April 4, 2025

Sweet Projects
Union Park
Hayes
UB34QQ

RE: Land at Bulls Bridge Industrial Estate North Hyde Gardens Hayes – SuDS Verification Information

To Whom It May Concern,

HDR have been requested to draft a verification statement of the current design strategy and collate relevant SuDS details, as-built information, and certifications of manufacturers.

The following design information can be verified by HDR as compliant with the original planning application and documentation. This information was part of the design package provided to the contractor.

Block 3

- HDR-0473-SWS-BG-DR-C-520210 Rev P09
- HDR-0473-SWS-BG-DR-C-520211 Rev P10
- HDR-0473-SWS-BG-DR-C-520212 Rev P11
- HDR-0473-SWS-BG-DR-C-520215 Rev P01
- HDR-0473-SWS-BG-DR-C-520501 Rev P03
- HDR-0473-SWS-BG-DR-C-520502 Rev P03
- HDR-0473-SWS-BG-DR-C-520503 Rev P05
- HDR-0473-SWS-BG-DR-C-520504 Rev P04
- HDR-0473-SWS-BG-DR-C-520505 Rev P04
- HDR-0473-SWS-BG-SCH-C-520010 Rev P15
- HDR-0473-SWS-BG-SCH-C-520020 Rev P13

The above information has been appended to this letter.

The following information was provided by Sweet Projects as additional supporting information.

- TOU-0473-SW-BG-TS-X-0022_Attenuation Tank – Stormwater Management
- TOU-0473-SW-BG-TS-X-0023_ Kingspan Klargester Class II Forecourt Separator
- TOU-0473-SW-XX-TS-X-0003_ Wavin TwinWall Surface and Stormwater Drainage Pipe

The above information has been appended to this letter.

Yours faithfully,
HDR Consulting Limited

Ulrich Groenewald *MIET CEng*
Associate Director

HDR Consulting Limited. Company Reg No: 26943273. Incorporated in: England & Wales.
Registered address: 240 Blackfriars Road, London, SE1 8NW, United Kingdom
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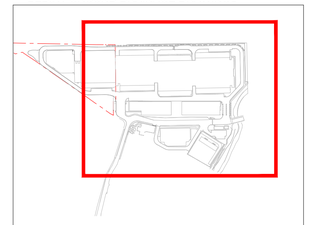
NOTES

1. DO NOT SCALE OFF THIS DRAWING. ALWAYS WORK TO NOTED DIMENSION.
2. ALL DIMENSIONS MUST BE VERIFIED ON SITE BEFORE COMPLETING SHOP DRAWINGS OR SETTING OUT OF THE WORKS.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DISCIPLINE'S DRAWINGS, REPORTS AND SPECIFICATIONS.
4. REFER TO GENERAL NOTES DRAWING HDR-0473-SWS-XX-TN-C-000025
5. REFER TO DRAWING SERIES HDR-0473-SWS-BG-DR-C-520... & HDR-0473-SWS-BG-SCH-C-520... FOR ASSOCIATED BELOW GROUND DRAINAGE DRAWINGS

KEYPLAN



NORTH

IN ABEYANCE REDESIGN REQUIRED SUBJECT TO BLOCK 4 LAYOUT

UNION PARK BLOCK 3
FFL: 31.300
GANTRY: 31.150 (SSL)

UNION PARK BLOCK 2
FFL: 31.300
GANTRY: 31.150 (SSL)

UNION PARK BLOCK 1
FFL: 31.300
GANTRY:31.150 (SSL)

REFER TO BLOCK 2 CONSTRUCTION DEMISE DRAWINGS FOR DETAILS

EC3 ENERGY CENTRE
SSL:31.000

EC1 ENERGY CENTRE
SSL:31.000

EC2 ENERGY CENTRE
SSL:31.000

BIKE SHELTER

VISITOR RECEPTION CENTRE (II)
FFL: 32.000m

BIKE SHELTER

VISITOR RECEPTION CENTRE (I) FFL: 30.350

EX. BUILDING

MAST COMPOUND

HV SUBSTATION

Gantry

MoPs

Weir

29.6m

Ramp

Lorry Park

NORTH HYDE GARDENS

NORTH HYDE GARDENS

RIVER CRANE

RIVER CRANE

THE PARK

Yeading

LEGEND

- PLANNING BOUNDARY
- CONSTRUCTION BOUNDARY
- EXISTING SURFACE WATER — EX-SW
- EXISTING PRIVATE FOUL WATER — EX-FW
- EXISTING PUBLIC FOUL WATER — EX-FW
- PROPOSED SURFACE WATER
- PROPOSED BACK DROP — BD
- PROPOSED FOUL WATER
- EXISTING THAMES VALLEY SEWER — TVS
- PERMEABLE PAVING CONNECTIONS — PP03.XX
- RAINWATER & CHANNEL CONNECTIONS (RWP01.XX) — RWP03.XX
- DRAINAGE CHANNEL (CH01.XX,FWCH01.XX) — CH
- SOIL VENT PIPE & FLOOR GULLY CONNECTIONS (SVP01.XX,FG01.XX)
- GULLY CONNECTION (GU01.XX)
- EXISTING GULLY CONNECTION (EXGU01.XX)
- SEWER NETWORK TO BE ABANDONED
- SWALE (SL01.XX)
- FILTRATION TRENCH (FT01.XX)
- LAND DRAIN (REFER DETAILS)
- SETTING OUT POINTS FOR SWALE,CHANNELS,TANKS — X1
- RAIN WATER HARVESTING TANK
- POLYPIPE PERMACEPTOR — PC03.XX

Rev	Description	Date
P09	STAGE 4 ISSUE	10/03/25
P08	STAGE 4 ISSUE	28/03/24
P07	STAGE 4 ISSUE	15/03/24
P06	STAGE 4 ISSUE	08/03/24
P05	STAGE 4 ISSUE	19/01/24
P04	STAGE 4 ISSUE	20/12/23
P03	STAGE 4 ISSUE	04/12/23
P02	STAGE 4 ISSUE	22/09/23
P01	STAGE 3 ISSUE	02/06/23

Drawing Status: FOR APPROVAL
Suitability: S4

4TH FLOOR
KNOLLYS HOUSE
17 ADDISCOMBE ROAD
CROYDON, CR0 6SR
UNITED KINGDOM
t: +44 (0) 20 8763 5900
e: info@hdrinc.com
w: www.hdrinc.com

Client: SWEET PROJECTS

Architect: NWA

Project: UNION PARK

Title: BLOCK 3
BELOW FINISHED GROUND LEVEL
FOUL AND SURFACE DRAINAGE
SITE LAYOUT

HDR Project Number: 10274713			
Cad File Name: HDR-0473-SWS-BG-DR-C-520210			
Drawn: AC	Chkd/Appd: JJ/UG	Date: 10/03/25	Scale @ A1: 1:500
Drawing Number: HDR-0473-SWS-BG-DR-C-520210			Revision: P09

File: \\UKRPI-FS01\DATA\REGIONAL WORKS DRIVE\PURLEY\17000\PUR17155 SWEETT GROUP UNION STG 4+\6.0 CAD BIM\6.2 WIP\6.2.2 CAD\5 CIVIL\DRAWINGS\BLOCK 3\HDR-0473-SWS-BG-DR-C-520210.DWG User: Engel, Dieter Sheet: HDR-0473-SWS-BG-DR-C-520210 Plot Date: 09/03/2025 13:49:08

NOTES

1. DO NOT SCALE OFF THIS DRAWING. ALWAYS WORK TO NOTED DIMENSION.
2. ALL DIMENSIONS MUST BE VERIFIED ON SITE BEFORE COMPLETING SHOP DRAWINGS OR SETTING OUT OF THE WORKS.
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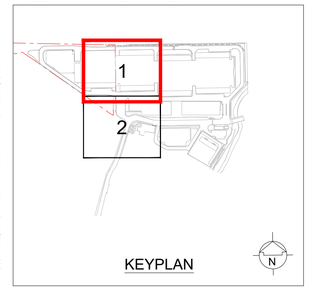
5. REFER TO DRAWING SERIES HDR-0473-SWS-BG-DR-C-520... & HDR-0473-SWS-BG-SCH-C-520... FOR ASSOCIATED BELOW GROUND DRAINAGE DRAWINGS



NORTH

PROVIDE STUB FOR FUTURE CONNECTION

RAINWATER HARVESTING TANK RWT03.01

PROVIDE STUB FOR FUTURE CONNECTION

IN ABEYANCE REDESIGN REQUIRED SUBJECT TO BLOCK 4 LAYOUT

UNION PARK BLOCK 3
FFL: 31.300m
GANTRY: 31.150m (SSL)

CONTRACTOR TO SURVEY AS BUILT DRAINAGE IN ORDER TO VALIDATE CURRENT DESIGN FOR BLOCK 3.

REFER TO BLOCK 2 CONSTRUCTION DEMISE DRAWINGS FOR DETAILS

ENSURE COVER IS LOCATED AWAY FROM PROPOSED ABOVE GROUND PLANT AS SHOWN

HIGH LEVEL VENT PIPE TO BE COORDINATED ON SITE

HIGH LEVEL VENT PIPE

PROVIDE STUB FOR FUTURE CONNECTION

HIGH LEVEL VENT PIPE

SW02.27 TO HAVE VENTED COVER CATCHPIT

VENT PIPE E510399.82 N179277.16 (COORDINATE WITH ARCHITECT)

LEGEND

- PLANNING BOUNDARY
- CONSTRUCTION BOUNDARY
- EXISTING SURFACE WATER (EX-SW)
- EXISTING PRIVATE FOUL WATER (EX-FW)
- EXISTING PUBLIC FOUL WATER (EX-FW)
- PROPOSED SURFACE WATER
- PROPOSED BACK DROP (BD)
- PROPOSED FOUL WATER
- EXISTING THAMES VALLEY SEWER (TVS)
- PERMEABLE PAVING CONNECTIONS (PP03.XX)
- RAINWATER & CHANNEL CONNECTIONS (RWP01.XX) (RWP03.XX)
- DRAINAGE CHANNEL (CH01.XX,FWCH01.XX) (CH)
- SOIL VENT PIPE & FLOOR GULLY CONNECTIONS (SVP01.XX,FG01.XX)
- GULLY CONNECTION (GU01.XX)
- EXISTING GULLY CONNECTION (EXGU01.XX)
- SEWER NETWORK TO BE ABANDONED
- SWALE (SL01.XX)
- FILTRATION TRENCH (FT01.XX)
- LAND DRAIN (REFER DETAILS)
- SETTING OUT POINTS FOR SWALE,CHANNELS,TANKS
- RAIN WATER HARVESTING TANK
- POLYPIPE PERMACEPTOR (PC03.XX)

Rev	Description	Date
P10	STAGE 4 ISSUE	10/03/25
P09	STAGE 4 ISSUE	28/03/24
P08	STAGE 4 ISSUE	08/03/24
P07	STAGE 4 ISSUE	21/02/24
P06	STAGE 4 ISSUE	06/02/24
P05	STAGE 4 ISSUE	19/01/24
P04	STAGE 4 ISSUE	20/12/23
P03	STAGE 4 ISSUE	04/12/23
P02	STAGE 4 ISSUE	22/09/23
P01	STAGE 3 ISSUE	02/06/23

Drawing Status: FOR APPROVAL
Suitability: S4

4TH FLOOR
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w: www.hdrinc.com

Client: SWEET PROJECTS
Architect: NWA
Project: UNION PARK
Title: BLOCK 3 BELOW FINISHED GROUND LEVEL FOUL AND SURFACE DRAINAGE LAYOUT SHEET 1 OF 2

HDR Project Number: 10274713
Cad File Name: HDR-0473-SWS-BG-DR-C-520211
Drawn: AC | Chkd/Appd: JJ/UG | Date: 10/03/25 | Scale @ A1: 1:200
Drawing Number: HDR-0473-SWS-BG-DR-C-520211 | Revision: P10

NOTES

1. DO NOT SCALE OFF THIS DRAWING. ALWAYS WORK TO NOTED DIMENSION.
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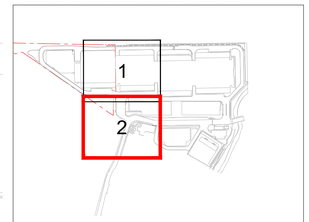

NORTH

SW03.01
SW03.01
PI03.01
PI03.01
FW03.30 B
FWD10
FWD11
FWD13
FWD14
FWD12
FWD15
FW03.11 B
FWD16
FWD17
FWCH03.01
FWCH03.01
FW03.23
M200D 20.0 ACO CHANNEL
FWCH03.03
FW03.24
FS03.01
VENT PIPE
E510399.82
N179277.16
(COORDINATE WITH ARCHITECT)
FW03.26
FW02.01
FWCH03.02
M200D 20.0 ACO CHANNEL
FWCH03.04
FW03.15
SW03.12
SW03.11
CH03.14
M200D 0.0 ACO CHANNEL
M200D 0.0 ACO CHANNEL
CH03.13
CH03.12
CH03.11
FW03.25
FW03.28
SVPE03.01
SW03.10
RWP03.22
FGE03.01
RWP03.23
SSE03.04
FG REFER GBL DRAWINGS
SW03.09
EC3 ENERGY CENTRE
SSL:31.000m
CDS/3 REFER GBL DRAWINGS
SSE03.02
RWP03.21
PENETRATION THROUGH CAPPING BEAM - REFER GBL DRAWINGS FOR CONTINUATION OF INTERNAL DRAINAGE
E: 510363.582
N: 179259.684
CL: 30.850
FW03.30 A
FW03.11 A
FWD09
FWD08
FWD05
FWD04
FWD07
FWD03
FWD01
FWD02
CH-03.01
FW03.14
FW03.13
GU03.01
GU03.02
E: 510384.693
N: 179259.661
CL: 30.850
IN ABEYANCE SUBJECT TO FINAL BLOCK 4 LAYOUT. REVISED ROUTING AND DESIGN MAY BE REQUIRED.
EXISTING ROAD GULLY TO BE ABANDONED
EXISTING ROAD GULLY TO BE ABANDONED
NORTH HYDE GARDENS
RELOCATE GULLIES CONNECT TO EXISTING DRAINAGE PIPES
GU03.03
GU03.06
RELOCATE GULLIES CONNECT TO EXISTING DRAINAGE PIPES
FW03.32
PP03.03
GU03.04
GU03.05
PP03.01
SW03.20
FW03.31
BIKE SHELTER
RWP03.24
SW03.21
PP03.02
VISITOR RECEPTION CENTRE (II)
FFL : 32.000m
SVPE03.02
RWP03.25
NORTH HYDE GARDENS
Gantry

LEGEND

- PLANNING BOUNDARY
- CONSTRUCTION BOUNDARY
- EXISTING SURFACE WATER (EX-SW)
- EXISTING PRIVATE FOUL WATER (EX-FW)
- EXISTING PUBLIC FOUL WATER (EX-FW)
- PROPOSED SURFACE WATER
- PROPOSED BACK DROP (BD)
- PROPOSED FOUL WATER
- EXISTING THAMES VALLEY SEWER (TVS)
- PERMEABLE PAVING CONNECTIONS (PP03.XX)
- RAINWATER & CHANNEL CONNECTIONS (RWP01.XX)
- DRAINAGE CHANNEL (CH01.XX,FWCH01.XX) (CH)
- SOIL VENT PIPE & FLOOR GULLY CONNECTIONS (SVP01.XX,FG01.XX)
- GULLY CONNECTION (GU01.XX)
- EXISTING GULLY CONNECTION (EXGU01.XX)
- SEWER NETWORK TO BE ABANDONED
- SWALE (SL01.XX)
- FILTRATION TRENCH (FT01.XX)
- LAND DRAIN (REFER DETAILS)
- SETTING OUT POINTS FOR SWALE,CHANNELS,TANKS (1 X)
- RAIN WATER HARVESTING TANK
- POLYPIPE PERMACEPTOR (PC03.XX)

Rev	Description	Date
P11	STAGE 4 ISSUE	10/03/25
P10	STAGE 4 ISSUE	12/07/24
P09	STAGE 4 ISSUE	14/06/24
P08	STAGE 4 ISSUE	28/03/24
P07	STAGE 4 ISSUE	15/03/24
P06	STAGE 4 ISSUE	21/02/24
P05	STAGE 4 ISSUE	06/02/24
P04	STAGE 4 ISSUE	19/01/24
P03	STAGE 4 ISSUE	20/12/23
P02	STAGE 4 ISSUE	22/09/23
P01	STAGE 3 ISSUE	06/02/23

Drawing Status: FOR APPROVAL
Suitability: S4

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e: info@hdrinc.com
w: www.hdrinc.com

