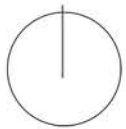


## Appendix D Indicative Masterplan



North



PROPOSED SITE LAYOUT  
BARTONS ROAD - HAVANT

6087 - SK005 - JULY 2025

**EDGINGTONS**  
ARCHITECTS

MERIDIAN HOUSE, 2 RUSSELL STREET, WINDSOR, BERKSHIRE, SL4 1HQ  
tel: 01753 857092 / email: mail@edgingtons.co.uk / web: www.edgingtons.co.uk

## Appendix E LPA Email re Sequential Test

---

**Subject:**

FW: Former SSE GEN/25/00435 - Sequential Test Question Response

---

**From:** [REDACTED]

Good morning Ben,

I have checked in with the planning policy team.

Just to confirm that according to both the national mapping and SFRA there is no current or future tidal or fluvial flood risk on the site. So a sequential test is not considered to be needed.

There is surface water risk on the site (see screenshot below), which will need ideally to be avoided, i.e. the sequential approach taken on site. However, given the extent, I assume that that won't be possible, so will need to be addressed as part of the drainage strategy.



I trust that this is helpful.

Regards

[REDACTED]

[REDACTED]

Principal Planning Officer  
Planning Services  
Havant Borough Council  
Public Service Plaza  
Civic Centre Road  
Havant  
PO9 2AX

[REDACTED]

## Appendix F Existing Run Off Calcs

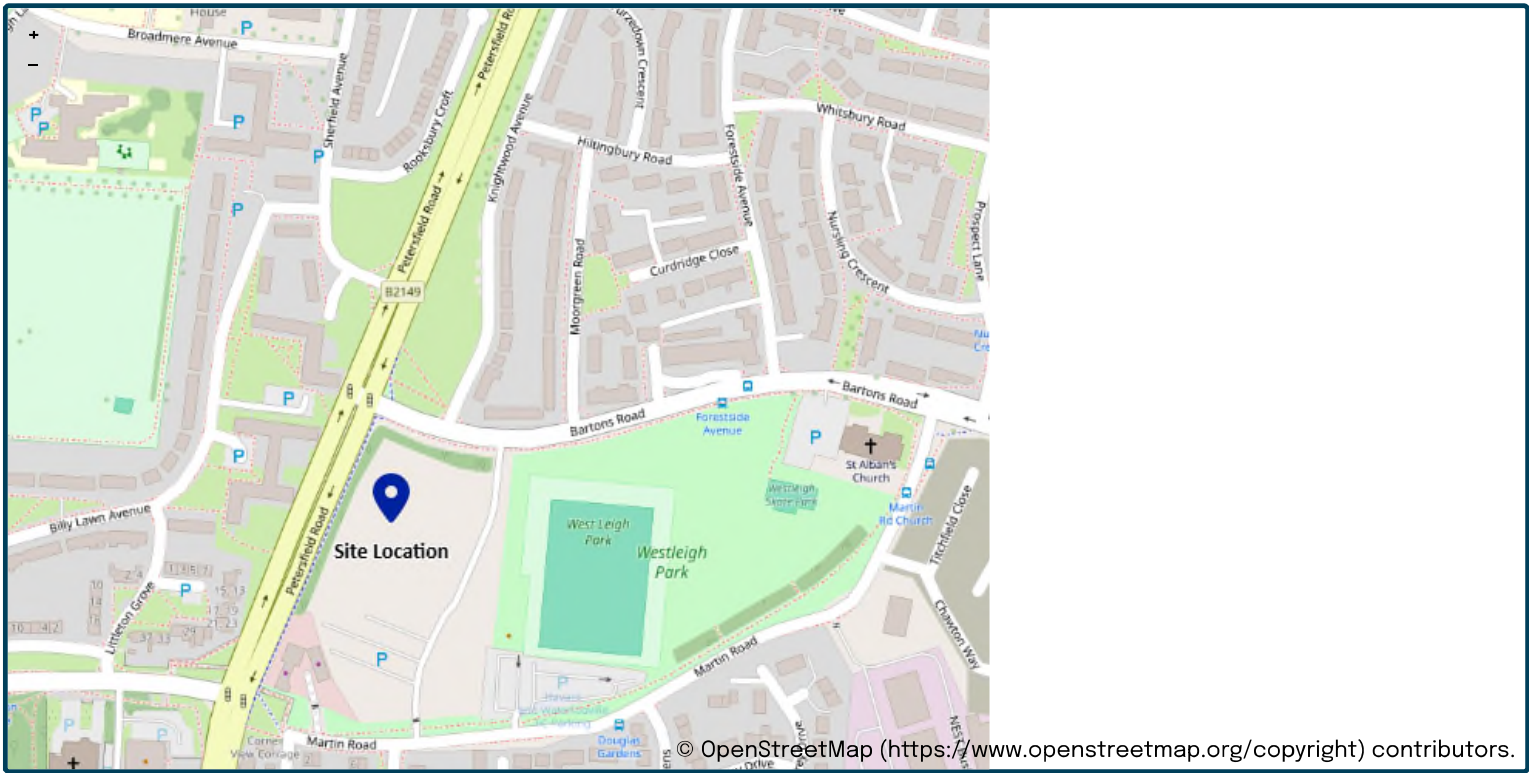
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

## Project details

|               |                                         |
|---------------|-----------------------------------------|
| Date          | <input type="text" value="22/07/2025"/> |
| Calculated by | <input type="text"/>                    |
| Reference     | <input type="text" value="24-097"/>     |
| Model version | <input type="text" value="2.0.1"/>      |

## Location

|               |                                           |
|---------------|-------------------------------------------|
| Site name     | <input type="text" value="Bartons Road"/> |
| Site location | <input type="text" value="Havant"/>       |



|               |                                     |
|---------------|-------------------------------------|
| Site easting  | <input type="text" value="472150"/> |
| Site northing | <input type="text" value="108030"/> |

## Site details

|                      |                                   |    |
|----------------------|-----------------------------------|----|
| Total site area (ha) | <input type="text" value="0.97"/> | ha |
|----------------------|-----------------------------------|----|

# Greenfield runoff

## Method

|        |                 |
|--------|-----------------|
| Method | FEH statistical |
|--------|-----------------|

## FEH statistical

|                              |                                    |     |                                    |
|------------------------------|------------------------------------|-----|------------------------------------|
|                              | <u>My value</u>                    |     | <u>Map value</u>                   |
| SAAR (mm)                    | <input type="text" value="764"/>   | mm  | <input type="text" value="764"/>   |
| BFIHOST                      | <input type="text" value="0.253"/> |     |                                    |
| QMed-QBar conversion         | <input type="text" value="1.136"/> |     | <input type="text" value="1.136"/> |
| QMed (l/s)                   | <input type="text" value="6.32"/>  | l/s |                                    |
| QBar (FEH statistical) (l/s) | <input type="text" value="7.2"/>   | l/s |                                    |

## Growth curve factors

|                        |                                   |  |                                |
|------------------------|-----------------------------------|--|--------------------------------|
|                        | <u>My value</u>                   |  | <u>Map value</u>               |
| Hydrological region    | <input type="text" value="7"/>    |  | <input type="text" value="7"/> |
| 1 year growth factor   | <input type="text" value="0.85"/> |  |                                |
| 2 year growth factor   | <input type="text" value="0.88"/> |  |                                |
| 10 year growth factor  | <input type="text" value="1.62"/> |  |                                |
| 30 year growth factor  | <input type="text" value="2.3"/>  |  |                                |
| 100 year growth factor | <input type="text" value="3.19"/> |  |                                |
| 200 year growth factor | <input type="text" value="3.74"/> |  |                                |

## Results

|                           |                                   |     |
|---------------------------|-----------------------------------|-----|
| Method                    | FEH statistical                   |     |
| Flow rate 1 year (l/s)    | <input type="text" value="6.1"/>  | l/s |
| Flow rate 2 year (l/s)    | <input type="text" value="6.3"/>  | l/s |
| Flow rate 10 years (l/s)  | <input type="text" value="11.6"/> | l/s |
| Flow rate 30 years (l/s)  | <input type="text" value="16.5"/> | l/s |
| Flow rate 100 years (l/s) | <input type="text" value="22.9"/> | l/s |
| Flow rate 200 years (l/s) | <input type="text" value="26.8"/> | l/s |

### Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.0.1) developed by HR Wallingford and available at uksuds.com (<https://www.uksuds.com/>).

The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at [uksuds.com/terms-conditions](https://www.uksuds.com/terms-conditions) (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

## Appendix G Drainage Calculations

### Design Settings

|                                      |        |                                    |               |
|--------------------------------------|--------|------------------------------------|---------------|
| Rainfall Methodology                 | FEH-22 | Minimum Velocity (m/s)             | 1.00          |
| Return Period (years)                | 100    | Connection Type                    | Level Soffits |
| Additional Flow (%)                  | 0      | Minimum Backdrop Height (m)        | 0.200         |
| CV                                   | 1.000  | Preferred Cover Depth (m)          | 1.200         |
| Time of Entry (mins)                 | 5.00   | Include Intermediate Ground        | ✓             |
| Maximum Time of Concentration (mins) | 30.00  | Enforce best practice design rules | x             |
| Maximum Rainfall (mm/hr)             | 50.0   |                                    |               |

