

Refer to L-30002

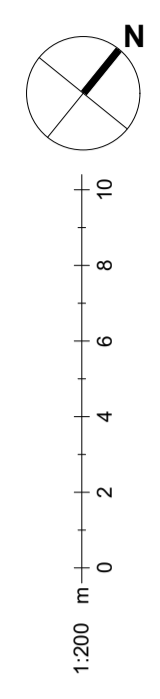
B1: BASEMENT LEVEL

**NOTE:**  
**REFER TO DRAWING BPD-HLM-00-XX-DR-L-30412 FOR RELEVANT PAVING INTERFACE.**  
**NOTE: TO BE READ WITH BPD-HLM-XX-XX-SP-L-00601 LANDSCAPE SPECIFICATION FOR DETAILS.**

- Hard Landscape GA Key**
- SP1** Stone Paving Type 1 - Yorkstone Sett  
Marshalls Yorkstone Sett Paving (50mm)  
Scoutmoor Sandstone, 100 x random length 200-400mm
  - SP1A** - Pedestrian loading over podium  
**SP1B** - Pedestrian loading - existing ground
  - SP2** Stone Paving Type 2 - Granite Sett  
Marshalls Vietnamese Granite Sett Paving (50mm)  
Sodemalm (50%), Malasana (20%), Fitzroy (30%),  
100 x 200 (10%) 300 (30%) 400 (60%) mm
  - SP2A** - Pedestrian loading over podium  
**SP2B** - Pedestrian loading - existing ground
  - SP3** Stone Paving Type 3 - Tactile  
Marshalls Vietnamese Granite Flag Paving (50mm)  
Tactile Paving, Malasana colour, 400 x 400mm.
  - SP4** Stone Paving Type 4 - Existing  
Relaid Sett Paving (Existing)  
Lift and relay to retain heritage of site access.
  - SP5** Stone Paving Type 5 - Existing  
Slab Paving (Existing)  
Made good where necessary.
  - SP6** Stone Paving Type 6  
Marshall Yorkstone Paving (50mm). Laid on rigid bed system. Scoutmoor Sandstone, 300 x random length 300-600mm
  - SP6A** - Vehicle loading  
**SP6B** - Vehicle loading over podium  
**SP6C** - Pedestrian loading over podium with permeavoid  
**SP6D** - Pedestrian loading over podium
  - SP7** Stone Paving Type 7  
Marshall Yorkstone Paving (50mm). Laid on rigid bed system. Scoutmoor Sandstone, 200 x 200mm
  - SP7A** - Vehicle loading  
**SP7B** - Vehicle loading over podium  
**SP7C** - Pedestrian loading over podium with permeavoid
  - SP8** Stone Paving Type 8  
Marshall Yorkstone Paving (50mm). Laid on Rigid bed System. Pedestrian loading over podium with permeavoid. Scoutmoor Sandstone, 200 x random length 200-400mm
  - CP1A** Concrete Paving Type 1A  
Marshalls MODAL Impermeable concrete paving (80mm) Light Granite (60%), Mid Grey Granite (40%), Textured finish; 200 x 100mm, 300 x 200mm, 200 x 200mm.
  - D1** Decking  
Enviro Build Frontier Composite Decking (22mm) Iroko, 143 x 22 x 4000mm
  - ST** Marshalls Granite Steps with nosing  
Silver grey, 200(H) x 300(W) x 1000(L)mm
  - E1a** Edging Type 1a & 1b  
Logic Edinburgh Straight Module Planter System, (E1a) Corten Steel Finish (E1b) Galvanised Steel & Powder Coated - Black Finish, 6(W)mm, height varies.
  - E2** Edging Type 2  
Logic Edinburgh Edge Straight System, Galvanised Steel Powder Coated Finish, 3(W) x 70(H) x 2000(L)mm x 70(Base width)mm
  - E2b** Edging Type 2b  
Logic Edinburgh Edge Straight System, Galvanised steel polyester powder coated black finish, 3(W) x 200(H) x 2000(L)mm x 100(Base width)mm, 100mm upstand
  - E4** Edging Type 4  
Marshalls Yorkstone Bespoke kerb 200(W) x 205(H) x 915(L)mm - 125mm upstand
  - BD1** Boundary Type 1  
BD1: Existing railings to be refurbished
  - Boundary Type 1 & 1a**  
BD1a/b: New railings to match existing. Black powder coated.
  - BD2** Boundary Type 2 & 2a  
Hand Rail to all steps and ramps  
Black powder coated, 900(H)mm.
  - BD3** Boundary Type 3  
Railing to MRI Suite - Side Entrance  
Style to match BD1, Black powder coated 1800mm high
  - W1** Wall Type 1  
215mm wide wall  
Conservation bricks to match existing
  - W2** Wall Type 2  
Boundary walls to North House with railing Refer to Architects detail
  - W4** Wall Type 4  
Render/Cladding Wall with Grey Yorkstone Coping, rounded edges, 300 (W) x 40 (H) x 600(L)mm., Height of wall varies
  - WH** Weephole to wall  
Refer to BPD-HLM-00-00-DR-L-00214 - DS03

- Gate Type 1 - Existing**  
Market Housing Vehicle Entrance Gate - Double leaf  
To be cleaned and made good. New powder coating - black
- Gate Type 2**  
Market Housing Pedestrian Entrance Gate - Single leaf  
Steel, Height/ Style to match existing Gate Type 1
- Gate Type 3**  
MRI Suite - Side Entrance Gate - Double Leaf  
Steel, Style to match existing Gate Type 1, 1800(H)mm
- Bench Type 1 - Surface Fixed**  
Escofet Boxland benches - various  
a 2000 x 500 x 450mm - full seat - white  
b 2000 x 500 x 450mm - full seat - grey  
c 2000 x 500 x 450mm - backless seat - white  
d 2000 x 500 x 450mm - backless seat - grey  
e 500 x 500 x 450mm - white  
f 2000 x 500 x 450mm - grey  
g 1000 x 500 x 450mm - grey  
h nexus hexagon - grey
- Bollard**  
StreetLife Rough and Ready (1-Removable) (2-Fixed)  
Bollard. Hardwood Timber with steel frame, 750(H)mm.
- Lighting Column**  
Santa & Cole Rama LED Column, 900(L) x 200(W)mm, Height TBC. Refer to Electrical Engineer's drawings for exact numbers and location
- Cycle Stand**  
Marshalls Orlerton Cycle Stand - Black Polyester Powder Coated Steel 750(H) x 48(W) x 750(L)mm
- Litter Bin**  
Helsinki Litter Bin, Black powder coated finish, 755 mm (L) x 570 mm (W) x 1230 mm(H)
- Glass Bridge**  
to North House
- Light Well/ Smoke Vent**
- Smoke Vent/ Breakout Panel**
- Open Vent/ Grille**
- Surface Drainage Channel**  
Refer to Aecom Civils Drainage plans
- Recessed Access Covers**  
MH - Manholes (Refer to Aecom Civils Drainage plans)  
CC - Cable Chambers (Refer to Arup MEP Lighting plans)  
IC - Inspection Chambers (Refer to Aecom Civils Drainage Plans)
- RWO** - Rain Water Outlet (Refer to Arup Civils New Build Drainage plans)
- DP** - Down pipes  
Ref detail L(00)9 drawing BPD-HLM-00-00-DR-L-00215 (Refer to Arup Civils New Build Drainage plans)
- Attenuation Tank**  
Refer to Arup Civils Drainage plans

**Notes**  
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| C06 | ISSUED FOR COORDINATION | 26/06/19 | LF | AD  |
| C05 | UPDATE AS CLOUED        | 13/05/19 | LF | MC  |
| C04 | ISSUE FOR TENDER        | 22/02/19 | LF | PI  |
| C03 | ISSUE FOR TENDER        | 08/02/19 | MC | AD  |
| C02 | ISSUE FOR TENDER        | 26/10/18 | MC | PI  |
| C01 | FOR INFORMATION         | 02/10/18 | MC | PI  |
| Rev | Description             | Date     | By | Chk |

Revisions  
 Project

## BEDFORD PASSAGE DEVELOPMENT

### MIDDLESEX ANNEXE LLP

Title

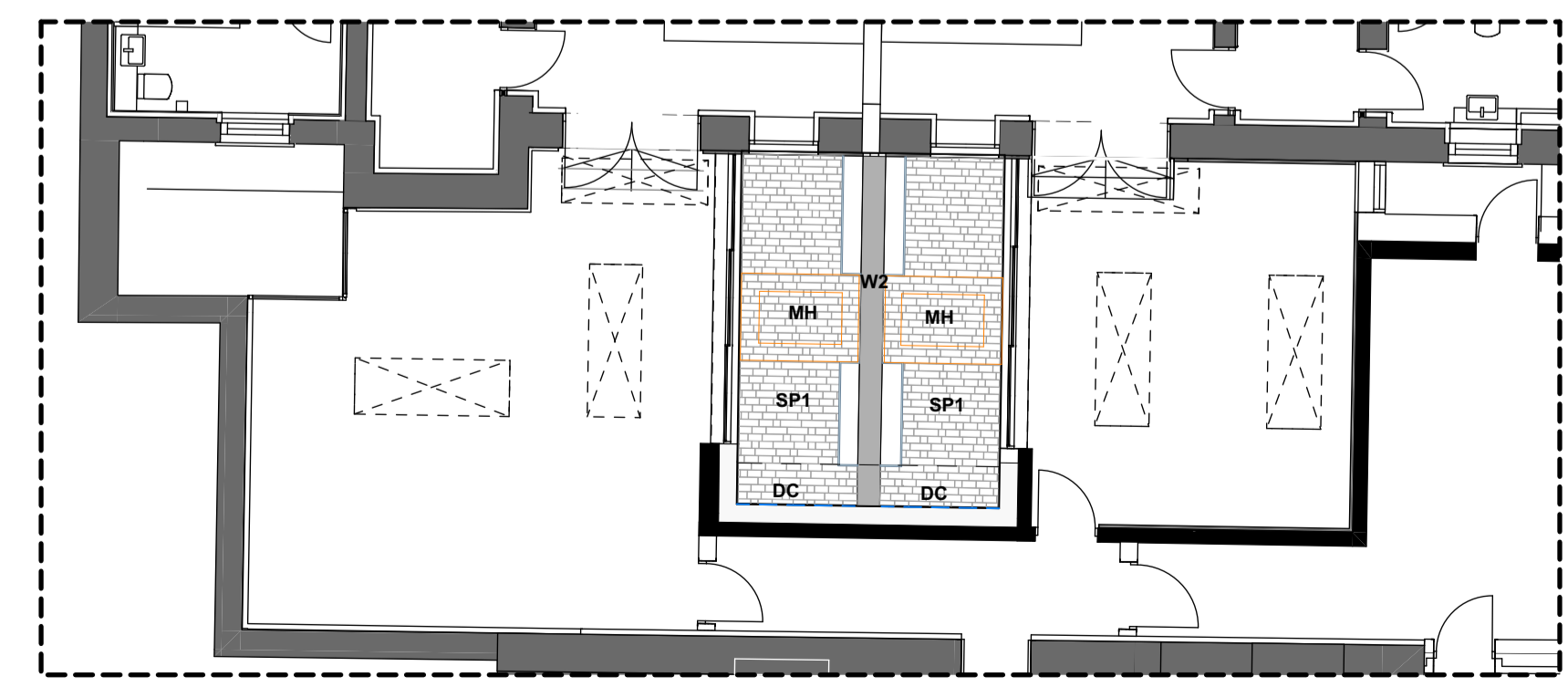
#### HARD LANDSCAPE GA PLAN - GROUND FLOOR - SHEET 01