Client: SWEET PROJECTS
Architect: NWA
Project: UNION PARK
Title: BLOCK 3
BELOW FINISHED GROUND LEVEL
FOUL AND SURFACE DRAINAGE
LAYOUT SHEET 2 OF 2

HDR Project Number: 10274713
Cad File Name: HDR-0473-SWS-BG-DR-C-520212

Drawn:	Chkd/Appd:	Date:	Scale @ A1:
AC	JJ/UG	10/03/25	1:200

Drawing Number: HDR-0473-SWS-BG-DR-C-520212
Revision: P11

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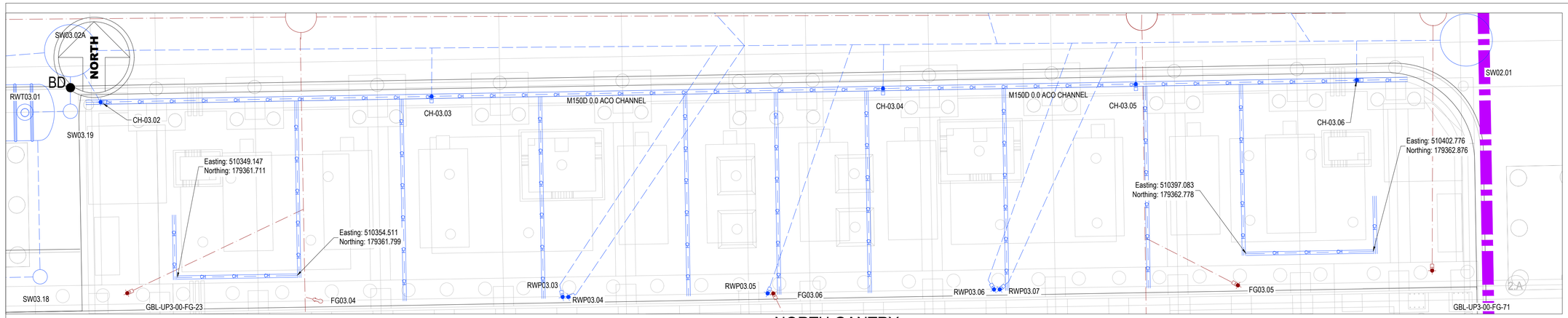
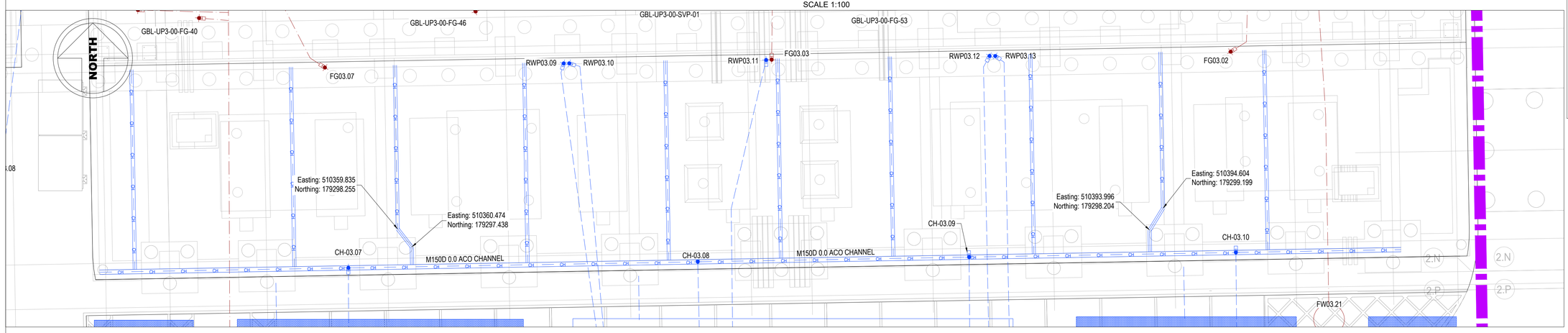


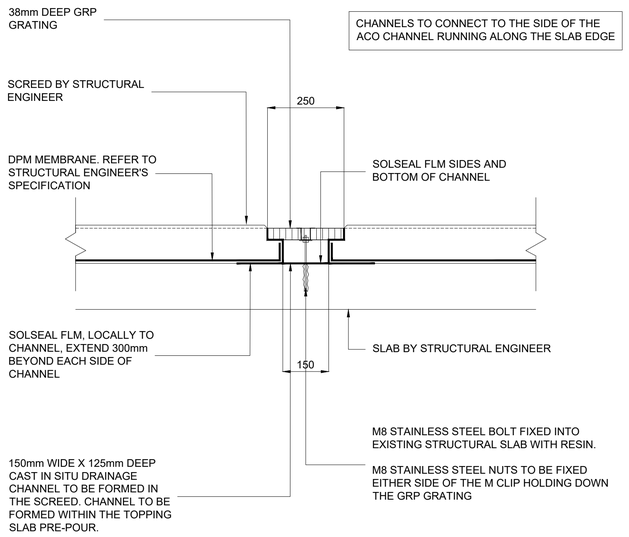
NORTH GANTRY

SCALE 1:100



SOUTH GANTRY

SCALE 1:100



DRAINAGE CHANNEL SECTION

SCALE 1:10

LEGEND

- PLANNING BOUNDARY
- CONSTRUCTION BOUNDARY
- EXISTING SURFACE WATER (EX-SW)
- EXISTING PRIVATE FOUL WATER (EX-FW)
- EXISTING PUBLIC FOUL WATER (EX-FW)
- PROPOSED SURFACE WATER
- PROPOSED BACK DROP (BD)
- PROPOSED FOUL WATER
- EXISTING THAMES VALLEY SEWER (TVS)
- PERMEABLE PAVING CONNECTIONS (PP03.XX)
- RAINWATER & CHANNEL CONNECTIONS (RWP01.XX) (RWP03.XX)
- DRAINAGE CHANNEL (CH01.XX,FWCH01.XX) (CH)
- SOIL VENT PIPE & FLOOR GULLY CONNECTIONS (SVP01.XX,FG01.XX)
- GULLY CONNECTION (GU01.XX)

NOTES

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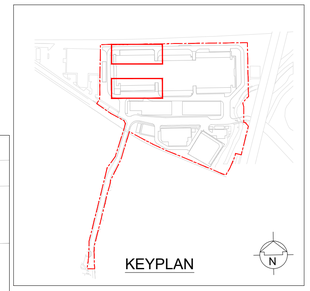

Rev	Description	Date
P01	STAGE 4 ISSUE	14/05/24

Drawing Status: FOR APPROVAL
Suitability: S4

4TH FLOOR
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w: www.hdrinc.com

Client: SWEET PROJECTS

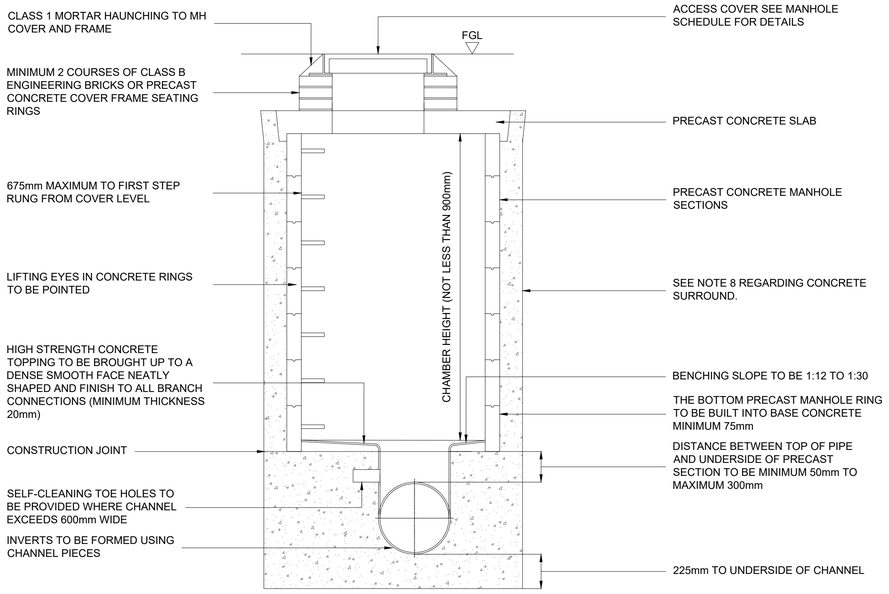
Architect: NWA

Project: UNION PARK

Title: BLOCK 3
BELOW FINISHED GROUND LEVEL
GANTRY DRAINAGE LAYOUT

HDR Project Number:			
10274713			
Cad File Name: HDR-0473-SWS-BG-DR-C-520215			
Drawn: AC	Chkd/Appd: JJ/UG	Date: 14/05/24	Scale @ A1: 1:100
Drawing Number: HDR-0473-SWS-BG-DR-C-520215			Revision: P01

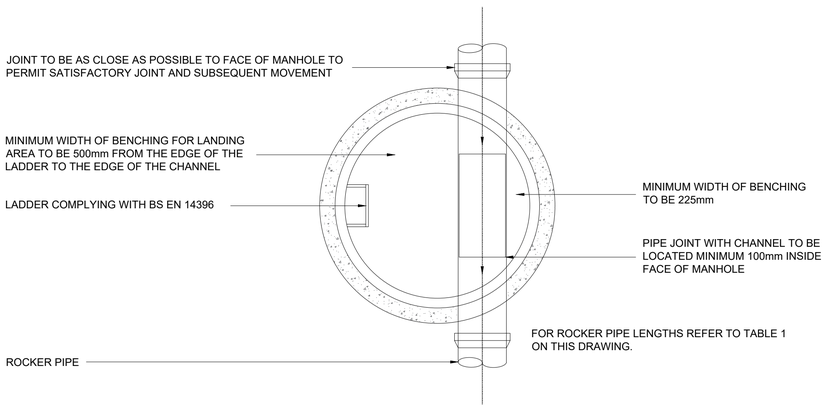
File: \\LHRPI-FS01\DATA\REGIONAL WORKS DRIVE\PURLEY\170000\PUR17155 SWEETT GROUP UNION STG 4+\6.0 CAD BIM\6.2 WIP\6.2.2 CAD\5 CIVIL\DRAWINGS\BLOCK 3\HDR-0473-SWS-BG-DR-C-520215.DWG User: Jensen, Jason Sheet: Layout1 Plot Date: 14/05/2024 09:23:03



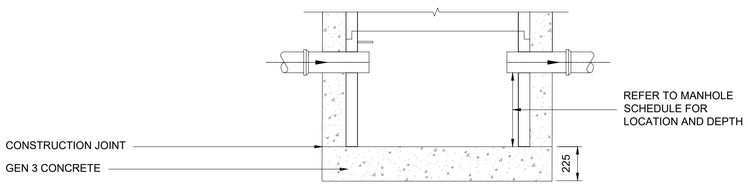
DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE 1.5m TO 3m
RIGID MATERIAL CONSTRUCTION WITHOUT CONCRETE SURROUND

TYPICAL MANHOLE DETAIL - TYPE B

SCALE 1:20

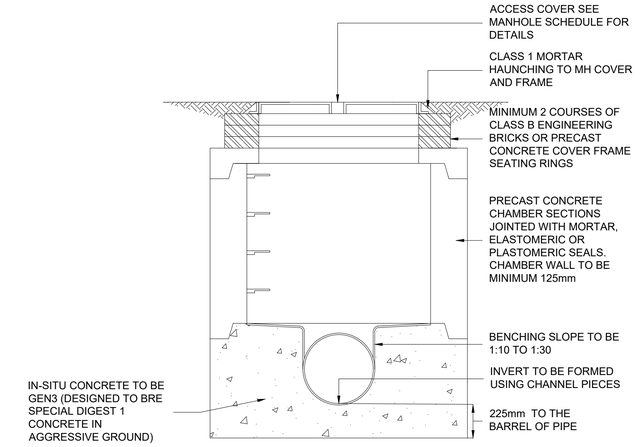


PLAN

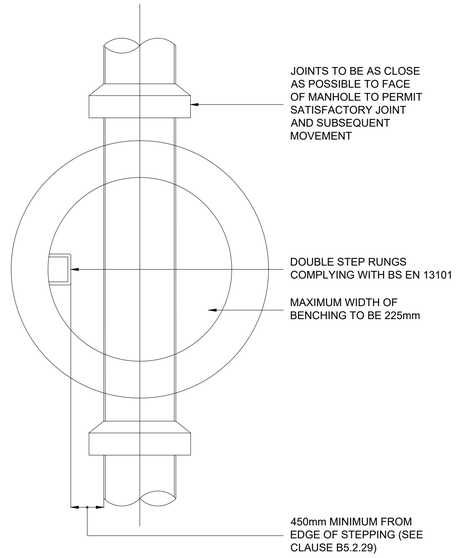


SUMP MANHOLE DETAIL

SCALE 1:20



SECTION



TYPICAL MANHOLE DETAIL - TYPE C

DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE <1.5m FLEXIBLE MATERIAL CONSTRUCTION FOR USE IN AREAS SUBJECT TO VEHICLE LOADING
(SCALE 1:20)

NOTES

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5. REFER TO DRAWING SERIES HDR-0473-SWS-BG-DR-C-520... & HDR-0473-SWS-BG-SCH-C-520... FOR ASSOCIATED BELOW GROUND DRAINAGE DRAWINGS

Rev	Description	Date
P03	STAGE 4 ISSUE	04/12/23
P02	STAGE 4 ISSUE	22/09/23
P01	STAGE 3 ISSUE	04/12/23

Drawing Status: FOR APPROVAL
Suitability: S4

4TH FLOOR
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w: www.hdrinc.com

Client: SWEET PROJECTS

Architect: NWA

Project: UNION PARK

Title: BLOCK 3
BELOW FINISHED GROUND LEVEL
DRAINAGE TYPICAL DETAILS
SHEET 1 OF 5

HDR Project Number: 10274713
Cad File Name: HDR-0473-SWS-BG-DR-C-520501

Drawn:	Chkd/Appd:	Date:	Scale @ A1:
RJJ	JJ/UG	04/12/23	AS SHOWN

Drawing Number: HDR-0473-SWS-BG-DR-C-520501
Revision: P03

NOTES

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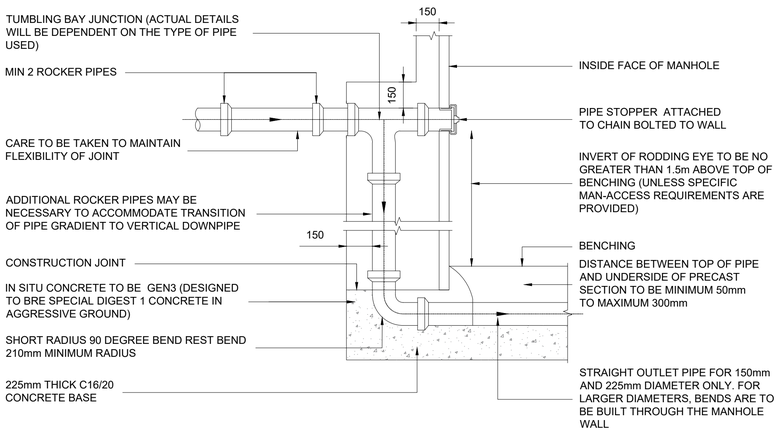
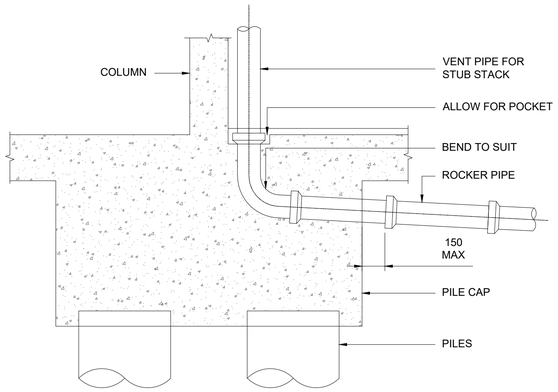
5. REFER TO DRAWING SERIES HDR-0473-SWS-BG-DR-C-520... & HDR-0473-SWS-BG-SCH-C-520... FOR ASSOCIATED BELOW GROUND DRAINAGE DRAWINGS



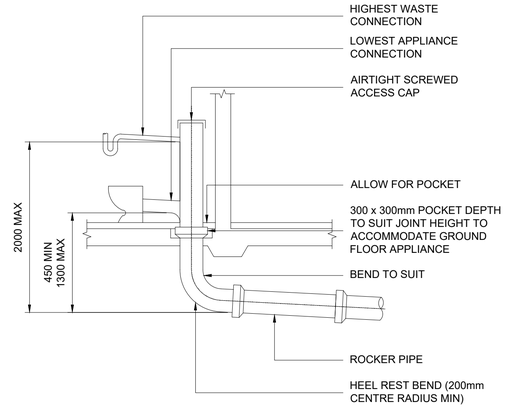
TYPICAL VERTICAL BACKDROP DETAIL

(NTS)



PIPES CROSSING THROUGH PILE CAP

(NTS)



PIPE TO BE LAID IN GROUND OR SUPPORTED AT EACH JOINT IF LAID ABOVE GROUND.