### Nodes

| Name                   | Area<br>(ha) | T of E<br>(mins) | Cover<br>Level<br>(m) | Node<br>Type | Manhole<br>Type | Diameter<br>(mm) | Easting<br>(m) | Northing<br>(m) | Depth<br>(m) |
|------------------------|--------------|------------------|-----------------------|--------------|-----------------|------------------|----------------|-----------------|--------------|
| ✓ MH1                  | 0.015        | 5.00             | 21.810                | Manhole      | Adoptable       | 1200             | 472223.034     | 108080.295      | 1.350        |
| ✓ MH2                  | 0.012        | 5.00             | 21.300                | Manhole      | Adoptable       | 1200             | 472221.648     | 108065.154      | 1.350        |
| ✓ MH3                  | 0.010        | 5.00             | 20.800                | Manhole      | Adoptable       | 1200             | 472219.977     | 108049.848      | 1.350        |
| ✓ MH4                  | 0.008        | 5.00             | 20.560                | Manhole      | Adoptable       | 1200             | 472218.465     | 108036.131      | 1.350        |
| ✓ MH5                  | 0.011        | 5.00             | 20.280                | Manhole      | Adoptable       | 1200             | 472214.561     | 108025.939      | 1.425        |
| ✓ MH6                  | 0.011        | 5.00             | 20.100                | Manhole      | Adoptable       | 1200             | 472205.056     | 108016.190      | 1.425        |
| ✓ MH7                  | 0.008        | 5.00             | 19.850                | Manhole      | Adoptable       | 1200             | 472193.975     | 108012.078      | 1.500        |
| ✓ MH8                  | 0.018        | 5.00             | 19.800                | Manhole      | Adoptable       | 1200             | 472182.246     | 108012.650      | 1.500        |
| ✓ MH9                  | 0.008        | 5.00             | 20.300                | Manhole      | Adoptable       | 1500             | 472156.375     | 108023.647      | 2.192        |
| ✓ MH10                 | 0.016        | 5.00             | 20.800                | Manhole      | Adoptable       | 1200             | 472152.666     | 108035.172      | 2.174        |
| ✓ MH11                 | 0.000        | 5.00             | 20.770                | Manhole      | Adoptable       | 1200             | 472149.728     | 108024.824      | 1.300        |
| ✓ MH13                 | 0.000        |                  | 20.520                | Manhole      | Adoptable       | 1200             | 472148.631     | 108001.593      | 2.489        |
| ✓ MH12                 | 0.000        |                  | 20.500                | Manhole      | Adoptable       | 1500             | 472148.930     | 108015.915      | 2.425        |
| ✓ MH14                 | 0.000        |                  | 19.900                | Manhole      | Adoptable       | 1200             | 472148.163     | 107988.308      | 1.910        |
| ✓ MH15                 | 0.000        |                  | 18.970                | Manhole      | Adoptable       | 1200             | 472144.176     | 107973.694      | 1.027        |
| ✓ MH16                 | 0.019        | 5.00             | 18.900                | Manhole      | Adoptable       | 1500             | 472142.359     | 107968.349      | 1.224        |
| ✓ MH17                 | 0.013        | 5.00             | 19.100                | Manhole      | Adoptable       | 1200             | 472122.678     | 107978.402      | 1.370        |
| ✓ MH18                 | 0.012        | 5.00             | 19.220                | Manhole      | Adoptable       | 1200             | 472106.210     | 107987.440      | 1.220        |
| ✓ MH19                 | 0.011        | 5.00             | 18.880                | Manhole      | Adoptable       | 1200             | 472142.071     | 107961.422      | 1.221        |
| ✓ MH20                 | 0.020        | 5.00             | 18.600                | Manhole      | Adoptable       | 1800             | 472136.999     | 107935.138      | 0.989        |
| ✓ MH21                 | 0.039        | 5.00             | 18.600                | Manhole      | Adoptable       | 1800             | 472129.750     | 107922.411      | 1.032        |
| ✓ MH22                 | 0.000        |                  | 18.820                | Manhole      | Adoptable       | 1500             | 472127.542     | 107917.510      | 1.276        |
| ✓ Southern Water Sewer | 0.000        |                  | 18.500                | Manhole      | Adoptable       | 1500             | 472134.049     | 107900.775      | 1.030        |
| ✓ Carpark 1            | 0.010        | 5.00             | 21.500                | Junction     |                 |                  | 472218.921     | 108084.365      | 0.700        |
| ✓ Carpark 2            | 0.019        | 5.00             | 21.260                | Junction     |                 |                  | 472217.019     | 108067.349      | 0.700        |
| ✓ Carpark 3            | 0.018        | 5.00             | 20.600                | Junction     |                 |                  | 472214.029     | 108051.840      | 0.700        |
| ✓ Carpark 4            | 0.019        | 5.00             | 20.300                | Junction     |                 |                  | 472214.334     | 108033.306      | 0.700        |
| ✓ Carpark 5            | 0.012        | 5.00             | 20.060                | Junction     |                 |                  | 472213.874     | 108017.667      | 0.700        |
| ✓ Carpark 6            | 0.016        | 5.00             | 19.730                | Junction     |                 |                  | 472183.980     | 108019.218      | 1.100        |
| ✓ Carpark 7            | 0.030        | 5.00             | 19.790                | Junction     |                 |                  | 472196.118     | 108007.602      | 0.700        |
| ✓ Carpark 8&10         | 0.041        | 5.00             | 20.000                | Junction     |                 |                  | 472181.938     | 108008.527      | 1.100        |
| ✓ Carpark 11           | 0.212        | 5.00             | 20.300                | Junction     |                 |                  | 472158.903     | 108044.802      | 1.500        |
| ✓ Carpark 12           | 0.032        | 5.00             | 20.600                | Junction     |                 |                  | 472143.988     | 108028.769      | 0.700        |
| ✓ Carpark 13           | 0.015        | 5.00             | 19.100                | Junction     |                 |                  | 472101.226     | 107978.168      | 0.700        |
| ✓ Carpark 14           | 0.044        | 5.00             | 19.200                | Manhole      | Adoptable       | 1200             | 472121.623     | 107984.677      | 1.100        |
| ✓ Carpark 15           | 0.041        | 5.00             | 18.950                | Junction     |                 |                  | 472156.348     | 107963.733      | 0.700        |
| ✓ Carpark 16           | 0.013        | 5.00             | 18.880                | Junction     |                 |                  | 472134.614     | 107962.971      | 0.700        |
| ✓ Carpark 17           | 0.019        | 5.00             | 18.700                | Junction     |                 |                  | 472128.132     | 107952.133      | 0.800        |
| ✓ Carpark 18           | 0.015        | 5.00             | 18.650                | Junction     |                 |                  | 472123.419     | 107945.518      | 0.800        |
| ✓ Carpark 19           | 0.013        | 5.00             | 18.600                | Junction     |                 |                  | 472120.450     | 107931.719      | 0.810        |
| ✓ Carpark 20           | 0.022        | 5.00             | 18.650                | Junction     |                 |                  | 472146.792     | 107941.872      | 0.710        |

### Nodes

| Name                         | Area<br>(ha) | T of E<br>(mins) | Cover<br>Level<br>(m) | Node<br>Type | Manhole<br>Type | Diameter<br>(mm) | Easting<br>(m) | Northing<br>(m) | Depth<br>(m) |
|------------------------------|--------------|------------------|-----------------------|--------------|-----------------|------------------|----------------|-----------------|--------------|
| ✓ Carpark 21                 | 0.023        | 5.00             | 18.600                | Junction     |                 |                  | 472142.166     | 107935.267      | 0.710        |
| ✓ Apartment Parking and Road | 0.111        | 5.00             | 19.300                | Junction     |                 |                  | 472101.277     | 107998.539      | 0.700        |
| ✓ Carpark 9                  | 0.032        | 5.00             | 20.000                | Junction     |                 |                  | 472166.575     | 108025.213      | 1.100        |

### Links (Input)

| US<br>Node                 | DS<br>Node           | Length<br>(m) | US IL<br>(m) | DS IL<br>(m) | Fall<br>(m) | Slope<br>(1:X) | Dia<br>(mm) | Link<br>Type | T of C<br>(mins) |
|----------------------------|----------------------|---------------|--------------|--------------|-------------|----------------|-------------|--------------|------------------|
| MH1                        | MH2                  | 15.204        | 20.460       | 19.950       | 0.510       | 29.8           | 150         | 1 STANDARD   | 5.19             |
| MH2                        | MH3                  | 15.397        | 19.950       | 19.450       | 0.500       | 30.8           | 150         | 1 STANDARD   | 5.33             |
| MH3                        | MH4                  | 13.800        | 19.450       | 19.210       | 0.240       | 57.5           | 150         | 1 STANDARD   | 5.51             |
| MH4                        | MH5                  | 10.914        | 19.210       | 18.905       | 0.305       | 35.8           | 150         | 1 STANDARD   | 5.61             |
| MH5                        | MH6                  | 13.616        | 18.855       | 18.675       | 0.180       | 75.6           | 225         | 1 STANDARD   | 5.77             |
| MH6                        | MH7                  | 11.819        | 18.675       | 18.425       | 0.250       | 47.3           | 225         | 1 STANDARD   | 5.87             |
| MH7                        | MH8                  | 11.743        | 18.350       | 18.300       | 0.050       | 234.9          | 300         | 1 STANDARD   | 6.06             |
| MH8                        | MH9                  | 28.111        | 18.300       | 18.183       | 0.117       | 240.0          | 300         | 1 STANDARD   | 6.52             |
| MH10                       | MH9                  | 12.107        | 18.626       | 18.258       | 0.368       | 32.9           | 225         | 1 STANDARD   | 5.21             |
| Carpark 3                  | MH3                  | 6.273         | 19.900       | 19.500       | 0.400       | 15.7           | 100         | 1 STANDARD   | 5.05             |
| MH11                       | MH12                 | 8.945         | 19.470       | 19.000       | 0.470       | 19.0           | 100         | 1 STANDARD   | 5.14             |
| MH9                        | MH12                 | 10.734        | 18.108       | 18.075       | 0.033       | 324.0          | 375         | 1 STANDARD   | 6.70             |
| MH12                       | MH13                 | 14.325        | 18.075       | 18.031       | 0.044       | 324.0          | 375         | 1 STANDARD   | 6.94             |
| MH13                       | MH14                 | 13.293        | 18.031       | 17.990       | 0.041       | 324.0          | 375         | 1 STANDARD   | 7.16             |
| MH14                       | MH15                 | 15.148        | 17.990       | 17.943       | 0.047       | 324.0          | 375         | 1 STANDARD   | 7.41             |
| MH15                       | MH16                 | 5.645         | 17.943       | 17.751       | 0.192       | 29.4           | 375         | 1 STANDARD   | 7.44             |
| MH18                       | MH17                 | 18.785        | 18.000       | 17.880       | 0.120       | 156.5          | 300         | 1 STANDARD   | 5.41             |
| MH17                       | MH16                 | 22.100        | 17.730       | 17.676       | 0.054       | 409.3          | 450         | 1 STANDARD   | 5.78             |
| MH16                       | MH19                 | 6.933         | 17.676       | 17.659       | 0.017       | 407.8          | 450         | 1 STANDARD   | 7.56             |
| Carpark 1                  | MH1                  | 5.786         | 20.800       | 20.510       | 0.290       | 20.0           | 100         | 1 STANDARD   | 5.06             |
| Carpark 2                  | MH2                  | 5.123         | 20.560       | 20.000       | 0.560       | 9.1            | 100         | 1 STANDARD   | 5.03             |
| MH19                       | MH20                 | 19.673        | 17.659       | 17.611       | 0.048       | 409.9          | 450         | 1 STANDARD   | 7.89             |
| MH20                       | MH21                 | 17.204        | 17.611       | 17.568       | 0.043       | 400.1          | 450         | 1 STANDARD   | 8.17             |
| MH21                       | MH22                 | 9.586         | 17.568       | 17.544       | 0.024       | 399.4          | 450         | 1 STANDARD   | 8.33             |
| MH22                       | Southern Water Sewer | 17.956        | 17.544       | 17.470       | 0.074       | 242.6          | 300         | 1 STANDARD   | 8.63             |
| Carpark 4                  | MH5                  | 7.370         | 19.600       | 18.955       | 0.645       | 11.4           | 100         | 1 STANDARD   | 5.05             |
| Carpark 5                  | MH6                  | 8.941         | 19.360       | 18.800       | 0.560       | 16.0           | 100         | 1 STANDARD   | 5.08             |
| Carpark 7                  | MH7                  | 4.963         | 19.090       | 18.550       | 0.540       | 9.2            | 100         | 1 STANDARD   | 5.03             |
| Carpark 6                  | MH8                  | 6.793         | 18.630       | 18.500       | 0.130       | 52.3           | 100         | 1 STANDARD   | 5.11             |
| Carpark 8&10               | MH8                  | 4.134         | 18.900       | 18.500       | 0.400       | 10.3           | 100         | 1 STANDARD   | 5.03             |
| Carpark 11                 | MH10                 | 11.473        | 18.800       | 18.626       | 0.174       | 65.9           | 225         | 1 STANDARD   | 5.12             |
| Carpark 12                 | MH11                 | 6.965         | 19.900       | 19.470       | 0.430       | 16.2           | 100         | 1 STANDARD   | 5.06             |
| Apartment Parking and Road | MH18                 | 12.146        | 18.600       | 18.150       | 0.450       | 27.0           | 150         | 1 STANDARD   | 5.10             |
| Carpark 13                 | MH18                 | 10.527        | 18.400       | 18.200       | 0.200       | 52.6           | 100         | 1 STANDARD   | 5.16             |
| Carpark 14                 | MH17                 | 6.363         | 18.100       | 17.930       | 0.170       | 37.4           | 150         | 1 STANDARD   | 5.06             |
| Carpark 15                 | MH16                 | 14.731        | 18.250       | 18.026       | 0.224       | 65.8           | 100         | 1 STANDARD   | 5.26             |
| Carpark 16                 | MH19                 | 7.616         | 18.180       | 18.009       | 0.171       | 44.5           | 100         | 1 STANDARD   | 5.11             |
| Carpark 17                 | MH20                 | 19.169        | 17.900       | 17.675       | 0.225       | 85.2           | 150         | 1 STANDARD   | 5.29             |
| Carpark 18                 | MH20                 | 17.093        | 17.850       | 17.611       | 0.239       | 71.5           | 150         | 1 STANDARD   | 5.24             |
| Carpark 20                 | MH20                 | 11.885        | 17.940       | 17.739       | 0.201       | 59.0           | 100         | 1 STANDARD   | 5.20             |
| Carpark 19                 | MH21                 | 13.158        | 17.790       | 17.627       | 0.163       | 80.7           | 150         | 1 STANDARD   | 5.20             |
| Carpark 21                 | MH20                 | 5.169         | 17.890       | 17.611       | 0.279       | 18.5           | 100         | 1 STANDARD   | 5.05             |

### Links (Input)

| US Node   | DS Node | Length (m) | US IL (m) | DS IL (m) | Fall (m) | Slope (1:X) | Dia (mm) | Link Type  | T of C (mins) |
|-----------|---------|------------|-----------|-----------|----------|-------------|----------|------------|---------------|
| Carpark 9 | MH9     | 10.320     | 18.900    | 18.383    | 0.517    | 20.0        | 100      | 1 STANDARD | 5.10          |

