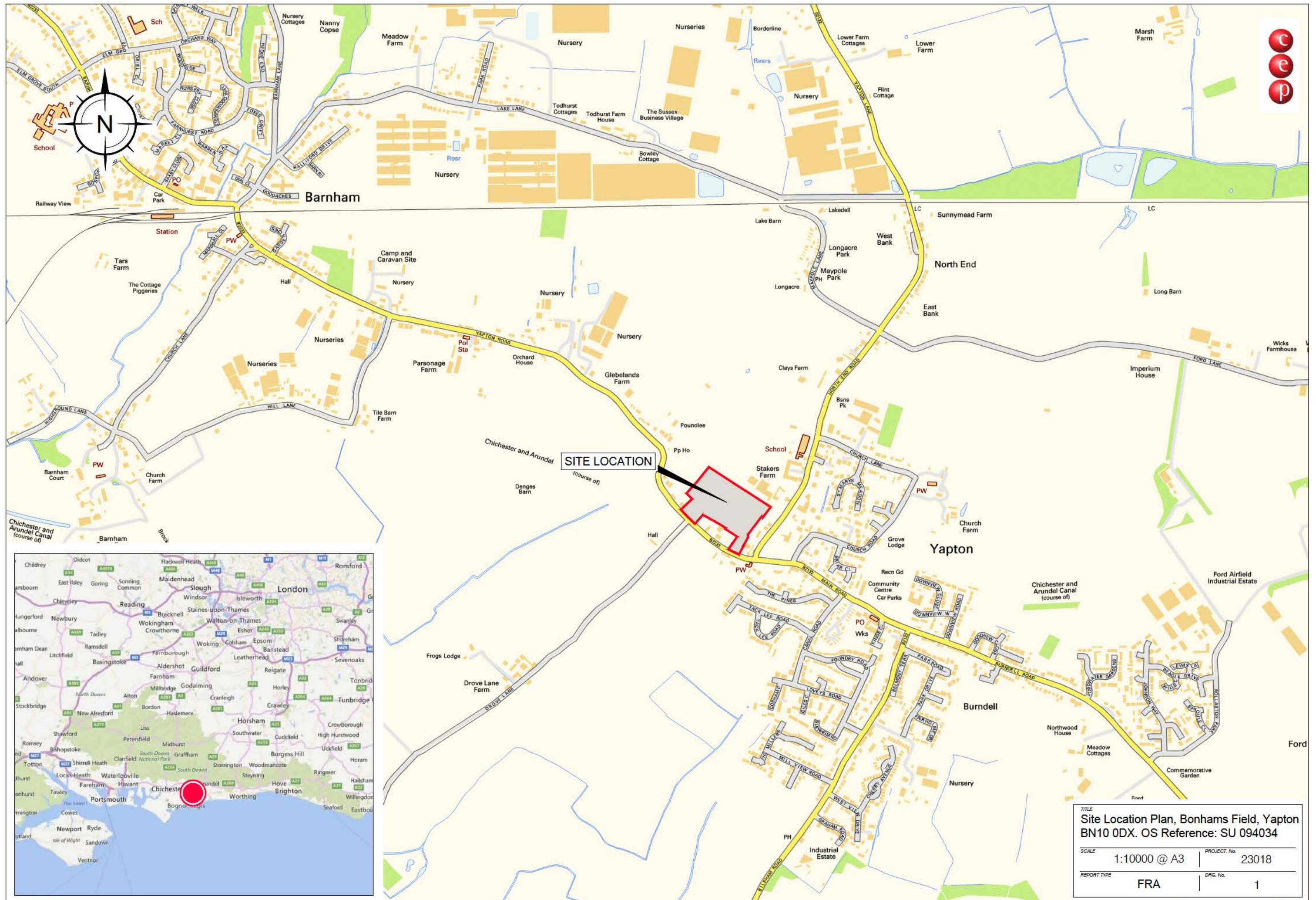


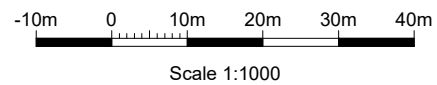
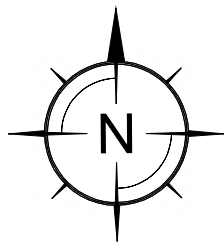
# **Appendix 1**