INTERNAL STACK CONNECTIONS

(NTS)

BEDDING BENEATH AND AT THE SIDES OF THE PIPE TO BE WELL COMPACTED. THE FIRST 300mm OF FILL ABOVE THE CROWN OF THE PIPE IS TO BE LIGHTLY TAMPED BY HAND. MECHANICAL COMPACTION MAY BE USED ONLY ABOVE THIS LEVEL. GEOTEXTILES MAY BE USED WHERE DIRECTED OR APPROVED BY THE ENGINEER TO CONTAIN BEDDING MATERIAL IN CERTAIN SOILS E.G. RUNNING SAND IN VERY WET CONDITIONS, WHERE DIRECTED OR APPROVED BY THE ENGINEER A TEMPORARY LAND DRAIN MAY BE LAID WITHIN THE GRANULAR BED.

GRANULAR BEDDING FOR FLEXIBLE PIPES

CLASS S BEDDING

(NTS)

PLAN

TABLE 1. ROCKER PIPE LENGTHS

PIPE DIAMETER (mm)	ROCKER PIPE LENGTH (mm)
100 - 600	600
601 - 750	1000
>750	1250

PIPES CONNECTIONS TO MANHOLES MUST HAVE A FLEXIBLE JOINT AS CLOSE AS FEASIBLE FROM THE EXTERNAL FACE OF THE STRUCTURE.

PIPE JUNCTIONS ARRANGEMENT

(NTS)

SUITABLE FOR PIPE SIZES UP TO 600mm INTERNAL DIAMETER

TYPICAL DOUBLE ROCKER PIPE DETAIL

(NTS)

SECTION

CONCRETE SURROUND SHALL BE PROVIDED WHERE THE DISTANCE BETWEEN THE SOFFIT OF THE LOWER DRAIN AND THE BARREL OF THE HIGHEST DRAIN IS LESS THAN 300mm.

PIPE TO PIPE CROSSOVER

(NTS)

DRAIN SLEEVE/DUCT TO BE LOCATED WHOLLY WITHIN THE MIDDLE THIRD OF THE FOUNDATION DEPTH. THE ENGINEER (HDR) IS TO BE ADVISED IF THIS IS NOT POSSIBLE. 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).

DRAINS THROUGH FOUNDATIONS

(NTS)

Rev	Description	Date
P03	STAGE 4 ISSUE	04/12/23
P02	STAGE 4 ISSUE	22/09/23
P01	STAGE 3 ISSUE	02/06/23

Drawing Status: FOR APPROVAL
Suitability: S4

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Client: SWEET PROJECTS

Architect: NWA

Project: UNION PARK

Title: BLOCK 3
BELOW FINISHED GROUND LEVEL
DRAINAGE TYPICAL DETAILS
SHEET 2 OF 5

HDR Project Number: 10274713

Cad File Name: HDR-0473-SWS-BG-DR-C-520502

Drawn:	Chkd/Appd:	Date:	Scale @ A1:
RJJ	JJ/UG	04/12/23	AS SHOWN

Drawing Number: HDR-0473-SWS-BG-DR-C-520502
Revision: P03

File: \\UKRPH-FS01\DATA\REGIONAL WORKS DRIVE\PURLEY\17000\PUR17155 SWEETT GROUP UNION STG 4+\6.0 C4D BIM\6.2 WIP\6.2.2 CAD\5 CIVIL\DRAWINGS\BLOCK 3\HDR-0473-SWS-BG-DR-C-520502.DWG User: Jensen, Joson Sheet: Layout1 Plot Date: 04/12/2023 15:45:16

NOTES

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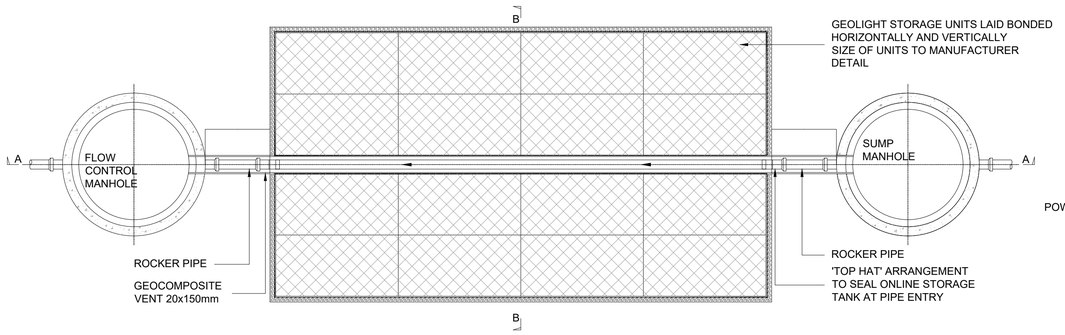
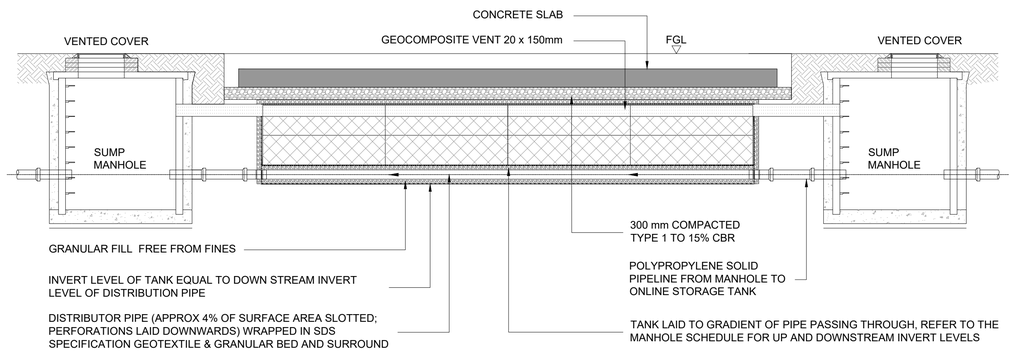
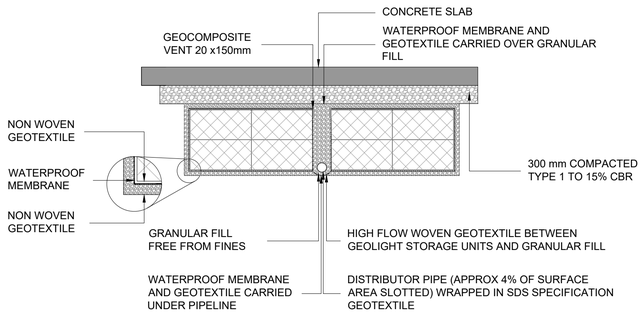


PLAN



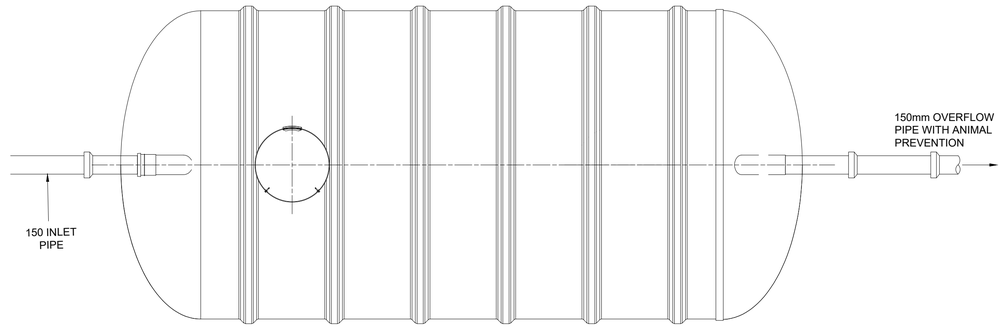
SECTION A-A



SECTION B-B

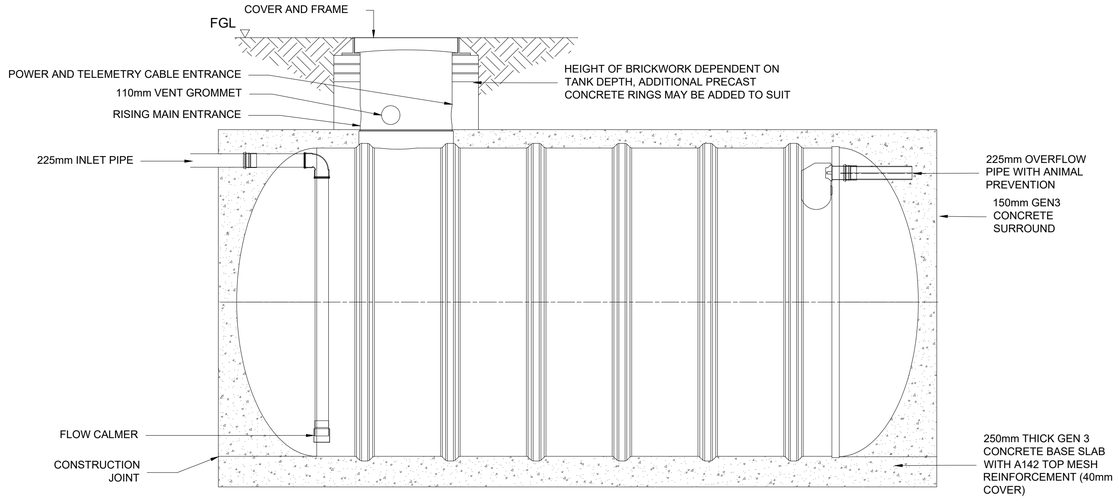
SDS GEOLIGHT 800 STORMWATER ATTENUATION SYSTEM

SCALE 1:50



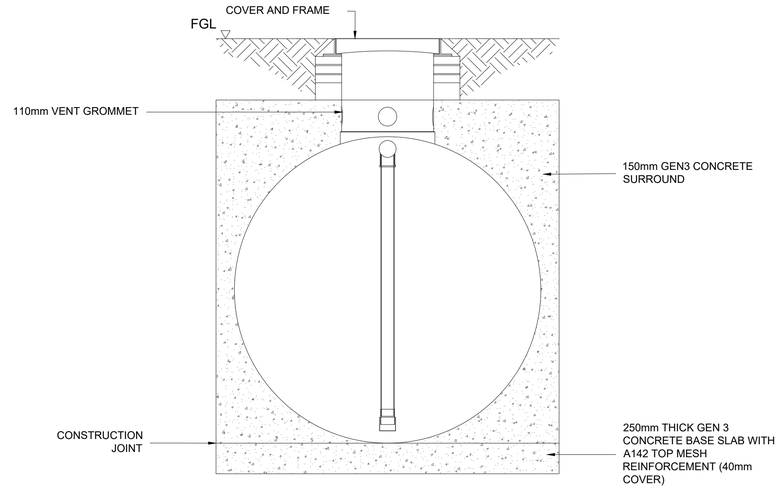
PLAN VIEW

SCALE 1:25



FRONT ELEVATION

SCALE 1:25



END ELEVATION

(NTS)

RAINWATER HARVESTING TANK
NOMINAL CAPACITY 25000 LITRES

SCALE 1:25

Rev	Description	Date
P04	STAGE 4 ISSUE	11/01/24
P03	STAGE 4 ISSUE	04/12/23
P02	STAGE 4 ISSUE	22/09/23
P01	STAGE 3 ISSUE	02/06/23

Drawing Status: FOR APPROVAL — Suitability: S4

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Architect: NWA

Project: UNION PARK

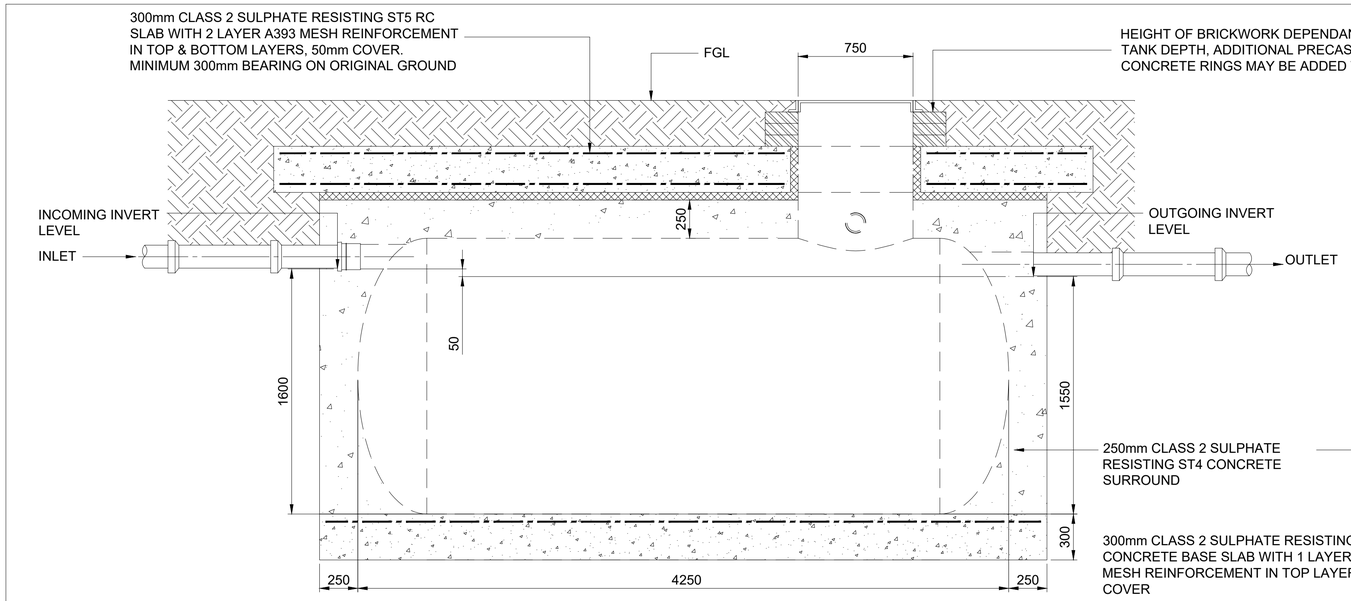
Title: BLOCK 3
BELOW FINISHED GROUND LEVEL
DRAINAGE TYPICAL DETAILS
SHEET 4 OF 5

HDR Project Number: 10274713

Cad File Name: HDR-0473-SWS-BG-DR-C-520504

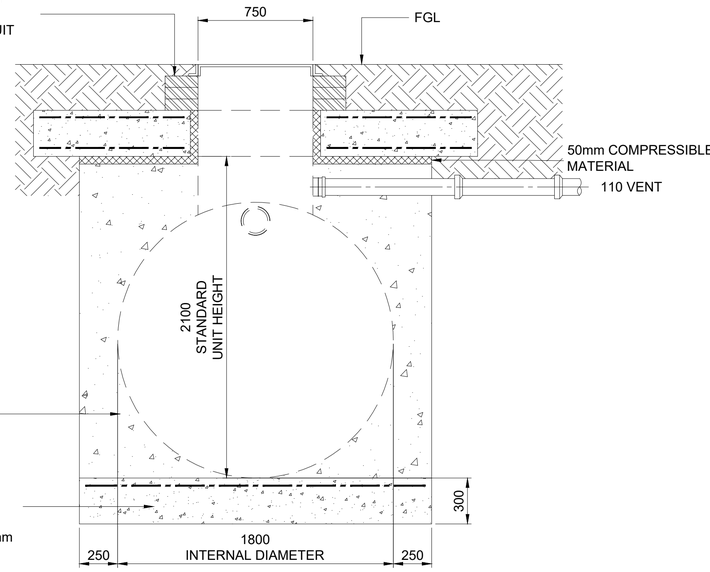
Drawn:	Chkd/Appd:	Date:	Scale @ A1:
RJJ	JJ/UG	11/01/24	AS SHOWN