### Simulation Settings

|                      |          |                            |        |                         |   |
|----------------------|----------|----------------------------|--------|-------------------------|---|
| Rainfall Methodology | FEH-22   | Analysis Speed             | Normal | Starting Level (m)      |   |
| Rainfall Events      | Singular | Skip Steady State          | x      | Check Discharge Rate(s) | x |
| Summer CV            | 1.000    | Drain Down Time (mins)     | 10080  | Check Discharge Volume  | x |
| Winter CV            | 1.000    | Additional Storage (m³/ha) | 20.0   |                         |   |

### Storm Durations

|    |     |     |     |     |      |      |      |      |       |
|----|-----|-----|-----|-----|------|------|------|------|-------|
| 15 | 60  | 180 | 360 | 600 | 960  | 2160 | 4320 | 7200 | 10080 |
| 30 | 120 | 240 | 480 | 720 | 1440 | 2880 | 5760 | 8640 |       |

| Return Period (years) | Climate Change (CC %) | Additional Area (A %) | Additional Flow (Q %) |
|-----------------------|-----------------------|-----------------------|-----------------------|
| 1                     | 0                     | 0                     | 0                     |
| 30                    | 40                    | 0                     | 0                     |
| 100                   | 45                    | 0                     | 0                     |

### Node MH22 Online Hydro-Brake® Control

|                          |        |                         |                                |
|--------------------------|--------|-------------------------|--------------------------------|
| Flap Valve               | x      | Objective               | (HE) Minimise upstream storage |
| Downstream Link          | 1.018  | Sump Available          | ✓                              |
| Replaces Downstream Link | x      | Product Number          | CTL-SHE-0122-7200-1200-7200    |
| Invert Level (m)         | 17.544 | Min Outlet Diameter (m) | 0.150                          |
| Design Depth (m)         | 1.200  | Min Node Diameter (mm)  | 1200                           |
| Design Flow (l/s)        | 7.2    |                         |                                |

### Node MH9 Online Hydro-Brake® Control

|                          |        |                         |                                |
|--------------------------|--------|-------------------------|--------------------------------|
| Flap Valve               | x      | Objective               | (HE) Minimise upstream storage |
| Downstream Link          | 1.009  | Sump Available          | ✓                              |
| Replaces Downstream Link | x      | Product Number          | CTL-SHE-0080-4000-2192-4000    |
| Invert Level (m)         | 18.108 | Min Outlet Diameter (m) | 0.100                          |
| Design Depth (m)         | 2.192  | Min Node Diameter (mm)  | 1200                           |
| Design Flow (l/s)        | 4.0    |                         |                                |

### Node MH17 Online Orifice Control

|                          |        |                   |        |                       |       |
|--------------------------|--------|-------------------|--------|-----------------------|-------|
| Flap Valve               | x      | Invert Level (m)  | 17.730 | Diameter (m)          | 0.028 |
| Downstream Link          | 12.002 | Design Depth (m)  | 1.370  | Discharge Coefficient | 0.600 |
| Replaces Downstream Link | x      | Design Flow (l/s) | 2.0    |                       |       |

### Node Carpark 1 Carpark Storage Structure

|                             |         |                           |        |               |       |
|-----------------------------|---------|---------------------------|--------|---------------|-------|
| Base Inf Coefficient (m/hr) | 0.00000 | Invert Level (m)          | 20.800 | Slope (1:X)   | 500.0 |
| Side Inf Coefficient (m/hr) | 0.00000 | Time to half empty (mins) | 0      | Depth (m)     | 0.700 |
| Safety Factor               | 2.0     | Width (m)                 | 3.600  | Inf Depth (m) |       |
| Porosity                    | 0.30    | Length (m)                | 10.000 |               |       |

### Node Carpark 2 Carpark Storage Structure

|                             |         |                           |        |               |       |
|-----------------------------|---------|---------------------------|--------|---------------|-------|
| Base Inf Coefficient (m/hr) | 0.00000 | Invert Level (m)          | 20.560 | Slope (1:X)   | 500.0 |
| Side Inf Coefficient (m/hr) | 0.00000 | Time to half empty (mins) | 0      | Depth (m)     | 0.700 |
| Safety Factor               | 2.0     | Width (m)                 | 6.800  | Inf Depth (m) |       |
| Porosity                    | 0.30    | Length (m)                | 10.000 |               |       |

### Node Carpark 3 Carpark Storage Structure

|                             |         |                           |        |               |       |
|-----------------------------|---------|---------------------------|--------|---------------|-------|
| Base Inf Coefficient (m/hr) | 0.00000 | Invert Level (m)          | 19.900 | Slope (1:X)   | 500.0 |
| Side Inf Coefficient (m/hr) | 0.00000 | Time to half empty (mins) | 10     | Depth (m)     | 0.700 |
| Safety Factor               | 2.0     | Width (m)                 | 5.500  | Inf Depth (m) |       |
| Porosity                    | 0.30    | Length (m)                | 10.000 |               |       |

### Node Carpark 4 Carpark Storage Structure

|                             |         |                           |        |               |       |
|-----------------------------|---------|---------------------------|--------|---------------|-------|
| Base Inf Coefficient (m/hr) | 0.00000 | Invert Level (m)          | 19.600 | Slope (1:X)   | 500.0 |
| Side Inf Coefficient (m/hr) | 0.00000 | Time to half empty (mins) | 0      | Depth (m)     | 0.700 |
| Safety Factor               | 2.0     | Width (m)                 | 6.500  | Inf Depth (m) |       |
| Porosity                    | 0.30    | Length (m)                | 10.000 |               |       |

### Node Carpark 5 Carpark Storage Structure

|                             |         |                           |        |               |       |
|-----------------------------|---------|---------------------------|--------|---------------|-------|
| Base Inf Coefficient (m/hr) | 0.00000 | Invert Level (m)          | 19.360 | Slope (1:X)   | 500.0 |
| Side Inf Coefficient (m/hr) | 0.00000 | Time to half empty (mins) | 0      | Depth (m)     | 0.700 |
| Safety Factor               | 2.0     | Width (m)                 | 11.900 | Inf Depth (m) |       |
| Porosity                    | 0.30    | Length (m)                | 10.000 |               |       |

### Node Carpark 6 Carpark Storage Structure

|                             |         |                           |        |               |       |
|-----------------------------|---------|---------------------------|--------|---------------|-------|
| Base Inf Coefficient (m/hr) | 0.00000 | Invert Level (m)          | 18.630 | Slope (1:X)   | 500.0 |
| Side Inf Coefficient (m/hr) | 0.00000 | Time to half empty (mins) | 1350   | Depth (m)     | 0.700 |
| Safety Factor               | 2.0     | Width (m)                 | 6.000  | Inf Depth (m) |       |
| Porosity                    | 0.30    | Length (m)                | 8.000  |               |       |

### Node Carpark 6 Depth/Area Storage Structure

|                             |         |               |      |                           |        |
|-----------------------------|---------|---------------|------|---------------------------|--------|
| Base Inf Coefficient (m/hr) | 0.00000 | Safety Factor | 2.0  | Invert Level (m)          | 18.630 |
| Side Inf Coefficient (m/hr) | 0.00000 | Porosity      | 0.95 | Time to half empty (mins) | 825    |

| 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> ) | 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     | 48.0                   | 0.0                        | 0.400     | 48.0                   | 0.0                        | 0.401     | 0.0                    | 0.0                        | 1.100     | 0.0                    | 0.0                        |

### Node Carpark 7 Carpark Storage Structure

|                             |         |                           |        |               |       |
|-----------------------------|---------|---------------------------|--------|---------------|-------|
| Base Inf Coefficient (m/hr) | 0.00000 | Invert Level (m)          | 19.090 | Slope (1:X)   | 500.0 |
| Side Inf Coefficient (m/hr) | 0.00000 | Time to half empty (mins) | 705    | Depth (m)     | 0.700 |
| Safety Factor               | 2.0     | Width (m)                 | 10.000 | Inf Depth (m) |       |
| Porosity                    | 0.30    | Length (m)                | 13.800 |               |       |

### Node Carpark 8&10 Carpark Storage Structure

|                             |         |                           |        |               |       |
|-----------------------------|---------|---------------------------|--------|---------------|-------|
| Base Inf Coefficient (m/hr) | 0.00000 | Invert Level (m)          | 19.300 | Slope (1:X)   | 500.0 |
| Side Inf Coefficient (m/hr) | 0.00000 | Time to half empty (mins) | 0      | Depth (m)     | 0.700 |
| Safety Factor               | 2.0     | Width (m)                 | 11.000 | Inf Depth (m) |       |
| Porosity                    | 0.30    | Length (m)                | 8.800  |               |       |

### Node Carpark 8&10 Depth/Area Storage Structure

|                             |         |               |      |                           |        |
|-----------------------------|---------|---------------|------|---------------------------|--------|
| Base Inf Coefficient (m/hr) | 0.00000 | Safety Factor | 2.0  | Invert Level (m)          | 18.900 |
| Side Inf Coefficient (m/hr) | 0.00000 | Porosity      | 0.95 | Time to half empty (mins) | 795    |

| 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> ) | 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     | 150.0                  | 0.0                        | 0.400     | 150.0                  | 0.0                        | 0.401     | 0.0                    | 0.0                        | 1.100     | 0.0                    | 0.0                        |

### Node Carpark 9 Carpark Storage Structure

|                             |         |                           |        |               |       |
|-----------------------------|---------|---------------------------|--------|---------------|-------|
| Base Inf Coefficient (m/hr) | 0.00000 | Invert Level (m)          | 19.300 | Slope (1:X)   | 500.0 |
| Side Inf Coefficient (m/hr) | 0.00000 | Time to half empty (mins) | 15     | Depth (m)     | 0.700 |
| Safety Factor               | 2.0     | Width (m)                 | 22.400 | Inf Depth (m) |       |
| Porosity                    | 0.30    | Length (m)                | 5.000  |               |       |

### Node Carpark 9 Depth/Area Storage Structure

|                             |         |               |      |                           |        |
|-----------------------------|---------|---------------|------|---------------------------|--------|
| Base Inf Coefficient (m/hr) | 0.00000 | Safety Factor | 2.0  | Invert Level (m)          | 18.900 |
| Side Inf Coefficient (m/hr) | 0.00000 | Porosity      | 0.30 | Time to half empty (mins) | 795    |

| 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> ) | 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     | 85.0                   | 0.0                        | 0.400     | 85.0                   | 0.0                        | 0.401     | 0.0                    | 0.0                        | 1.100     | 0.0                    | 0.0                        |

### Node Carpark 11 Carpark Storage Structure

|                             |         |                           |        |               |       |
|-----------------------------|---------|---------------------------|--------|---------------|-------|
| Base Inf Coefficient (m/hr) | 0.00000 | Invert Level (m)          | 19.600 | Slope (1:X)   | 500.0 |
| Side Inf Coefficient (m/hr) | 0.00000 | Time to half empty (mins) |        | Depth (m)     | 0.700 |
| Safety Factor               | 2.0     | Width (m)                 | 10.000 | Inf Depth (m) |       |
| Porosity                    | 0.30    | Length (m)                | 74.100 |               |       |

### Node Carpark 11 Depth/Area Storage Structure

|                             |         |               |      |                           |        |
|-----------------------------|---------|---------------|------|---------------------------|--------|
| Base Inf Coefficient (m/hr) | 0.00000 | Safety Factor | 2.0  | Invert Level (m)          | 18.800 |
| Side Inf Coefficient (m/hr) | 0.00000 | Porosity      | 0.95 | Time to half empty (mins) | 1065   |

| 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> ) | 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     | 450.0                  | 0.0                        | 0.800     | 450.0                  | 0.0                        | 0.801     | 0.0                    | 0.0                        | 1.000     | 0.0                    | 0.0                        |

### Node Carpark 12 Carpark Storage Structure

|                             |         |                           |        |               |       |
|-----------------------------|---------|---------------------------|--------|---------------|-------|
| Base Inf Coefficient (m/hr) | 0.00000 | Invert Level (m)          | 19.900 | Slope (1:X)   | 500.0 |
| Side Inf Coefficient (m/hr) | 0.00000 | Time to half empty (mins) | 0      | Depth (m)     | 0.700 |
| Safety Factor               | 2.0     | Width (m)                 | 21.500 | Inf Depth (m) |       |
| Porosity                    | 0.30    | Length (m)                | 4.000  |               |       |