Drawing No. **BPD-HLM-00-00-DR-L-30001** Revision **C07**

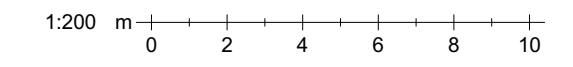
Scale @ A1  
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B1 BASEMENT LEVEL 1:100

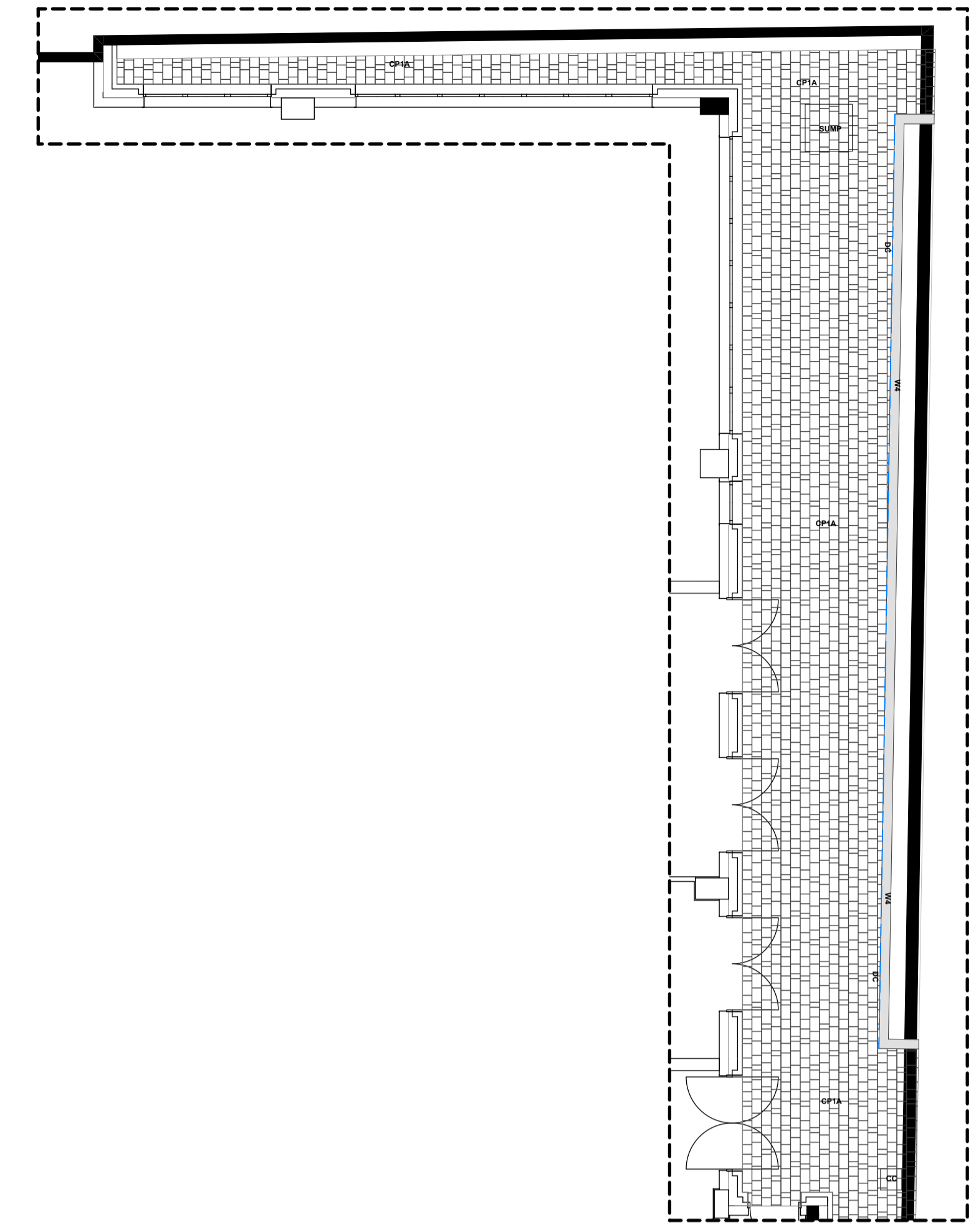
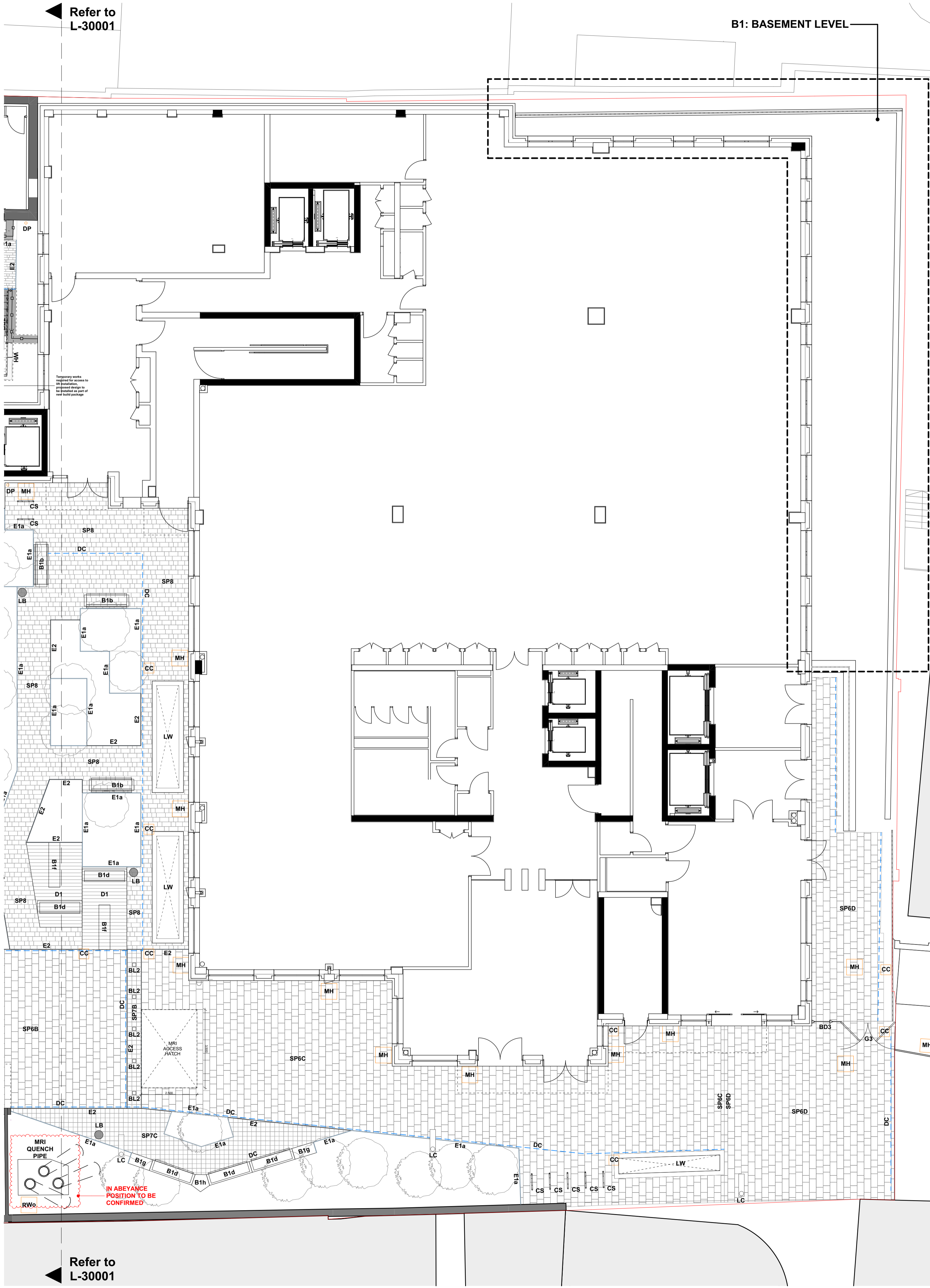
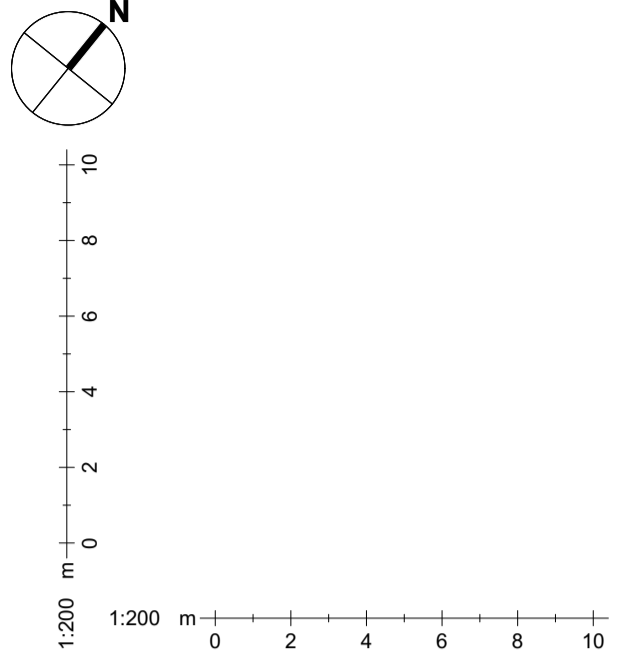