Drawing Number: HDR-0473-SWS-BG-DR-C-520504 — Revision: P04



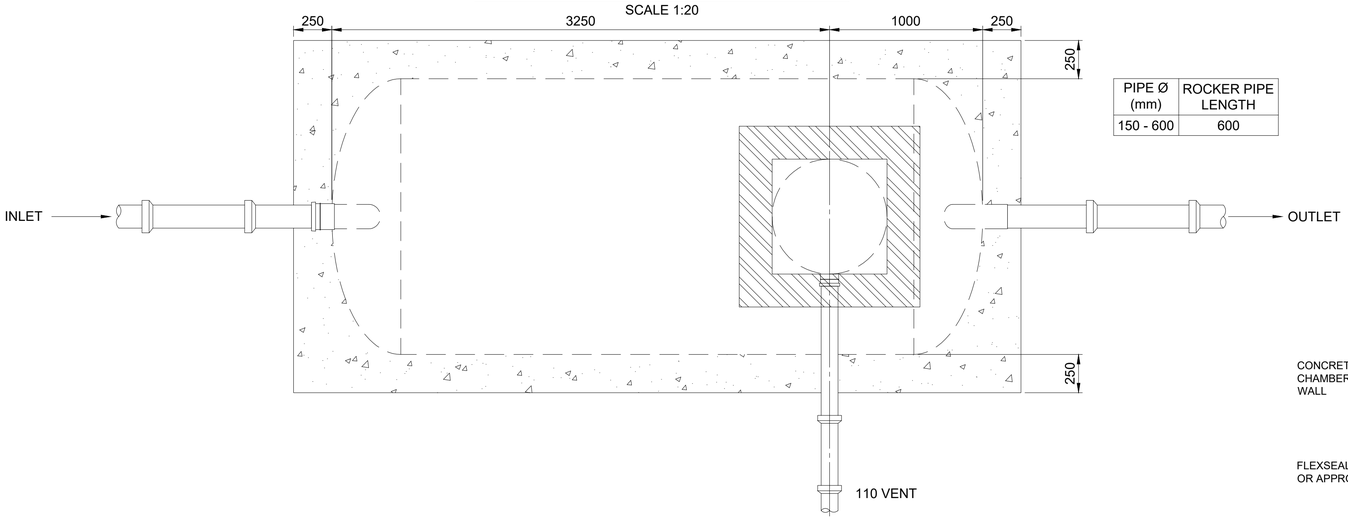
FORECOURT SEPARATOR SECTION

SCALE 1:20



FORECOURT SEPARATOR SECTION

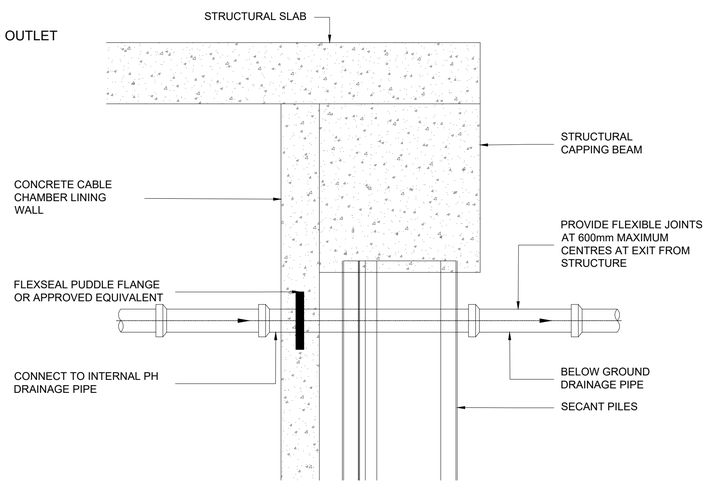
SCALE 1:20



PIPE Ø (mm)	ROCKER PIPE LENGTH
150 - 600	600

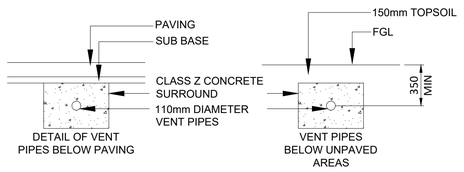
FORECOURT SEPARATOR PLAN

SCALE 1:20



PUDDLE FLANGE

SCALE 1:20



INTERCEPTOR VENT PIPES

SCALE 1:20

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Rev	Description	Date
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P03	STAGE 4 ISSUE	04/12/23
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Architect: NWA

Project: UNION PARK

Title: BLOCK 3
BELOW FINISHED GROUND LEVEL
DRAINAGE TYPICAL DETAILS
SHEET 5 OF 5

HDR Project Number: 10274713			
Cad File Name: HDR-0473-SWS-BG-DR-C-520505			
Drawn: RJ/HA	Chkd/Appd: JJ/UG	Date: 20/12/23	Scale @ A1: AS SHOWN
Drawing Number: HDR-0473-SWS-BG-DR-C-520505			Revision: P04

SURFACE WATER MANHOLE AND PIPE SCHEDULE

REF NO.	APPROXIMATE COVER LEVEL (m)	INVERT LEVEL (m)	PIPE INVERT LEVELS (m)	DEPTH (m)	EASTING	NORTHING	INTERNAL CHAMBER SIZE (mm)	COVER LOADING TO BS EN 124	RECESSED	LOCKED	SEALED	VENTED	ACCESS COVER OPENING (mm)	DOWNSTREAM PIPE DIAMETER (mm)	DOWNSTREAM PIPE GRADIENT	REMARKS
SW03.02	30.843	27.864	In = 28.719 from PP-03.01 In = 29.424 from SD03.01 Out = 27.861	2.98	510324.695	179370.328	1800	D400	NO	NO	NO	NO	600x600	600	1:563	TYPE B
SW03.02A	30.770	27.826	In = 27.826 from SW03.02 In = 28.276 from SW03.19 In = 29.326 from CH-03.02 Out = 27.826	3.03	510344.356	179371.881	1800	D400	NO	NO	NO	NO	600x600	600	1:482	TYPE A1
SW03.03	30.622	29.871	In = 29.871 from RWP03.01 Out = 29.871	0.75	510341.264	179332.052	450	B125	YES	NO	NO	NO	450x450	150	1:39	PPIC
SW03.04	31.213	29.119	In = 29.119 from MH960 Out = 29.119	2.09	510340.760	179361.704	450	C250	NO	NO	NO	NO	450x450	150	1:40	TYPE E
SW03.05	31.035	27.859	In = 27.859 from PP03-03 Out = 27.859	3.19	510325.801	179291.591	1800	D400	NO	NO	NO	NO	600x600	600	1:600	TYPE B
SW03.07	31.206	27.332	In = 27.832 from SW03.05 In = 28.158 from RWP.03.08 Out = 27.832	3.35	510341.838	179291.592	1800	C250	NO	NO	NO	YES	600x600	600	1:761	CATCHPIT
SW03.09	30.921	28.837	In = 29.349 from MH940 Out = 28.837	2.08	510362.044	179267.355	450	C250	NO	NO	NO	NO	450x450	150	1:40	TYPE E
SW03.10	31.017	28.670	In = 28.670 from SW03.09 In = 28.670 from RWP03.22 Out = 28.670	2.35	510361.319	179273.969	1200	C250	NO	NO	NO	NO	600x600	150	1:21	TYPE B
SW03.11	30.777	29.140	In = 29.140 from MH1007 In = 29.140 from RWP03.23 Out = 29.140	1.64	510406.857	179278.208	600	D400	NO	NO	NO	NO	600x600	225	1:41	TYPE E
SW03.12	30.857	28.807	In = 28.817 from SW03.11 In = 28.818 from CH03.13 Out = 28.807	2.05	510393.534	179278.398	600	D400	NO	NO	NO	NO	600x600	225	1:12	TYPE E
SW03.18	31.161	29.063	In = 29.063 from SW03.04 Out = 29.063	2.10	510342.993	179361.743	450	C250	NO	NO	NO	NO	450X450	150	1:40	TYPE E
SW03.19	30.963	28.859	In = 28.859 from RWT03.01 Out = 28.859	2.10	510344.351	179369.167	450	C250	NO	NO	NO	NO	450x450	150	1:5	TYPE E
SW03.20	31.802	30.804	In = 30.858 from RWP03.24 In = 30.858 from PP03.02 In = 30.858 from PP03.01 Out = 30.858	1.00	510391.580	179223.551	600	D400	NO	NO	NO	NO	600x600	225	1:156	PPIC
SW03.21	31.801	30.759	In = 30.759 from PP03.03 In = 30.759 from RWP03.25 In = 30.759 from SW03.20 Out = 30.759	1.09	510406.821	179220.971	600	D400	NO	NO	NO	NO	600x600	225	1:100	PPIC

SURFACE WATER RAINWATER TANK CONNECTION SCHEDULE

REFERENCE	COVER LEVEL (m)	PIPE INVERT LEVELS (m)	DOWNSTREAM PIPE DIAMETER (mm)	DOWNSTREAM PIPE GRADIENT	EASTING (m)	NORTHING (m)	SPECIAL REQUIREMENTS
RWT03.01	29.515	Out = 28.910	150	1:40	510342.313	179369.122	RAIN WATER HARVESTING

SURFACE WATER ATTENUATION TANK SCHEDULE

TANK REFERENCE	TOP TANK LEVEL (m)	INVERT LEVEL (m)	WIDTH (m)	LENGTH (m)	DEPTH (m)	VOID RATIO	TOTAL ATTENUATION VOLUME (m³)	TANKED/ INFILTRATION	NOTES
ATT03.01	29.745	27.745	5.000	4.000	2.000	97%	38.802	TANKED	
ATT03.02	29.755	27.755	5.000	10.000	2.000	97%	96.983	TANKED	
ATT03.03	29.772	27.772	5.000	20.000	2.000	97%	193.959	TANKED	
ATT03.04	29.801	27.801	5.000	13.000	2.000	97%	126.089	TANKED	
ATT03.05	29.821	27.821	5.000	4.500	2.000	97%	43.640	TANKED	

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SURFACE WATER, GULLY & CHANNEL CONNECTION SCHEDULE

REFERENCE	COVER LEVEL (m)	PIPE INVERT LEVELS (m)	DOWNSTREAM PIPE DIAMETER (mm)	DOWNSTREAM PIPE GRADIENT	EASTING (m)	NORTHING (m)	SPECIAL REQUIREMENTS
CH-03.01	30.850	In = 30.650 Out = 29.569	150	1:40	510363.582	179259.684	
CH-03.02	31.275	Out = 29.372	150	1:58	510345.702	179369.579	
CH-03.03	31.275	Out = 28.284	150	1:52	510360.552	179369.840	
CH-03.04	31.275	Out = 28.237	150	1:53	510380.796	179370.194	
CH-03.05	31.275	Out = 28.229	150	1:57	510392.134	179370.389	
CH-03.06	31.275	Out = 28.188	150	1:55	510402.038	179370.565	
CH-03.07	31.275	Out = 30.061	150	1:44	510357.593	179296.498	
CH-03.08	31.275	Out = 30.037	150	1:44	510373.466	179296.769	
CH-03.09	31.275	Out = 30.042	150	1:44	510385.794	179296.978	
CH-03.10	31.275	Out = 30.028	150	1:44	510397.914	179297.189	
CH03.11	31.100	Out = 29.256	150	1:40	510409.807	179275.808	
CH03.12	31.100	Out = 29.090	150	1:40	510400.996	179275.808	
CH03.13	31.100	Out = 28.887	150	1:40	510392.593	179275.808	
CH03.14	31.100	Out = 28.621	150	1:40	510363.547	179275.808	
PP-03-01	30.907	Out = 28.944	150	1:40	510322.013	179361.922	
PP-03-02	30.674	Out = 29.535	150	1:100	510367.264	179375.710	
PP-03-03	30.935	Out = 28.010	150	Horizontal	510323.271	179299.879	
PP-03-04	31.107	Out = 27.943	150	1:40	510335.351	179288.886	
PP-03-05	30.952	Out = 29.519	150	1:40	510368.122	179287.699	
PP-03-06	30.787	Out = 29.471	150	1:40	510394.188	179288.743	
PP-03.07	30.656	Out = 28.629	150	1:40	510384.597	179376.752	
PP03.01	31.683	Out = 30.996	150	1:109	510376.573	179224.358	
RWP03.02	30.624	Out = 29.309	150	1:23	510342.151	179356.239	
RWP03.08	31.299	Out = 28.615	150	1:39	510342.912	179309.620	
RWP03.23	31.100	Out = 29.479	150	1:19	510407.790	179271.907	
SD03.01	30.904	Out = 30.223	100	1:10	510322.077	179377.897	
SD03.02	30.642	Out = 28.619	100	1:40	510395.436	179379.144	

RWP CONNECTION SCHEDULE

REFERENCE	COVER LEVEL (m)	PIPE INVERT LEVELS (m)	DOWNSTREAM PIPE DIAMETER (mm)	DOWNSTREAM PIPE GRADIENT
PP-03-02	30.674	Out = 29.535	150	1:100
PP03.01	31.683	Out = 30.996	150	1:109
PP03.03	31.500	Out = 30.870	225	1:108
RWP03.01	31.300	Out = 30.078	150	1:40
RWP03.03	31.150	Out = 28.832	150	1:22
RWP03.04	31.150	Out = 28.932	150	1:19
RWP03.05	31.150	Out = 28.701	150	1:24
RWP03.06	31.150	Out = 28.805	150	1:11
RWP03.07	31.150	Out = 28.828	150	1:19
RWP03.09	31.150	Out = 30.251	150	1:40
RWP03.10	31.150	Out = 30.253	150	1:40
RWP03.11	31.150	Out = 30.175	150	1:40
RWP03.12	31.150	Out = 30.164	150	1:40
RWP03.13	31.150	Out = 30.174	150	1:40
RWP03.21	31.000	Out = 29.422	150	1:40
RWP03.22	30.954	Out = 28.740	150	1:40
RWP03.24	31.675	Out = 31.280	225	1:7
RWP03.25	31.532	Out = 31.300	225	1:6

REFER TO HDR-0473-UP3-00-DR-S-200208 P01 12/09/23 FOR RWP SETOUT

PERMACEPTOR SETTING OUT SCHEDULE

REFERENCE	COVER LEVEL (m)	PIPE INVERT LEVELS (m)	DOWNSTREAM PIPE DIAMETER (mm)	EASTING (m)	NORTHING (m)	SPECIAL REQUIREMENTS
PC-03-01	29.186	In = 28.922 Out = 28.922	150	510322.027	179362.819	SETTING OUT TBC BY OTHERS
PC-03-02	29.154	In = 28.890 Out = 28.890	150	510322.046	179364.084	SETTING OUT TBC BY OTHERS
PC-03-03	29.796	In = 29.528 Out = 29.528	150	510367.998	179375.736	SETTING OUT TBC BY OTHERS
PC-03-04	29.780	In = 29.516 Out = 29.516	150	510369.243	179375.744	SETTING OUT TBC BY OTHERS
PC-03-05	29.767	In = 29.503 Out = 29.503	150	510370.493	179375.750	SETTING OUT TBC BY OTHERS
PC-03-06	28.274	In = 28.010 Out = 28.010	150	510323.268	179299.197	SETTING OUT TBC BY OTHERS
PC-03-07	28.274	In = 28.010 Out = 28.010	150	510323.258	179297.788	SETTING OUT TBC BY OTHERS
PC-03-08	28.182	In = 27.927 Out = 27.927	150	510336.013	179288.874	SETTING OUT TBC BY OTHERS
PC-03-09	29.758	In = 29.503 Out = 29.503	150	510368.787	179287.712	SETTING OUT TBC BY OTHERS
PC-03-10	29.728	In = 29.473 Out = 29.473	150	510369.988	179287.711	SETTING OUT TBC BY OTHERS
PC-03-11	29.708	In = 29.453 Out = 29.453	150	510394.907	179288.756	SETTING OUT TBC BY OTHERS
PC-03-12	29.678	In = 29.423 Out = 29.423	150	510396.107	179288.758	SETTING OUT TBC BY OTHERS
PC-03-13	29.554	Out = 28.609 In = 28.609	150	510384.816	179375.995	SETTING OUT TBC BY OTHERS

Rev	Description	Date
P15	STAGE 4 ISSUE	12/07/24
P14	STAGE 4 ISSUE	14/06/24
P13	STAGE 4 ISSUE	14/05/24
P12	STAGE 4 ISSUE	28/03/24
P11	STAGE 4 ISSUE	20/03/24
P10	STAGE 4 ISSUE	15/03/24
P09	STAGE 4 ISSUE	08/03/24
P08	STAGE 4 ISSUE	21/02/24
P07	STAGE 4 ISSUE	09/02/24
P06	STAGE 4 ISSUE	06/02/24
P05	STAGE 4 ISSUE	19/01/24
P04	STAGE 4 ISSUE	20/12/23
P03	STAGE 4 ISSUE	04/12/23
P02	STAGE 4 ISSUE	22/09/23
P01	STAGE 3 ISSUE	02/06/23