### Node Carpark 13 Carpark Storage Structure

|                             |         |                           |        |               |       |
|-----------------------------|---------|---------------------------|--------|---------------|-------|
| Base Inf Coefficient (m/hr) | 0.00000 | Invert Level (m)          | 18.400 | Slope (1:X)   | 500.0 |
| Side Inf Coefficient (m/hr) | 0.00000 | Time to half empty (mins) | 1500   | Depth (m)     | 0.700 |
| Safety Factor               | 2.0     | Width (m)                 | 9.000  | Inf Depth (m) |       |
| Porosity                    | 0.30    | Length (m)                | 6.000  |               |       |

### Node Carpark 14 Carpark Storage Structure

|                             |         |                           |        |               |       |
|-----------------------------|---------|---------------------------|--------|---------------|-------|
| Base Inf Coefficient (m/hr) | 0.00000 | Invert Level (m)          | 18.500 | Slope (1:X)   | 500.0 |
| Side Inf Coefficient (m/hr) | 0.00000 | Time to half empty (mins) | 1230   | Depth (m)     | 0.700 |
| Safety Factor               | 2.0     | Width (m)                 | 22.000 | Inf Depth (m) |       |
| Porosity                    | 0.30    | Length (m)                | 5.000  |               |       |

### Node Carpark 14 Depth/Area Storage Structure

|                             |         |               |      |                           |        |
|-----------------------------|---------|---------------|------|---------------------------|--------|
| Base Inf Coefficient (m/hr) | 0.00000 | Safety Factor | 2.0  | Invert Level (m)          | 18.100 |
| Side Inf Coefficient (m/hr) | 0.00000 | Porosity      | 0.95 | Time to half empty (mins) | 180    |

| 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> ) | 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     | 50.0                   | 0.0                        | 0.400     | 50.0                   | 0.0                        | 0.401     | 0.0                    | 0.0                        | 1.100     | 0.0                    | 0.0                        |

### Node Carpark 15 Carpark Storage Structure

|                             |         |                           |        |               |       |
|-----------------------------|---------|---------------------------|--------|---------------|-------|
| Base Inf Coefficient (m/hr) | 0.00000 | Invert Level (m)          | 18.250 | Slope (1:X)   | 500.0 |
| Side Inf Coefficient (m/hr) | 0.00000 | Time to half empty (mins) | 32     | Depth (m)     | 0.700 |
| Safety Factor               | 2.0     | Width (m)                 | 22.600 | Inf Depth (m) |       |
| Porosity                    | 0.30    | Length (m)                | 5.000  |               |       |

### Node Carpark 16 Carpark Storage Structure

|                             |         |                           |        |               |       |
|-----------------------------|---------|---------------------------|--------|---------------|-------|
| Base Inf Coefficient (m/hr) | 0.00000 | Invert Level (m)          | 18.180 | Slope (1:X)   | 500.0 |
| Side Inf Coefficient (m/hr) | 0.00000 | Time to half empty (mins) | 33     | Depth (m)     | 0.700 |
| Safety Factor               | 2.0     | Width (m)                 | 3.000  | Inf Depth (m) |       |
| Porosity                    | 0.30    | Length (m)                | 7.000  |               |       |

### Node Carpark 17 Carpark Storage Structure

|                             |         |                           |        |               |       |
|-----------------------------|---------|---------------------------|--------|---------------|-------|
| Base Inf Coefficient (m/hr) | 0.00000 | Invert Level (m)          | 17.900 | Slope (1:X)   | 500.0 |
| Side Inf Coefficient (m/hr) | 0.00000 | Time to half empty (mins) | 393    | Depth (m)     | 0.700 |
| Safety Factor               | 2.0     | Width (m)                 | 6.000  | Inf Depth (m) |       |
| Porosity                    | 0.30    | Length (m)                | 6.000  |               |       |

### Node Carpark 18 Carpark Storage Structure

|                             |         |                           |        |               |       |
|-----------------------------|---------|---------------------------|--------|---------------|-------|
| Base Inf Coefficient (m/hr) | 0.00000 | Invert Level (m)          | 17.850 | Slope (1:X)   | 500.0 |
| Side Inf Coefficient (m/hr) | 0.00000 | Time to half empty (mins) | 481    | Depth (m)     | 0.700 |
| Safety Factor               | 2.0     | Width (m)                 | 10.000 | Inf Depth (m) |       |
| Porosity                    | 0.30    | Length (m)                | 4.900  |               |       |

### Node Carpark 19 Carpark Storage Structure

|                             |         |                           |        |               |       |
|-----------------------------|---------|---------------------------|--------|---------------|-------|
| Base Inf Coefficient (m/hr) | 0.00000 | Invert Level (m)          | 18.240 | Slope (1:X)   | 500.0 |
| Side Inf Coefficient (m/hr) | 0.00000 | Time to half empty (mins) | 160    | Depth (m)     | 0.360 |
| Safety Factor               | 2.0     | Width (m)                 | 7.600  | Inf Depth (m) |       |
| Porosity                    | 0.30    | Length (m)                | 5.000  |               |       |

### Node Carpark 19 Depth/Area Storage Structure

|                             |         |               |      |                           |        |
|-----------------------------|---------|---------------|------|---------------------------|--------|
| Base Inf Coefficient (m/hr) | 0.00000 | Safety Factor | 2.0  | Invert Level (m)          | 17.790 |
| Side Inf Coefficient (m/hr) | 0.00000 | Porosity      | 0.95 | Time to half empty (mins) | 416    |

| Depth<br>(m) | Area<br>(m <sup>2</sup> ) | Inf Area<br>(m <sup>2</sup> ) | Depth<br>(m) | Area<br>(m <sup>2</sup> ) | Inf Area<br>(m <sup>2</sup> ) | Depth<br>(m) | Area<br>(m <sup>2</sup> ) | Inf Area<br>(m <sup>2</sup> ) | Depth<br>(m) | Area<br>(m <sup>2</sup> ) | Inf Area<br>(m <sup>2</sup> ) |
|--------------|---------------------------|-------------------------------|--------------|---------------------------|-------------------------------|--------------|---------------------------|-------------------------------|--------------|---------------------------|-------------------------------|
| 0.000        | 38.0                      | 0.0                           | 0.450        | 38.0                      | 0.0                           | 0.451        | 0.0                       | 0.0                           | 0.810        | 0.0                       | 0.0                           |

#### Node Carpark 20 Carpark Storage Structure

|                             |         |                           |        |               |       |
|-----------------------------|---------|---------------------------|--------|---------------|-------|
| Base Inf Coefficient (m/hr) | 0.00000 | Invert Level (m)          | 18.390 | Slope (1:X)   | 500.0 |
| Side Inf Coefficient (m/hr) | 0.00000 | Time to half empty (mins) |        | Depth (m)     | 0.260 |
| Safety Factor               | 2.0     | Width (m)                 | 10.000 | Inf Depth (m) |       |
| Porosity                    | 0.30    | Length (m)                | 5.700  |               |       |

#### Node Carpark 20 Depth/Area Storage Structure

|                             |         |               |      |                           |        |
|-----------------------------|---------|---------------|------|---------------------------|--------|
| Base Inf Coefficient (m/hr) | 0.00000 | Safety Factor | 2.0  | Invert Level (m)          | 17.940 |
| Side Inf Coefficient (m/hr) | 0.00000 | Porosity      | 0.95 | Time to half empty (mins) | 536    |

| Depth<br>(m) | Area<br>(m <sup>2</sup> ) | Inf Area<br>(m <sup>2</sup> ) | Depth<br>(m) | Area<br>(m <sup>2</sup> ) | Inf Area<br>(m <sup>2</sup> ) | Depth<br>(m) | Area<br>(m <sup>2</sup> ) | Inf Area<br>(m <sup>2</sup> ) | Depth<br>(m) | Area<br>(m <sup>2</sup> ) | Inf Area<br>(m <sup>2</sup> ) |
|--------------|---------------------------|-------------------------------|--------------|---------------------------|-------------------------------|--------------|---------------------------|-------------------------------|--------------|---------------------------|-------------------------------|
| 0.000        | 62.0                      | 0.0                           | 0.450        | 62.0                      | 0.0                           | 0.451        | 0.0                       | 0.0                           | 0.710        | 0.0                       | 0.0                           |

#### Node Carpark 21 Carpark Storage Structure

|                             |         |                           |        |               |       |
|-----------------------------|---------|---------------------------|--------|---------------|-------|
| Base Inf Coefficient (m/hr) | 0.00000 | Invert Level (m)          | 18.340 | Slope (1:X)   | 500.0 |
| Side Inf Coefficient (m/hr) | 0.00000 | Time to half empty (mins) |        | Depth (m)     | 0.260 |
| Safety Factor               | 2.0     | Width (m)                 | 16.200 | Inf Depth (m) |       |
| Porosity                    | 0.30    | Length (m)                | 10.000 |               |       |

#### Node Carpark 21 Depth/Area Storage Structure

|                             |         |               |      |                           |        |
|-----------------------------|---------|---------------|------|---------------------------|--------|
| Base Inf Coefficient (m/hr) | 0.00000 | Safety Factor | 2.0  | Invert Level (m)          | 17.890 |
| Side Inf Coefficient (m/hr) | 0.00000 | Porosity      | 0.95 | Time to half empty (mins) | 544    |

| Depth<br>(m) | Area<br>(m <sup>2</sup> ) | Inf Area<br>(m <sup>2</sup> ) | Depth<br>(m) | Area<br>(m <sup>2</sup> ) | Inf Area<br>(m <sup>2</sup> ) | Depth<br>(m) | Area<br>(m <sup>2</sup> ) | Inf Area<br>(m <sup>2</sup> ) | Depth<br>(m) | Area<br>(m <sup>2</sup> ) | Inf Area<br>(m <sup>2</sup> ) |
|--------------|---------------------------|-------------------------------|--------------|---------------------------|-------------------------------|--------------|---------------------------|-------------------------------|--------------|---------------------------|-------------------------------|
| 0.000        | 161.0                     | 0.0                           | 0.450        | 161.0                     | 0.0                           | 0.451        | 0.0                       | 0.0                           | 0.710        | 0.0                       | 0.0                           |

#### Node Apartment Parking and Road Carpark Storage Structure

|                             |         |                           |         |               |       |
|-----------------------------|---------|---------------------------|---------|---------------|-------|
| Base Inf Coefficient (m/hr) | 0.00000 | Invert Level (m)          | 18.600  | Slope (1:X)   | 500.0 |
| Side Inf Coefficient (m/hr) | 0.00000 | Time to half empty (mins) | 915     | Depth (m)     | 0.700 |
| Safety Factor               | 2.0     | Width (m)                 | 142.800 | Inf Depth (m) |       |
| Porosity                    | 0.30    | Length (m)                | 5.000   |               |       |

**Results for 1 year Critical Storm Duration. Lowest mass balance: 99.94%**

| Node Event        | US Node              | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status     |
|-------------------|----------------------|-------------|-----------|-----------|--------------|---------------|------------|------------|
| 15 minute summer  | MH1                  | 11          | 20.491    | 0.031     | 3.0          | 0.0418        | 0.0000     | OK         |
| 15 minute summer  | MH2                  | 11          | 19.996    | 0.046     | 6.6          | 0.0602        | 0.0000     | OK         |
| 15 minute summer  | MH3                  | 11          | 19.521    | 0.071     | 9.7          | 0.0902        | 0.0000     | OK         |
| 15 minute summer  | MH4                  | 11          | 19.275    | 0.065     | 10.6         | 0.0816        | 0.0000     | OK         |
| 15 minute summer  | MH5                  | 11          | 18.933    | 0.078     | 13.9         | 0.1001        | 0.0000     | OK         |
| 600 minute summer | MH6                  | 435         | 18.900    | 0.225     | 3.9          | 0.2887        | 0.0000     | OK         |
| 600 minute summer | MH7                  | 435         | 18.900    | 0.550     | 4.8          | 0.6805        | 0.0000     | SURCHARGED |
| 600 minute summer | MH8                  | 435         | 18.900    | 0.600     | 6.2          | 0.8222        | 0.0000     | SURCHARGED |
| 600 minute summer | MH9                  | 435         | 18.900    | 0.792     | 5.0          | 1.4566        | 0.0000     | SURCHARGED |
| 600 minute summer | MH10                 | 435         | 18.900    | 0.274     | 3.5          | 0.3498        | 0.0000     | SURCHARGED |
| 15 minute summer  | MH11                 | 12          | 19.504    | 0.034     | 3.2          | 0.0381        | 0.0000     | OK         |
| 15 minute summer  | MH13                 | 13          | 18.092    | 0.061     | 5.9          | 0.0687        | 0.0000     | OK         |
| 15 minute summer  | MH12                 | 12          | 18.136    | 0.061     | 6.0          | 0.1074        | 0.0000     | OK         |
| 15 minute summer  | MH14                 | 13          | 18.049    | 0.059     | 5.9          | 0.0672        | 0.0000     | OK         |
| 15 minute summer  | MH15                 | 13          | 17.977    | 0.034     | 5.9          | 0.0389        | 0.0000     | OK         |
| 240 minute summer | MH16                 | 152         | 17.918    | 0.242     | 7.1          | 0.5036        | 0.0000     | OK         |
| 480 minute summer | MH17                 | 360         | 18.453    | 0.723     | 3.7          | 0.9555        | 0.0000     | SURCHARGED |
| 480 minute summer | MH18                 | 360         | 18.453    | 0.453     | 3.6          | 0.6020        | 0.0000     | SURCHARGED |
| 240 minute summer | MH19                 | 152         | 17.918    | 0.259     | 7.4          | 0.3399        | 0.0000     | OK         |
| 240 minute summer | MH20                 | 152         | 17.918    | 0.307     | 10.3         | 0.9058        | 0.0000     | OK         |
| 240 minute summer | MH21                 | 152         | 17.918    | 0.350     | 11.0         | 1.1554        | 0.0000     | OK         |
| 240 minute summer | MH22                 | 152         | 17.918    | 0.374     | 7.4          | 0.6607        | 0.0000     | SURCHARGED |
| 240 minute summer | Southern Water Sewer | 152         | 17.533    | 0.063     | 7.2          | 0.0000        | 0.0000     | OK         |
| 15 minute summer  | Carpark 1            | 11          | 20.820    | 0.020     | 1.3          | 0.1117        | 0.0000     | OK         |
| 15 minute summer  | Carpark 2            | 12          | 20.582    | 0.022     | 2.5          | 0.2644        | 0.0000     | OK         |