Refer to L-30002

Refer to L-30001

B1: BASEMENT LEVEL

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B1 BASEMENT LEVEL 1:100

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E1a) Corten Steel Finish  
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- BD1a/b Boundary Type 1 & 1a**  
BD1a/b: New railings to match existing.  
Black powder coated.
- BD2 Boundary Type 2 & 2a**  
BD2: Hand Rail to all steps and ramps  
BD2A: Black powder coated, 900(H)mm.
- BD3 Boundary Type 3**  
Railing to MRI Suite - Side Entrance  
Style to match BD1, Black powder coated  
1800mm high
- W1 Wall Type 1**  
215mm wide wall  
Refer to Aecom Civils Drainage plans  
Conservation bricks to match existing
- W2 Wall Type 2**  
Boundary walls to North House with railing Refer to Architects detail
- W4 Wall Type 4**  
Render/Cladding Wall with Grey Yorkstone Coping, rounded edges, 300 (W) x 40 (H) x 600(L)mm., Height of wall varies
- WH Weephole to wall**  
Refer to BPD-HLM-00-00-DR-L-00214 - DS03
- G1 Gate Type 1 - Existing**  
Market Housing Vehicle Entrance Gate - Double leaf to be cleaned and made good. New powder coating - black
- G2 Gate Type 2**  
Market Housing Pedestrian Entrance Gate - Single leaf Steel, Height/ Style to match existing Gate Type 1
- G3 Gate Type 3**  
MRI Suite - Side Entrance Gate - Double Leaf Steel, Style to match existing Gate Type 1, 1800(H)mm
- B1a Bench Type 1 - Surface Fixed**  
Escofet Boxland benches - various  
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d 2000 x 500 x 450mm - backless seat - grey  
e 500 x 500 x 450mm - white  
f 2000 x 500 x 450mm - grey  
g 1000 x 500 x 450mm - grey  
h nexus hexagon - grey
- BL12 Bollard**  
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Helsinki Litter Bin, Black powder coated finish, 755 mm (L) x 570 mm (W) x 1230 mm(H)
- GB Glass Bridge**  
to North House
- LW Light Well/ Smoke Vent**
- SV Smoke Vent/ Breakout Panel**
- OV Open Vent/ Grille**
- DC Surface Drainage Channel**  
Refer to Aecom Civils Drainage plans
- MH Manholes**  
(Refer to Aecom Civils Drainage plans)
- CC Cable Chambers**  
(Refer to Arup MEP Lighting plans)
- IC Inspection Chambers**  
(Refer to Aecom Civils Drainage Plans)
- RWo Rain Water Outlet**  
(Refer to Arup Civils New Build Drainage plans)
- DP Down pipes**  
Ref detail L(00)9 drawing  
BPD-HLM-00-00-DR-L-00215  
(Refer to Arup Civils New Build Drainage plans)
- Attenuation Tank**  
Refer to Arup Civils Drainage plans

| Rev | Description             | Date     | By | Ck |
|-----|-------------------------|----------|----|----|
| C07 | ISSUED FOR COORDINATION | 10/10/19 | LF | AD |
| C06 | ISSUED FOR COORDINATION | 26/06/19 | LF | AD |
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| C02 | ISSUE FOR TENDER        | 26/10/18 | MC | PI |
| C01 | FOR INFORMATION         | 02/10/18 | MC | PI |

Revisions

Project

### BEDFORD PASSAGE DEVELOPMENT

Client

### MIDDLESEX ANNEXE LLP

Title

### HARD LANDSCAPE GA PLAN - GROUND FLOOR - SHEET 02

Drawing No. BPD-HLM-00-00-DR-L-30002

Revision C07

Scale @ A1 1:100

Drawn BH

Date 04/10/2018

Checked HLM

Drawn

Checked

Scale @ A1

Drawn

Date

Checked

Drawn

Checked



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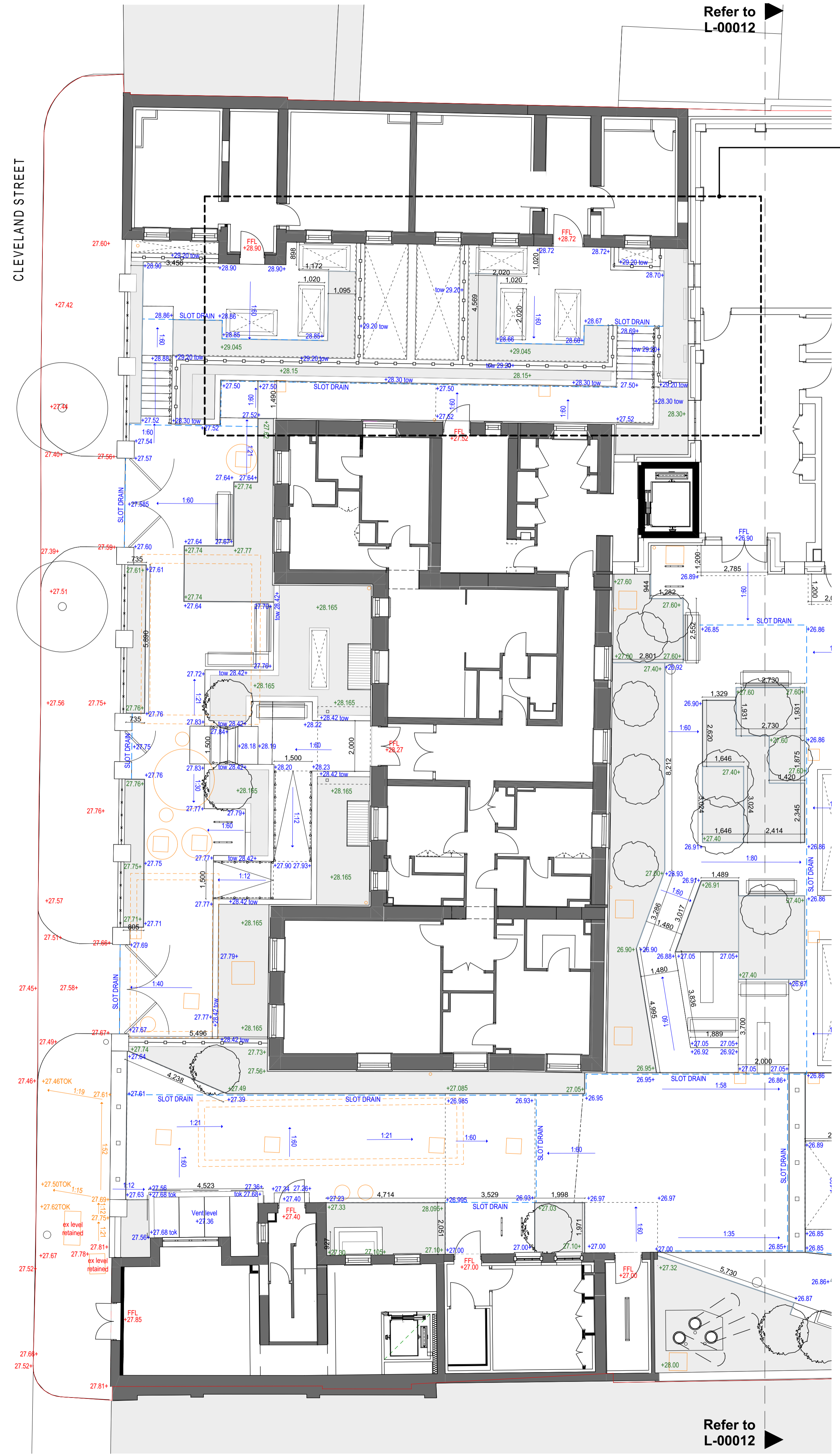
NOTE: TO BE READ WITH  
BPD-HLM-XX-XX-SP-L-00601  
LANDSCAPE SPECIFICATION FOR DETAILS.

Refer to L-30001

CLEVELAND STREET

Refer to L-00012

B1: BASEMENT LEVEL

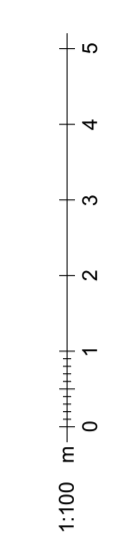
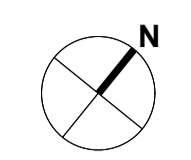


Refer to L-00012

**Landscape Levels Key**

- +26.76 Existing Levels
- +26.76 Proposed Level for Section 278 Work
- +26.76TOK Proposed Top of Kerb Level for Section 278 Work
- +26.88 Proposed Levels
- +26.88 low Proposed Top of Wall Level
- +26.88 Proposed Levels within Planter
- 1:21 Proposed Falls
- 1:21 Proposed Falls for Section 278 Work
- 1:12 Proposed Ramp Slopes
- Level Break
- Soft Landscape
- Hard Landscape
- Approximate location of manhole / downpipe. Refer to Engineer's drawings for details.
- Approximate location of attenuation tank. Refer to Engineer's drawings for details.
- Surface Drainage Channel. Refer to AECOM Civils Drainage Plans

Notes  
Check all dimensions on site. Do not scale from this drawing. Report any discrepancies and omissions to HLM Architects. This Drawing is Copyright ©



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| C02 | ISSUE FOR TENDER        | 26/10/18 | MC | PI  |
| C01 | FOR INFORMATION         | 02/10/18 | MC | PI  |

| Revisions                          |  |
|------------------------------------|--|
| Project                            |  |
| <b>BEDFORD PASSAGE DEVELOPMENT</b> |  |

| Client                      |  |
|-----------------------------|--|
| <b>MIDDLESEX ANNEXE LLP</b> |  |