Drawing Status: FOR APPROVAL

Suitability: S4

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Client: SWEET PROJECTS

Architect: NWA

Project: UNION PARK

Title: BLOCK 3
BELOW FINISHED GROUND LEVEL
SURFACE WATER MANHOLE AND PIPELINE SCHEDULE

HDR Project Number: 10274713

Cad File Name: HDR-0473-SWS-BG-SCH-C-520010

Drawn:	Chkd/Appd:	Date:	Scale @ A1:
AC	JJ/UG	12/07/24	NTS

Drawing Number: HDR-0473-SWS-BG-SCH-C-520010

Revision: P15

FOUL WATER SVP, GULLY & CHANNEL CONNECTION SCHEDULE

REFERENCE	COVER LEVEL (m)	PIPE INVERT LEVELS (m)	DOWNSTREAM PIPE DIAMETER (mm)	DOWNSTREAM PIPE GRADIENT	SPECIAL REQUIREMENTS
FG03.02	31.150	Out = 29.360	150	1:36	
FG03.03	31.150	Out = 30.407	150	1:40	
FG03.04	31.150	Out = 28.843	150	1:40	
FG03.05	31.150	Out = 29.058	150	1:45	
FG03.06	31.150	Out = 30.217	150	1:40	
FG03.07	31.150	Out = 30.183	150	1:33	
GBL-UP3-00-CDS-01	31.300	Out = 28.961	150	1:40	
GBL-UP3-00-CDS-03	30.900	Out = 29.724	150	1:24	
GBL-UP3-00-CDS-04	31.300	Out = 29.615	150	1:40	
GBL-UP3-00-FG-01	31.300	Out = 29.121	150	1:40	
GBL-UP3-00-FG-02	31.190	Out = 28.961	150	1:40	
GBL-UP3-00-FG-03	30.900	Out = 30.251	150	1:40	
GBL-UP3-00-FG-04	30.900	Out = 30.156	150	1:40	
GBL-UP3-00-FG-05	31.300	Out = 29.904	150	1:40	
GBL-UP3-00-FG-06	31.300	Out = 29.901	150	1:40	
GBL-UP3-00-FG-07	30.900	Out = 30.205	150	1:40	
GBL-UP3-00-FG-08	31.300	Out = 30.126	150	1:40	
GBL-UP3-00-FG-11	31.300	Out = 29.977	150	1:40	
GBL-UP3-00-FG-12	31.300	Out = 29.937	150	1:40	
GBL-UP3-00-FG-13	31.300	Out = 29.924	150	1:40	
GBL-UP3-00-FG-16	31.300	Out = 29.286	150	1:40	
GBL-UP3-00-FG-17	30.900	Out = 30.026	150	1:40	
GBL-UP3-00-FG-18	30.900	Out = 30.125	150	1:80	
GBL-UP3-00-FG-19	30.900	Out = 30.291	150	1:40	
GBL-UP3-00-FG-20	30.900	Out = 30.092	150	1:40	
GBL-UP3-00-FG-21	30.900	Out = 30.208	150	1:40	
GBL-UP3-00-FG-22	31.300	Out = 29.913	150	1:40	
GBL-UP3-00-FG-23	31.290	Out = 29.530	150	1:11	
GBL-UP3-00-FG-26	31.300	Out = 29.937	150	1:40	
GBL-UP3-00-FG-27	31.300	Out = 29.748	150	1:40	
GBL-UP3-00-FG-28	31.300	Out = 29.172	150	1:40	
GBL-UP3-00-FG-29	31.300	Out = 29.957	150	1:40	
GBL-UP3-00-FG-30	31.300	Out = 30.168	150	1:40	
GBL-UP3-00-FG-32	31.300	Out = 29.342	150	1:40	
GBL-UP3-00-FG-33	31.300	Out = 30.054	150	1:40	
GBL-UP3-00-FG-34	31.300	Out = 29.303	150	1:45	
GBL-UP3-00-FG-35	31.300	Out = 30.168	150	1:40	
GBL-UP3-00-FG-36	31.300	Out = 30.170	150	1:40	
GBL-UP3-00-FG-37	31.300	Out = 30.181	150	1:15	
GBL-UP3-00-FG-39	31.300	Out = 28.888	150	1:40	
GBL-UP3-00-FG-40	31.300	Out = 28.814	150	1:40	
GBL-UP3-00-FG-41	31.300	Out = 29.522	150	1:14	
GBL-UP3-00-FG-42	31.300	Out = 29.699	150	1:40	
GBL-UP3-00-FG-44	31.300	Out = 29.549	150	1:40	
GBL-UP3-00-FG-45	31.190	Out = 29.777	150	1:40	
GBL-UP3-00-FG-47	31.300	Out = 29.954	150	1:40	
GBL-UP3-00-FG-49	31.300	Out = 29.826	150	1:40	
GBL-UP3-00-FG-50	31.300	Out = 30.135	150	1:40	
GBL-UP3-00-FG-52	31.300	Out = 29.755	150	1:40	
GBL-UP3-00-FG-54	31.300	Out = 29.589	150	1:40	
GBL-UP3-00-FG-55	31.190	Out = 29.601	150	1:40	
GBL-UP3-00-FG-57	31.300	Out = 29.914	150	1:40	
GBL-UP3-00-FG-58	31.300	Out = 30.240	150	1:40	
GBL-UP3-00-FG-59	31.300	Out = 30.094	150	1:40	
GBL-UP3-00-FG-60	31.300	Out = 30.054	150	1:40	
GBL-UP3-00-FG-61	31.300	Out = 29.237	150	1:40	
GBL-UP3-00-FG-62	31.300	Out = 28.836	150	1:40	
GBL-UP3-00-FG-64	31.300	Out = 28.861	150	1:40	
GBL-UP3-00-FG-66	31.300	Out = 28.760	150	1:40	
GBL-UP3-00-FG-67	31.300	Out = 28.722	150	1:40	
GBL-UP3-00-FG-68	31.300	Out = 28.718	150	1:40	
GBL-UP3-00-FG-71	31.150	Out = 28.954	150	1:40	
GBL-UP3-00-SS-03	31.300	Out = 28.704	150	1:40	
GBL-UP3-00-SVP-04	31.300	Out = 29.704	150	1:40	
GBL-UP3-00-SVP-05	31.300	Out = 30.153	150	1:40	

NOTE: REFER TO HDR-0473-UP3-00-DR-S-200208 P01 13/09/23
AND HDR-0473-EC3-00-DR-S-200211 P01 13/09/23 FOR SETOUT

FOUL WATER SVP, GULLY & CHANNEL CONNECTION SCHEDULE

REFERENCE	COVER LEVEL (m)	PIPE INVERT LEVELS (m)	DOWNSTREAM PIPE DIAMETER (mm)	DOWNSTREAM PIPE GRADIENT	SPECIAL REQUIREMENTS
FGE03.01	30.365	Out = 30.154	100	1:32	
FWCH03.01	31.095	In = 30.605 Out = 29.864	150	1:40	
FWCH03.02	30.860	Out = 29.944	150	1:40	
FWCH03.03	30.996	Out = 29.455	150	1:40	
FWCH03.04	30.859	Out = 29.408	150	1:40	
GBL-UP3-00-FG-09	30.900	Out = 30.172	150	1:70	
GBL-UP3-00-FG-10	30.900	Out = 30.089	150	1:40	
GBL-UP3-00-FG-15	31.300	Out = 30.120	150	1:40	
GBL-UP3-00-FG-24	31.300	Out = 29.661	150	1:40	
GBL-UP3-00-FG-25	31.300	Out = 30.243	150	1:40	
GBL-UP3-00-FG-31	31.190	Out = 29.094	150	1:40	
GBL-UP3-00-FG-38	31.300	Out = 29.576	150	1:40	
GBL-UP3-00-FG-43	31.300	Out = 29.762	150	1:40	
GBL-UP3-00-FG-46	31.300	Out = 30.310	150	1:40	
GBL-UP3-00-FG-53	31.300	Out = 29.960	150	1:40	
GBL-UP3-00-FG-65	31.300	Out = 28.832	150	1:40	
GBL-UP3-00-FG-69	31.300	Out = 29.667	150	1:40	
GBL-UP3-00-FG-70	31.300	Out = 28.997	150	1:40	
GBL-UP3-00-SP--01	30.900	Out = 30.058	150	1:40	
GBL-UP3-00-SP-02	30.900	Out = 30.217	150	1:40	
GBL-UP3-00-SP-03	30.900	Out = 30.153	150	1:40	
GBL-UP3-00-SP-04	30.900	Out = 30.210	150	1:40	
GBL-UP3-00-SS-01	31.300	Out = 29.790	150	1:40	
GBL-UP3-00-SS-02	31.300	Out = 29.362	150	1:42	
GBL-UP3-00-SS-04	31.300	Out = 30.157	150	1:40	
GBL-UP3-00-SVP-01	31.300	Out = 30.488	150	1:40	
GBL-UP3-00-SVP-02	31.300	Out = 29.849	150	1:42	
GBL-UP3-00-SVP-03	31.300	Out = 29.947	150	1:58	
GBL-UP3-00-SVP-06	31.300	Out = 29.873	150	1:40	
GBL-UP3-00-SVP-07	31.300	Out = 30.312	150	1:20	

FOUL WATER SVP, GULLY & CHANNEL CONNECTION SCHEDULE

REFERENCE	COVER LEVEL (m)	PIPE INVERT LEVELS (m)	DOWNSTREAM PIPE DIAMETER (mm)	DOWNSTREAM PIPE GRADIENT	SPECIAL REQUIREMENTS
GBL-UP3-00-SVP-08	31.300	Out = 30.314	150	1:40	
SSE03.02	30.098	Out = 29.935	100	1:40	
SSE03.04	30.344	Out = 30.171	150	1:40	
SVPE03.01	31.000	Out = 28.487	150	1:40	
SVPE03.02	32.000	Out = 29.488	150	1:40	

FORECOIURT SEPARATOR SETTING OUT SCHEDULE

REFERENCE	COVER LEVEL (m)	PIPE INVERT LEVELS (m)	DOWNSTREAM PIPE DIAMETER (mm)	EASTING (m)	NORTHING (m)	SPECIAL REQUIREMENTS
FS03.01	30.820	In = 28.923 Out = 28.873	150	510400.203	179282.892	

RODDING EYE SCHEDULE

REFERENCE	COVER LEVEL (m)	PIPE INVERT LEVELS (m)	DOWNSTREAM PIPE DIAMETER (mm)	DOWNSTREAM PIPE GRADIENT	EASTING (m)	NORTHING (m)	SPECIAL REQUIREMENTS
RE03.01	31.300	Out = 30.131	150	1:40	510368.751	179344.269	
RE03.03	31.300	Out = 30.182	150	1:40	510376.417	179345.168	
RE03.05	31.300	Out = 30.100	150	1:40	510372.283	179321.811	
RE03.06	31.300	Out = 30.489	150	1:40	510371.699	179309.489	
RE03.07	31.300	Out = 30.152	150	1:40	510375.681	179322.062	
RE03.08	31.300	Out = 30.244	150	1:40	510401.409	179331.173	
RE03.09	31.300	Out = 30.148	150	1:40	510403.775	179345.754	

FOUL WATER MANHOLE AND PIPE SCHEDULE

REF NO.	APPROXIMATE COVER LEVEL (m)	INVERT LEVEL (m)	PIPE INVERT LEVELS (m)	DEPTH (m)	EAST	NORTH	INTERNAL CHAMBER SIZE (mm)	COVER LOADING TO BS EN 124	RECESSED	LOCKED	SEALED	VENTED	ACCESS COVER OPENING (mm)	DOWNSTREAM PIPE DIAMETER (mm)	DOWNSTREAM PIPE GRADIENT	REMARKS
FW03.01	30.841	28.648	Out = 28.648	2.22	510334.630	179373.228	1200	D400	NO	YES	YES	NO	600x600	150	1:150	TYPE B
FW03.02	31.300	29.270	In = 29.270 from GBL-UP3-00-FG-34 In = 29.791 from RE03.01 In = 29.578 from FW03.03 Out = 29.270	2.03	510355.187	179344.185	1200	C250	NO	YES	YES	NO	600X600	150	1:38	TYPE B
FW03.03	31.300	29.783	In = 29.783 from GBL-UP3-00-FG-26 In = 29.783 from GBL-UP3-00-FG-06 Out = 29.783	1.52	510346.981	179343.889	450	C250	NO	YES	YES	NO	450x450	150	1:40	PPIC
FW03.04	30.727	28.514	In = 28.514 from FW03.01 In = 28.514 from FW03.02 Out = 28.514	2.22	510354.694	179373.398	1200	D400	NO	YES	YES	NO	600x600	150	1:150	TYPE B
FW03.04A	31.300	30.146	In = 30.146 from GBL-UP3-00-FG-21 In = 30.146 from GBL-UP3-00-FG-30 Out = 30.146	1.15	510376.229	179357.123	450	C250	NO	YES	YES	NO	450x450	150	1:40	PPIC
FW03.05	31.300	29.373	In = 29.773 from RE03.03 In = 29.873 from RE03.09 In = 29.873 from GBL-UP3-00-FG-36 Out = 29.373	1.93	510392.765	179345.567	1200	C250	NO	YES	YES	NO	600x600	150	1:40	TYPE B
FW03.06	31.300	29.053	In = 29.739 from FW03.04A In = 29.053 from GBL-UP3-00-FG-31 In = 29.053 from FW03.05 Out = 29.053	2.25	510392.623	179358.373	1200	C250	NO	YES	YES	NO	600x600	150	1:50	TYPE B
FW03.07	30.741	28.263	In = 28.263 from FW03.01 In = 28.263 from FW03.06 Out = 28.263	2.49	510392.403	179373.491	1200	D400	NO	YES	YES	NO	600x600	150	1:150	TYPE B
FW03.09	31.300	29.592	In = 29.592 from GBL-UP3-00-FG-37 In = 29.592 from RE03.05 In = 29.592 from GBL-UP3-00-SVP-03 Out = 29.592	1.71	510351.977	179321.420	1200	C250	NO	YES	YES	NO	600x600	150	1:42	TYPE B
FW03.10	31.300	28.801	In = 30.000 from RE03.06 In = 29.302 from FW03.09 In = 28.801 from GBL-UP3-00-CDS-01 Out = 28.801	2.50	510352.139	179309.219	1200	C250	NO	YES	YES	NO	600x600	150	1:71	TYPE B
FW03.11	31.107	28.517	In = 28.517 from FW03.30 In = 30.022 from FW03.11B In = 28.519 from FW03.10 Out = 28.517	2.59	510352.290	179288.293	1200	D400	NO	YES	YES	NO	600x600	150	1:55	TYPE B
FW03.11 A	32.432	30.723	In = 30.723 from FWD03 In = 30.723 from FWD04 In = 30.723 from FWD02 In = 30.723 from FWD01 Out = 30.723	1.71	510352.290	179262.252	450	D400	NO	YES	YES	NO	450X450	150	1:36	TYPE E
FW03.11 B	31.399	30.188	In = 30.188 from FW03.11B In = 30.238 from FWD14 In = 30.238 from FWD17 In = 30.238 from FWD15 In = 30.238 from FWD16 Out = 30.188	1.21	510352.290	179281.648	450	D400	NO	YES	YES	NO	450X450	150	1:40	PPIC
FW03.13	31.000	28.908	In = 29.881 from PVC Pipe SI Out = 28.908	2.09	510394.777	179261.412	450	C250	NO	YES	YES	NO	450x450	150	1:43	TYPE E
FW03.14	31.000	28.648	In = 28.648 from FW03.13 Out = 28.648	2.35	510383.729	179261.491	450	C250	NO	YES	YES	NO	450x450	150	1:41	TYPE E
FW03.15	30.989	28.259	In = 28.259 from FW03.14 Out = 28.259	2.73	510381.701	179277.488	450	D400	NO	YES	YES	NO	450x450	150	1:39	TYPE E
FW03.16	30.945	27.982	In = 27.982 from FW03.11 In = 27.982 from FW03.15 Out = 27.982	2.96	510381.696	179288.319	1200	D400	NO	YES	YES	NO	600x600	150	1:56	TYPE B
FW03.17	31.300	28.932	In = 29.516 from RE03.07 In = 30.019 from RE03.08 In = 28.932 from GBL-UP3-00-FG-70 Out = 28.932	2.37	510401.105	179322.176	450	C250	NO	YES	YES	NO	450x450	150	1:40	TYPE E
FW03.18	31.300	29.659	In = 30.169 from FG03.03 In = 29.677 from GBL-UP3-00-FG-49 Out = 29.659	1.64	510376.938	179315.437	1200	C250	NO	YES	YES	NO	600x600	150	1:41	TYPE B
FW03.19	31.300	28.774	In = 29.071 from FW03.18 In = 28.774 from FW03.17 In = 28.774 from GBL-UP3-00-FG-65 Out = 28.774	2.53	510401.187	179315.856	1200	C250	NO	YES	YES	NO	600x600	150	1:80	TYPE B
FW03.21	30.624	28.502	In = 28.502 from FW03.19 Out = 28.502	2.12	510402.145	179294.155	1200	D400	NO	YES	YES	NO	600x600	150	1:80	TYPE B
FW03.22	30.646	27.589	In = 27.589 from FW03.16 In = 28.834 from FW3.21 Out = 27.589	3.06	510403.657	179288.264	1200	D400	NO	YES	YES	NO	600x600	150	1:58	TYPE A1
FW03.23	30.994	29.773	In = 29.773 from FWCH03.02 In = 29.773 from FWCH03.01 Out = 29.773	1.22	510365.298	179284.007	1200	D400	NO	YES	YES	NO	600x600	150	1:40	TYPE B
FW03.24	30.987	29.253	In = 29.253 from FW03.23 In = 29.253 from FWCH03.04 In = 29.354 from FWCH03.03 Out = 29.253	1.73	510386.069	179282.890	1200	D400	NO	YES	YES	NO	600x600	150	1:43	TYPE B
FW03.25	30.989	29.996	In = 29.996 from SSE03.04 Out = 29.996	0.99	510405.181	179277.439	450	D400	NO	YES	YES	NO	450x450	150	1:40	PPIC
FW03.26	30.672	28.781	In = 28.781 from FS03.01 In = 29.835 from FW03.25 Out = 28.781	1.89	510407.441	179283.468	1200	D400	NO	YES	YES	NO	600x600	150	1:113	TYPE B
FW03.28	31.000	28.300	In = 28.300 from SVPE03.01 Out = 28.300	2.70	510415.257	179275.080	450	C250	NO	YES	YES	NO	450x450	150	1:40	TYPE E
FW03.29	30.742	28.176	In = 28.176 from FW03.07 Out = 28.176	2.59	510405.474	179373.607	1200	D400	NO	YES	YES	NO	600x600	150	1:150	TYPE B
FW03.30	31.122	28.712	In = 30.262 from FW03.30B Out = 28.712	2.41	510341.613	179288.283	1200	D400	NO	YES	YES	NO	600x600	150	1:55	TYPE B
FW03.30 A	32.432	30.916	In = 30.916 from FWD09 In = 30.916 from FWD08 In = 30.916 from FWD07 In = 30.916 from FWD05 Out = 30.916	1.52	510343.807	179262.252	450	D400	450X450	YES	YES	NO	450X450	150	1:40	TYPE E
FW03.30 B	31.477	30.464	In = 30.464 from FWD10 In = 30.464 from FWD11 In = 30.464 from FWD12 In = 30.464 from FWD13 In = 30.464 from FW03.30A Out = 30.464	1.01	510341.613	179280.215	450	D400	NO	YES	YES	NO	450X450	150	1:40	PPIC
FW03.31	31.846	29.269	In = 29.269 from SVPE03.02 Out = 29.269	2.58	510398.888	179224.362	1200	D400	NO	YES	YES	NO	600X600	150	1:40	TYPE B
FW03.32	31.805	28.899	In = 28.899 from FW03.31	2.91	510401.501	179238.916	1200	D400	NO	YES	YES	NO	600x600			TYPE B