| Link Event<br>(Upstream Depth) | US Node   | Link   | DS Node              | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Discharge Vol (m³) |
|--------------------------------|-----------|--------|----------------------|---------------|----------------|----------|--------------------|
| 15 minute summer               | MH1       | 1.001  | MH2                  | 3.0           | 0.855          | 0.093    |                    |
| 15 minute summer               | MH2       | 1.002  | MH3                  | 6.6           | 1.039          | 0.204    |                    |
| 15 minute summer               | MH3       | 1.003  | MH4                  | 9.6           | 1.238          | 0.409    |                    |
| 15 minute summer               | MH4       | 1.004  | MH5                  | 10.5          | 1.483          | 0.352    |                    |
| 15 minute summer               | MH5       | 1.005  | MH6                  | 13.8          | 1.214          | 0.231    |                    |
| 600 minute summer              | MH6       | 1.006  | MH7                  | 3.8           | 0.768          | 0.050    |                    |
| 600 minute summer              | MH7       | 1.007  | MH8                  | 4.8           | 0.385          | 0.066    |                    |
| 600 minute summer              | MH8       | 1.008  | MH9                  | 4.1           | 0.367          | 0.057    |                    |
| 600 minute summer              | MH9       | 1.009  | MH12                 | 3.0           | 0.423          | 0.027    |                    |
| 600 minute summer              | MH10      | 9.001  | MH9                  | 3.0           | 0.691          | 0.033    |                    |
| 15 minute summer               | MH11      | 11.001 | MH12                 | 3.2           | 1.403          | 0.227    |                    |
| 15 minute summer               | MH13      | 1.011  | MH14                 | 5.9           | 0.522          | 0.054    |                    |
| 15 minute summer               | MH12      | 1.010  | MH13                 | 5.9           | 0.517          | 0.054    |                    |
| 15 minute summer               | MH14      | 1.012  | MH15                 | 5.9           | 0.759          | 0.054    |                    |
| 15 minute summer               | MH15      | 1.013  | MH16                 | 6.0           | 1.181          | 0.016    |                    |
| 240 minute summer              | MH16      | 1.014  | MH19                 | 6.3           | 0.412          | 0.040    |                    |
| 480 minute summer              | MH17      | 12.002 | MH16                 | 1.4           | 0.191          | 0.009    |                    |
| 480 minute summer              | MH18      | 12.001 | MH17                 | 3.4           | 0.324          | 0.038    |                    |
| 240 minute summer              | MH19      | 1.015  | MH20                 | 6.8           | 0.344          | 0.043    |                    |
| 240 minute summer              | MH20      | 1.016  | MH21                 | 9.3           | 0.245          | 0.058    |                    |
| 240 minute summer              | MH21      | 1.017  | MH22                 | 7.4           | 0.191          | 0.046    |                    |
| 240 minute summer              | MH22      | 1.018  | Southern Water Sewer | 7.2           | 0.644          | 0.101    | 178.3              |
| 15 minute summer               | Carpark 1 | 1.000  | MH1                  | 1.1           | 1.036          | 0.082    |                    |
| 15 minute summer               | Carpark 2 | 2.000  | MH2                  | 2.1           | 1.640          | 0.104    |                    |

**Results for 1 year Critical Storm Duration. Lowest mass balance: 99.94%**

| Node Event        | US Node                    | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status     |
|-------------------|----------------------------|-------------|-----------|-----------|--------------|---------------|------------|------------|
| 15 minute summer  | Carpark 3                  | 12          | 19.924    | 0.024     | 2.3          | 0.2527        | 0.0000     | OK         |
| 15 minute summer  | Carpark 4                  | 12          | 19.623    | 0.023     | 2.5          | 0.2745        | 0.0000     | OK         |
| 15 minute summer  | Carpark 5                  | 13          | 19.378    | 0.018     | 1.6          | 0.2826        | 0.0000     | OK         |
| 600 minute summer | Carpark 6                  | 435         | 18.900    | 0.270     | 6.2          | 16.1468       | 0.0000     | SURCHARGED |
| 15 minute summer  | Carpark 7                  | 12          | 19.117    | 0.027     | 3.9          | 0.5433        | 0.0000     | OK         |
| 120 minute summer | Carpark 8&10               | 72          | 18.919    | 0.019     | 2.7          | 2.6954        | 0.0000     | OK         |
| 600 minute summer | Carpark 11                 | 435         | 18.900    | 0.100     | 7.4          | 42.9187       | 0.0000     | OK         |
| 15 minute summer  | Carpark 12                 | 12          | 19.932    | 0.032     | 4.2          | 0.7398        | 0.0000     | OK         |
| 480 minute summer | Carpark 13                 | 360         | 18.453    | 0.053     | 0.5          | 0.7903        | 0.0000     | OK         |
| 480 minute summer | Carpark 14                 | 360         | 18.453    | 0.353     | 3.8          | 17.4643       | 0.0000     | SURCHARGED |
| 30 minute summer  | Carpark 15                 | 21          | 18.294    | 0.044     | 4.8          | 1.3572        | 0.0000     | OK         |
| 15 minute summer  | Carpark 16                 | 11          | 18.208    | 0.028     | 1.7          | 0.1461        | 0.0000     | OK         |
| 15 minute summer  | Carpark 17                 | 12          | 17.933    | 0.033     | 2.5          | 0.3100        | 0.0000     | OK         |
| 240 minute summer | Carpark 18                 | 152         | 17.918    | 0.068     | 1.0          | 0.9568        | 0.0000     | OK         |
| 240 minute summer | Carpark 19                 | 152         | 17.918    | 0.128     | 3.4          | 4.6685        | 0.0000     | OK         |
| 120 minute summer | Carpark 20                 | 72          | 17.962    | 0.022     | 1.5          | 1.3372        | 0.0000     | OK         |
| 240 minute summer | Carpark 21                 | 164         | 17.916    | 0.026     | 1.6          | 3.9321        | 0.0000     | OK         |
| 120 minute summer | Apartment Parking and Road | 72          | 18.635    | 0.035     | 7.4          | 6.5609        | 0.0000     | OK         |
| 15 minute summer  | Carpark 9                  | 12          | 18.932    | 0.032     | 4.2          | 0.8355        | 0.0000     | OK         |

| Link Event (Upstream Depth) | US Node                    | Link   | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Discharge Vol (m³) |
|-----------------------------|----------------------------|--------|---------|---------------|----------------|----------|--------------------|
| 15 minute summer            | Carpark 3                  | 3.000  | MH3     | 1.9           | 1.323          | 0.126    |                    |
| 15 minute summer            | Carpark 4                  | 4.000  | MH5     | 2.1           | 1.516          | 0.115    |                    |
| 15 minute summer            | Carpark 5                  | 5.000  | MH6     | 1.0           | 1.087          | 0.066    |                    |
| 600 minute summer           | Carpark 6                  | 7.000  | MH8     | -5.8          | -0.737         | -0.687   |                    |
| 15 minute summer            | Carpark 7                  | 6.000  | MH7     | 3.1           | 1.769          | 0.153    |                    |
| 120 minute summer           | Carpark 8&10               | 8.000  | MH8     | 1.5           | 0.907          | 0.077    |                    |
| 600 minute summer           | Carpark 11                 | 9.000  | MH10    | 3.1           | 0.720          | 0.049    |                    |
| 15 minute summer            | Carpark 12                 | 11.000 | MH11    | 3.2           | 1.446          | 0.211    |                    |
| 480 minute summer           | Carpark 13                 | 13.000 | MH18    | 0.5           | 0.561          | 0.059    |                    |
| 480 minute summer           | Carpark 14                 | 14.000 | MH17    | -2.5          | 0.461          | -0.087   |                    |
| 30 minute summer            | Carpark 15                 | 15.000 | MH16    | 2.9           | 0.883          | 0.383    |                    |
| 15 minute summer            | Carpark 16                 | 16.000 | MH19    | 1.5           | 0.854          | 0.169    |                    |
| 15 minute summer            | Carpark 17                 | 17.000 | MH20    | 2.1           | 0.647          | 0.108    |                    |
| 240 minute summer           | Carpark 18                 | 18.000 | MH20    | 0.7           | 0.167          | 0.033    |                    |
| 240 minute summer           | Carpark 19                 | 21.000 | MH21    | -2.8          | -0.194         | -0.143   |                    |
| 120 minute summer           | Carpark 20                 | 19.000 | MH20    | 0.9           | 0.404          | 0.110    |                    |
| 240 minute summer           | Carpark 21                 | 20.000 | MH20    | 1.8           | 0.328          | 0.129    |                    |
| 120 minute summer           | Apartment Parking and Road | 12.000 | MH18    | 4.1           | 1.171          | 0.120    |                    |
| 15 minute summer            | Carpark 9                  | 10.000 | MH9     | 3.0           | 1.069          | 0.220    |                    |

**Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.98%**

| Node Event        | US Node              | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status     |
|-------------------|----------------------|-------------|-----------|-----------|--------------|---------------|------------|------------|
| 15 minute summer  | MH1                  | 12          | 20.676    | 0.216     | 15.4         | 0.2928        | 0.0000     | SURCHARGED |
| 15 minute summer  | MH2                  | 12          | 20.576    | 0.626     | 29.7         | 0.8189        | 0.0000     | SURCHARGED |
| 15 minute summer  | MH3                  | 12          | 20.183    | 0.733     | 31.4         | 0.9371        | 0.0000     | SURCHARGED |
| 15 minute summer  | MH4                  | 12          | 19.860    | 0.650     | 29.6         | 0.8114        | 0.0000     | SURCHARGED |
| 15 minute summer  | MH5                  | 12          | 19.504    | 0.649     | 42.7         | 0.8341        | 0.0000     | SURCHARGED |
| 30 minute summer  | MH6                  | 20          | 19.385    | 0.710     | 50.7         | 0.9120        | 0.0000     | SURCHARGED |
| 720 minute winter | MH7                  | 705         | 19.291    | 0.941     | 8.7          | 1.1649        | 0.0000     | SURCHARGED |
| 720 minute winter | MH8                  | 705         | 19.291    | 0.991     | 9.8          | 1.3585        | 0.0000     | SURCHARGED |
| 720 minute winter | MH9                  | 705         | 19.291    | 1.183     | 7.6          | 2.1765        | 0.0000     | SURCHARGED |
| 720 minute winter | MH10                 | 705         | 19.291    | 0.665     | 5.6          | 0.8498        | 0.0000     | SURCHARGED |
| 15 minute summer  | MH11                 | 15          | 19.637    | 0.167     | 14.7         | 0.1891        | 0.0000     | SURCHARGED |
| 60 minute summer  | MH13                 | 46          | 18.323    | 0.292     | 14.3         | 0.3304        | 0.0000     | OK         |
| 60 minute summer  | MH12                 | 46          | 18.323    | 0.248     | 15.1         | 0.4381        | 0.0000     | OK         |
| 60 minute summer  | MH14                 | 46          | 18.323    | 0.333     | 12.4         | 0.3763        | 0.0000     | OK         |
| 60 minute summer  | MH15                 | 45          | 18.323    | 0.380     | 10.3         | 0.4294        | 0.0000     | SURCHARGED |
| 60 minute summer  | MH16                 | 45          | 18.323    | 0.647     | 23.2         | 1.3435        | 0.0000     | SURCHARGED |
| 480 minute winter | MH17                 | 464         | 18.915    | 1.185     | 5.0          | 1.5653        | 0.0000     | FLOOD RISK |
| 480 minute winter | MH18                 | 464         | 18.915    | 0.915     | 5.7          | 1.2151        | 0.0000     | SURCHARGED |
| 60 minute summer  | MH19                 | 45          | 18.322    | 0.663     | 26.2         | 0.8694        | 0.0000     | SURCHARGED |
| 60 minute summer  | MH20                 | 45          | 18.321    | 0.710     | 34.3         | 2.0948        | 0.0000     | FLOOD RISK |
| 60 minute summer  | MH21                 | 45          | 18.321    | 0.753     | 25.0         | 2.4871        | 0.0000     | FLOOD RISK |
| 60 minute summer  | MH22                 | 45          | 18.321    | 0.777     | 10.5         | 1.3734        | 0.0000     | SURCHARGED |
| 600 minute winter | Southern Water Sewer | 1110        | 17.533    | 0.063     | 7.2          | 0.0000        | 0.0000     | OK         |
| 15 minute summer  | Carpark 1            | 11          | 20.848    | 0.048     | 6.4          | 0.4249        | 0.0000     | OK         |
| 15 minute summer  | Carpark 2            | 13          | 20.638    | 0.078     | 12.1         | 1.4356        | 0.0000     | OK         |

| Link Event<br>(Upstream Depth) | US Node   | Link   | DS Node              | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Discharge Vol (m³) |
|--------------------------------|-----------|--------|----------------------|---------------|----------------|----------|--------------------|
| 15 minute summer               | MH1       | 1.001  | MH2                  | 13.9          | 1.205          | 0.424    |                    |
| 15 minute summer               | MH2       | 1.002  | MH3                  | 25.5          | 1.446          | 0.791    |                    |
| 15 minute summer               | MH3       | 1.003  | MH4                  | 26.1          | 1.481          | 1.110    |                    |
| 15 minute summer               | MH4       | 1.004  | MH5                  | 28.2          | 1.768          | 0.945    |                    |
| 15 minute summer               | MH5       | 1.005  | MH6                  | 42.3          | 1.311          | 0.707    |                    |
| 30 minute summer               | MH6       | 1.006  | MH7                  | 50.0          | 1.304          | 0.660    |                    |
| 720 minute winter              | MH7       | 1.007  | MH8                  | 8.6           | 0.405          | 0.119    |                    |
| 720 minute winter              | MH8       | 1.008  | MH9                  | 6.6           | 0.399          | 0.092    |                    |
| 720 minute winter              | MH9       | 1.009  | MH12                 | 3.0           | 0.428          | 0.027    |                    |
| 720 minute winter              | MH10      | 9.001  | MH9                  | -5.0          | 0.540          | -0.055   |                    |
| 15 minute summer               | MH11      | 11.001 | MH12                 | 13.3          | 1.865          | 0.951    |                    |
| 60 minute summer               | MH13      | 1.011  | MH14                 | 12.4          | 0.627          | 0.112    |                    |
| 60 minute summer               | MH12      | 1.010  | MH13                 | 14.3          | 0.639          | 0.130    |                    |
| 60 minute summer               | MH14      | 1.012  | MH15                 | 10.3          | 0.826          | 0.093    |                    |
| 60 minute summer               | MH15      | 1.013  | MH16                 | 14.2          | 1.118          | 0.038    |                    |
| 60 minute summer               | MH16      | 1.014  | MH19                 | 20.2          | 0.457          | 0.127    |                    |
| 480 minute winter              | MH17      | 12.002 | MH16                 | 5.5           | 0.210          | 0.035    |                    |
| 480 minute winter              | MH18      | 12.001 | MH17                 | 4.5           | 0.349          | 0.051    |                    |
| 60 minute summer               | MH19      | 1.015  | MH20                 | 25.9          | 0.424          | 0.163    |                    |
| 60 minute summer               | MH20      | 1.016  | MH21                 | 15.9          | 0.316          | 0.099    |                    |
| 60 minute summer               | MH21      | 1.017  | MH22                 | 10.5          | 0.361          | 0.065    |                    |
| 60 minute summer               | MH22      | 1.018  | Southern Water Sewer | 7.2           | 0.645          | 0.101    | 455.7              |
| 15 minute summer               | Carpark 1 | 1.000  | MH1                  | 6.3           | 1.613          | 0.463    |                    |
| 15 minute summer               | Carpark 2 | 2.000  | MH2                  | 8.8           | 2.122          | 0.437    |                    |

**Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.98%**

| Node Event        | US Node                    | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status     |
|-------------------|----------------------------|-------------|-----------|-----------|--------------|---------------|------------|------------|
| 30 minute summer  | Carpark 3                  | 23          | 20.192    | 0.292     | 15.8         | 4.8076        | 0.0000     | SURCHARGED |
| 15 minute summer  | Carpark 4                  | 12          | 19.676    | 0.076     | 12.1         | 1.3362        | 0.0000     | OK         |
| 30 minute summer  | Carpark 5                  | 21          | 19.411    | 0.051     | 6.9          | 1.4707        | 0.0000     | OK         |
| 720 minute winter | Carpark 6                  | 705         | 19.291    | 0.661     | 4.1          | 27.8584       | 0.0000     | SURCHARGED |
| 720 minute winter | Carpark 7                  | 705         | 19.291    | 0.201     | 1.4          | 7.9133        | 0.0000     | SURCHARGED |
| 720 minute winter | Carpark 8&10               | 705         | 19.291    | 0.391     | 5.1          | 56.0112       | 0.0000     | SURCHARGED |
| 720 minute winter | Carpark 11                 | 705         | 19.291    | 0.491     | 15.8         | 211.3160      | 0.0000     | SURCHARGED |
| 15 minute summer  | Carpark 12                 | 12          | 20.009    | 0.109     | 20.4         | 2.8017        | 0.0000     | SURCHARGED |
| 480 minute winter | Carpark 13                 | 464         | 18.915    | 0.515     | 2.5          | 8.4674        | 0.0000     | FLOOD RISK |
| 480 minute winter | Carpark 14                 | 464         | 18.915    | 0.815     | 5.5          | 34.1265       | 0.0000     | FLOOD RISK |
| 30 minute summer  | Carpark 15                 | 23          | 18.469    | 0.219     | 23.7         | 7.5256        | 0.0000     | SURCHARGED |
| 60 minute summer  | Carpark 16                 | 45          | 18.325    | 0.145     | 5.7          | 0.9245        | 0.0000     | SURCHARGED |
| 60 minute summer  | Carpark 17                 | 44          | 18.323    | 0.423     | 9.5          | 4.7083        | 0.0000     | SURCHARGED |
| 60 minute summer  | Carpark 18                 | 44          | 18.323    | 0.473     | 11.5         | 7.0562        | 0.0000     | SURCHARGED |
| 60 minute summer  | Carpark 19                 | 45          | 18.324    | 0.534     | 20.5         | 17.3372       | 0.0000     | FLOOD RISK |
| 120 minute winter | Carpark 20                 | 102         | 18.288    | 0.348     | 9.1          | 20.7063       | 0.0000     | SURCHARGED |
| 240 minute winter | Carpark 21                 | 240         | 18.275    | 0.385     | 10.8         | 59.0816       | 0.0000     | SURCHARGED |
| 480 minute winter | Apartment Parking and Road | 464         | 18.915    | 0.315     | 9.3          | 67.4511       | 0.0000     | SURCHARGED |
| 720 minute winter | Carpark 9                  | 705         | 19.291    | 0.391     | 1.5          | 10.1986       | 0.0000     | SURCHARGED |

| Link Event (Upstream Depth) | US Node                    | Link   | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Discharge Vol (m³) |
|-----------------------------|----------------------------|--------|---------|---------------|----------------|----------|--------------------|
| 30 minute summer            | Carpark 3                  | 3.000  | MH3     | 14.3          | 1.831          | 0.929    |                    |
| 15 minute summer            | Carpark 4                  | 4.000  | MH5     | 8.9           | 1.796          | 0.494    |                    |
| 30 minute summer            | Carpark 5                  | 5.000  | MH6     | 4.4           | 1.075          | 0.288    |                    |
| 720 minute winter           | Carpark 6                  | 7.000  | MH8     | -3.8          | -0.488         | -0.455   |                    |
| 720 minute winter           | Carpark 7                  | 6.000  | MH7     | 1.4           | 0.923          | 0.070    |                    |
| 720 minute winter           | Carpark 8&10               | 8.000  | MH8     | -3.1          | 0.916          | -0.165   |                    |
| 720 minute winter           | Carpark 11                 | 9.000  | MH10    | -5.6          | 0.689          | -0.087   |                    |
| 15 minute summer            | Carpark 12                 | 11.000 | MH11    | 14.7          | 1.959          | 0.970    |                    |
| 480 minute winter           | Carpark 13                 | 13.000 | MH18    | -1.7          | 0.493          | -0.204   |                    |
| 480 minute winter           | Carpark 14                 | 14.000 | MH17    | -3.7          | 0.477          | -0.126   |                    |
| 30 minute summer            | Carpark 15                 | 15.000 | MH16    | 8.0           | 1.056          | 1.078    |                    |
| 60 minute summer            | Carpark 16                 | 16.000 | MH19    | 5.5           | 1.111          | 0.602    |                    |
| 60 minute summer            | Carpark 17                 | 17.000 | MH20    | 3.2           | 0.530          | 0.165    |                    |
| 60 minute summer            | Carpark 18                 | 18.000 | MH20    | -5.0          | -0.285         | -0.238   |                    |
| 60 minute summer            | Carpark 19                 | 21.000 | MH21    | -15.1         | -0.857         | -0.762   |                    |
| 120 minute winter           | Carpark 20                 | 19.000 | MH20    | -5.2          | -0.661         | -0.655   |                    |
| 240 minute winter           | Carpark 21                 | 20.000 | MH20    | -8.5          | -1.085         | -0.600   |                    |
| 480 minute winter           | Apartment Parking and Road | 12.000 | MH18    | 5.1           | 0.924          | 0.149    |                    |
| 720 minute winter           | Carpark 9                  | 10.000 | MH9     | 1.0           | 0.703          | 0.071    |                    |

**Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.97%**

| Node Event        | US Node              | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status     |
|-------------------|----------------------|-------------|-----------|-----------|--------------|---------------|------------|------------|
| 15 minute summer  | MH1                  | 12          | 20.842    | 0.382     | 18.8         | 0.5171        | 0.0000     | SURCHARGED |
| 15 minute summer  | MH2                  | 12          | 20.703    | 0.753     | 33.4         | 0.9862        | 0.0000     | SURCHARGED |
| 30 minute summer  | MH3                  | 22          | 20.332    | 0.882     | 33.1         | 1.1284        | 0.0000     | SURCHARGED |
| 15 minute summer  | MH4                  | 12          | 19.983    | 0.773     | 30.3         | 0.9660        | 0.0000     | SURCHARGED |
| 30 minute summer  | MH5                  | 20          | 19.584    | 0.729     | 44.7         | 0.9367        | 0.0000     | SURCHARGED |
| 960 minute winter | MH6                  | 930         | 19.503    | 0.828     | 6.9          | 1.0634        | 0.0000     | SURCHARGED |
| 960 minute winter | MH7                  | 930         | 19.502    | 1.152     | 8.7          | 1.4268        | 0.0000     | SURCHARGED |
| 960 minute winter | MH8                  | 930         | 19.502    | 1.202     | 9.8          | 1.6486        | 0.0000     | FLOOD RISK |
| 960 minute winter | MH9                  | 930         | 19.502    | 1.394     | 7.6          | 2.5657        | 0.0000     | SURCHARGED |
| 960 minute winter | MH10                 | 930         | 19.502    | 0.876     | 5.6          | 1.1201        | 0.0000     | SURCHARGED |
| 15 minute summer  | MH11                 | 14          | 19.650    | 0.180     | 14.9         | 0.2030        | 0.0000     | SURCHARGED |
| 60 minute summer  | MH13                 | 42          | 18.571    | 0.540     | 15.2         | 0.6110        | 0.0000     | SURCHARGED |
| 60 minute summer  | MH12                 | 42          | 18.573    | 0.498     | 16.1         | 0.8796        | 0.0000     | SURCHARGED |
| 60 minute summer  | MH14                 | 44          | 18.570    | 0.580     | 14.9         | 0.6557        | 0.0000     | SURCHARGED |
| 60 minute summer  | MH15                 | 44          | 18.570    | 0.627     | 14.5         | 0.7095        | 0.0000     | SURCHARGED |
| 60 minute summer  | MH16                 | 44          | 18.570    | 0.894     | 24.3         | 1.8588        | 0.0000     | SURCHARGED |
| 600 minute winter | MH17                 | 585         | 19.070    | 1.340     | 4.0          | 1.7698        | 0.0000     | FLOOD RISK |
| 600 minute winter | MH18                 | 585         | 19.070    | 1.070     | 5.1          | 1.4206        | 0.0000     | FLOOD RISK |
| 60 minute summer  | MH19                 | 44          | 18.570    | 0.911     | 28.6         | 1.1948        | 0.0000     | SURCHARGED |
| 60 minute summer  | MH20                 | 43          | 18.571    | 0.960     | 37.4         | 2.8296        | 0.0000     | FLOOD RISK |
| 60 minute summer  | MH21                 | 43          | 18.572    | 1.004     | 28.5         | 3.3134        | 0.0000     | FLOOD RISK |
| 60 minute summer  | MH22                 | 43          | 18.572    | 1.028     | 10.7         | 1.8158        | 0.0000     | FLOOD RISK |
| 15 minute summer  | Southern Water Sewer | 9           | 17.533    | 0.063     | 7.2          | 0.0000        | 0.0000     | OK         |
| 15 minute summer  | Carpark 1            | 12          | 20.881    | 0.081     | 8.3          | 0.7901        | 0.0000     | OK         |
| 30 minute summer  | Carpark 2            | 22          | 20.735    | 0.175     | 14.5         | 3.4557        | 0.0000     | SURCHARGED |

| Link Event<br>(Upstream Depth) | US Node   | Link   | DS Node              | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Discharge Vol (m³) |
|--------------------------------|-----------|--------|----------------------|---------------|----------------|----------|--------------------|
| 15 minute summer               | MH1       | 1.001  | MH2                  | 16.3          | 1.142          | 0.498    |                    |
| 15 minute summer               | MH2       | 1.002  | MH3                  | 26.1          | 1.483          | 0.812    |                    |
| 30 minute summer               | MH3       | 1.003  | MH4                  | 26.9          | 1.525          | 1.144    |                    |
| 15 minute summer               | MH4       | 1.004  | MH5                  | 29.8          | 1.728          | 0.998    |                    |
| 30 minute summer               | MH5       | 1.005  | MH6                  | 44.4          | 1.213          | 0.742    |                    |
| 960 minute winter              | MH6       | 1.006  | MH7                  | 6.9           | 0.735          | 0.091    |                    |
| 960 minute winter              | MH7       | 1.007  | MH8                  | 8.6           | 0.402          | 0.119    |                    |
| 960 minute winter              | MH8       | 1.008  | MH9                  | 6.7           | 0.387          | 0.094    |                    |
| 960 minute winter              | MH9       | 1.009  | MH12                 | 3.0           | 0.430          | 0.027    |                    |
| 960 minute winter              | MH10      | 9.001  | MH9                  | -4.8          | 0.517          | -0.053   |                    |
| 15 minute summer               | MH11      | 11.001 | MH12                 | 13.6          | 1.819          | 0.973    |                    |
| 60 minute summer               | MH13      | 1.011  | MH14                 | 14.9          | 0.606          | 0.135    |                    |
| 60 minute summer               | MH12      | 1.010  | MH13                 | 15.2          | 0.630          | 0.137    |                    |
| 60 minute summer               | MH14      | 1.012  | MH15                 | 14.5          | 0.822          | 0.131    |                    |
| 60 minute summer               | MH15      | 1.013  | MH16                 | 14.4          | 1.135          | 0.039    |                    |
| 60 minute summer               | MH16      | 1.014  | MH19                 | 23.4          | 0.461          | 0.147    |                    |
| 600 minute winter              | MH17      | 12.002 | MH16                 | 4.4           | 0.209          | 0.028    |                    |
| 600 minute winter              | MH18      | 12.001 | MH17                 | 3.4           | 0.357          | 0.039    |                    |
| 60 minute summer               | MH19      | 1.015  | MH20                 | 27.8          | 0.409          | 0.175    |                    |
| 60 minute summer               | MH20      | 1.016  | MH21                 | 16.1          | 0.321          | 0.100    |                    |
| 60 minute summer               | MH21      | 1.017  | MH22                 | 10.7          | 0.388          | 0.067    |                    |
| 60 minute summer               | MH22      | 1.018  | Southern Water Sewer | 7.2           | 0.645          | 0.101    | 604.3              |
| 15 minute summer               | Carpark 1 | 1.000  | MH1                  | 6.8           | 1.642          | 0.499    |                    |
| 30 minute summer               | Carpark 2 | 2.000  | MH2                  | 12.7          | 2.117          | 0.627    |                    |

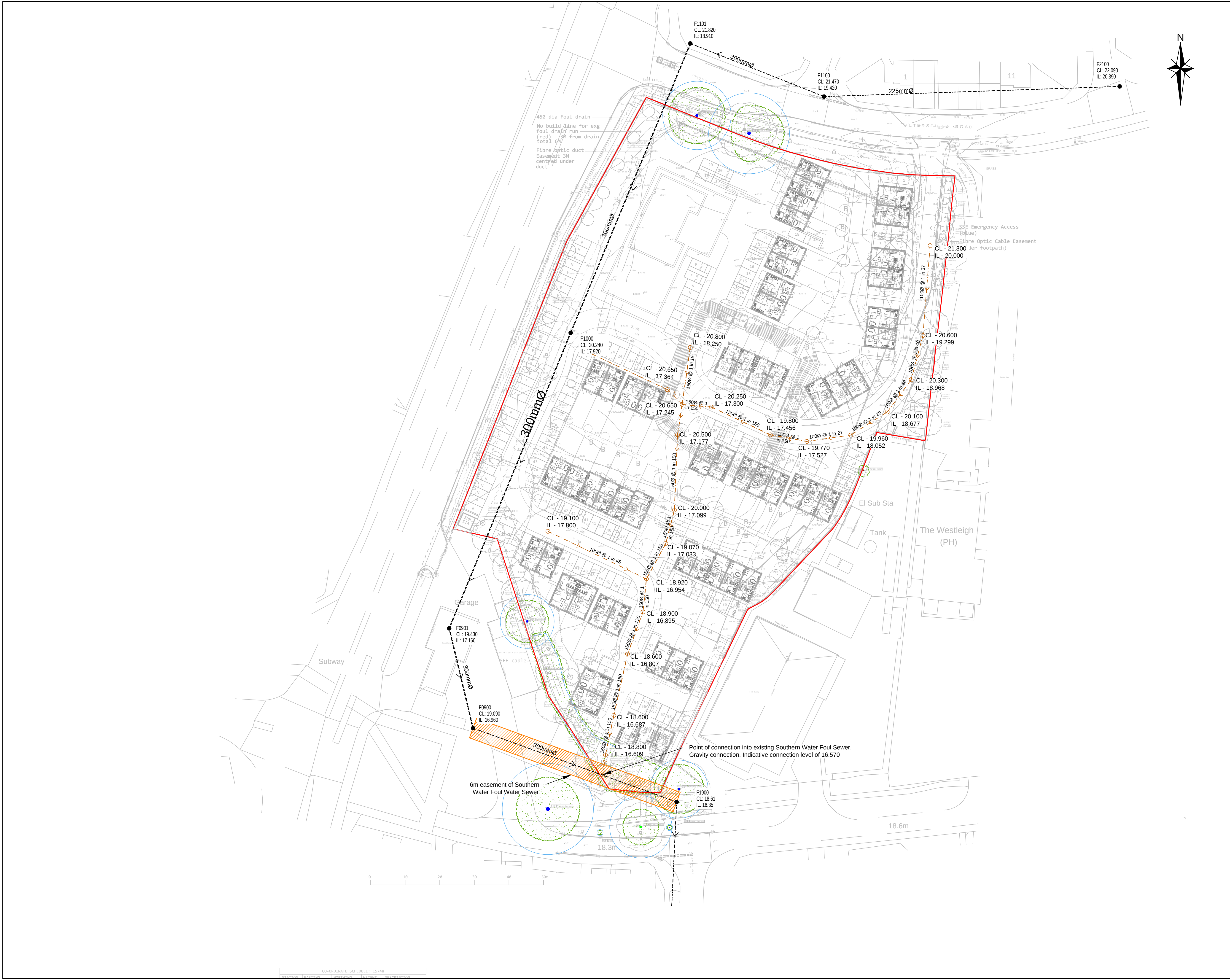
**Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.97%**

| Node Event        | US Node                    | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status     |
|-------------------|----------------------------|-------------|-----------|-----------|--------------|---------------|------------|------------|
| 30 minute summer  | Carpark 3                  | 24          | 20.350    | 0.450     | 21.6         | 7.4860        | 0.0000     | FLOOD RISK |
| 15 minute summer  | Carpark 4                  | 13          | 19.731    | 0.131     | 15.8         | 2.4366        | 0.0000     | SURCHARGED |
| 960 minute winter | Carpark 5                  | 930         | 19.503    | 0.143     | 0.7          | 4.7822        | 0.0000     | SURCHARGED |
| 960 minute winter | Carpark 6                  | 930         | 19.502    | 0.872     | 2.6          | 28.4895       | 0.0000     | FLOOD RISK |
| 960 minute winter | Carpark 7                  | 930         | 19.503    | 0.413     | 1.5          | 16.8541       | 0.0000     | FLOOD RISK |
| 960 minute winter | Carpark 8&10               | 930         | 19.503    | 0.602     | 5.1          | 63.1406       | 0.0000     | SURCHARGED |
| 960 minute winter | Carpark 11                 | 930         | 19.503    | 0.703     | 15.7         | 302.3189      | 0.0000     | SURCHARGED |
| 15 minute summer  | Carpark 12                 | 13          | 20.072    | 0.172     | 26.6         | 4.4974        | 0.0000     | SURCHARGED |
| 600 minute winter | Carpark 13                 | 585         | 19.070    | 0.670     | 2.2          | 11.0413       | 0.0000     | FLOOD RISK |
| 600 minute winter | Carpark 14                 | 585         | 19.070    | 0.970     | 4.7          | 39.5342       | 0.0000     | FLOOD RISK |
| 60 minute summer  | Carpark 15                 | 47          | 18.621    | 0.371     | 23.7         | 12.8276       | 0.0000     | SURCHARGED |
| 60 minute summer  | Carpark 16                 | 44          | 18.576    | 0.396     | 7.5          | 2.5986        | 0.0000     | SURCHARGED |
| 60 minute summer  | Carpark 17                 | 44          | 18.574    | 0.674     | 11.4         | 7.5385        | 0.0000     | FLOOD RISK |
| 60 minute summer  | Carpark 18                 | 43          | 18.573    | 0.723     | 14.1         | 10.4956       | 0.0000     | FLOOD RISK |
| 60 minute summer  | Carpark 19                 | 43          | 18.574    | 0.784     | 24.3         | 20.2655       | 0.0000     | FLOOD RISK |
| 360 minute winter | Carpark 20                 | 352         | 18.523    | 0.583     | 5.2          | 29.0233       | 0.0000     | FLOOD RISK |
| 360 minute winter | Carpark 21                 | 352         | 18.523    | 0.633     | 10.8         | 77.7332       | 0.0000     | FLOOD RISK |
| 600 minute winter | Apartment Parking and Road | 585         | 19.070    | 0.470     | 9.9          | 101.0919      | 0.0000     | FLOOD RISK |
| 960 minute winter | Carpark 9                  | 930         | 19.503    | 0.603     | 1.6          | 17.2002       | 0.0000     | SURCHARGED |