## **Site Location Plan**



## **Appendix 2**

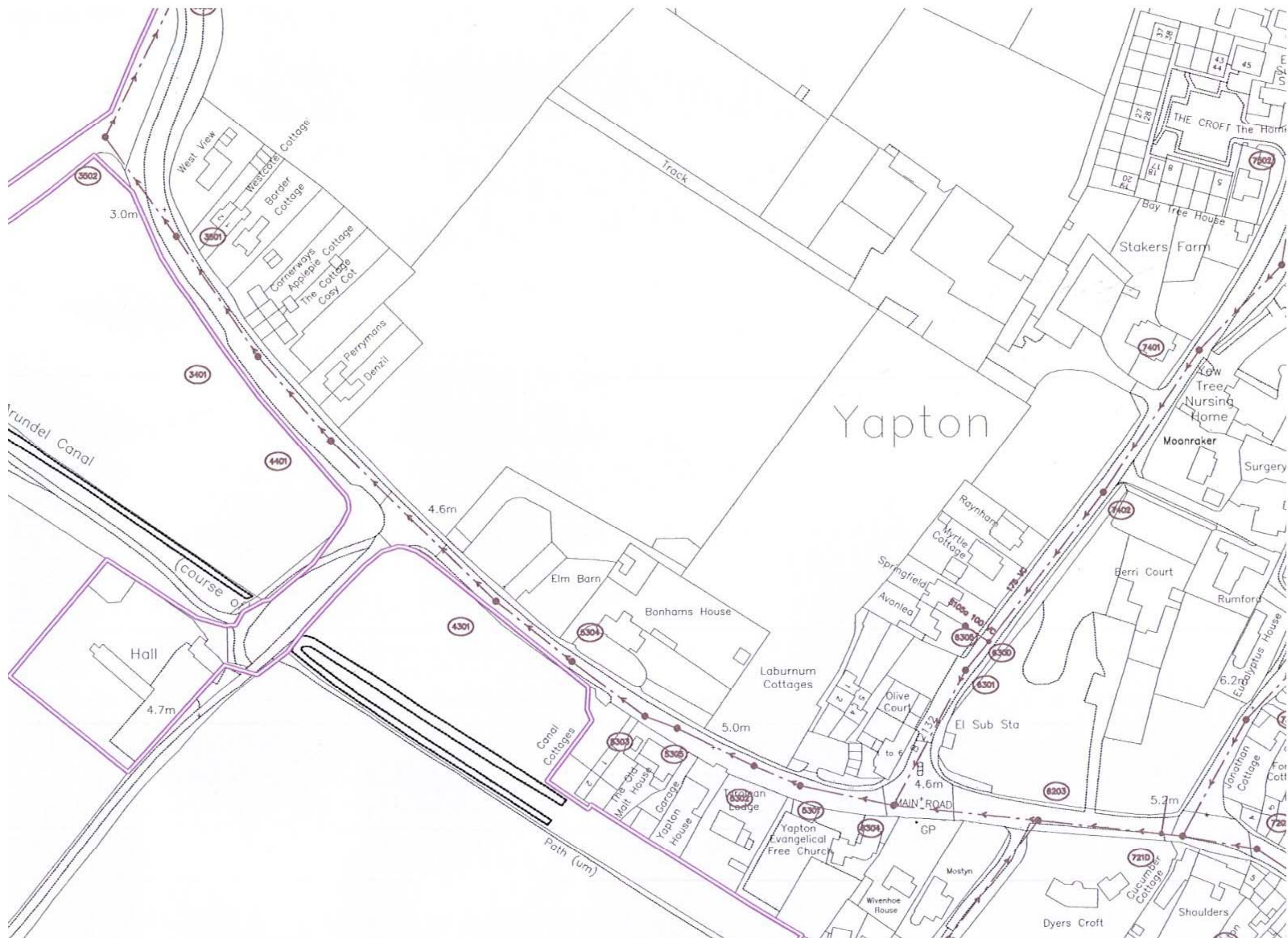
### **Existing Site Layout Plan**



|                                    |                      |
|------------------------------------|----------------------|
| TITLE<br>Existing Site Layout Plan |                      |
| SCALE<br>1:1000 @ A3               | PROJECT No.<br>23018 |
| REPORT TYPE<br>FRA                 | DRG. No.<br>2        |

## **Appendix 3**

### **Sewer Records**



| Node  | Cover | Invert | Size | Material | Shape |   | Node  | Cover | Invert | Size | Material | Shape |
|-------|-------|--------|------|----------|-------|---|-------|-------|--------|------|----------|-------|
| 0001X | 8.32  | 6.31   | 150  | VC       | CIRC  | * | 9101X | 6.61  | 3.01   | 350  | PF       | CIRC  |
| 0001X | 5.9   | 4.02   | 175  | VC       | CIRC  | * | 9102X | 3.22  | -0.06  | 350  | PF       | CIRC  |
| 0001X | 6.06  | 3.61   | 225  | VC       | CIRC  | * | 9301X | 5.53  | 4.18   | 175  | VC       | CIRC  |
| 0002X | 5.83  | 3.49   | 225  | VC       | CIRC  | * | 9302X | 5.56  | 4.18   | 175  | VC       | CIRC  |
| 0002X | 6.96  | 4.79   | 150  | VC       | CIRC  | * | 9303X | 5.54  | 4.08   | 175  | VC       | CIRC  |
| 0002X | 5.93  | 3.76   | 175  | VC       | CIRC  | * | 9402X | 6.999 | 5.79   | 150  | VC       | CIRC  |
| 0003X |       |        | 150  | VC       | CIRC  |   | 9502X | 6.938 | 5.057  | 150  | VC       | CIRC  |
| 0004X |       |        | 150  | VC       | CIRC  |   | 9505X | 7.037 |        | 150  | VC       | CIRC  |
| 0101X | 6.13  | 2.98   | 350  | PF       | CIRC  |   | 9601X | 6.25  | 3.98   | 175  | VC       | CIRC  |
| 0301X | 5.67  | 4.49   | 175  | VC       | CIRC  |   | 9603X | 6.298 |        | 175  | VC       | CIRC  |
| 0401X | 5.92  | 4.58   | 150  | VC       | CIRC  |   | 9801X | 6.27  | 4.77   | 175  | VC       | CIRC  |
| 0402X | 5.8   | 5.03   | 150  | VC       | CIRC  |   | 9901X | 6.27  | 4.85   | 175  | VC       | CIRC  |
| 0403X | 6.32  | 5.24   | 150  | VC       | CIRC  |   | 9902X | 6.13  | 4.56   | 175  | VC       | CIRC  |
| 0404X | 6.46  | 5.42   | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 0405X | 6.55  | 5.38   | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 0406X | 6.72  | 5.55   | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 0407X | 7.03  | 5.69   | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 0408X | 6.82  | 5.6    | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 0501X | 5.89  | 4.78   | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 0502X | 5.86  | 4.41   | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 0503X | 5.99  |        | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 0504X | 6.05  | 4.53   | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 0801X | 5.38  | 3.83   | 175  | VC       | CIRC  | * |       |       |        |      |          |       |
| 0801X | 6.25  | 4.12   | 225  | VC       | CIRC  | * |       |       |        |      |          |       |
| 0802X | 7.44  | 4.75   | 175  | VC       | CIRC  | * |       |       |        |      |          |       |
| 0802X | 4.67  | 3.24   | 175  | VC       | CIRC  | * |       |       |        |      |          |       |
| 0803X | 7.4   | 4.64   | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 0804X | 7.47  | 4.43   | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 0901X | 6.53  | 3.91   | 225  | VC       | CIRC  | * |       |       |        |      |          |       |
| 0901X | 5.39  | 3.49   | 150  | VC       | CIRC  | * |       |       |        |      |          |       |
| 0902X | 6.5   | 3.9    | 225  | VC       | CIRC  |   |       |       |        |      |          |       |
| 0903X | 6.23  | 3.79   | 225  | VC       | CIRC  | * |       |       |        |      |          |       |
| 1001X | 5.78  | 4.38   | 150  | VC       | CIRC  | * |       |       |        |      |          |       |
| 1001X | 5.73  | 3.46   | 350  | PF       | CIRC  | * |       |       |        |      |          |       |
| 1002X | 6.88  | 3.85   | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 1003X | 6.53  | 3.87   | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 1004X | 7.13  | 6.1    | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 1005X | 6.414 | 3.974  | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 1006X | 6.06  | 4.145  | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 1007X | 6.96  | 4.445  | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 1101X | 6.908 | 4.753  | 150  | VC       | CIRC  | * |       |       |        |      |          |       |
| 1101X | 5.91  | 3.61   | 175  | VC       | CIRC  | * |       |       |        |      |          |       |
| 1102X |       |        | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 1103X | 6.887 | 4.987  | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 1104X |       |        | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 1105X |       |        | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 1201X |       |        | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 1401X | 6.39  | 5.24   | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 1501X | 6.45  | 4.65   | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 1502X | 6.39  | 4.58   | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 1701X | 5.34  | 2.61   | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 1801X | 4.84  | 3      | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 1802X | 7.14  | 5      | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 1800X |       |        | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 1901X | 7.23  | 6.16   | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 1902X | 7.12  | 5.95   | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 1903X | 7.31  | 5.78   | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 1904X | 7.11  | 5.92   | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 2001X | 6.59  | 4.81   | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 2002X | 6.82  | 4.02   | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 2003X | 6.78  |        | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 2101X | 6.5   | 5.36   | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 2102X | 6.092 | 4.332  | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 2103X |       | 4.551  | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 2104X | 6.684 | 4.669  | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 2105X |       |        | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 2106X |       |        | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 2402X |       |        | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 2405X | 6.453 | 5.647  | UNK  | UNK      | CIRC  |   |       |       |        |      |          |       |
| 2601X | 4.42  | 2.1    | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 2701X | 4.91  | 2.31   | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 2801X | 7.02  | 5.74   | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 2802X | 6.67  | 5.54   | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 2803X | 7.06  | 5.33   | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 2901X | 6.91  | 6.02   | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 2902X | 6.99  | 5.88   | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 3001X | 7.06  | 4.28   | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 3002X | 6.98  | 4.99   | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 3003X | 6.92  | 5.15   | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 3005X | 7.02  |        | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 3006X |       |        | UNK  | UNK      | CIRC  |   |       |       |        |      |          |       |
| 3007X |       |        | UNK  | UNK      | CIRC  |   |       |       |        |      |          |       |
| 3008X |       |        | UNK  | UNK      | CIRC  |   |       |       |        |      |          |       |
| 3401X | 3.95  | 1.25   | 350  | PF       | CIRC  |   |       |       |        |      |          |       |
| 3501X | 3.02  | 1.08   | 350  | PF       | CIRC  |   |       |       |        |      |          |       |
| 3502X | 2.58  | 0.9    | 350  | PF       | CIRC  |   |       |       |        |      |          |       |
| 3601X | 3.96  | 2.11   | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 3602X | 3.14  | 0.74   | 350  | PF       | CIRC  |   |       |       |        |      |          |       |
| 3604X | 3.19  | 0.86   | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 3605Y | 3.15  |        | 225  | VC       | CIRC  | * |       |       |        |      |          |       |
| 3605X | 3.15  |        | 225  | VC       | CIRC  | * |       |       |        |      |          |       |
| 3606X | 3.42  |        | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 360PX | 3.42  | 3.41   | 300  | BAC      | CIRC  |   |       |       |        |      |          |       |
| 3701X | 5     | 3.44   | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 3901X | 7.06  | 4.38   | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 4301X | 4.78  | 1.72   | 350  | PF       | CIRC  |   |       |       |        |      |          |       |
| 4401X | 4.49  | 1.27   | 350  | PF       | CIRC  |   |       |       |        |      |          |       |
| 4601X | 4.46  | 2.99   | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 4901X | 6.58  | 4.6    | 175  | VC       | CIRC  |   |       |       |        |      |          |       |
| 5101X | 6.35  | 2.81   | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 5102X | 6.42  | 3.06   | 150  | VC       | CIRC  |   |       |       |        |      |          |       |
| 5301X | 4.63  | 2.12   | 350  | PF       | CIRC  |   |       |       |        |      |          |       |
| 5302X | 4.86  | 2.04   | 350  | PF       | CIRC  |   |       |       |        |      |          |       |
| 5303X | 5.39  | 1.81   | 350  | PF       | CIRC  |   |       |       |        |      |          |       |
| 5304X | 5.33  | 1.81   | 350  | PF       | CIRC  |   |       |       |        |      |          |       |
| 5305X | 5.32  | 1.96   | 350  | PF       | CIRC  |   |       |       |        |      |          |       |