**LANDSCAPE LEVELS AND SETTING OUT - SHEET 01**

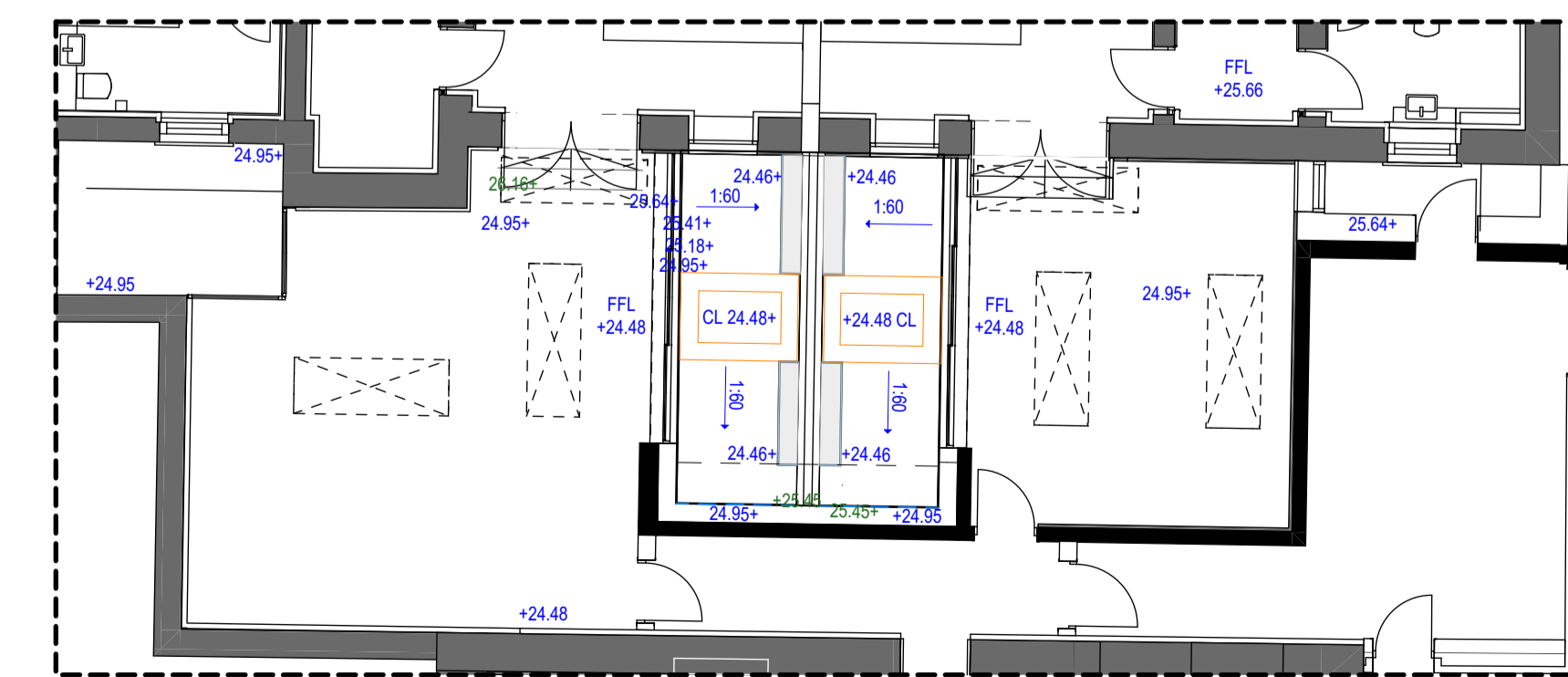
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|---------------------------------|------------|
| <b>BPD-HLM-00-00-DR-L-00011</b> | <b>C08</b> |

| Scale @ A1 | Drawn   |
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| 1:100      | BH      |
| Date       | Checked |
| 04/10/2018 | HLM     |

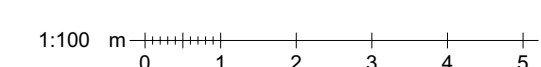
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B1 BASEMENT LEVEL 1:100

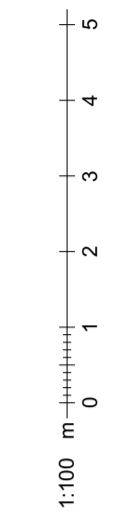
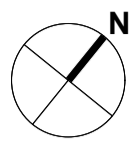


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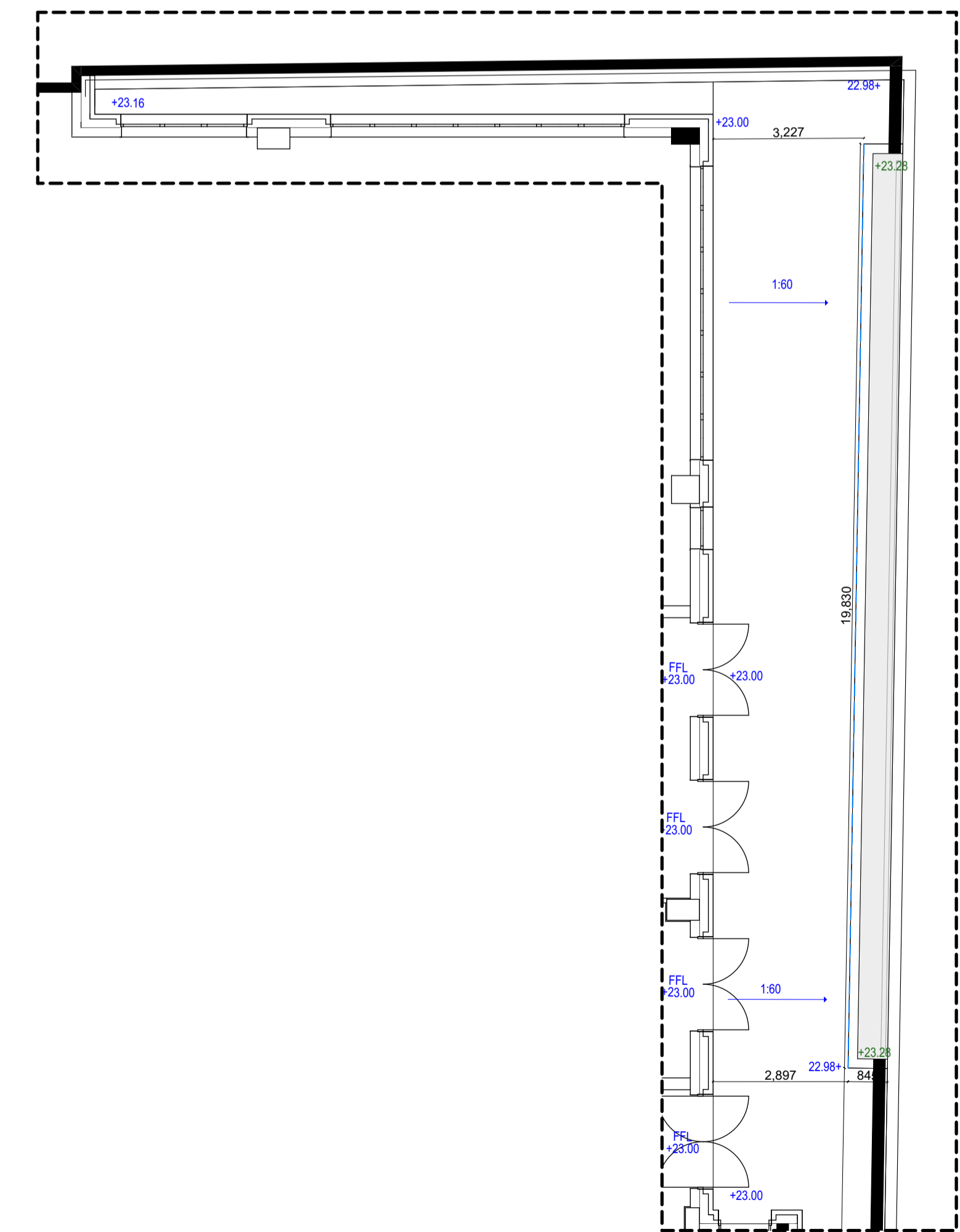
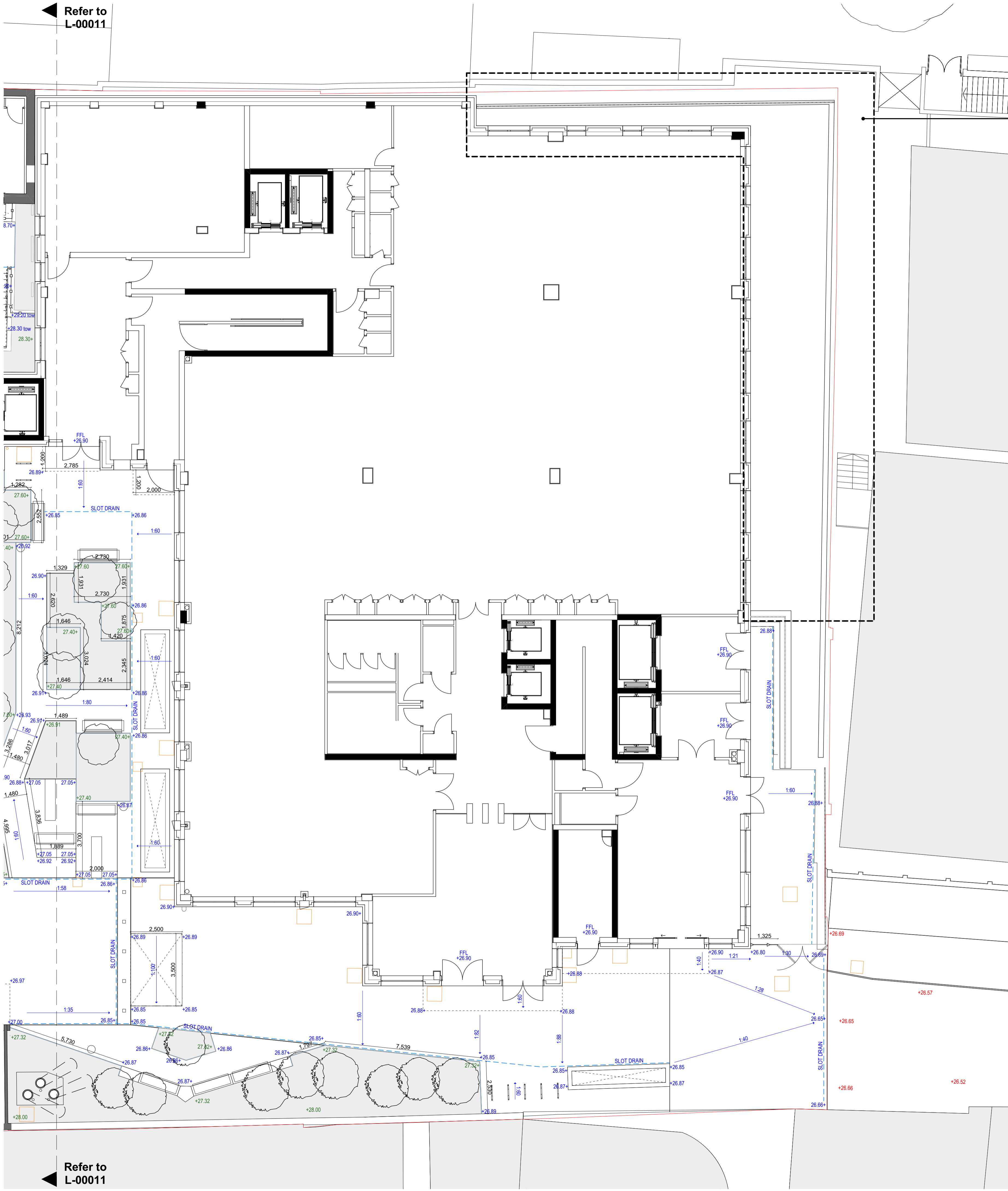
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B1: BASEMENT LEVEL



