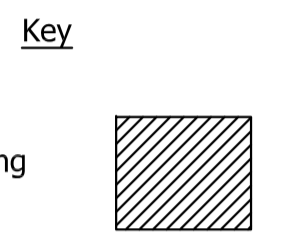


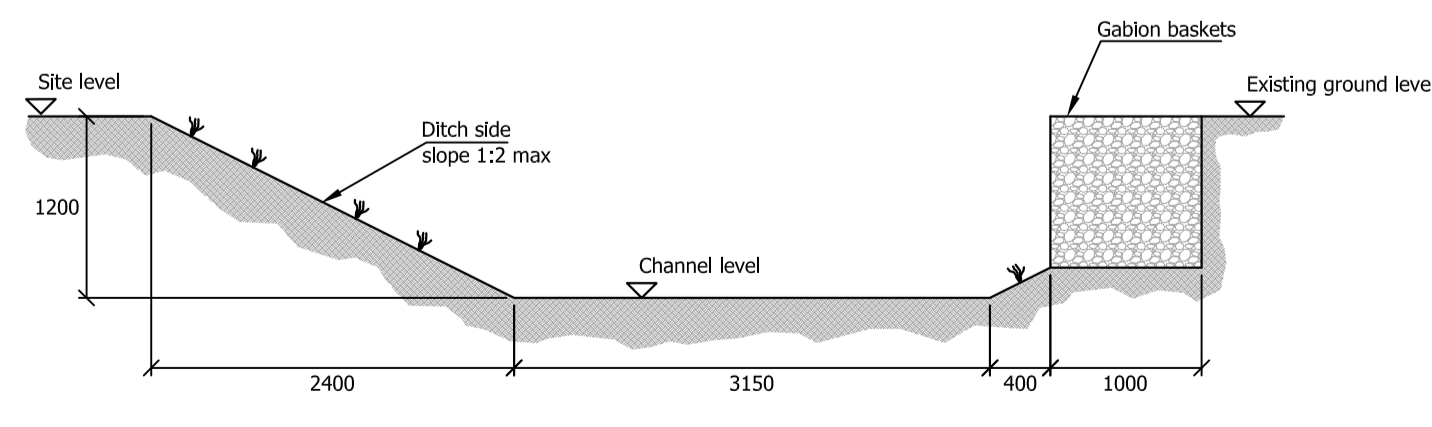
GENERAL NOTES

1. The location, size, depth and identification of existing services that may be shown or referred to on this drawing have been assessed from non-intrusive observations, record drawings or the like. The contractor shall safely carry out intrusive investigations, trial holes or soundings prior to commencing work to satisfy himself that it is safe to proceed and that the assessments are accurate. Any discrepancies shall be notified to gta prior to works commencing.
2. Tender or billing drawings shall not be used for construction or the ordering of materials.
3. Do not scale. All dimensions and levels to be site confirmed.
4. This drawing shall be read in conjunction with all relevant architects, consultants drawings and specifications, together with H&S plan requirements.
5. Copyright in this drawing must not be copied, amended nor reproduced without the prior written agreement of gta.
6. All drawings, specifications and recommendations made by gta are subject to Local Authority and other relevant Statutory Authorities approval. Any works or services made abortive due to the client's non-compliance with these approvals is considered wholly at the Client's risk. gta hold no responsibility for resulting abortive works or costs.