## **Appendix 4**

### **Site Investigation and Winter Groundwater Monitoring Extracts**

materials, CBR values of <2.5% would be recommended for preliminary design purposes where road formation is proven to be within made ground.

- 10.5.5 It should be noted that all road formations should be proof rolled and soft spots removed and replaced with selected granular fill and, where adoptable, a pavement of sufficient thickness to prevent the penetration of frost should be employed.

## 10.6 Excavations

- 10.6.1 Excavation of the materials immediately beneath the site should be achievable using conventional excavation plant.

- 10.6.2 Based on observations made during intrusive site investigations, groundwater ingress unlikely to pose an issue within excavations on site. Therefore, dewatering works are considered unlikely during the excavation works.

- 10.6.3 Where excavations extend beyond 1.2m depth and are within soils, it is recommended that appropriate shoring/temporary works is used i.e. in accordance with current Health and Safety requirements where access for personnel is required.

## 10.7 Protection of Buried Concrete

- 10.7.1 The results of the water soluble sulphate and pH testing carried out for the made ground and natural ground materials indicate that in accordance with BRE Special Digest 1 (2005), the natural ground materials encountered on site generally yield an Aggressive Chemical Environment for Concrete (ACEC) of AC-1 requiring a Design Sulphate Class of DS-1.

## 10.8 Drainage

- 10.8.1 Soakage testing was undertaken in two locations on site (TP1/SA1 and TP2/SA2), in general accordance with BRE 365, within the natural ground materials comprising gravelly sandy clay and sandy gravelly clay respectively. The full data sheet is provided in Appendix I.

- 10.8.2 TP1 (SA1) failed to drain during the test period (i.e. to 75% effective water depth). Notwithstanding this, extrapolation of the data suggests indicative infiltration rate of  $3.65 \times 10^{-6}$  within this location.

- 10.8.3 TP2 (SA2) drained fully (i.e. to >75% effective water depth) during the 3No. tests undertaken within this location. As a result, an infiltration rate has been calculated based on the methodology described in BRE365, with indicative infiltration rates of between  $3.02 \times 10^{-5}$  and  $6.75 \times 10^{-5}$  m/s calculated for this location.

- 10.8.4 A summary of the calculated infiltration rates for all soakage tests carried out at the site is presented in Table 10.3.