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Revisions

Project  
**BEDFORD PASSAGE DEVELOPMENT**

Client  
**MIDDLESEX ANNEXE LLP**

Title  
**LANDSCAPE LEVELS AND SETTING OUT - SHEET 02**

Drawing No. **BPD-HLM-00-00-DR-L-00012** Revision **C08**

Scale @ A1 Drawn **BH**  
1:100  
Date 04/10/2018 Checked **HLM**



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Refer to L-00011


B1

BASEMENT LEVEL

1:100



# Appendix I : MicroDrainage Calculation

|   |  |   |
|---|--|---|
| AECOM   |  | Page 1  |
| Midpoint<br>Alencon Link<br>Basingstoke, RG21 7PP         | Bedford Passage Development<br>Stage 4 |  |
| Date 30/10/2019 09:49<br>File Proposed SW Drainage v4.mdx | Designed by BL<br>Checked by           |   |
| Innovyze  | Network 2018.1.1                       |   |

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD












FSR Rainfall Model - England and Wales

|                                      |        |                                       |       |
|--------------------------------------|--------|---------------------------------------|-------|
| Return Period (years)                | 2      | PIMP (%)                              | 100   |
| M5-60 (mm)                           | 20.700 | Add Flow / Climate Change (%)         | 0     |
| Ratio R                              | 0.439  | Minimum Backdrop Height (m)           | 0.200 |
| Maximum Rainfall (mm/hr)             | 50     | Maximum Backdrop Height (m)           | 1.500 |
| Maximum Time of Concentration (mins) | 30     | Min Design Depth for Optimisation (m) | 1.200 |
| Foul Sewage (l/s/ha)                 | 0.000  | Min Vel for Auto Design only (m/s)    | 1.00  |
| Volumetric Runoff Coeff.             | 0.750  | Min Slope for Optimisation (1:X)      | 500   |

Designed with Level Soffits


Network Design Table for Storm

« - Indicates pipe capacity < flow



| PN     | Length (m) | Fall (m) | Slope (1:X) | I.Area (ha) | T.E. (mins) | Base Flow (l/s) | k (mm) | HYD SECT | DIA (mm) | Section Type | Auto Design   |
|--------|------------|----------|-------------|-------------|-------------|-----------------|--------|----------|----------|--------------|---|
| S1.000 | 2.451      | 0.016    | 153.2       | 0.005       | 5.00        | 0.0             | 0.600  | o        | 150      | Pipe/Conduit |  |
| S2.000 | 5.390      | 0.100    | 53.9        | 0.000       | 5.00        | 0.0             | 0.600  | o        | 250      | Pipe/Conduit |  |
| S2.001 | 3.341      | 0.100    | 33.4        | 0.150       | 0.00        | 0.0             | 0.600  | o        | 250      | Pipe/Conduit |  |
| S2.002 | 2.021      | 0.763    | 2.6         | 0.000       | 0.00        | 0.0             | 0.600  | o        | 250      | Pipe/Conduit |  |
| S2.003 | 11.279     | 0.363    | 31.1        | 0.000       | 0.00        | 0.0             | 0.600  | o        | 300      | Pipe/Conduit |  |
| S3.000 | 5.060      | 0.106    | 47.7        | 0.007       | 5.00        | 0.0             | 0.600  | o        | 150      | Pipe/Conduit |  |
| S1.001 | 8.455      | 0.308    | 27.5        | 0.012       | 0.00        | 0.0             | 0.600  | o        | 300      | Pipe/Conduit |  |
| S1.002 | 3.266      | 0.011    | 296.9       | 0.015       | 0.00        | 0.0             | 0.600  | o        | 150      | Pipe/Conduit |  |
| S1.003 | 2.556      | 0.170    | 15.0        | 0.000       | 0.00        | 0.0             | 0.600  | o        | 150      | Pipe/Conduit |  |
| S4.000 | 7.434      | 0.041    | 181.3       | 0.028       | 5.00        | 0.0             | 0.600  | o        | 150      | Pipe/Conduit |  |
| S4.001 | 3.886      | 0.157    | 24.8        | 0.016       | 0.00        | 0.0             | 0.600  | o        | 150      | Pipe/Conduit |  |

Network Results Table

| PN     | Rain (mm/hr) | T.C. (mins) | US/IL (m) | E I.Area (ha) | E Base Flow (l/s) | Foul (l/s) | Add Flow (l/s) | Vel (m/s) | Cap (l/s) | Flow (l/s) |
|--------|--------------|-------------|-----------|---------------|-------------------|------------|----------------|-----------|-----------|------------|
| S1.000 | 50.00        | 5.05        | 25.290    | 0.005         | 0.0               | 0.0        | 0.0            | 0.81      | 14.3      | 0.7        |
| S2.000 | 50.00        | 5.05        | 26.600    | 0.000         | 0.0               | 0.0        | 0.0            | 1.91      | 93.8      | 0.0        |
| S2.001 | 50.00        | 5.07        | 26.500    | 0.150         | 0.0               | 0.0        | 0.0            | 2.43      | 119.3     | 20.3       |
| S2.002 | 50.00        | 5.07        | 26.400    | 0.150         | 0.0               | 0.0        | 0.0            | 8.66      | 425.3     | 20.3       |
| S2.003 | 50.00        | 5.14        | 25.637    | 0.150         | 0.0               | 0.0        | 0.0            | 2.83      | 200.1     | 20.3       |
| S3.000 | 50.00        | 5.06        | 25.481    | 0.007         | 0.0               | 0.0        | 0.0            | 1.46      | 25.8      | 0.9        |
| S1.001 | 50.00        | 5.19        | 23.774    | 0.174         | 0.0               | 0.0        | 0.0            | 3.01      | 212.9     | 23.5       |
| S1.002 | 50.00        | 5.28        | 23.466    | 0.189         | 0.0               | 0.0        | 0.0            | 0.58      | 10.2«     | 25.6       |
| S1.003 | 50.00        | 5.30        | 23.455    | 0.189         | 0.0               | 0.0        | 0.0            | 2.61      | 46.1      | 25.6       |
| S4.000 | 50.00        | 5.17        | 26.408    | 0.028         | 0.0               | 0.0        | 0.0            | 0.74      | 13.1      | 3.9        |
| S4.001 | 50.00        | 5.20        | 25.017    | 0.044         | 0.0               | 0.0        | 0.0            | 2.03      | 35.9      | 6.0        |

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Network Design Table for Storm

| PN     | Length<br>(m) | Fall<br>(m) | Slope<br>(1:X) | I.Area<br>(ha) | T.E.<br>(mins) | Base<br>Flow (l/s) | k<br>(mm) | HYD<br>SECT | DIA<br>(mm) | Section Type | Auto<br>Design  |
|--------|---------------|-------------|----------------|----------------|----------------|--------------------|-----------|-------------|-------------|--------------|---|
| S4.002 | 1.603         | 0.016       | 100.2          | 0.000          | 0.00           | 0.0                | 0.600     | o           | 150         | Pipe/Conduit |  |
| S1.004 | 5.744         | 0.815       | 7.0            | 0.000          | 0.00           | 0.0                | 0.600     | o           | 225         | Pipe/Conduit |  |

Network Results Table

| PN     | Rain<br>(mm/hr) | T.C.<br>(mins) | US/IL<br>(m) | Σ I.Area<br>(ha) | Σ Base<br>Flow (l/s) | Foul<br>(l/s) | Add Flow<br>(l/s) | Vel<br>(m/s) | Cap<br>(l/s) | Flow<br>(l/s) |
|--------|-----------------|----------------|--------------|------------------|----------------------|---------------|-------------------|--------------|--------------|---------------|
| S4.002 | 50.00           | 5.23           | 23.301       | 0.044            | 0.0                  | 0.0           | 0.0               | 1.00         | 17.7         | 6.0           |
| S1.004 | 50.00           | 5.32           | 23.285       | 0.233            | 0.0                  | 0.0           | 0.0               | 4.96         | 197.2        | 31.5          |