NOTES

1. DO NOT SCALE OFF THIS DRAWING. ALWAYS WORK TO NOTED DIMENSION.
2. ALL DIMENSIONS MUST BE VERIFIED ON SITE BEFORE COMPLETING SHOP DRAWINGS OR SETTING OUT OF THE WORKS.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DISCIPLINE'S DRAWINGS, REPORTS AND SPECIFICATIONS.
4. REFER TO GENERAL NOTES DRAWING HDR-0473-SWS-XX-TN-C-000025
5. REFER TO DRAWING SERIES HDR-0473-SWS-BG-DR-C-520... & HDR-0473-SWS-BG-SCH-C-520... FOR ASSOCIATED BELOW GROUND DRAINAGE DRAWINGS

Rev	Description	Date
P13	STAGE 4 ISSUE	28/03/24
P12	STAGE 4 ISSUE	20/03/24
P11	STAGE 4 ISSUE	15/03/24
P10	STAGE 4 ISSUE	08/03/24
P09	STAGE 4 ISSUE	21/02/24
P08	STAGE 4 ISSUE	15/02/24
P07	STAGE 4 ISSUE	08/02/24
P06	STAGE 4 ISSUE	06/02/24
P05	STAGE 4 ISSUE	19/01/24
P04	STAGE 4 ISSUE	20/12/23
P03	STAGE 4 ISSUE	04/12/23
P02	STAGE 4 ISSUE	22/09/23
P01	STAGE 3 ISSUE	02/06/23

Drawing Status: FOR APPROVAL
Suitability: S4

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Client: SWEET PROJECTS

Architect: NWA

Project: UNION PARK

Title: BLOCK 3
BELOW FINISHED GROUND LEVEL
FOUL WATER MANHOLE AND PIPELINE SCHEDULE

HDR Project Number: 10274713
Cad File Name: HDR-0473-SWS-BG-SCH-C-520020

Drawn:	Chkd/Appd:	Date:	Scale @ A1:
AC	JJ/UG	28/03/24	NTS

Drawing Number: HDR-0473-SWS-BG-SCH-C-520020
Revision: P13

Technical Submittal Form

Please use this form as a 'front sheet' for all technical submittals. Ensure you include as much information as possible to receive a status. Where you provide an attachment, please reference the technical submittal ref. in the 'Subject/Title' field. and refer to the attachment in the 'Description' field.

Subject/Title
TOU-0473-SW-BG-TS-X-0022

Description (example: product name; location; specification details; supplier; etc.):
Storm water attenuation system

Is the proposal specification compliant?
Yes

Is the proposal an alternative to specification?
No

Details of reason for deviation from specification / alternative to specification:
N/A

Technical Submittal Form

Doc Ref.	SWP-0471-SW-ZZ-TS-W-000002		
To: (Name)	Neil Cooper	**From:** (Name)	Alhasan Sheriff
Company:	Ark Data Centres	**Company:**	Sweet Projects
Project Name:	Union Park	**Company Initials:** (3 capital letters)	SWP
Job No:	SP103	**Role:**	Main Contractor
Submission Date:	25/04/22	**Package Code:**	WP0001-Groundworks
Date Approval is Required:	23/05/22	**Revision:**	01
Date Approval was Received:			
SWP Submission No	SP103-WP0001-0001		

Description of Technical Submittal		
System Category	Group:	Disposal Systems
	Subgroup:	Surface Water drainage collection systems
	Section:	Storm water gravity drainage systems
	Object:	Rigid attenuation or storage tank for storm water flood attenuation
Equipment Category	Group:	Services and process source products
	Subgroup:	Tank, cylinder and vessel products
	Section:	Water tanks and cisterns
	Object:	Piped attenuation structures

Equipment Type (Fan Coil Unit, Radiator etc)	Attenuation Tank – Stormwater Management System
System Abbreviation	
Manufacturer	SDS
Model	GEOlight
Drawing No	HPF-0471-SWS-BG-DR-C-91138 T3
Specification reference	HPF-0471-SWS-XX-SPE-C-93000 464 Modular stormwater attenuation units Ss_50_35_80_72 Pr_60_50_96_62
Description or additional information:	
Is the proposal specification compliant?	Yes
Is the proposal an alternative to specification?	No
Details of reason for deviation from specification / alternative to specification:	
SWP / Consultant' comments:	

Designated Consultant to co-ordinate response from all parties

Organisation	Copied to	Comments

Consultant	Approval Status	Signed	Date

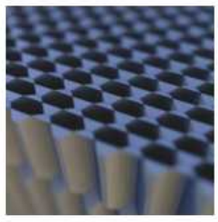
SDS
Water Infrastructure Systems

SDS GEOlight®

Stormwater Management System

Product Profile

SDS GEOlight® is an ultra lightweight honeycombed modular structure made from recycled PVC. The ready to install units are preformed to provide an underground stormwater storage facility, for the application of stormwater attenuation or infiltration.



The high void rate (>95%), high compressive strength (to 1000KN/m²) and low resistance to water flow makes SDS GEOlight® an ideal material for cost efficient and maintainable underground water storage during storm conditions.

SDS GEOlight® Benefits

- High compressive strength – can be located under all roads, car parks and amenity area surfaces.
- Reduced excavation costs – the very high void rate (95%) minimises the required volume of earthworks.
- Speed of installation – 1000m³ reservoir, completed in one week.
- Light and easy to handle.
- Excellent hydraulic characteristics.
- The honeycomb structure is highly permeable, offering low resistance to water flow.
- SDS GEOlight®'s unique lateral and vertical filling arrangement requires a minimum amount of pipework and stone.
- Depth of tank invert reduced by using patented lateral supply.
- Simplified distribution pipe network, easy maintenance – dispensing with costly and complicated pipework configurations.
- Modular format offers design flexibility to overcome topographical contraints and architectural requirements.
- Greatly reduces the risk of flooding when used as stormwater storage.
- Can also be used for water recycling and combining with irrigation systems.
- Can virtually eliminate pollution when used in combination with specialist separation and filtration technology such as SDS Aqua-Swirl™ and SDS Aqua-Filter™.
- Design service available, including calculations.

APPLICATIONS

RETAIL

INFRASTRUCTURE

INDUSTRIAL

RESIDENTIAL

COMMERCIAL

PUBLIC SECTOR

SDS Ltd, Clearwater House, Castlemills, Biddisham, Somerset, BS26 2RE
T: +44 (0)1934 751303
E: info@sdslimited.com

	SDS GEOlight® 400	SDS GEOlight® 600	SDS GEOlight® 800
APPLICATIONS			
Stormwater Management			
Attenuation / Infiltration			
Bacterial filter-bed for biological treatment			
Hydrocarbon Separation			
Filtration and Separation Units			
SPECIFICATIONS			
Material	Recycled Rigid PVC		
Colour	Dark grey to black		
Standard length of a block	2000 mm	2000 mm	2000 mm
Standard width of a block	500 mm	500 mm	500 mm
Standard height of a block*	750 mm	750 mm	750 mm
	*Other block sizes available on request		
Void Ratio	> 95%	> 95%	> 95%
Compressive Strength	420 kN/m²	610 kN/m²	800 kN/m²
ADVANTAGES			
Highly cost effective			
Reduced excavation costs			
High void capacity			
Good UV resistance			
Good hydrocarbon resistance			

GEO DS/1021

SDS Ltd, Clearwater House, Castlemills,
Biddisham, Somerset, BS26 2RE

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SDS
Water Infrastructure Systems

INNOVATORS IN
WATER TECHNOLOGY

SDS GEOlight®

Stormwater Management System

SDS GEOlight® is an ultra lightweight honeycombed modular structure, made from recycled PVC, that provides an underground storage facility for the application of stormwater attenuation or infiltration.

SDS
Water Infrastructure Systems

Stormwater Management

The Environment Agency is keen to promote the wider use of sustainable drainage systems, which reduce the impact of surface water runoff. There are two main ways of storing surface water for stormwater management:

- Stormwater attenuation tanks
- Soakaway infiltration systems

Stormwater Attenuation Systems

This consists of underground water storage facilities that hold excess water during periods of peak rainfall.

The stored water is gradually released in a controlled manner into the surface water drainage system or directly into watercourses, reducing the risk of upstream and downstream flooding.

Soakaway Infiltration Systems

Soakaways are designed to store surface water runoff until it can be gradually absorbed by the surrounding ground.

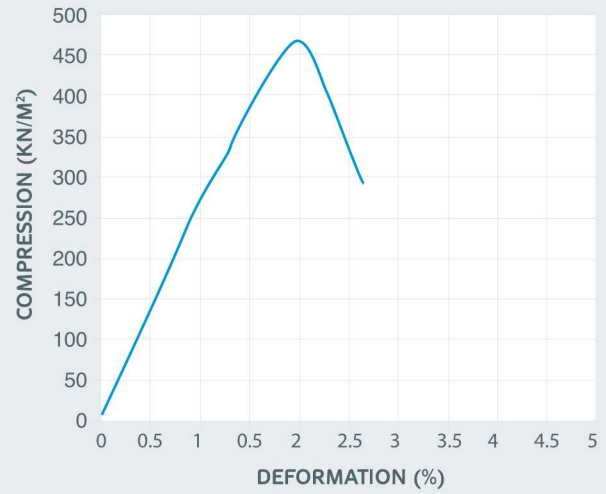
SDS GEOlight® – an efficient and economic solution for stormwater management.

SDS GEOlight® Attenuation

SDS GEOlight® has been specifically designed to form underground water storage reservoirs in stormwater management schemes. Its honeycombed structure gives it certain unique characteristics that make it ideal for this purpose:

- The high void rate (95%) of GEOlight® means that the maximum volume of water is stored in the minimum volume of storage unit.
- High compressive strength. GEOlight® is available in two strengths as standard: 200 and 400kN/m². Note: Higher compressive strengths available from 600 to 1000 kN/m². The graph on the right shows the results of a compression test, where samples of GEOlight® 400 were compressed at the rate of 1mm per minute. The deformation at 400kN/m² is about 1.6%.

RESULTS OF COMPRESSION TEST ON SDS GEOLIGHT® 400



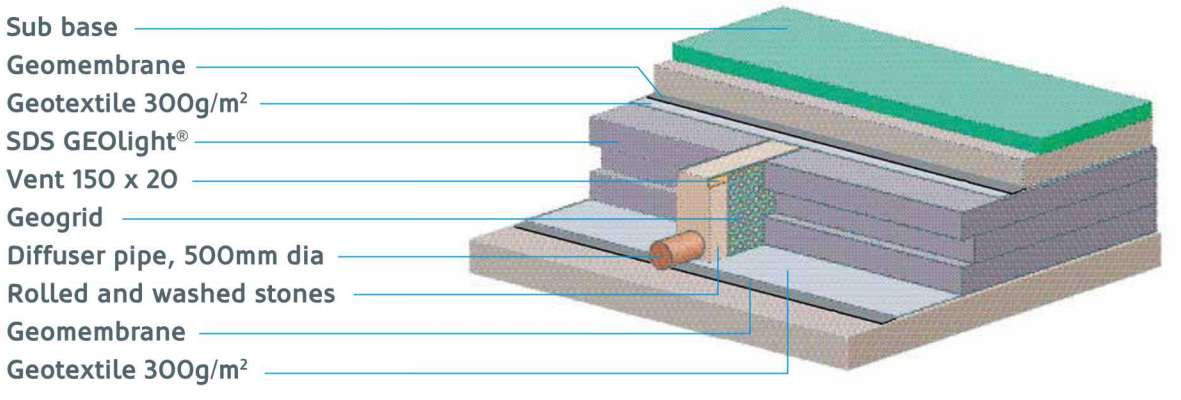
The GEOlight® Stormwater Attenuation System consists of two manholes (inspection chambers) connected by a length of perforated distribution pipe which feeds the stormwater storage reservoirs on either side formed from GEOlight®.

The distribution pipe is normally from 225mm up to 500mm diameter, generally covered in a trench that is filled with draining material such as 15/25 clean graded stone, free from fines.

The reservoirs and distribution pipe are wrapped in a waterproof membrane, such as butyl, to prevent seepage of water into the surrounding ground. The top of each GEOlight® reservoir has a vent which is connected back to the upstream manhole.

A geotextile or 10mm mesh geogrid is laid between the distribution pipe and GEOlight® to prevent the GEOlight® units being clogged by the draining materials.

SDS GEOlight® Attenuation



How does it work?

→ 1. In normal conditions, water enters a back drop manhole. This is the upstream manhole and any silt or sediment will collect in the bottom of the chamber. The water then flows along the distribution pipe into the downstream manhole. The upstream pipework is sized to cope with normal flow conditions. The distribution pipe and attenuation tank are sized to cope with storm conditions. The outflow pipe is sized to cope with the permissible discharge.

→ 2. In storm conditions the flow restrictor (vortex flow control or orifice plate) in the downstream manhole limits the amount of water flowing out of the manhole. This causes the water level in the distribution pipe to rise and water to spill into the GEOlight® reservoirs on either side. As the water level rises in the reservoirs, air is forced out of the high level vents into the upstream manhole.

→ 3. Once the storm has passed, the water level in the GEOlight®reservoirs gradually falls as water passes through the flow restrictor in the downstream manhole. The vents now allow air to return into the GEOlight® reservoirs. Gradually the reservoirs empty. The flow restrictor prevents excess surges of flood water to pass downstream and uses the storage reservoirs to store the water for the period of the storm.

Calculating the storage capacity

The storage capacity of the GEOlight® reservoirs is determined by the maximum outflow permitted, (set by the water company or Environment Agency), the impermeable area of the site and the rainfall return period – normally 1 in 30 years, but again can be dictated by the water company. A full design service, including calculations, can be supplied via a third party consultant.
Please contact SDS for details.