**Table 10.3: Summary of Soakage Test Data**

| Location | Test 1                | Test 2                | Test 3                |
|----------|-----------------------|-----------------------|-----------------------|
| TP01/SA1 | $9.16 \times 10^{-6}$ | -                     | -                     |
| TP02/SA2 | $3.08 \times 10^{-5}$ | $2.92 \times 10^{-5}$ | $2.97 \times 10^{-5}$ |

- 10.8.5 Based on the soakage test data collated to date, it is considered that the more granular underlying ground materials encountered may provide a suitable drainage medium, should suitable and sufficient attenuation be available. It is recommended that an



# Trial Pit Soakage Test Summary Sheet

BRE Digest 365 (2007) Soakaway Design

|                     |                        |
|---------------------|------------------------|
| Site:               | Bonhams Field, Yapton  |
| Test Pit Reference: | TP2/SA2                |
| Site Reference:     | 1608013.001            |
| Client:             | Seaward Properties Ltd |
| Operator:           | ML                     |
| Test Date:          | 6th September 2016     |

## Test 1

| Time (min) | Depth (mm bgl) |
|------------|----------------|
| 0          | 1915           |
| 1          | 1950           |
| 2          | 2056           |
| 3          | 2120           |
| 4          | 2179           |
| 5          | 2223           |
| 6          | 2264           |
| 7          | 2302           |
| 8          | 2346           |
| 9          | 2374           |
| 10         | 2406           |
| 12         | 2460           |
| 16         | 2552           |
| 18         | 2580           |
| 20         | 2611           |
| 23         | 2645           |
| 25         | 2692           |
| 28         | 2681           |
| 30         | 2694           |
| 34         | 2709           |
| 38         | 2739           |
| 42         | 2751           |
| 45         | 2760           |
| 50         | 2774           |
| 56         | 2791           |
| 61         | 2803           |
| 66         | 2820           |

## Test 2

| Time (min) | Depth (mm bgl) |
|------------|----------------|
| 0          | 1755           |
| 1          | 1837           |
| 2          | 1891           |
| 3          | 1958           |
| 4          | 2001           |
| 5          | 2052           |
| 7          | 2174           |
| 8          | 2205           |
| 9          | 2239           |
| 10         | 2278           |
| 12         | 2350           |
| 15         | 2417           |
| 22         | 2554           |
| 25         | 2591           |
| 30         | 2628           |
| 36         | 2660           |
| 40         | 2675           |
| 46         | 2700           |
| 53         | 2721           |
| 58         | 2730           |
| 66         | 2742           |
| 72         | 2750           |
| 75         | 2755           |
| 80         | 2758           |
| 85         | 2762           |
| 93         | 2770           |

## Test 3

| Time (min) | Depth (mm bgl) |
|------------|----------------|
| 0          | 1860           |
| 2          | 1942           |
| 3          | 2010           |
| 4          | 2067           |
| 5          | 2121           |
| 6          | 2150           |
| 7          | 2207           |
| 8          | 2230           |
| 9          | 2263           |
| 10         | 2298           |
| 13         | 2385           |
| 15         | 2431           |
| 20         | 2524           |
| 25         | 2563           |
| 31         | 2621           |
| 42         | 2664           |
| 47         | 2680           |
| 64         | 2700           |
| 79         | 2720           |
| 92         | 2740           |

| Ground Conditions / Comments                                    |  |
|-----------------------------------------------------------------|--|
| Dry. Conducted within sandy gravelly clay with gravel of chalk. |  |
|                                                                 |  |
|                                                                 |  |
|                                                                 |  |
|                                                                 |  |
|                                                                 |  |
|                                                                 |  |
|                                                                 |  |
|                                                                 |  |
|                                                                 |  |

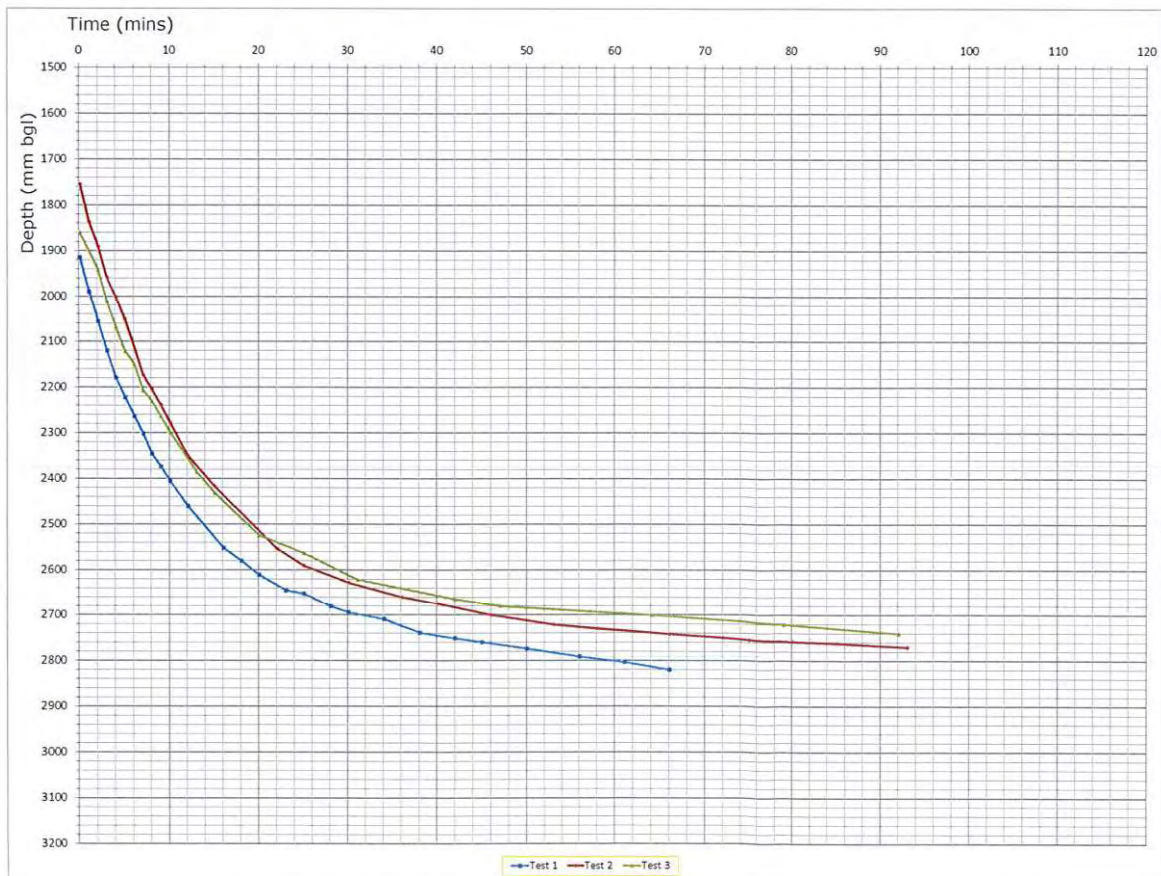
| Pit reference               | TP2 / SA2 |
|-----------------------------|-----------|
| Pit depth (m)               | 3.015     |
| Pit width (m)               | 0.50      |
| Pit length (m)              | 1.85      |
| Depth to standing water (m) | -         |

|                              | Test 1 | Test 2 | Test 3 |
|------------------------------|--------|--------|--------|
| Max. depth (mm)              | 3015   | 3015   | 3015   |
| Effective depth (mm bgl)     | 1915   | 1755   | 1860   |
| Effective drop (mm)          | 1100   | 1260   | 1155   |
| 25% effective depth (mm bgl) | 2190   | 2070   | 2149   |
| 50% effective depth (mm bgl) | 2465   | 2385   | 2438   |
| 75% effective depth (mm bgl) | 2740   | 2700   | 2726   |