NOTES

Surface water storage design shown for 1 in 100 year event + 30% climate change



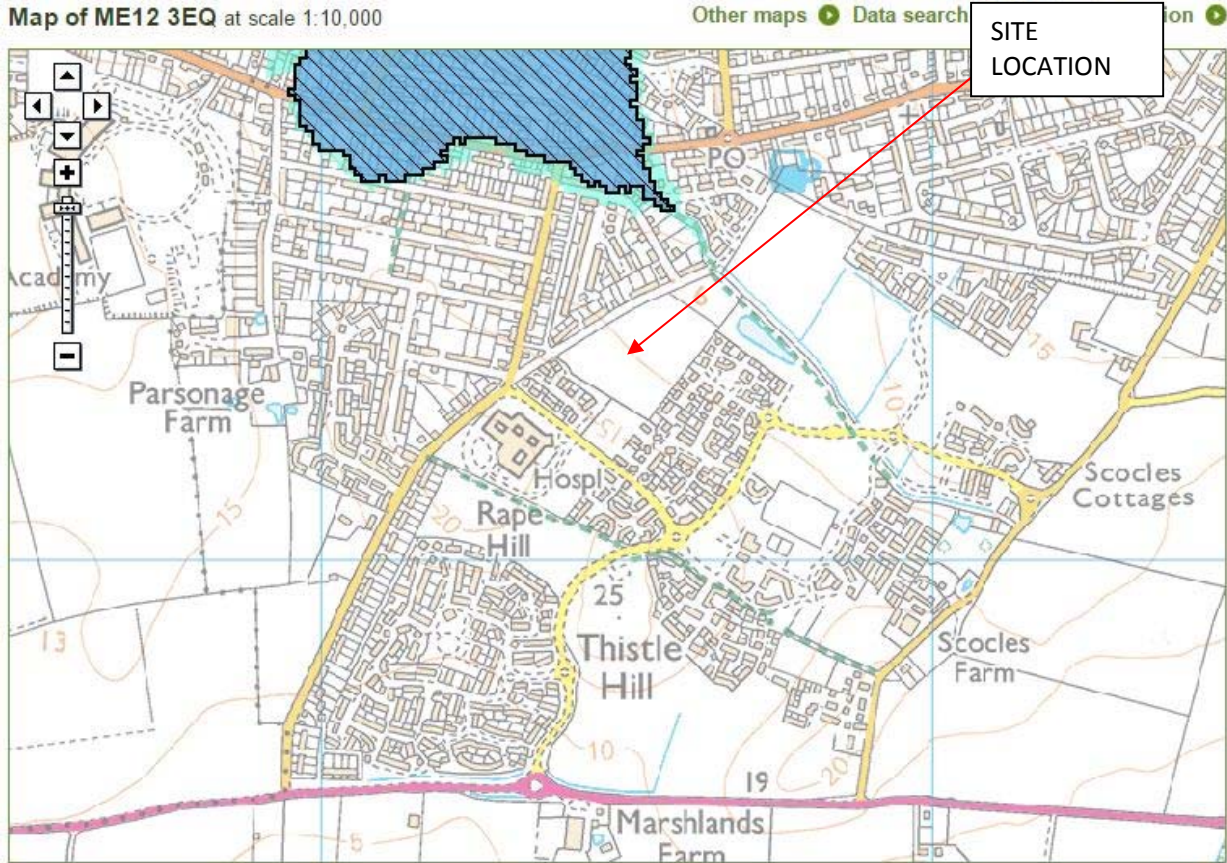
TYPICAL SECTION A-A
THROUGH DITCH/ SWALE
1:50

| Rev | Amendments | Date | Des | CHK |
|---|------------|---------------|-------|-----|
| Status PRELIMINARY | | | | |
| Client DALEMARCH SHEPPY LTD | | | | |
| Architect BDB | | | | |
| Project PROPOSED MIX DEVELOPMENT LAND OFF PLOVER ROAD, SHEPPY | | | | |
| Title SURFACE WATER DRAINAGE STRATEGY | | | | |
| Date | APRIL 2012 | Scale @ A1 | 1:500 | |
| Base Layout Ref. | | CAD File ref. | | |
| Clients Ref. | | Project Ref. | 3995 | |

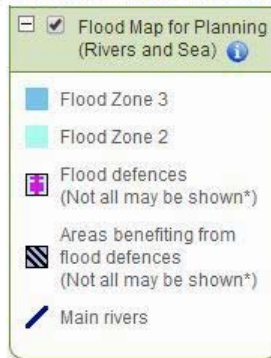
gta **civils-ltd**
CONSULTING ENGINEERS
 gloucester house, 66a church walk,
 burgess Hill, west sussex, rh15 9as
 tel.01444 871444 fax.01444 871401 web: www.gtacivils.co.uk