Other uses

The water storage ability of SDS GEOlight® lends itself to a number of other uses:

→ Water recycling combines with irrigation systems – this is increasingly popular: GEOlight® is used to retain stormwater which is then pumped as required to a network of standpipes for irrigation.

→ Drainage channels – the natural permeability of GEOlight® lends itself for use as an underground drainage channel that collects and drains away groundwater.

→ Pollution control – improved water runoff quality. When used in combination with oil / petrol separators, GEOlight® can replenish groundwater without the risk of contamination from oil, chemicals or suspended solids.

→ To form lightweight embankments (slope stabilisation) - GEOlight® can be used to quickly form the base of embankments that only weigh a fraction of earth embankments.

Stormwater Attenuation System

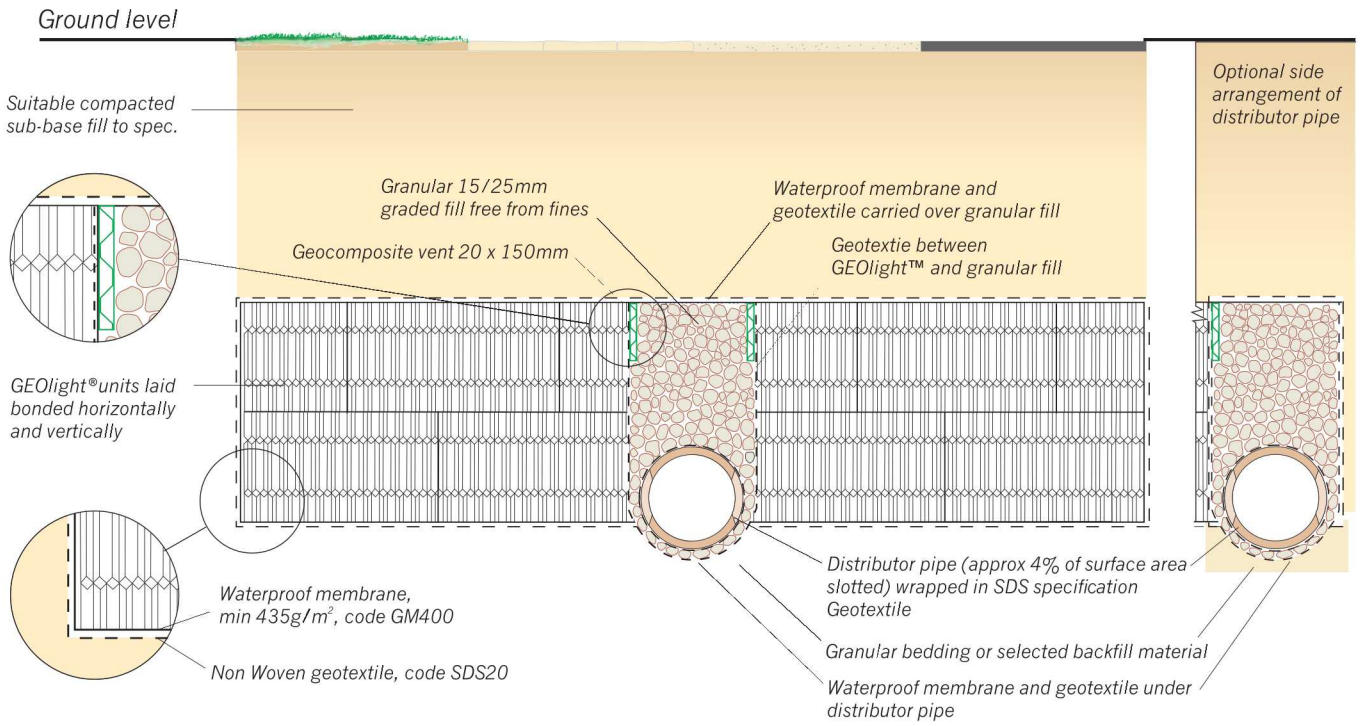
Design Details

The details on these two pages illustrate the construction of a typical SDS GEOlight® Stormwater Attenuation System. The length and height of the GEOlight® reservoirs is determined by the quantity of water to be stored.

The layout of each scheme is specifically designed to suit the characteristics and limitation of the site. Typically the distributor pipe would be arranged in the centre of the reservoir, but can alternatively be placed at the side where topographical constraints dictate.

The high performance waterproof membrane should be sealed continuously to encapsulate the GEOlight® reservoirs, distributor pipe and granular fill. It is protected by a heavyweight needle punched, non woven geotextile. To help with maintenance a high flow geotextile is placed between the granular fill and GEOlight® attenuation units to prevent silt and particles being washed into the reservoir. GEOlight® can be used under a range of surfaces e.g. grass, porous paving, standard paving block, tarmac and concrete.

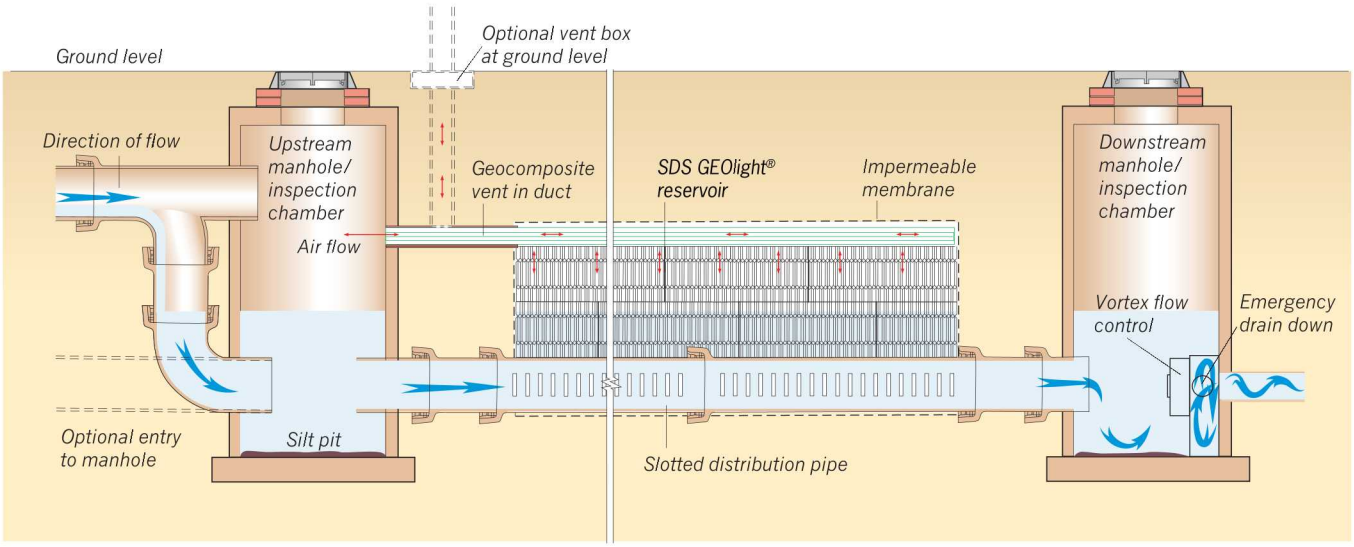
Cross Section



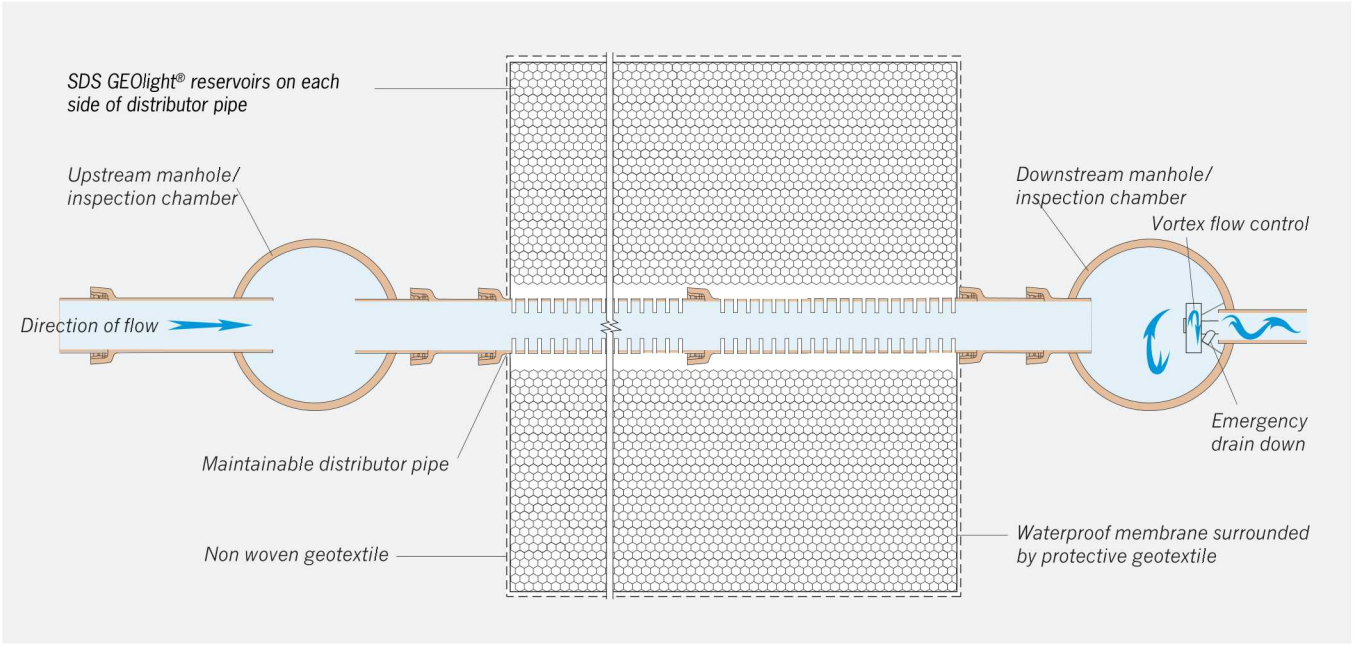
Stormwater Attenuation System

Design Details

Long Section



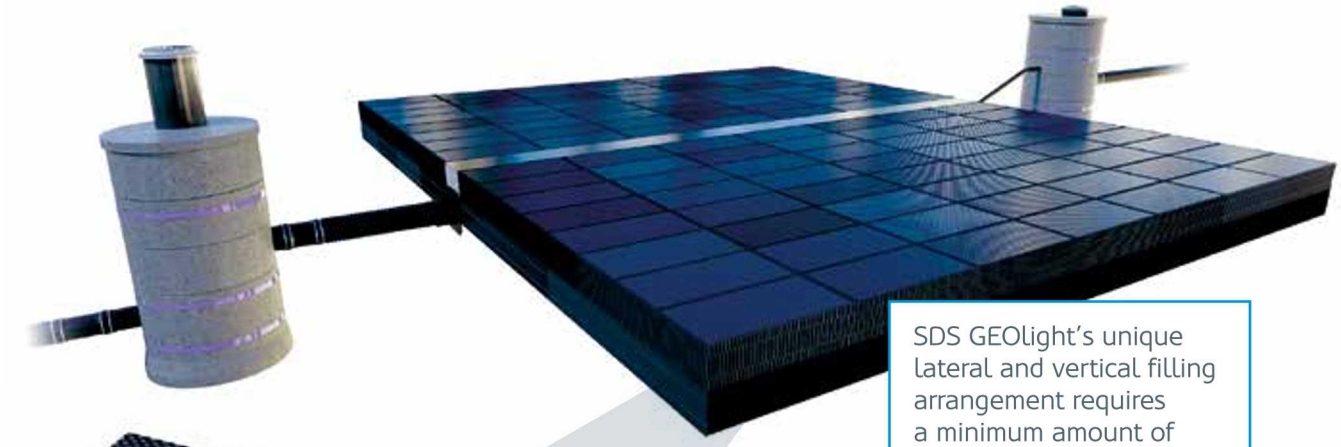
Plan



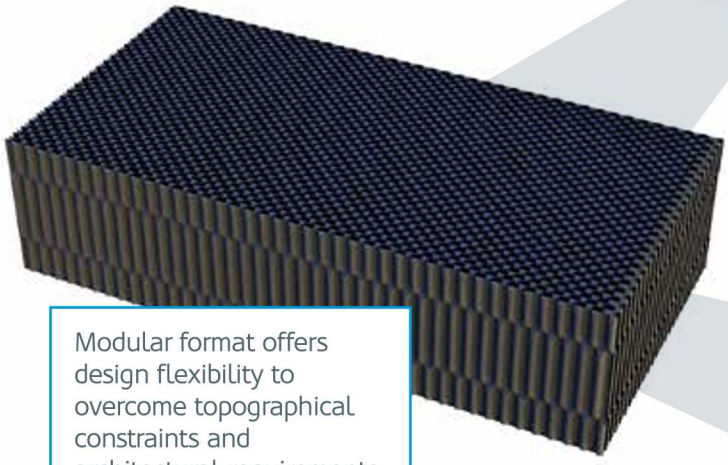
Benefits

- High compressive strength – can be located under all roads, car parks and amenity area surfaces.
- Reduced excavation costs – the very high void rate (95%) minimises the required volume of earthworks.
- Speed of installation – 1000m^3 reservoir, completed in one week.
- Light and easy to handle.
- Depth of tank invert reduced by using patented lateral supply.
- Simplified distribution pipe network, easy maintenance – dispensing with costly and complicated pipework configurations.
- Greatly reduces the risk of flooding when used as stormwater storage.
- Can also be used for water recycling and combining with irrigation systems.
- Can virtually eliminate pollution when used in combination with specialist petrol / oil separators.
- Design service available, including calculations.

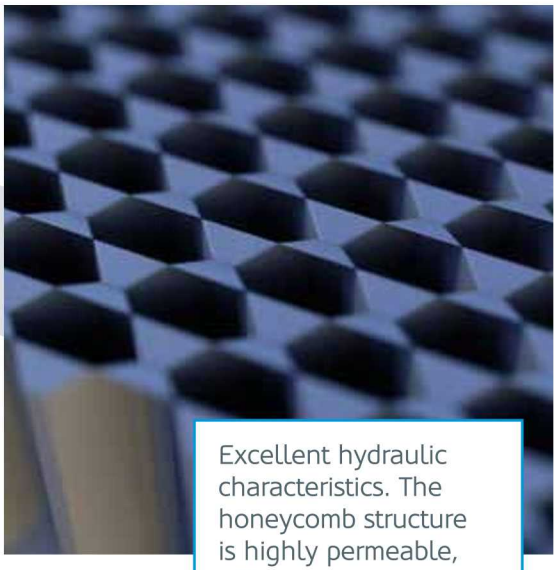
GEOlight® block



SDS GEOlight's unique lateral and vertical filling arrangement requires a minimum amount of pipework and stone.



Modular format offers design flexibility to overcome topographical constraints and architectural requirements.



Excellent hydraulic characteristics. The honeycomb structure is highly permeable, offering low resistance to water flow.

COSHH and Handling Information

1. COMPOSITION/INFORMATION ON INGREDIENTS:

Hazardous ingredients:
None as finished goods or products.

Types of materials:
Polyvinyl chloride (PVC)
MEK

2. HAZARDS IDENTIFICATION

Nature of hazard:
There are no health risks from the products during normal use. The products may contain various pigment colours and stabilisers that may be toxic. The chemicals are, however, bound within the product material and not easily extracted.

3. FIRST-AID MEASURES

Eye contact:
Plastic materials may cause physical irritation in the eyes. Wash out with large amounts of water. If irritation persists, seek medical advice.

Skin contact:
Not applicable.

Inhalation:
Not applicable.

Ingestion:
Not expected to have any toxic effects.

4. FIRE-FIGHTING MEASURES

Extinguishing media:
On small fires use any hand-held extinguisher type.
On large fires use water.

Fire and explosion hazards:
Melting plastics may flow and spread in a large fire.
Products of fire will be thick black toxic smoke.

Material characteristics:
PVC products will burn in the presence of a flame but are classed as self- extinguishing.

Protective equipment:
Wear self-contained breathing apparatus and protective clothing.

5. HANDLING AND STORAGE

Handling:
There are no hazards associated with the finished products. However, when cutting SDS GEOlight®, we recommend that the correct tools are used e.g. Handsaw or Alligator saw. When cutting, dust may be created; avoid inhaling these dusts. Take care of heat build-up within materials during cutting etc. The pallets of SDS GEOlight® units should be placed on level ground and should not be stacked on site. The maximum weight of the pallet of SDS GEOlight® units as delivered to site is 650kg (700kg on one copy), including packaging. Machines used to lift the pallet should be able to lift this weight safely. Loose individual units should not be stored more than three units high. SDS GEOlight® units are lightweight ranging from 23kg to 55kg and can be easily handled – one or two person lift.