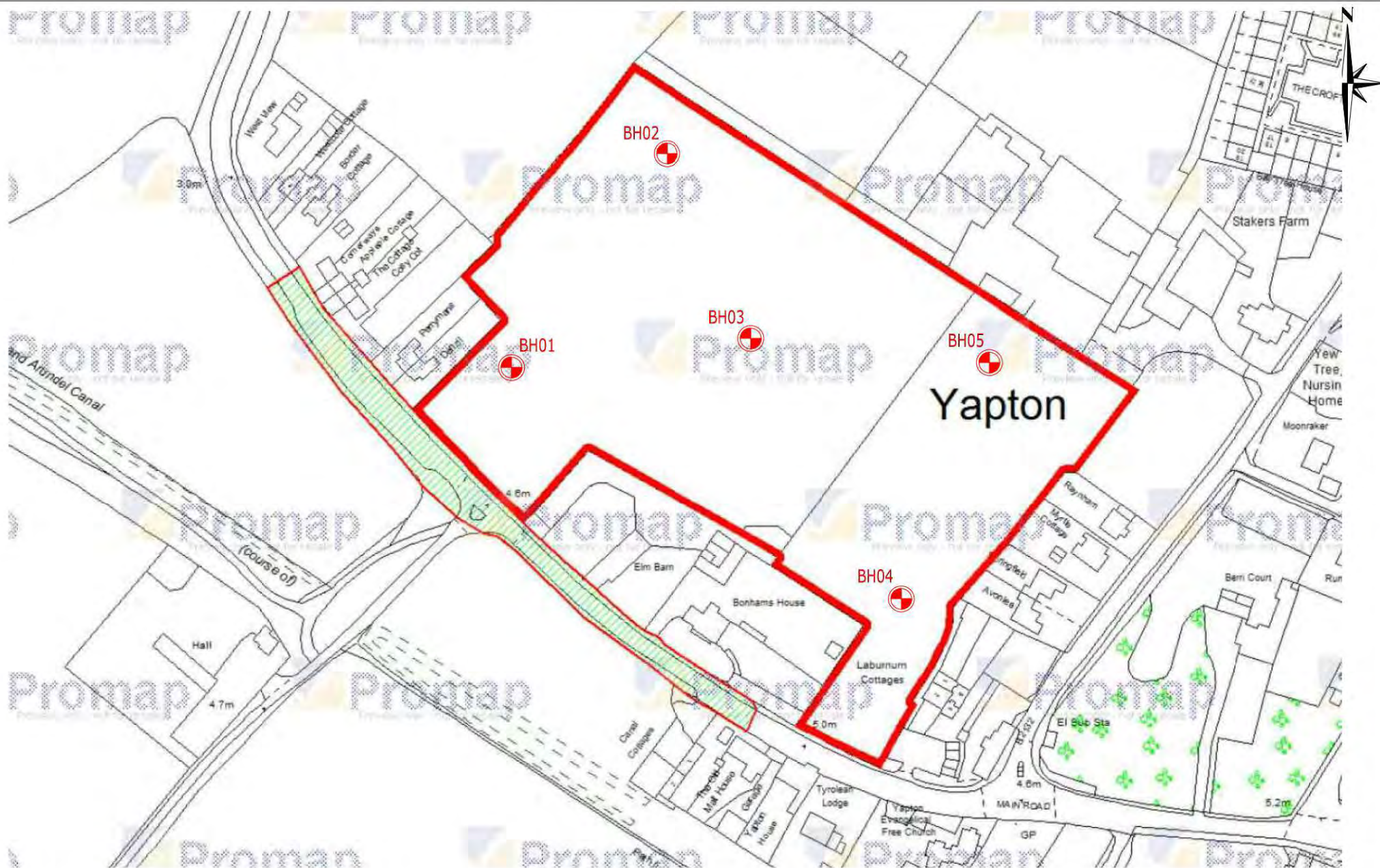
|                |     |     |    |
|----------------|-----|-----|----|
| $t_{15}$ (min) | 4.2 | 5.5 | 6  |
| $t_{75}$ (min) | 40  | 46  | 87 |

|                              |      |      |      |
|------------------------------|------|------|------|
| $V_{0.25}$ (m <sup>3</sup> ) | 0.51 | 0.58 | 0.53 |
| $A_{0.50}$ (m <sup>2</sup> ) | 3.51 | 3.89 | 3.64 |
| $t_{0.25-0.50}$ (min)        | 36   | 41   | 81   |

|                                |          |          |          |
|--------------------------------|----------|----------|----------|
| Soil Infiltration Rate (m/sec) | 6.75E-05 | 6.17E-05 | 3.02E-05 |
| Soil Infiltration Rate (mm/hr) | 2.43E+02 | 2.22E+02 | 1.09E+02 |