Drawing Number **3995/SK100** Rev. **B**

APPENDIX D: Environment Agency Flood Maps



Customers in Wales - From 1 April 2013 Natural Resources Wales (NRW) has taken over the responsibilities of the Environment Agency in Wales.
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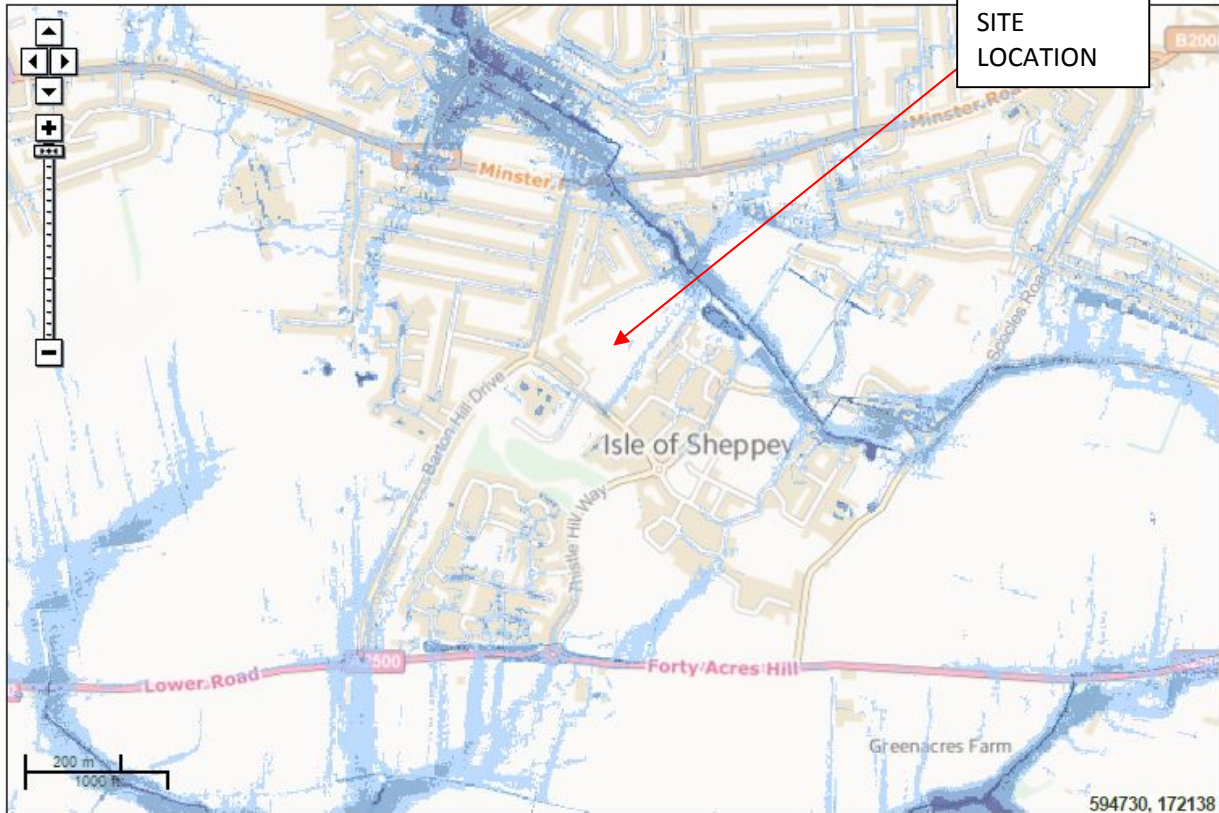


EA's Online 'Flood Map for Planning (Rivers and Sea)

The site is in FZ1

Map of ME12 3EQ at scale 1:10,000

Data search




Customers in Wales - From 1 April 2013 Natural Resources Wales (NRW) will take over the responsibilities of the Environment Agency in Wales.
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- Surface Water Depth - Low Chance of Occurring
- Over 900mm
- 300-900mm
- Below 300mm

EA's Online 'Risk of Flooding From Surface Water – Low Chance, 1 in 1000 years' Map

The site is largely clear of this risk: some dwellings and gardens along the SE boundary and NE boundary are liable to flood in the 1 in 1000 years event, ie extreme. The maximum depth is 300mm so the units will be set 0.35m above ambient ground levels in these 2 zones.