Storage:
SDS GEOlight® units will resist the effects of UV light for up to six months; however, prolonged storage in direct sunlight should be avoided. SDS GEOlight® units should not be stored near to any fuel storage areas or any other solvents. SDS GEOlight® units are very robust and resistant to damage during normal handling; however, they should be secured in areas where impacts from vehicles or construction plant will be avoided.

Material characteristics:
PVC products will burn in the presence of a flame but are classed as self-extinguishing.

Protective equipment:
Wear self-contained breathing apparatus and protective clothing.

6. EXPOSURE CONTROLS / PERSONAL PROTECTION

Respiratory protection:
Not required under normal conditions of use. Where cutting etc. creates dust, wear a disposable half-mask to the standard FFP2S.

Hand protection:
Wear impervious strong gloves to prevent cuts to the hands while handling, cutting etc.

Eye protection:
Wear safety glasses when cutting etc.

Skin protection:
Wear overalls.

7. SITE HAZARDS

Other hazards for consideration:
Working in excavations and trenches – SDS GEOlight® may be designed with a shallow invert for infiltration (soakaway) or attenuation (storage) system. This negates the need for deep excavations or trenches, excavation near services e.g. gas, electricity or contaminated soil areas. N.B. All risk assessments should be undertaken by the main contractor for forklift, access to and working in excavations and trench support.

8. STABILITY AND REACTIVITY

Decomposition products:
Major thermal decomposition products are oxides of carbon.
Relevant differences are (in addition): PVC may produce amounts of Hydrogen Chloride.

Stability:
These materials are stable at temperatures up to normal operating limits (moulding parameters).

9. ECOLOGICAL INFORMATION

Biodegradability:
Plastic products are not readily biodegradable but are not detrimental to terrestrial wildlife.

Aquatic toxicity:
Non-toxic to marine life.

10. DISPOSAL CONSIDERATIONS

Method:
The preferred method of disposal is collection and recycling. Plastics can safely be placed with regular industrial or household wastes where recycling is not available.

11. OTHER INFORMATION

As the handling, storage, use and disposal of the product are beyond our control SDS disclaims all liability for loss, damage, injury or expense in any way connected with such activities and further makes no warranties, expressed or implied, as to the suitability of the product for any particular use.

The preferred method of disposal is collection and recycling. Plastics can safely be placed with regular industrial or household wastes where recycling is not available.

SDS
Water Infrastructure Systems

INNOVATORS IN WATER TECHNOLOGY

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E info@sdslimited.com

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Technical Submittal Form

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Subject/Title
TOU-0473-SW-BG-TS-X-0023

Description (example: product name; location; specification details; supplier; etc.):
Forecourt Separator specification for approval

Is the proposal specification compliant?
Yes

Is the proposal an alternative to specification?
No

Details of reason for deviation from specification / alternative to specification:
N/A

Forecourt

APPLICATION

The forecourt separator is designed for installation in petrol filling station forecourts and similar applications. The function of the separator is to intercept hydrocarbon pollutants such as petroleum and oil and prevent their entry to the drainage system, thus protecting the environment against hydrocarbon contaminated surface water run-off and gross spillage.

PERFORMANCE

Operation ensures that the flow cannot exit the unit without first passing through the coalescer assembly.

In normal operation, the forecourt separator has sufficient capacity to provide storage for separated pollutants within the main chamber, but is also able to contain up to 7,600 litres of pollutant arising from the spillage of a fuel delivery tanker compartment on the petrol forecourt. The separator has been designed to ensure that oil cannot exit the separator in the event of a major spillage, subsequently the separator should be emptied immediately.

FEATURES

- Light and easy to install.
- Inclusive of silt storage volume.
- Fitted inlet/outlet connectors.
- Vent points within necks.
- Extension access shafts for deep inverts.
- Maintenance from ground level.
- Class I and Class II design.
- Oil storage volume.
- Coalescer (Class I unit only).
- Automatic closure device.
- Oil alarm system available.

INSTALLATION

The unit should be installed on a suitable concrete base slab and surrounded with concrete or pea gravel backfill. See sales drawing for installation.

If the separator is to be installed within a trafficked area, then a suitable cover slab must be designed to ensure that loads are not transmitted to the unit.

The separator should be installed and vented in accordance with Health and Safety Guidance Note HS(G)41 for filling stations, subject to Local Authority requirements.

SIZES AND SPECIFICATIONS

ENVIROCEPTOR CLASS	TOTAL CAP. (litres)	DRAINAGE AREA (m^2)	MAX. FLOW RATE (l/s)	LENGTH (mm)	DIAMETER (mm)	ACCESS SHAFT DIA. (mm)	BASE TO INLET INVERT (mm)	BASE TO OUTLET INVERT (mm)	STD. FALL ACROSS UNIT (mm)	MIN. INLET INVERT (mm)	STD. PIPEWORK (mm)	EMPTY WEIGHT (kg)
I	10000	555	10	3963	1920	600	2110	2060	50	400	160	500
II	10000	555	10	3963	1920	600	2110	2060	50	400	160	500
I	10000	1110	20	3963	1920	600	2110	2060	50	400	200	500
II	10000	1110	20	3963	1920	600	2110	2060	50	400	200	500

Alarm Systems

British European Standard EN 858-1 and Environment Agency Pollution Prevention Guideline PPG3 requires that all separators are to be fitted with an oil level alarm system and that it should be installed and calibrated by a suitably qualified technician so that it will respond to an alarm condition when the separator requires emptying.

- Easily fitted to existing tanks.
- Excellent operational range.
- Visual and audible alarm.
- Additional telemetry option.

Technical Submittal Form

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Subject/Title

TOU-0473-SW-XX-TS-X-0003 - SW Twin Wall Drainage

Description (example: product name; location; specification details; supplier; etc.):

SW Drainage
Wavin
Twin Wall
Drawing Ref - HPF-0473-SWS-BG-DR-C-520210 P02
Specification Ref - Clause R12 345

Is the proposal specification compliant?

Yes

Is the proposal an alternative to specification?

Yes

Details of reason for deviation from specification / alternative to specification:

Technical Submittal Form

Doc Ref:	TOU-0473-SW-BG-TS-X-00003		
To: (Name)	Alhassan Sheriff	**From:** (Name)	Mark Rowlandson
Company:	SWP	**Company:**	Toureen Group
Project Name:	Project Union – Phase 3	**Company Initials:** (3 capital letters)	TCL
Job No:	1182	**Role:**	Project Engineer
Submission Date:	04.12.2023	**Package Code:**	
Date Approval is Required:	11.12.2023	**Revision:**	01
Date Approval was Received:			
SWP Submission N			

Description of Technical Submittal		
System Category	Group:	Civils
	Subgroup: Section:	
	Object:	
Equipment Category	Group:	Drainage
	Subgroup: Section:	
	Object:	

Equipment Type (Fan Coil Unit, Radiator etc)	SW Drainage
System Abbreviation	
Manufacturer	Wavin
Model	Twin Wall
Drawing No	HPF-0473-SWS-BG-DR-C-520210 P02
Specification reference	R12 345
Description or additional information:	
Is the proposal specification compliant?	yes
Is the proposal an alternative to specification?	yes
Details of reason for deviation from specification / alternative to specification:	
SWP / Consultant's comments:	

Designated Consultant to co-ordinate response from all parties

Organisation	Copied to	Comments

Consultant	Approval Status	Signed	Date

SAFETY DATA SHEET
PP and PE PIPE AND FITTINGS

1.0 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

ALTERNATIVE PRODUCT NAMES	Polypropylene and Polyethylene pipe and fittings
PRODUCT NO.	2CSxxx, 4CSxxx, 5CSxxx. 3Dxxx, 4Dxxx, 6Dxxx, 6LBxxx, 2Sxxx, 3Sxxx, 4Sxxx, 6Sxxx, 6TWxxx, 9TWxxx, 12TWxxx, 375TWxxx, 450TWxxx, 500TWxxx, 600TWxxx, WCxxx, 100OCxxx, 2Vxxx, 4Vxxx, 5Vxxx, 2Wxxx, 4Wxxx, 5Wxxx, 2Zxxx, 4Zxxx, 5Zxxx, PExxx
APPLICATION	Potable, Non-potable, Stormwater, Drain, Soil and Waste
MANUFACTURER:	WAVIN UK Parsonage Way, Chippenham, Wiltshire, SN15 5PN Tel: (01249) 766600 (Opening hours 07.00 -19.00hrs) Fax: (01249) 443286
CONTACT PERSON	development.technologist@wavin.com

2.0 HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to regulation (EC) No. 1272/2008 CLP is that PP and PE pipes and fittings as finished product are not regarded as hazardous to health, and exhibit no chemical hazards when used under normal circumstances for the stated application(s).

2.2 Label Elements

Not labelled as Hazardous

2.3 Other Hazards

Fine particles released on cutting may cause irritation to the eyes and respiratory tract.

3.0 COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

This material is not classified as hazardous to Health or the Environment under current EU legislation.

PRODUCT IDENTIFIER IN ACCORDANCE WITH ARTICLE 18(2) (EC) No 1272/2008	IDENTIFICATION NO	IDENTIFICATION NAME	WEIGHT % OR RANGE	EC NUMBER[1]
CAS Number	9003-07-0	1-Propene Copolymer	0-100	
CAS Number	9010-79-1	1-Propene with Ethene	0-100	

CAS Number	29160-13-2	1-butene, polymer with 1-propene	0-100	
CAS Number	25895-47-0	1-butene, polymer with ethane and 1-propene	0-100	
CAS Number	9002-88-4	High density Polyethylene	0-100	

[1] – this is only required for reference purposes only.

4.0 FIRST AID MEASURES

4.1 DESCRIPTION OF FIRST AID MEASURES
After inhalation:
Move the exposed person to fresh air at once.
Get medical attention if any discomfort continues.
Unlikely route of exposure as the product does not contain volatile substances.

After skin contact:
Contact with molten product may cause burns. Cool with plenty of cold water.
Do not attempt to remove the solidified plastic without consulting a trained first aider.
Contact with the product at room temperature is unlikely to cause irritation however, obtain medical attention if any discomfort develops.

After eye contact:
Promptly wash eyes with plenty of water while lifting the eye lids.
Continue to rinse for at least 15 minutes.
Get medical attention if any discomfort continues.

After ingestion: Unlikely route of exposure.
Get medical attention should discomfort develop.

4.2 Most important symptoms and effects, both acute and delayed

No further relevant information available.

4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available.

5.0 FIRE FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA

Suitable Media - Extinguish with foam, carbon dioxide, dry powder or water fog.

Unsuitable Media - Do not use water jet as an extinguisher, as this will spread the fire.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

Avoid breathing fire vapours. Beware, risk of formation of toxic and corrosive gases.
Keep run-off water out of sewers and water sources.
Dike for water control. If risk of water pollution occurs, notify appropriate authorities.

5.3 ADVICE FOR FIREFIGHTERS

Self-contained breathing apparatus and full protective clothing must be worn in case of a large fire.

6.0 ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECUATIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Pellets remaining on the ground may act as a slip hazard.
Ensure adequate ventilation.
Keep away from ignition sources.
Keep unprotected personnel away from the area.
Wear protective equipment if applicable.

6.2 ENVIRONMENTAL PRECAUTIONS

Do not allow to enter drains, sewers or watercourses.
Avoid release to the environment, and avoid any contact with wildlife.

6.3 METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP

Not applicable.

6.4 REFERENCE TO OTHER SECTIONS

See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7.0 HANDLING AND STORAGE

7.1 PRECAUTIONS OF SAFE HANDLING

Avoid dust formation if cutting.
Avoid eating, drinking and smoking when using the product.
Observe good industrial hygiene practices.
Gloves should be worn if edges are sharp where pipes have been broken.

7.2 CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPTABILITIES

Products should preferably be stored in dry covered conditions away from direct sources of heat, including sunlight.
During storage it must be recognised that the packaging and pallets may themselves be a fire risk, and are generally a much more likely route for rapid fire spread.

7.3 SPECIFIC END USE(S)

No further relevant information available.

8.0 EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 CONTROL PARAMETERS

8.1.1 Occupational Exposure Limits

	15min TWA	8hr TWA
Total Inhalable Dust	20 mg/m³	10 mg/m³
Total Respirable Dust		4 mg/m³

8.1.2 Decomposition Products With Occupational Exposure Limits

Cas No.	Name	15min TWA	8hr TWA
630-08-0	Carbon Monoxide	200 ppm ;	

8.2 PROTECTIVE EQUIPMENT

8.2.1 General protective and hygienic measures:

Appropriate workwear
Provide adequate general and local exhaust ventilation.

8.2.2 Respiratory protection:

No specific recommendation made, but respiratory protection may still be required under exceptional circumstances when excessive dust formation occurs. Seek advice.

8.2.3 Protection of hands:

Protective gloves recommended, for prolonged or repeated skin contact use suitable protective gloves.

Protective gloves recommended

8.2.4 Eye protection:

Wear protective goggles to prevent any possibility of eye contact especially when cutting.

Eye protection

8.2.5 Skin protection:

Standard industrial protective clothing

8.2.5 Body protection:

Not necessary

9.0 PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	Solid plastic articles		
COLOUR	White, Grey or Black		
ODOUR	Odourless		
SOLUBILITY	Insoluble in water	DECOMPOSITION TEMP °C	> 250°C
RELATIVE DENSITY	0.90 – 0.97	FLASH POINT (°C)	> 300°C

10.0 STABILITY AND REACTIVITY

10.1 REACTIVITY

Non-reactive under normal handling and storage conditions.

10.2 CHEMICAL STABILITY

Stable under normal temperature conditions and recommended use.

10.3 POSSIBILITY OF HAZARDOUS REACTIONS

No further relevant information available.

10.4 CONDITIONS TO AVOID

Avoid excessive heat for prolonged periods of time.

10.5 INCOMPATIBLE MATERIALS

No further relevant information available.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS

None under normal conditions.

11.0 TOXICOLOGICAL INFORMATION

11.1 ACUTE TOXICITY

11.2 PRIMARY IRRITANT EFFECT

11.2.1 On the skin:

No harmful effects expected

11.2.2 On the eye:

Dust formed during cutting may cause irritation.

11.2.3 Sensitization:

Material is practically inert from a physiological point of view.

11.2.4 Inhalation:

Dust formed during cutting may be irritating to the respiratory tract.

11.2.4 Ingestion:

No harmful effects expected.

11.3 ADDITIONAL TOXICOLOGICAL INFORMATION

No further relevant information available.

12.0 ECOLOGICAL INFORMATION

The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that inappropriate, large or frequent disposal might have a harmful or damaging effect on the environment.

12.1 Toxicity

No data available.

12.2 Persistence and degradability

Product is not readily biodegradable and is likely to persist in the environment.

In Sewage plants it can be separated mechanically.

12.3 Bio accumulative Potential

To avoid bio accumulation of the plastics products should not be disposed in the sea or water environment.

12.4 Mobility in Soil

No data available.

12.5 Results of PBT & vPvB assessment

According to the revised Annex XIII of Regulations (EC) 1907/2006 and (EC) 253/2011: No information available.

12.6 Other adverse effects

Do not allow to enter into the ground water, surface water or drains.

12.7 Additional Information

13.0 DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS

13.1.1 Product and Packaging Disposal

Disposal of waste materials in accordance with local Waste regulations
When handling waste, consideration should be made to the safety precautions applying to handling of the product.
Recycle where it is practical to do so.

13.1.2 Waste Treatment

Inadequate incineration may generate toxic gases.

13.1.3 Sewage Disposal

13.1.4 Other Disposal recommendations

14.0 TRANSPORT INFORMATION

The product is not covered by international regulation on the transport of dangerous goods (IMDG, IATA, ADR/RID).

14.1 UN Number

Not Applicable

14.2 UN Proper Shipping Name

Not Regulated

14.3 Transport Hazard Classes

Not Applicable

14.4 Packing Group

Not Applicable

14.5 Environmental Hazards

Not considered a hazard based on current data.

14.6 Special precautions for the User

No data available.

15.0 REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE

Approved Code Of Practice

Workplace Exposure Limits EH40.

EU Legislation

CLP Regulations to EC 1272/2008

15.2. Chemical Safety Assessment

No chemical safety assessment has been carried out.

16 OTHER INFORMATION

REVISION DATE	28/04/2017
REV. NO./REPL. SDS GENERATED	A
SAFETY DATA SHEET STATUS	Approved.
DATE	28/04/2017
SIGNATURE	JM
SIGNATURE 2	AR

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Any natural or legal person established within the community, other than the manufacturer or the importer, who uses a substance, either on its own or in a preparation, in the course of his industrial or professional activities. A distributor or a consumer is not a downstream user.

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