Infiltration calculated to method in BRE Digest 365 (2007) Soakaway Design

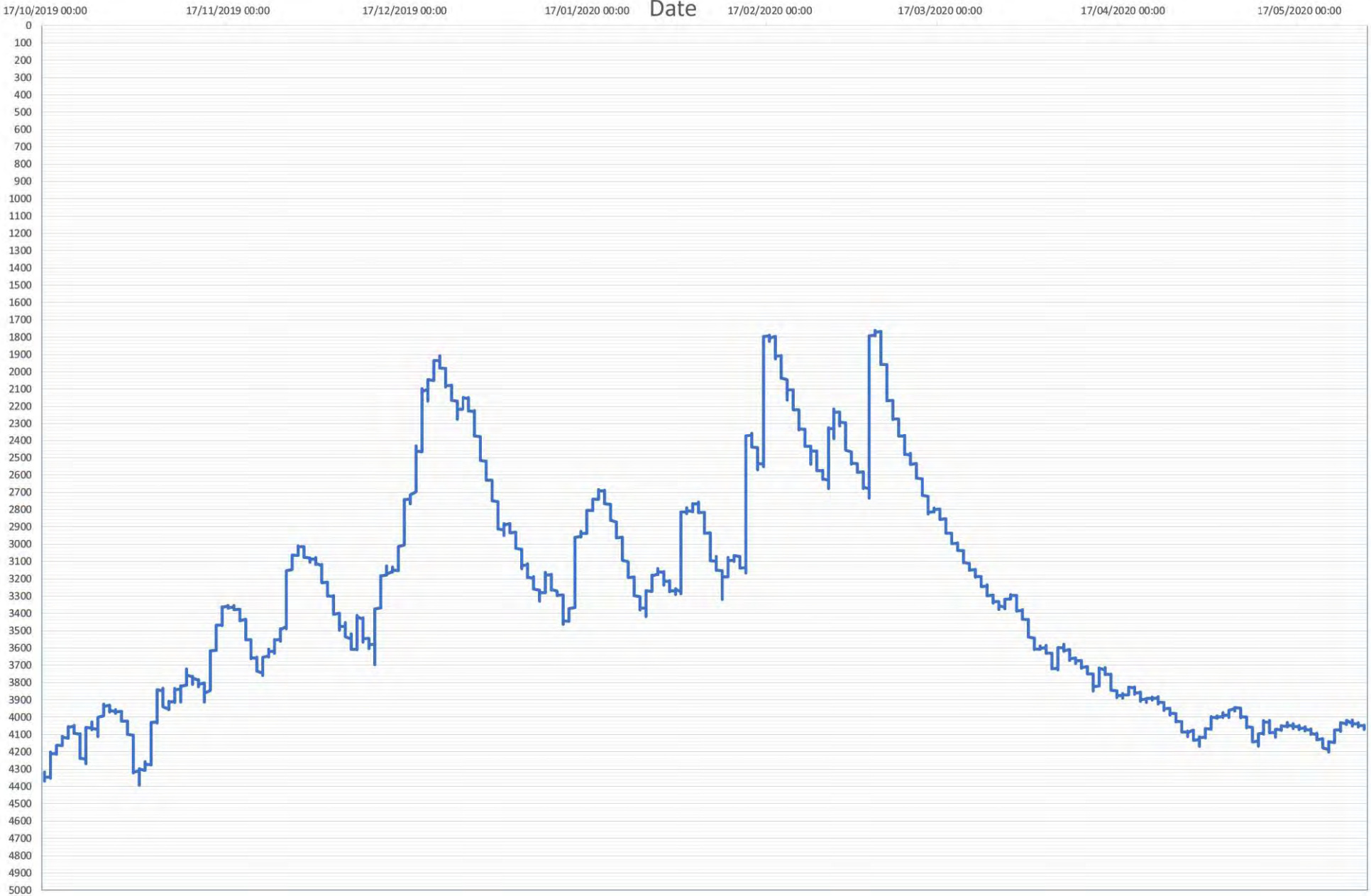


TEC Exploratory Hole with Installation Location: 

BH01

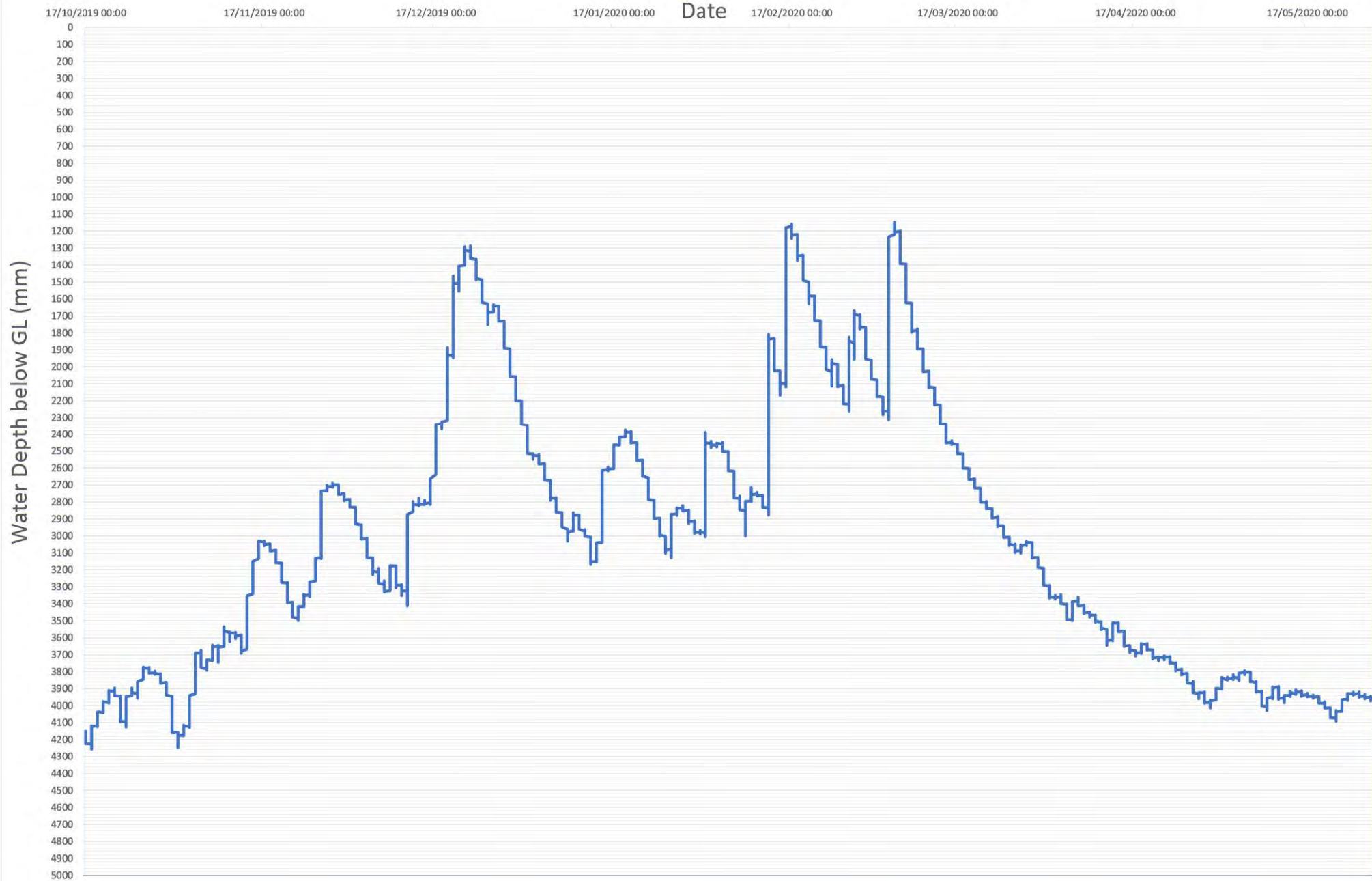
Date

Water Depth below GL (mm)