APPENDIX E: Micro Drainage Calculation

| | | |
|--|------------------------------------|---|
| GTA Civils Ltd | | Page 1 |
| Gloucester House 66a Church Walk Burgess Hill RH15 9AS | |  |
| Date 13/03/2012 17:31 File | Designed by mroberts Checked by | |
| Micro Drainage | Source Control W.12.6 | |

ICP SUDS Mean Annual Flood

Input


Return Period (years) 100 SAAR (mm) 574 Urban 0.000
Area (ha) 3.610 Soil 0.400 Region Number Region 7

Results 1/s

QBAR Rural 9.7
QBAR Urban 9.7

Q100 years 31.1

Q1 year 8.3
Q30 years 22.1
Q100 years 31.1


| | | |
|--|--|---|
| GTA Civils Ltd | | Page 1 |
| Gloucester House 66a Church Walk Burgess Hill RH15 9AS | Plover Road Residential site Swale |  |
| Date May 2012 File swale.srcx | Designed By SDL Checked By | |
| Micro Drainage | | Source Control W.12.4 |

Summary of Results for 100 year Return Period (+30%)

Half Drain Time : 188 minutes.

| Storm Event | Max Level (m) | Max Depth (m) | Max Infiltration (1/s) | Max Control (1/s) | Max Σ Outflow (1/s) | Max Volume (m ³) | Status |
|-----------------|---------------|---------------|------------------------|-------------------|----------------------------|------------------------------|------------|
| 15 min Summer | 6.581 | 0.781 | 0.0 | 20.1 | 20.1 | 264.1 | O K |
| 30 min Summer | 6.722 | 0.922 | 0.0 | 21.9 | 21.9 | 336.5 | Flood Risk |
| 60 min Summer | 6.830 | 1.030 | 0.0 | 23.1 | 23.1 | 397.2 | Flood Risk |
| 120 min Summer | 6.884 | 1.084 | 0.0 | 23.7 | 23.7 | 429.4 | Flood Risk |
| 180 min Summer | 6.883 | 1.083 | 0.0 | 23.7 | 23.7 | 428.7 | Flood Risk |
| 240 min Summer | 6.871 | 1.071 | 0.0 | 23.6 | 23.6 | 421.5 | Flood Risk |
| 360 min Summer | 6.840 | 1.040 | 0.0 | 23.3 | 23.3 | 402.9 | Flood Risk |
| 480 min Summer | 6.805 | 1.005 | 0.0 | 22.9 | 22.9 | 382.9 | Flood Risk |
| 600 min Summer | 6.770 | 0.970 | 0.0 | 22.5 | 22.5 | 363.3 | Flood Risk |
| 720 min Summer | 6.736 | 0.936 | 0.0 | 22.1 | 22.1 | 344.4 | Flood Risk |
| 960 min Summer | 6.671 | 0.871 | 0.0 | 21.3 | 21.3 | 309.4 | O K |
| 1440 min Summer | 6.551 | 0.751 | 0.0 | 19.8 | 19.8 | 249.9 | O K |
| 2160 min Summer | 6.399 | 0.599 | 0.0 | 17.7 | 17.7 | 181.8 | O K |
| 2880 min Summer | 6.269 | 0.469 | 0.0 | 16.3 | 16.3 | 130.8 | O K |
| 4320 min Summer | 6.054 | 0.254 | 0.0 | 15.9 | 15.9 | 60.5 | O K |
| 5760 min Summer | 5.994 | 0.194 | 0.0 | 13.5 | 13.5 | 44.0 | O K |
| 7200 min Summer | 5.966 | 0.166 | 0.0 | 11.5 | 11.5 | 36.7 | O K |
| 8640 min Summer | 5.948 | 0.148 | 0.0 | 9.9 | 9.9 | 32.2 | O K |

| Storm Event | Rain (mm/hr) | Time-Peak (mins) |
|-----------------|--------------|------------------|
| 15 min Summer | 128.285 | 18 |
| 30 min Summer | 84.226 | 33 |
| 60 min Summer | 52.662 | 62 |
| 120 min Summer | 31.800 | 120 |
| 180 min Summer | 23.353 | 152 |
| 240 min Summer | 18.644 | 182 |
| 360 min Summer | 13.543 | 250 |
| 480 min Summer | 10.792 | 318 |
| 600 min Summer | 9.043 | 386 |
| 720 min Summer | 7.823 | 456 |
| 960 min Summer | 6.219 | 588 |
| 1440 min Summer | 4.493 | 850 |
| 2160 min Summer | 3.241 | 1232 |
| 2880 min Summer | 2.568 | 1588 |
| 4320 min Summer | 1.847 | 2244 |
| 5760 min Summer | 1.461 | 2936 |
| 7200 min Summer | 1.217 | 3672 |
| 8640 min Summer | 1.048 | 4400 |

| | | |
|--|--|---|
| GTA Civils Ltd | | Page 2 |
| Gloucester House 66a Church Walk Burgess Hill RH15 9AS | Plover Road Residential site Swale |  |
| Date May 2012 File swale.srcx | Designed By SDL Checked By | |
| Micro Drainage | Source Control W.12.4 | |