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Manhole Schedules for Storm

| MH Name     | MH CL (m) | MH Depth (m) | MH Connection | MH Diam., L*W (mm) | PN     | Pipe Out Invert Level (m) | Diameter (mm) | PN     | Pipes In Invert Level (m) | Diameter (mm) | Backdrop (mm) |
|-------------|-----------|--------------|---------------|--------------------|--------|---------------------------|---------------|--------|---------------------------|---------------|---------------|
| SSW1.3      | 27.552    | 2.262        | Open Manhole  | 600                | S1.000 | 25.290                    | 150           |        |                           |               |               |
| SDUMMY MH 1 | 26.902    | 0.302        | Open Manhole  | 1200               | S2.000 | 26.600                    | 250           |        |                           |               |               |
| SPVD        | 26.961    | 0.461        | Open Manhole  | 1200               | S2.001 | 26.500                    | 250           | S2.000 | 26.500                    | 250           |               |
| SDUMMY MH 2 | 26.946    | 0.546        | Open Manhole  | 1200               | S2.002 | 26.400                    | 250           | S2.001 | 26.400                    | 250           |               |
| SSW1.1      | 26.949    | 1.312        | Open Manhole  | 1200               | S2.003 | 25.637                    | 300           | S2.002 | 25.637                    | 250           |               |
| SSW1.2      | 27.240    | 1.759        | Open Manhole  | 600                | S3.000 | 25.481                    | 150           |        |                           |               |               |
| SSW TANK 3  | 27.002    | 3.228        | Open Manhole  | 1200               | S1.001 | 23.774                    | 300           | S1.000 | 25.274                    | 150           | 1350          |
|             |           |              |               |                    |        |                           |               | S2.003 | 25.274                    | 300           | 1500          |
|             |           |              |               |                    |        |                           |               | S3.000 | 25.375                    | 150           | 1451          |
| SSW TANK 2  | 27.769    | 4.303        | Open Manhole  | 1200               | S1.002 | 23.466                    | 150           | S1.001 | 23.466                    | 300           |               |
| SSW1.4      | 27.768    | 4.313        | Open Manhole  | 1200               | S1.003 | 23.455                    | 150           | S1.002 | 23.455                    | 150           |               |
| SSW2.1      | 27.608    | 1.200        | Open Manhole  | 1200               | S4.000 | 26.408                    | 150           |        |                           |               |               |
| SSW TANK 1  | 27.693    | 2.676        | Open Manhole  | 1200               | S4.001 | 25.017                    | 150           | S4.000 | 26.367                    | 150           | 1350          |
| SBD         | 27.810    | 4.509        | Open Manhole  | 1200               | S4.002 | 23.301                    | 150           | S4.001 | 24.860                    | 150           | 1559          |
| SSW1.5      | 27.797    | 4.512        | Open Manhole  | 2400               | S1.004 | 23.285                    | 225           | S1.003 | 23.285                    | 150           |               |
|             |           |              |               |                    |        |                           |               | S4.002 | 23.285                    | 150           |               |
| S           | 27.420    | 4.950        | Open Manhole  | 0                  |        | OUTFALL                   |               | S1.004 | 22.470                    | 225           |               |



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Area Summary for Storm

| Pipe Number | PIMP Type | PIMP Name | PIMP (%) | Gross Area (ha) | Imp. Area (ha) | Pipe Total (ha) |
|-------------|-----------|-----------|----------|-----------------|----------------|-----------------|
| 1.000       | User      | -         | 100      | 0.005           | 0.005          | 0.005           |
| 2.000       | -         | -         | 100      | 0.000           | 0.000          | 0.000           |
| 2.001       | -         | -         | 100      | 0.150           | 0.150          | 0.150           |
| 2.002       | -         | -         | 100      | 0.000           | 0.000          | 0.000           |
| 2.003       | -         | -         | 100      | 0.000           | 0.000          | 0.000           |
| 3.000       | User      | -         | 100      | 0.007           | 0.007          | 0.007           |
| 1.001       | User      | -         | 100      | 0.012           | 0.012          | 0.012           |
| 1.002       | User      | -         | 100      | 0.015           | 0.015          | 0.015           |
| 1.003       | -         | -         | 100      | 0.000           | 0.000          | 0.000           |
| 4.000       | User      | -         | 100      | 0.028           | 0.028          | 0.028           |
| 4.001       | User      | -         | 100      | 0.016           | 0.016          | 0.016           |
| 4.002       | -         | -         | 100      | 0.000           | 0.000          | 0.000           |
| 1.004       | -         | -         | 100      | 0.000           | 0.000          | 0.000           |
|             |           |           |          | Total           | Total          | Total           |
|             |           |           |          | 0.233           | 0.233          | 0.233           |

Free Flowing Outfall Details for Storm


| Outfall Pipe Number | Outfall Name | C. Level (m) | I. Level (m) | Min I. Level (m) | D,L (mm) | W (mm) |
|---------------------|--------------|--------------|--------------|------------------|----------|--------|
| S1.004              | S            | 27.420       | 22.470       | 0.000            | 0        | 0      |

Simulation Criteria for Storm

|                                 |       |  |       |
|---------------------------------|-------|--|-------|
| Volumetric Runoff Coeff         | 0.750 | Additional Flow - % of Total Flow          | 0.000 |
| Areal Reduction Factor          | 1.000 | MADD Factor * 10m <sup>3</sup> /ha Storage | 2.000 |
| Hot Start (mins)                | 0     | Inlet Coeffiecient                         | 0.800 |
| Hot Start Level (mm)            | 0     | Flow per Person per Day (l/per/day)        | 0.000 |
| Manhole Headloss Coeff (Global) | 0.500 | Run Time (mins)                            | 60    |
| Foul Sewage per hectare (l/s)   | 0.000 | Output Interval (mins)                     | 1     |
| Number of Input Hydrographs     | 0     | Number of Offline Controls                 | 0     |
| Number of Online Controls       | 3     | Number of Storage Structures               | 4     |
|                                 |       | Number of Time/Area Diagrams               | 0     |
|                                 |       | Number of Real Time Controls               | 0     |

Synthetic Rainfall Details

|                       |                   |                       |        |
|-----------------------|-------------------|-----------------------|--------|
| Rainfall Model        | FSR               | Profile Type          | Summer |
| Return Period (years) | 2                 | Cv (Summer)           | 0.750  |
| Region                | England and Wales | Cv (Winter)           | 0.840  |
| M5-60 (mm)            | 20.700            | Storm Duration (mins) | 30     |
| Ratio R               | 0.439             |                       |        |

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Online Controls for Storm

Orifice Manhole: SPVD, DS/PN: S2.001, Volume (m³): 0.7

Diameter (m) 0.236 Discharge Coefficient 0.600 Invert Level (m) 26.500

Hydro-Brake® Optimum Manhole: SSW1.4, DS/PN: S1.003, Volume (m³): 4.9

|                                   |                            |
|-----------------------------------|----------------------------|
| Unit Reference                    | MD-SHE-0129-9300-1800-9300 |
| Design Head (m)                   | 1.800                      |
| Design Flow (l/s)                 | 9.3                        |
| Flush-Flo™                        | Calculated                 |
| Objective                         | Minimise upstream storage  |
| Application                       | Surface                    |
| Sump Available                    | Yes                        |
| Diameter (mm)                     | 129                        |
| Invert Level (m)                  | 23.455                     |
| Minimum Outlet Pipe Diameter (mm) | 150                        |
| Suggested Manhole Diameter (mm)   | 1500                       |

| Control Points            | Head (m) | Flow (l/s) | Control Points            | Head (m) | Flow (l/s) |
|---------------------------|----------|------------|---------------------------|----------|------------|
| Design Point (Calculated) | 1.800    | 9.3        | Kick-Flo®                 | 1.095    | 7.4        |
| Flush-Flo™                | 0.530    | 9.3        | Mean Flow over Head Range | -        | 8.2        |

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated


| Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) |
|-----------|------------|-----------|------------|-----------|------------|-----------|------------|
| 0.100     | 4.6        | 1.200     | 7.7        | 3.000     | 11.8       | 7.000     | 17.7       |
| 0.200     | 8.0        | 1.400     | 8.3        | 3.500     | 12.7       | 7.500     | 18.3       |
| 0.300     | 8.8        | 1.600     | 8.8        | 4.000     | 13.6       | 8.000     | 18.9       |
| 0.400     | 9.2        | 1.800     | 9.3        | 4.500     | 14.4       | 8.500     | 19.5       |
| 0.500     | 9.3        | 2.000     | 9.8        | 5.000     | 15.1       | 9.000     | 20.0       |
| 0.600     | 9.3        | 2.200     | 10.2       | 5.500     | 15.8       | 9.500     | 20.5       |
| 0.800     | 9.0        | 2.400     | 10.7       | 6.000     | 16.5       |           |            |
| 1.000     | 8.1        | 2.600     | 11.1       | 6.500     | 17.1       |           |            |

Hydro-Brake® Optimum Manhole: SSW TANK 1, DS/PN: S4.001, Volume (m³): 3.1

|                                   |                            |
|-----------------------------------|----------------------------|
| Unit Reference                    | MD-SHE-0035-7000-1500-7000 |
| Design Head (m)                   | 1.500                      |
| Design Flow (l/s)                 | 0.7                        |
| Flush-Flo™                        | Calculated                 |
| Objective                         | Minimise upstream storage  |
| Application                       | Surface                    |
| Sump Available                    | Yes                        |
| Diameter (mm)                     | 35                         |
| Invert Level (m)                  | 25.017                     |
| Minimum Outlet Pipe Diameter (mm) | 75                         |
| Suggested Manhole Diameter (mm)   | 1200                       |


| Control Points            | Head (m) | Flow (l/s) | Control Points            | Head (m) | Flow (l/s) |
|---------------------------|----------|------------|---------------------------|----------|------------|
| Design Point (Calculated) | 1.500    | 0.7        | Kick-Flo®                 | 0.312    | 0.4        |
| Flush-Flo™                | 0.154    | 0.4        | Mean Flow over Head Range | -        | 0.5        |

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

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Hydro-Brake@ Optimum Manhole: SSW TANK 1, DS/PN: S4.001, Volume (m<sup>3</sup>): 3.1

| Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) |
|-----------|------------|-----------|------------|-----------|------------|-----------|------------|
| 0.100     | 0.4        | 1.200     | 0.6        | 3.000     | 1.0        | 7.000     | 1.4        |
| 0.200     | 0.4        | 1.400     | 0.7        | 3.500     | 1.0        | 7.500     | 1.4        |
| 0.300     | 0.4        | 1.600     | 0.7        | 4.000     | 1.1        | 8.000     | 1.5        |
| 0.400     | 0.4        | 1.800     | 0.8        | 4.500     | 1.1        | 8.500     | 1.5        |
| 0.500     | 0.4        | 2.000     | 0.8        | 5.000     | 1.2        | 9.000     | 1.6        |
| 0.600     | 0.5        | 2.200     | 0.8        | 5.500     | 1.3        | 9.500     | 1.6        |
| 0.800     | 0.5        | 2.400     | 0.9        | 6.000     | 1.3        |           |            |
| 1.000     | 0.6        | 2.600     | 0.9        | 6.500     | 1.4        |           |            |

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Storage Structures for Storm

Cellular Storage Manhole: SPVD, DS/PN: S2.001

Invert Level (m) 26.500 Safety Factor 2.0  
 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95  
 Infiltration Coefficient Side (m/hr) 0.00000

| Depth (m) | Area (m <sup>2</sup> ) | Inf. Area (m <sup>2</sup> ) | Depth (m) | Area (m <sup>2</sup> ) | Inf. Area (m <sup>2</sup> ) |
|-----------|------------------------|-----------------------------|-----------|------------------------|-----------------------------|
| 0.000     | 339.0                  | 0.0                         | 0.151     | 0.0                    | 0.0                         |
| 0.150     | 339.0                  | 0.0                         |           |                        |                             |