| Link Event (Upstream Depth) | US Node                    | Link   | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Discharge Vol (m³) |
|-----------------------------|----------------------------|--------|---------|---------------|----------------|----------|--------------------|
| 30 minute summer            | Carpark 3                  | 3.000  | MH3     | 14.3          | 2.024          | 0.929    |                    |
| 15 minute summer            | Carpark 4                  | 4.000  | MH5     | 9.6           | 1.855          | 0.530    |                    |
| 960 minute winter           | Carpark 5                  | 5.000  | MH6     | 0.6           | 0.637          | 0.039    |                    |
| 960 minute winter           | Carpark 6                  | 7.000  | MH8     | -2.4          | 0.561          | -0.281   |                    |
| 960 minute winter           | Carpark 7                  | 6.000  | MH7     | 1.4           | 0.923          | 0.070    |                    |
| 960 minute winter           | Carpark 8&10               | 8.000  | MH8     | -3.1          | 0.922          | -0.162   |                    |
| 960 minute winter           | Carpark 11                 | 9.000  | MH10    | -5.5          | 0.690          | -0.086   |                    |
| 15 minute summer            | Carpark 12                 | 11.000 | MH11    | 14.9          | 1.957          | 0.983    |                    |
| 600 minute winter           | Carpark 13                 | 13.000 | MH18    | -1.5          | 0.444          | -0.177   |                    |
| 600 minute winter           | Carpark 14                 | 14.000 | MH17    | -2.6          | 0.465          | -0.088   |                    |
| 60 minute summer            | Carpark 15                 | 15.000 | MH16    | 7.7           | 1.061          | 1.026    |                    |
| 60 minute summer            | Carpark 16                 | 16.000 | MH19    | 5.8           | 1.103          | 0.636    |                    |
| 60 minute summer            | Carpark 17                 | 17.000 | MH20    | 3.1           | 0.570          | 0.162    |                    |
| 60 minute summer            | Carpark 18                 | 18.000 | MH20    | -5.9          | -0.335         | -0.281   |                    |
| 60 minute summer            | Carpark 19                 | 21.000 | MH21    | -17.5         | -0.993         | -0.883   |                    |
| 360 minute winter           | Carpark 20                 | 19.000 | MH20    | -3.0          | -0.378         | -0.375   |                    |
| 360 minute winter           | Carpark 21                 | 20.000 | MH20    | -8.6          | -1.099         | -0.607   |                    |
| 600 minute winter           | Apartment Parking and Road | 12.000 | MH18    | 4.5           | 0.927          | 0.132    |                    |
| 960 minute winter           | Carpark 9                  | 10.000 | MH9     | 0.8           | 0.704          | 0.060    |                    |

## Appendix H Drainage Strategy Drawings





NOTES

1. Do not scale from this drawing.

2. This drawing is in metres unless stated otherwise.

3. Topographical Survey has been provided by others. C&A accept no liability for inaccuracies.

4. C&A Consulting Engineers Ltd cannot guarantee the authenticity or reliability of any data and/or records provided by third parties.

5. Foul water will be discharged into the Existing Thames Water Foul Water Sewer, via a new manhole. Gravity connection into Thames Water Foul Water Sewer, assumed connection level of 16.570

Key

Proposed Foul Water Network

6m Easement on Southern Water Foul Sewer

Existing Southern Water Foul Water Sewer

B

New Site Layout

A

New Site Layout

Rev

Amendments

MMSC

GC

July 25

MT

SC

GC

July 25

Rev

Amendments

Dm

Chk

App

Date

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Aylesford

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01732 448120

Issued by

Job Title

Bartons Road, Havant

Drawing Title

Foul Water Drainage Strategy

Client

Stonebond Properties (Guildford) Ltd

Scale

1:500 @ A1

Date

April 2025

Designed

MT

Drawn

MT

Checked

GAC

Approved

GAC

Job No

24-097

Drawing No

24-097-004

Rev

B



NOTES

Key

- House Catchment
- Parking Catchment
- Road Catchment

Total Catchment

House Catchment (+urban creep) = 4026m<sup>2</sup>

Parking Catchment = 2899m<sup>2</sup>

Road Catchment = 3158m<sup>2</sup>

|                       |            |     |     |     |         |
|-----------------------|------------|-----|-----|-----|---------|
| A Updated Site Layout |            | MM  | SC  | GC  | July 25 |
| Rev                   | Amendments | Drn | Chk | App | Date    |



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☒ Issued by

☐

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Park Farm

East Malling Trust Estate

Bradbourne Lane

Aylesford

Kent

ME20 6SN

01752 446120

|               |            |                                         |           |
|---------------|------------|-----------------------------------------|-----------|
| Job Title     |            | Bartons Road,<br>Havant                 |           |
| Drawing Title |            | Catchment Plan                          |           |
| Client        |            | Stonebond Properties<br>(Guildford) Ltd |           |
| Scale         | 1:500 @ A1 | Date                                    | July 2025 |
| Drawn         | MT         | Checked                                 | SAC       |
| Job No        | 24-097     | Approved                                | GAC       |
| Drawing No    |            | 24-097-013                              | Rev       |
|               |            |                                         | A         |



NOTES

Key

→

Exceedance Flow Route

A

Updated Site Layout

MMSC

GC

July 25

| Rev | Amendments | Drn | Chk | App | Date |
|-----|------------|-----|-----|-----|------|
|     |            |     |     |     |      |

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East Malling Trust Estate

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Aylesford

Kent

ME20 6SN

01753 448120

Job Title

Bartons Road,  
Havant

Drawing Title

Exceedance Flow Path Route

Client

Stonebond Properties  
(Guildford) Ltd

|            |            |          |
|------------|------------|----------|
| Scale      | Date       | Designed |
| 1:500 @ A1 | July 2025  | MT       |
| Drawn      | Checked    | Approved |
| MT         | SAC        | GAC      |
| Job No     | Drawing No | Rev      |
| 24-097     | 24-097-014 | A        |

## Appendix I Southern Water Correspondence



Joel Marques  
Charles & Associates Consulting Engineers Ltd  
Landmark House  
Hook  
Hampshire  
RG27 9HA

Your ref  
20140

Our ref  
DSA000042942

Date  
30 April 2025

Contact  
Tel 0330 303 0119

Dear Mr Marques,

**Level 1 Capacity Check Enquiry: Bartons Road, Havant, Hampshire, PO9 5HA.**

We have completed the capacity check for the above development site and the results are as follows:

### **Foul Water**

The enquiry has been reassessed to determine the capacity available for 0.81 l/s at manhole references SU720700900 and SU72071900 (Grid Reference: 472152 , 107905) .

There is currently inadequate capacity within the foul sewerage network to accommodate a foul flow of 0.81 l/s for the above development at manhole references SU720700900 and SU72071900. The proposed development would increase flows to the public sewerage system which may increase the risk of flooding to existing properties and land. Additional off-site sewers or improvements to existing sewers will be required to provide sufficient capacity to service the development. Southern Water has a duty to provide Network capacity from the point of practical connection (point of equivalent or larger diameter pipe) funded by the New Infrastructure Charge.

Southern Water aim to provide this within 24 months following the date that planning has been granted for developments not identified as strategic sites in our current business plan. Strategic sites are larger developments and will often take longer than 24 months for a full solution to be provided.

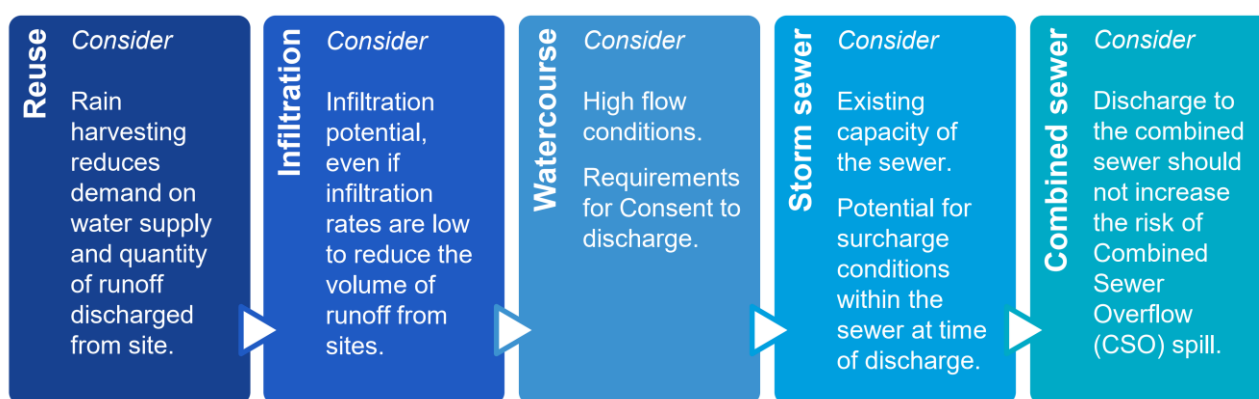
Due to extensive flooding at POCs and DG5s present, there is no alternative POC nearby. Rights are not issued for a direct connection to Wastewater Treatment Works (WTW). Please note that connection to the WTW will have to be agreed by Southern Water Services before being carried out.

## Surface Water

The enquiry has been reassessed to determine the capacity available for 6.1 l/s at manhole reference SU72071951 (Grid Reference: 472135 , 107900).

There is currently inadequate capacity within the local surface water/foul sewerage network to accommodate a flow of 6.1 l/s at manhole reference SU72071951.

In situations where surface water is being considered for discharge to our network, we require the below hierarchy for surface water to be followed which is reflected in part H3 of the Building Regulations. Whilst reuse does not strictly form part of this hierarchy, Southern Water would encourage the consideration of reuse for new developments.



Guidance on Building Regulations is here: [gov.uk/government/publications/drainage-and-waste-disposal-approved-document-h](https://gov.uk/government/publications/drainage-and-waste-disposal-approved-document-h)

We would like to engage with you on the design for disposal of surface water, with a particular focus on the potential for incorporating Sustainable Drainage Systems (SuDS), for this development at the earliest opportunity and we recommend that civil engineers and landscape architects work together and with Southern Water. In many cases this may negate or reduce the need for network reinforcement and allow earlier completion of the development.

Where a surface water connection to the foul or combined sewer is being considered, this should be agreed by the Lead Local Flood Authority, in consultation with Southern Water.

Southern Water has a duty to provide Network capacity from the point of practical connection (point of equivalent or larger diameter pipe) funded by the New Infrastructure Charge.

Southern Water aim to provide this within 24 months following the date that planning has been granted for developments not identified as strategic sites in our current business plan. Strategic sites are larger developments and will often take longer than 24 months for a full solution to be provided.

Due to extensive flooding at POCs and DG5s present, there is no alternative POC nearby.

## New Infrastructure Charging

Please note as of 1st April 2018 we have moved to the “New Connections Services Charging Arrangements”. We understand that this may cause uncertainty for customers, particularly where they may have already committed to a development based on previous charging arrangements. We have worked with our stakeholders and Water UK to agree a set of principles by which we will base our charges. Please read through our new charging arrangement documents available at the following link: [Connecting Charging Arrangements - Southern Water](#)

Alternatively, New Appointees and Variations (NAVs), also known as ‘inset’ companies, can provide new connection services or take ownership of the new water and wastewater connection infrastructure provided for a new development. NAVs are appointed by Ofwat and replace the regional water company. It is for the developer to choose whether to use a NAV or the regional water company to supply services for new sites, according to certain legal criteria.

## Connecting to our network

It should be noted that this information is only a hydraulic assessment of the existing sewerage network and does not grant approval for a connection to the public sewerage system. A formal Sewer Connection (S106) application is required to be completed and approved by Southern Water Services. To make an application visit: [developerservices.southernwater.co.uk](https://developerservices.southernwater.co.uk)

Please note the information provided above does not grant approval for any designs/drawings submitted for the capacity analysis. The results quoted above are only valid for 12 months from the date of issue of this letter. **Any revisions in flow rate or alternative point of connection will require a new Pre-Planning Application to be submitted.**

[ONLINE]

Please get in touch via the Get Connected customer dashboard if you have any queries.

[OTHER]

Should it be necessary to contact us please quote our above reference number in all communications relating to this application by email at [southernwaterplanning@southernwater.co.uk](mailto:southernwaterplanning@southernwater.co.uk)

Yours sincerely,

Future Growth Planning Team  
**Developer Services**

[southernwater.co.uk/developing-building/planning-your-development](https://southernwater.co.uk/developing-building/planning-your-development)