Summary of Results for 100 year Return Period (+30%)

| Storm Event | Max Level (m) | Max Depth (m) | Max Infiltration (l/s) | Max Control (l/s) | Max Σ Outflow (l/s) | Max Volume (m ³) | Status |
|-----------------------|---------------|---------------|------------------------|-------------------|----------------------------|------------------------------|-------------------|
| 10080 min Summer | 5.935 | 0.135 | 0.0 | 8.7 | 8.7 | 29.1 | O K |
| 15 min Winter | 6.646 | 0.846 | 0.0 | 21.0 | 21.0 | 297.0 | O K |
| 30 min Winter | 6.799 | 0.999 | 0.0 | 22.8 | 22.8 | 379.7 | Flood Risk |
| 60 min Winter | 6.919 | 1.119 | 0.0 | 24.1 | 24.1 | 450.6 | Flood Risk |
| 120 min Winter | 6.987 | 1.187 | 0.0 | 24.8 | 24.8 | 493.5 | Flood Risk |
| 180 min Winter | 6.989 | 1.189 | 0.0 | 24.9 | 24.9 | 494.6 | Flood Risk |
| 240 min Winter | 6.973 | 1.173 | 0.0 | 24.7 | 24.7 | 484.1 | Flood Risk |
| 360 min Winter | 6.934 | 1.134 | 0.0 | 24.3 | 24.3 | 459.8 | Flood Risk |
| 480 min Winter | 6.888 | 1.088 | 0.0 | 23.8 | 23.8 | 431.4 | Flood Risk |
| 600 min Winter | 6.839 | 1.039 | 0.0 | 23.2 | 23.2 | 402.4 | Flood Risk |
| 720 min Winter | 6.790 | 0.990 | 0.0 | 22.7 | 22.7 | 374.5 | Flood Risk |
| 960 min Winter | 6.697 | 0.897 | 0.0 | 21.6 | 21.6 | 323.1 | O K |
| 1440 min Winter | 6.529 | 0.729 | 0.0 | 19.5 | 19.5 | 239.4 | O K |
| 2160 min Winter | 6.315 | 0.515 | 0.0 | 16.4 | 16.4 | 148.3 | O K |
| 2880 min Winter | 6.080 | 0.280 | 0.0 | 16.3 | 16.3 | 68.1 | O K |
| 4320 min Winter | 5.980 | 0.180 | 0.0 | 12.5 | 12.5 | 40.2 | O K |
| 5760 min Winter | 5.949 | 0.149 | 0.0 | 10.0 | 10.0 | 32.4 | O K |
| 7200 min Winter | 5.931 | 0.131 | 0.0 | 8.3 | 8.3 | 28.1 | O K |
| 8640 min Winter | 5.919 | 0.119 | 0.0 | 7.2 | 7.2 | 25.3 | O K |

| Storm Event | Rain (mm/hr) | Time-Peak (mins) |
|-----------------------|---------------|------------------|
| 10080 min Summer | 0.923 | 5136 |
| 15 min Winter | 128.285 | 18 |
| 30 min Winter | 84.226 | 32 |
| 60 min Winter | 52.662 | 60 |
| 120 min Winter | 31.800 | 118 |
| 180 min Winter | 23.353 | 170 |
| 240 min Winter | 18.644 | 192 |
| 360 min Winter | 13.543 | 270 |
| 480 min Winter | 10.792 | 346 |
| 600 min Winter | 9.043 | 420 |
| 720 min Winter | 7.823 | 492 |
| 960 min Winter | 6.219 | 634 |
| 1440 min Winter | 4.493 | 896 |
| 2160 min Winter | 3.241 | 1296 |
| 2880 min Winter | 2.568 | 1556 |
| 4320 min Winter | 1.847 | 2204 |
| 5760 min Winter | 1.461 | 2936 |
| 7200 min Winter | 1.217 | 3672 |
| 8640 min Winter | 1.048 | 4400 |