Tank or Pond Manhole: SSW TANK 3, DS/PN: S1.001

Invert Level (m) 23.774

| Depth (m) | Area (m <sup>2</sup> ) | Depth (m) | Area (m <sup>2</sup> ) | Depth (m) | Area (m <sup>2</sup> ) |
|-----------|------------------------|-----------|------------------------|-----------|------------------------|
| 0.000     | 21.0                   | 1.800     | 21.0                   | 1.801     | 0.0                    |

Tank or Pond Manhole: SSW TANK 2, DS/PN: S1.002


Invert Level (m) 23.466

| Depth (m) | Area (m <sup>2</sup> ) | Depth (m) | Area (m <sup>2</sup> ) | Depth (m) | Area (m <sup>2</sup> ) |
|-----------|------------------------|-----------|------------------------|-----------|------------------------|
| 0.000     | 16.0                   | 1.800     | 16.0                   | 1.801     | 0.0                    |

Tank or Pond Manhole: SSW TANK 1, DS/PN: S4.001


Invert Level (m) 25.017

| Depth (m) | Area (m <sup>2</sup> ) | Depth (m) | Area (m <sup>2</sup> ) | Depth (m) | Area (m <sup>2</sup> ) |
|-----------|------------------------|-----------|------------------------|-----------|------------------------|
| 0.000     | 24.0                   | 1.500     | 24.0                   | 1.501     | 0.0                    |

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Areas for Storm

| PN     | C. Area (ha) | PIMP (%) | Imp. Area (ha) | X (m)      | Y (m)      |
|--------|--------------|----------|----------------|------------|------------|
| S1.000 | 0.005        | 100      | 0.005          | 529267.571 | 181781.687 |
|        |              |          |                | 529264.405 | 181785.688 |
|        |              |          |                | 529265.521 | 181786.655 |
|        |              |          |                | 529265.101 | 181787.267 |
|        |              |          |                | 529268.375 | 181789.988 |
|        |              |          |                | 529267.536 | 181790.997 |
|        |              |          |                | 529269.628 | 181792.726 |
| S3.000 | 0.007        | 100      | 0.007          | 529274.082 | 181786.981 |
|        |              |          |                | 529270.961 | 181791.103 |
|        |              |          |                | 529274.117 | 181786.937 |
|        |              |          |                | 529284.314 | 181795.540 |
| S1.001 | 0.012        | 100      | 0.012          | 529280.986 | 181799.246 |
|        |              |          |                | 529259.757 | 181791.627 |
|        |              |          |                | 529273.131 | 181802.277 |
|        |              |          |                | 529277.730 | 181796.695 |
|        |              |          |                | 529270.961 | 181791.103 |
|        |              |          |                | 529269.628 | 181792.726 |
|        |              |          |                | 529267.536 | 181790.997 |
|        |              |          |                | 529268.375 | 181789.988 |
| S1.002 | 0.015        | 100      | 0.015          | 529265.101 | 181787.267 |
|        |              |          |                | 529265.521 | 181786.655 |
|        |              |          |                | 529264.666 | 181785.915 |
|        |              |          |                | 529259.757 | 181791.627 |
|        |              |          |                | 529252.636 | 181801.307 |
|        |              |          |                | 529256.887 | 181804.672 |
|        |              |          |                | 529256.482 | 181805.356 |
| S4.000 | 0.028        | 100      | 0.028          | 529261.517 | 181809.324 |
|        |              |          |                | 529269.453 | 181799.160 |
|        |              |          |                | 529244.199 | 181811.750 |
|        |              |          |                | 529235.824 | 181821.715 |
|        |              |          |                | 529253.577 | 181835.425 |
|        |              |          |                | 529261.787 | 181826.027 |
|        |              |          |                | 529253.581 | 181819.489 |
| S4.001 | 0.016        | 100      | 0.016          | 529248.425 | 181815.539 |
|        |              |          |                | 529252.636 | 181801.307 |
|        |              |          |                | 529256.887 | 181804.672 |
|        |              |          |                | 529256.482 | 181805.356 |
|        |              |          |                | 529261.517 | 181809.324 |
|        |              |          |                | 529253.581 | 181819.489 |
|        |              |          |                | 529244.199 | 181811.750 |

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000  
Hot Start (mins) 0 MADD Factor \* 10m<sup>3</sup>/ha Storage 2.000  
Hot Start Level (mm) 0 Inlet Coefficient 0.800  
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000  
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0  
Number of Online Controls 3 Number of Storage Structures 4 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.437  
Region England and Wales Cv (Summer) 0.750  
M5-60 (mm) 20.500 Cv (Winter) 0.840  
Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF  
Analysis Timestep Fine Inertia Status OFF  
DTS Status ON

Profile(s) Summer and Winter  
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720,  
960, 1440, 2160, 2880, 4320, 5760, 7200, 8640,  
10080  
Return Period(s) (years) 1, 30, 100  
Climate Change (%) 0, 0, 40

| PN     | US/MH Name  | Storm      | Return Period | Climate Change | First (X) Surchage | First (Y) Flood | First (Z) Overflow | Overflow Act. | Water Level (m) |
|--------|-------------|------------|---------------|----------------|--------------------|-----------------|--------------------|---------------|-----------------|
| S1.000 | SSW1.3      | 15 Winter  | 1             | +0%            |                    |                 |                    |               | 25.316          |
| S2.000 | SDUMMY MH 1 | 360 Winter | 1             | +0%            |                    |                 |                    |               | 26.600          |
| S2.001 | SPVD        | 240 Winter | 1             | +0%            |                    |                 |                    |               | 26.548          |
| S2.002 | SDUMMY MH 2 | 240 Winter | 1             | +0%            |                    |                 |                    |               | 26.413          |
| S2.003 | SSW1.1      | 240 Winter | 1             | +0%            |                    |                 |                    |               | 25.653          |
| S3.000 | SSW1.2      | 15 Winter  | 1             | +0%            |                    |                 |                    |               | 25.502          |
| S1.001 | SSW TANK 3  | 15 Winter  | 1             | +0%            | 100/30 Winter      |                 |                    |               | 23.800          |
| S1.002 | SSW TANK 2  | 30 Winter  | 1             | +0%            | 30/15 Summer       |                 |                    |               | 23.536          |
| S1.003 | SSW1.4      | 30 Winter  | 1             | +0%            | 30/15 Summer       |                 |                    |               | 23.532          |
| S4.000 | SSW2.1      | 15 Winter  | 1             | +0%            | 100/15 Summer      |                 |                    |               | 26.472          |
| S4.001 | SSW TANK 1  | 120 Winter | 1             | +0%            | 1/60 Winter        |                 |                    |               | 25.179          |
| S4.002 | SBD         | 15 Summer  | 1             | +0%            |                    |                 |                    |               | 23.320          |
| S1.004 | SSW1.5      | 30 Winter  | 1             | +0%            |                    |                 |                    |               | 23.310          |

| PN     | US/MH Name  | Surcharged Depth (m) | Flooded Volume (m <sup>3</sup> ) | Flow / Cap. (l/s) | Overflow (l/s) | Pipe Flow (l/s) | Status | Level Exceeded |
|--------|-------------|----------------------|----------------------------------|-------------------|----------------|-----------------|--------|----------------|
| S1.000 | SSW1.3      | -0.124               | 0.000                            | 0.07              |                | 0.8             | OK     |                |
| S2.000 | SDUMMY MH 1 | -0.250               | 0.000                            | 0.00              |                | 0.0             | OK     |                |
| S2.001 | SPVD        | -0.202               | 0.000                            | 0.03              |                | 1.7             | OK     |                |
| S2.002 | SDUMMY MH 2 | -0.237               | 0.000                            | 0.01              |                | 1.7             | OK     |                |
| S2.003 | SSW1.1      | -0.284               | 0.000                            | 0.01              |                | 1.7             | OK     |                |
| S3.000 | SSW1.2      | -0.129               | 0.000                            | 0.05              |                | 1.0             | OK     |                |
| S1.001 | SSW TANK 3  | -0.274               | 0.000                            | 0.02              |                | 2.5             | OK     |                |
| S1.002 | SSW TANK 2  | -0.080               | 0.000                            | 0.30              |                | 3.1             | OK     |                |
| S1.003 | SSW1.4      | -0.073               | 0.000                            | 0.12              |                | 3.1             | OK     |                |

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

| PN     | US/MH<br>Name | Surcharged   |                             | Flooded        |                   | Pipe<br>Flow<br>(l/s) | Status     | Level<br>Exceeded |
|--------|---------------|--------------|-----------------------------|----------------|-------------------|-----------------------|------------|-------------------|
|        |               | Depth<br>(m) | Volume<br>(m <sup>3</sup> ) | Flow /<br>Cap. | Overflow<br>(l/s) |                       |            |                   |
| S4.000 | SSW2.1        | -0.086       | 0.000                       | 0.37           |                   | 4.1                   | OK         |                   |
| S4.001 | SSW TANK 1    | 0.012        | 0.000                       | 0.02           |                   | 0.4                   | SURCHARGED |                   |
| S4.002 | SBD           | -0.131       | 0.000                       | 0.04           |                   | 0.4                   | OK         |                   |
| S1.004 | SSW1.5        | -0.200       | 0.000                       | 0.03           |                   | 3.5                   | OK         |                   |

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000    Additional Flow - % of Total Flow 0.000  
Hot Start (mins) 0    MADD Factor \* 10m<sup>3</sup>/ha Storage 2.000  
Hot Start Level (mm) 0    Inlet Coefficient 0.800  
Manhole Headloss Coeff (Global) 0.500    Flow per Person per Day (l/per/day) 0.000  
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0    Number of Offline Controls 0    Number of Time/Area Diagrams 0  
Number of Online Controls 3    Number of Storage Structures 4    Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model    FSR    Ratio R 0.437  
Region England and Wales    Cv (Summer) 0.750  
M5-60 (mm)    20.500    Cv (Winter) 0.840  
Margin for Flood Risk Warning (mm) 300.0    DVD Status OFF  
Analysis Timestep    Fine Inertia Status OFF  
DTS Status    ON

Profile(s)    Summer and Winter  
Duration(s) (mins)    15, 30, 60, 120, 180, 240, 360, 480, 600, 720,  
960, 1440, 2160, 2880, 4320, 5760, 7200, 8640,  
10080  
Return Period(s) (years)    1, 30, 100  
Climate Change (%)    0, 0, 40

| PN     | US/MH Name  | Storm      | Return Period | Climate Change | First (X) Surcharge | First (Y) Flood | First (Z) Overflow | Overflow Act. | Water Level (m) |
|--------|-------------|------------|---------------|----------------|---------------------|-----------------|--------------------|---------------|-----------------|
| S1.000 | SSW1.3      | 15 Winter  | 30            | +0%            |                     |                 |                    |               | 25.332          |
| S2.000 | SDUMMY MH 1 | 360 Winter | 30            | +0%            |                     |                 |                    |               | 26.600          |
| S2.001 | SPVD        | 120 Winter | 30            | +0%            |                     |                 |                    |               | 26.594          |
| S2.002 | SDUMMY MH 2 | 120 Winter | 30            | +0%            |                     |                 |                    |               | 26.433          |
| S2.003 | SSW1.1      | 120 Winter | 30            | +0%            |                     |                 |                    |               | 25.676          |
| S3.000 | SSW1.2      | 15 Winter  | 30            | +0%            |                     |                 |                    |               | 25.515          |
| S1.001 | SSW TANK 3  | 15 Winter  | 30            | +0%            | 100/30 Winter       |                 |                    |               | 23.824          |
| S1.002 | SSW TANK 2  | 60 Winter  | 30            | +0%            | 30/15 Summer        |                 |                    |               | 23.664          |
| S1.003 | SSW1.4      | 120 Winter | 30            | +0%            | 30/15 Summer        |                 |                    |               | 23.654          |
| S4.000 | SSW2.1      | 15 Winter  | 30            | +0%            | 100/15 Summer       |                 |                    |               | 26.521          |
| S4.001 | SSW TANK 1  | 180 Winter | 30            | +0%            | 1/60 Winter         |                 |                    |               | 25.486          |
| S4.002 | SBD         | 60 Winter  | 30            | +0%            |                     |                 |                    |               | 23.324          |
| S1.004 | SSW1.5      | 60 Winter  | 30            | +0%            |                     |                 |                    |               | 23.322          |

| PN     | US/MH Name  | Surcharged Depth (m) | Flooded Volume (m <sup>3</sup> ) | Flow / Cap. (l/s) | Overflow (l/s) | Pipe Flow (l/s) | Status     | Level Exceeded |
|--------|-------------|----------------------|----------------------------------|-------------------|----------------|-----------------|------------|----------------|
| S1.000 | SSW1.3      | -0.108               | 0.000                            | 0.17              |                | 1.9             | OK         |                |
| S2.000 | SDUMMY MH 1 | -0.250               | 0.000                            | 0.00              |                | 0.0             | OK         |                |
| S2.001 | SPVD        | -0.156               | 0.000                            | 0.11              |                | 6.3             | OK         |                |
| S2.002 | SDUMMY MH 2 | -0.217               | 0.000                            | 0.04              |                | 6.3             | OK         |                |
| S2.003 | SSW1.1      | -0.261               | 0.000                            | 0.04              |                | 6.3             | OK         |                |
| S3.000 | SSW1.2      | -0.116               | 0.000                            | 0.12              |                | 2.4             | OK         |                |
| S1.001 | SSW TANK 3  | -0.250               | 0.000                            | 0.07              |                | 9.1             | OK         |                |
| S1.002 | SSW TANK 2  | 0.048                | 0.000                            | 0.77              |                | 8.0             | SURCHARGED |                |
| S1.003 | SSW1.4      | 0.049                | 0.000                            | 0.30              |                | 7.8             | SURCHARGED |                |



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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

| PN     | US/MH<br>Name | Surcharged   |                             | Flooded        |                   | Pipe<br>Flow<br>(l/s) | Status     | Level<br>Exceeded |
|--------|---------------|--------------|-----------------------------|----------------|-------------------|-----------------------|------------|-------------------|
|        |               | Depth<br>(m) | Volume<br>(m <sup>3</sup> ) | Flow /<br>Cap. | Overflow<br>(l/s) |                       |            |                   |
| S4.000 | SSW2.1        | -0.037       | 0.000                       | 0.90           |                   | 10.2                  | OK         |                   |
| S4.001 | SSW TANK 1    | 0.319        | 0.000                       | 0.02           |                   | 0.4                   | SURCHARGED |                   |
| S4.002 | SBD           | -0.127       | 0.000                       | 0.04           |                   | 0.4                   | OK         |                   |
| S1.004 | SSW1.5        | -0.188       | 0.000                       | 0.07           |                   | 8.3                   | OK         |                   |

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000    Additional Flow - % of Total Flow 0.000  
Hot Start (mins) 0    MADD Factor \* 10m<sup>3</sup>/ha Storage 2.000  
Hot Start Level (mm) 0    Inlet Coefficient 0.800  
Manhole Headloss Coeff (Global) 0.500    Flow per Person per Day (l/per/day) 0.000  
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0    Number of Offline Controls 0    Number of Time/Area Diagrams 0  
Number of Online Controls 3    Number of Storage Structures 4    Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model    FSR    Ratio R 0.437  
Region England and Wales    Cv (Summer) 0.750  
M5-60 (mm)    20.500    Cv (Winter) 0.840  
Margin for Flood Risk Warning (mm) 300.0    DVD Status OFF  
Analysis Timestep    Fine    Inertia Status OFF  
DTS Status    ON

Profile(s)    Summer and Winter  
Duration(s) (mins)    15, 30, 60, 120, 180, 240, 360, 480, 600, 720,  
960, 1440, 2160, 2880, 4320, 5760, 7200, 8640,  
10080  
Return Period(s) (years)    1, 30, 100  
Climate Change (%)    0, 0, 40

| PN     | US/MH Name  | Storm      | Return Period | Climate Change | First (X) Surchage | First (Y) Flood | First (Z) Overflow | Overflow Act. | Water Level (m) |
|--------|-------------|------------|---------------|----------------|--------------------|-----------------|--------------------|---------------|-----------------|
| S1.000 | SSW1.3      | 15 Winter  | 100           | +40%           |                    |                 |                    |               | 25.348          |
| S2.000 | SDUMMY MH 1 | 60 Winter  | 100           | +40%           |                    |                 |                    |               | 26.689          |
| S2.001 | SPVD        | 60 Winter  | 100           | +40%           |                    |                 |                    |               | 26.691          |
| S2.002 | SDUMMY MH 2 | 60 Winter  | 100           | +40%           |                    |                 |                    |               | 26.463          |
| S2.003 | SSW1.1      | 60 Winter  | 100           | +40%           |                    |                 |                    |               | 25.712          |
| S3.000 | SSW1.2      | 15 Winter  | 100           | +40%           |                    |                 |                    |               | 25.528          |
| S1.001 | SSW TANK 3  | 120 Winter | 100           | +40%           | 100/30 Winter      |                 |                    |               | 24.383          |
| S1.002 | SSW TANK 2  | 120 Winter | 100           | +40%           | 30/15 Summer       |                 |                    |               | 24.380          |
| S1.003 | SSW1.4      | 120 Winter | 100           | +40%           | 30/15 Summer       |                 |                    |               | 24.394          |
| S4.000 | SSW2.1      | 15 Winter  | 100           | +40%           | 100/15 Summer      |                 |                    |               | 26.625          |
| S4.001 | SSW TANK 1  | 240 Winter | 100           | +40%           | 1/60 Winter        |                 |                    |               | 25.956          |
| S4.002 | SBD         | 240 Winter | 100           | +40%           |                    |                 |                    |               | 23.329          |
| S1.004 | SSW1.5      | 240 Winter | 100           | +40%           |                    |                 |                    |               | 23.326          |

| PN     | US/MH Name  | Surcharged Depth (m) | Flooded Volume (m <sup>3</sup> ) | Flow / Cap. (l/s) | Overflow (l/s) | Pipe Flow (l/s) | Status     | Level Exceeded |
|--------|-------------|----------------------|----------------------------------|-------------------|----------------|-----------------|------------|----------------|
| S1.000 | SSW1.3      | -0.092               | 0.000                            | 0.32              |                | 3.4             | OK         |                |
| S2.000 | SDUMMY MH 1 | -0.161               | 0.000                            | 0.00              |                | 0.2             | FLOOD RISK |                |
| S2.001 | SPVD        | -0.059               | 0.000                            | 0.38              |                | 20.8            | FLOOD RISK |                |
| S2.002 | SDUMMY MH 2 | -0.187               | 0.000                            | 0.14              |                | 21.0            | OK         |                |
| S2.003 | SSW1.1      | -0.225               | 0.000                            | 0.14              |                | 21.2            | OK         |                |
| S3.000 | SSW1.2      | -0.103               | 0.000                            | 0.22              |                | 4.4             | OK         |                |
| S1.001 | SSW TANK 3  | 0.309                | 0.000                            | 0.10              |                | 13.6            | SURCHARGED |                |
| S1.002 | SSW TANK 2  | 0.764                | 0.000                            | 0.93              |                | 9.6             | SURCHARGED |                |
| S1.003 | SSW1.4      | 0.789                | 0.000                            | 0.36              |                | 9.3             | SURCHARGED |                |

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

| PN     | US/MH<br>Name | Surcharged   |                             | Flooded        |                   | Pipe<br>Flow<br>(l/s) | Status     | Level<br>Exceeded |
|--------|---------------|--------------|-----------------------------|----------------|-------------------|-----------------------|------------|-------------------|
|        |               | Depth<br>(m) | Volume<br>(m <sup>3</sup> ) | Flow /<br>Cap. | Overflow<br>(l/s) |                       |            |                   |
| S4.000 | SSW2.1        | 0.067        | 0.000                       | 1.63           |                   | 18.4                  | SURCHARGED |                   |
| S4.001 | SSW TANK 1    | 0.789        | 0.000                       | 0.02           |                   | 0.6                   | SURCHARGED |                   |
| S4.002 | SBD           | -0.122       | 0.000                       | 0.05           |                   | 0.6                   | OK         |                   |
| S1.004 | SSW1.5        | -0.184       | 0.000                       | 0.08           |                   | 9.8                   | OK         |                   |