Gloucester House
 66a Church Walk
 Burgess Hill RH15 9AS

Plover Road
 Residential site
 Swale



Date May 2012
 File swale.srcx

Designed By SDL
 Checked By

Micro Drainage

Source Control W.12.4

Summary of Results for 100 year Return Period (+30%)

| Storm Event | Max Level (m) | Max Depth (m) | Max Infiltration (l/s) | Max Control (l/s) | Max Outflow (l/s) | Max Volume (m ³) | Status |
|------------------|---------------|--------------------|------------------------|---------------------|-------------------------|------------------------------|--------|
| 10080 min Winter | 5.910 | 0.110 | 0.0 | 6.3 | 6.3 | 23.2 | O K |
| | | Storm Event | | Rain (mm/hr) | Time-Peak (mins) | | |
| | | 10080 min Winter | | 0.923 | 5136 | | |

Gloucester House
66a Church Walk
Burgess Hill RH15 9AS

Plover Road
Residential site
Swale



Date May 2012
File swale.srcx

Designed By SDL
Checked By

Micro Drainage

Source Control W.12.4

Rainfall Details


| | | | |
|-----------------------|-------------------|-----------------------|-------|
| Rainfall Model | FSR | Winter Storms | Yes |
| Return Period (years) | 100 | Cv (Summer) | 0.750 |
| Region | England and Wales | Cv (Winter) | 0.840 |
| M5-60 (mm) | 20.000 | Shortest Storm (mins) | 15 |
| Ratio R | 0.400 | Longest Storm (mins) | 10080 |
| Summer Storms | Yes | Climate Change % | +30 |

Time / Area Diagram

Total Area (ha) 1.158

| Time (mins) | Area (ha) |
|------------------------|----------------------|
|------------------------|----------------------|

| | |
|-----|-------|
| 0-4 | 1.158 |
|-----|-------|

| | | |
|--|--|---|
| GTA Civils Ltd | | Page 5 |
| Gloucester House 66a Church Walk Burgess Hill RH15 9AS | Plover Road Residential site Swale |  |
| Date May 2012 File swale.srcx | Designed By SDL Checked By | |
| Micro Drainage | Source Control W.12.4 | |

Model Details

Storage is Online Cover Level (m) 7.000

Swale Structure

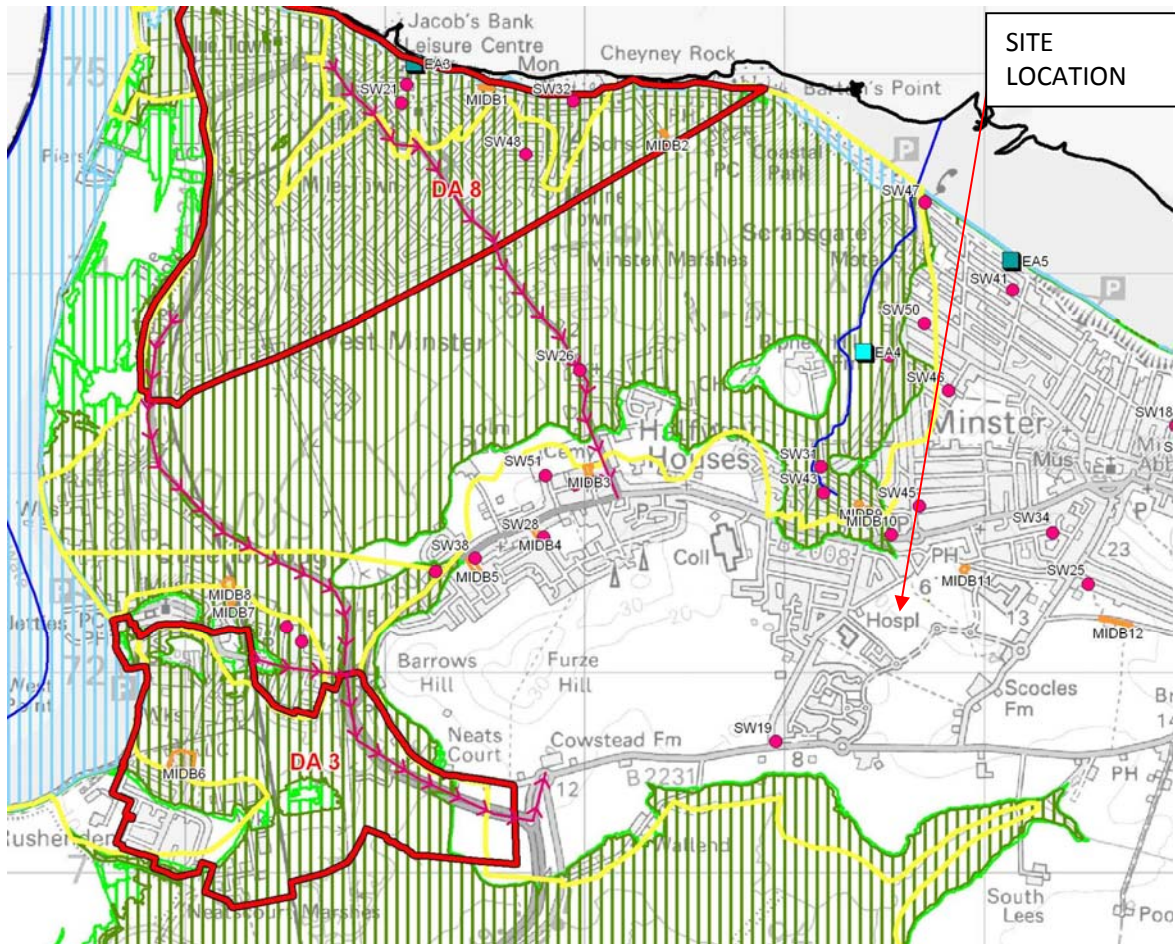
| | | | |
|--------------------------------------|---------|----------------------------|-------|
| Infiltration Coefficient Base (m/hr) | 0.00000 | Length (m) | 95.0 |
| Infiltration Coefficient Side (m/hr) | 0.00000 | Side Slope (1:X) | 2.0 |
| Safety Factor | 2.0 | Slope (1:X) | 0.0 |
| Porosity | 1.00 | Cap Volume Depth (m) | 0.000 |
| Invert Level (m) | 5.800 | Cap Infiltration Depth (m) | 0.000 |
| Base Width (m) | 2.0 | | |

Hydro-Brake® Outflow Control

Design Head (m) 1.200 Hydro-Brake® Type Md3 Invert Level (m) 5.800
Design Flow (l/s) 25.0 Diameter (mm) 153

| Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) |
|-----------|------------|-----------|------------|-----------|------------|-----------|------------|
| 0.100 | 5.4 | 1.200 | 25.0 | 3.000 | 39.5 | 7.000 | 60.3 |
| 0.200 | 13.8 | 1.400 | 27.0 | 3.500 | 42.7 | 7.500 | 62.4 |
| 0.300 | 16.3 | 1.600 | 28.8 | 4.000 | 45.6 | 8.000 | 64.5 |
| 0.400 | 15.3 | 1.800 | 30.6 | 4.500 | 48.4 | 8.500 | 66.5 |
| 0.500 | 16.2 | 2.000 | 32.2 | 5.000 | 51.0 | 9.000 | 68.4 |
| 0.600 | 17.7 | 2.200 | 33.8 | 5.500 | 53.5 | 9.500 | 70.3 |
| 0.800 | 20.4 | 2.400 | 35.3 | 6.000 | 55.9 | | |
| 1.000 | 22.8 | 2.600 | 36.8 | 6.500 | 58.1 | | |

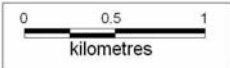
APPENDIX F: SFRA Maps



LEGEND

| | | | | | |
|--|-------------------------------------|--|---|--|--|
| | Main Rivers | | Evacuation routes | | EA 0 Flooding from other sources |
| | SW 0 | | Swale Borough Boundary | | EA 1 Tidal flooding |
| | Area Action Plan & Development Area | | Lower Medway Internal Drainage Board Data | | EA 2 Fluvial flooding |
| | Flood Zone 2 | | Drainage Board Data | | EA 3 Groundwater flooding |
| | Flood Zone 3a | | Flushing from other sources | | Flood extents of 1953 event (tidal) |
| | Flood Zone 3b | | Tidal flooding | | Flood extents of 1978 event (mainly tidal, some fluvial) |

Note: Due to the volume of data displayed on this map not all features are labelled. All the information is available in a GIS format supplied as part of this SFRA.



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APPENDIX G: Southern Water Correspondence