BH02

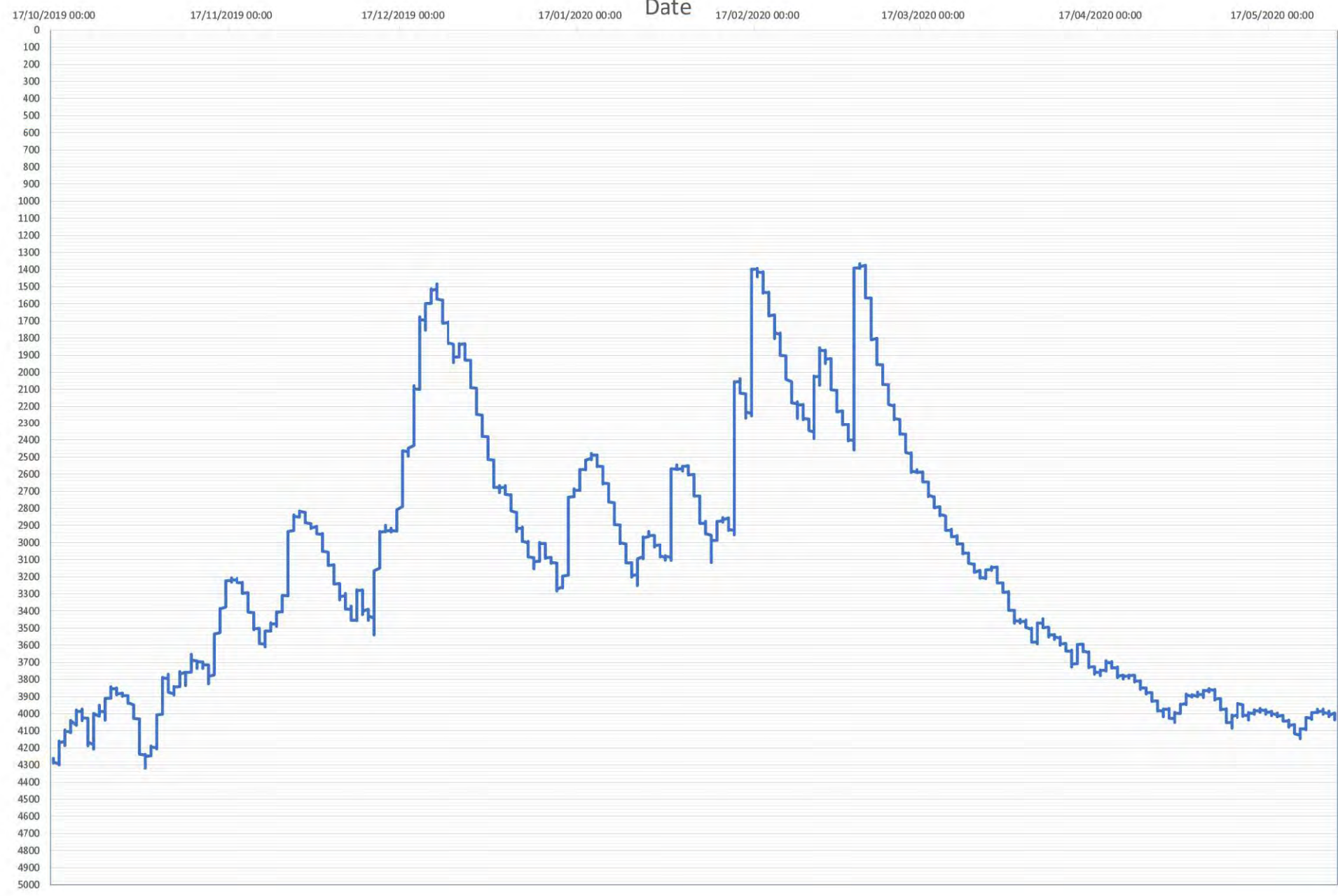
Date

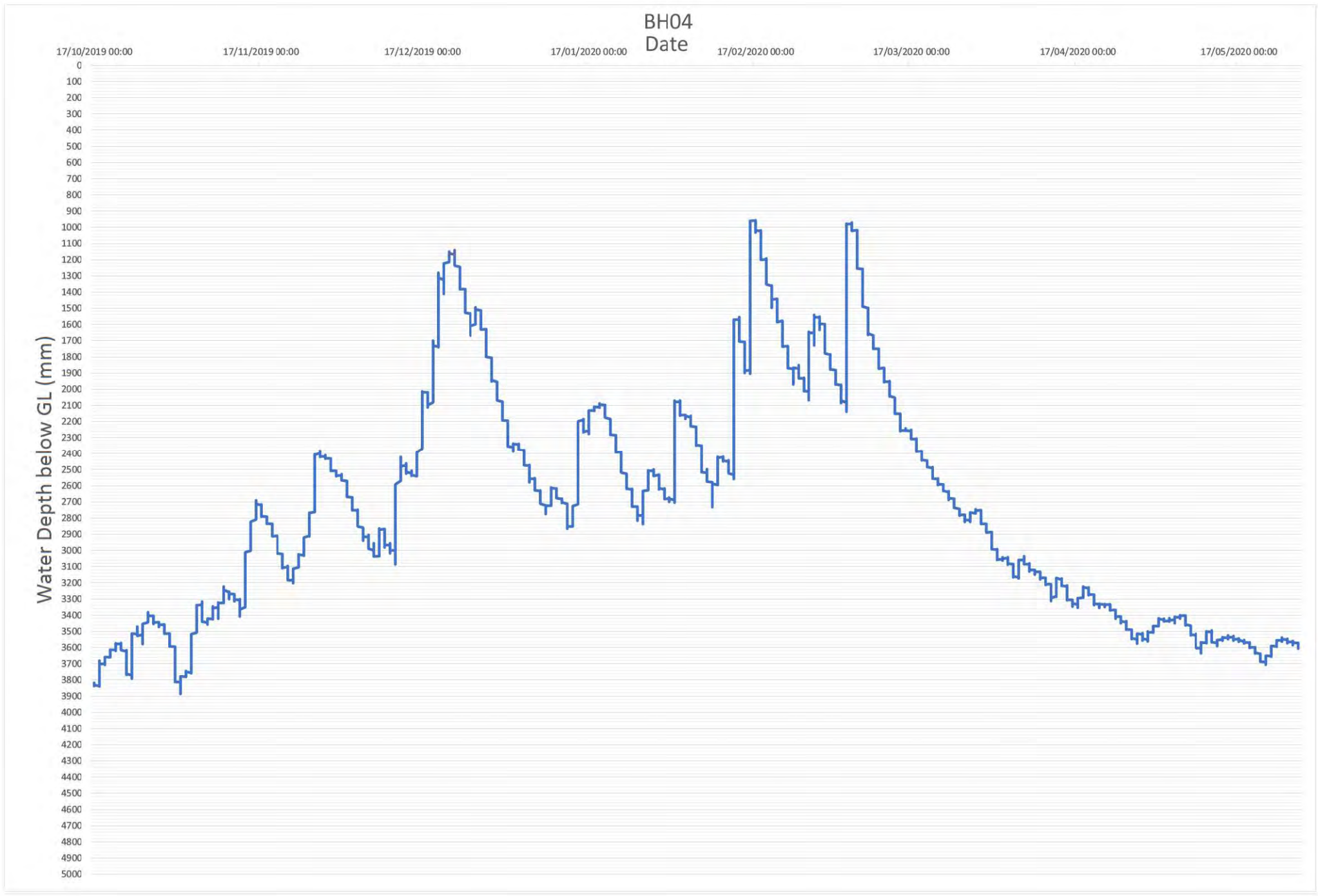


BH03

Date

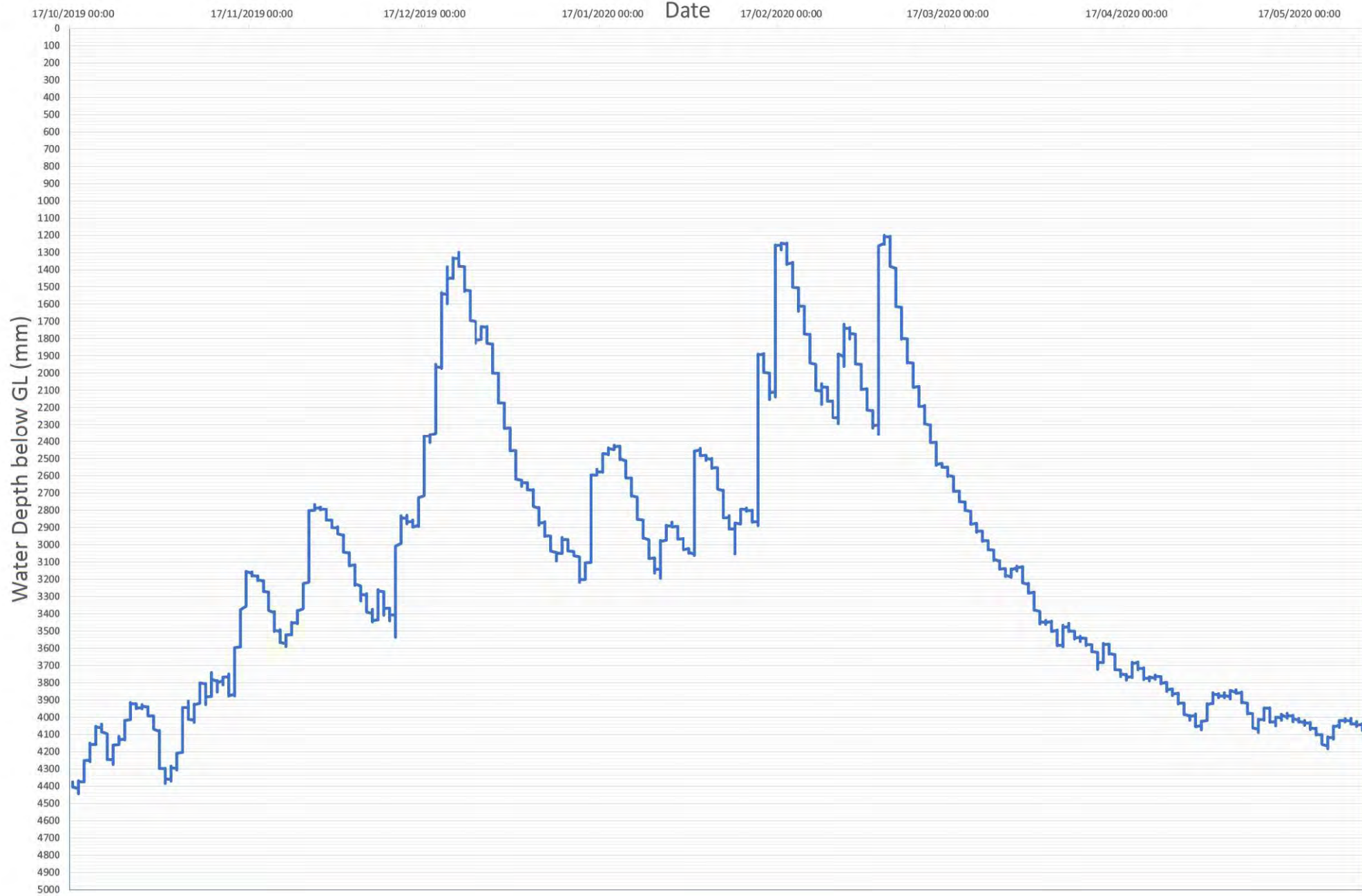
Water Depth below GL (mm)





BH05

Date



intrusive investigation.

### Soakage Test Results

The results of the soakage tests generally indicate a very slight drop in water level at all locations and all test locations failed to drain during the test (i.e. to 75% effective water depth) and, therefore, insufficient time was available to complete the testing in accordance with BRE365 and determination of infiltration rates at the site in strict accordance with BRE365 has not been possible.

### Soakage Test Results

| Soakage Test | Depth (mbgl) | Comments                                |
|--------------|--------------|-----------------------------------------|
| TP01         | 2.6          | Drop in water level: 7.5m in 5hr        |
| TP02         | 2.9          | Drop in water level: 6.5cm in 4hr 22min |
| TP03         | 3.5          | Drop in water level: 3.0cm in 4hr       |
| TP04         | 2.9          | No drop in water level in 5hr and 32min |
| TP05         | 3.0          | Drop in water level: 9cm in 5hr 6min    |
| TP06         | 1.8          | Drop in water level: 16cm in 4hr 49min  |
| TP07         | 3.1          | Drop in water level: 5.0cm in 5hr 1min  |
| TP08         | 3.2          | Drop in water level: 2.0cm in 5hr 4min  |
| TP09         | 1.7          | Drop in water level: 21cm in 4hr 12min  |

The results indicate that the ground materials tend to be of very limited permeability.

It should also be noted that CIRIA Report 156 – Infiltration Drainage – Manual of Good Practice, recommends that any infiltration systems constructed should normally be built at least 5m away from the nearest foundation. In addition, it is noted that where draining to the underlying chalk, CIRIA Report C574 recommends that soakaways should be located at least 5m from foundations for the medium density chalk recorded at the site.

In addition, the requirements of the Environment Agency would need to be incorporated into any design which drains into an aquifer, such as on this site.

### Recommendations

Based on the results, it is considered unlikely that the encountered ground materials would provide a suitable drainage medium for the site.

### Closure

We hope you find the above to your satisfaction, but should you have queries please do not hesitate to contact us.

Yours sincerely



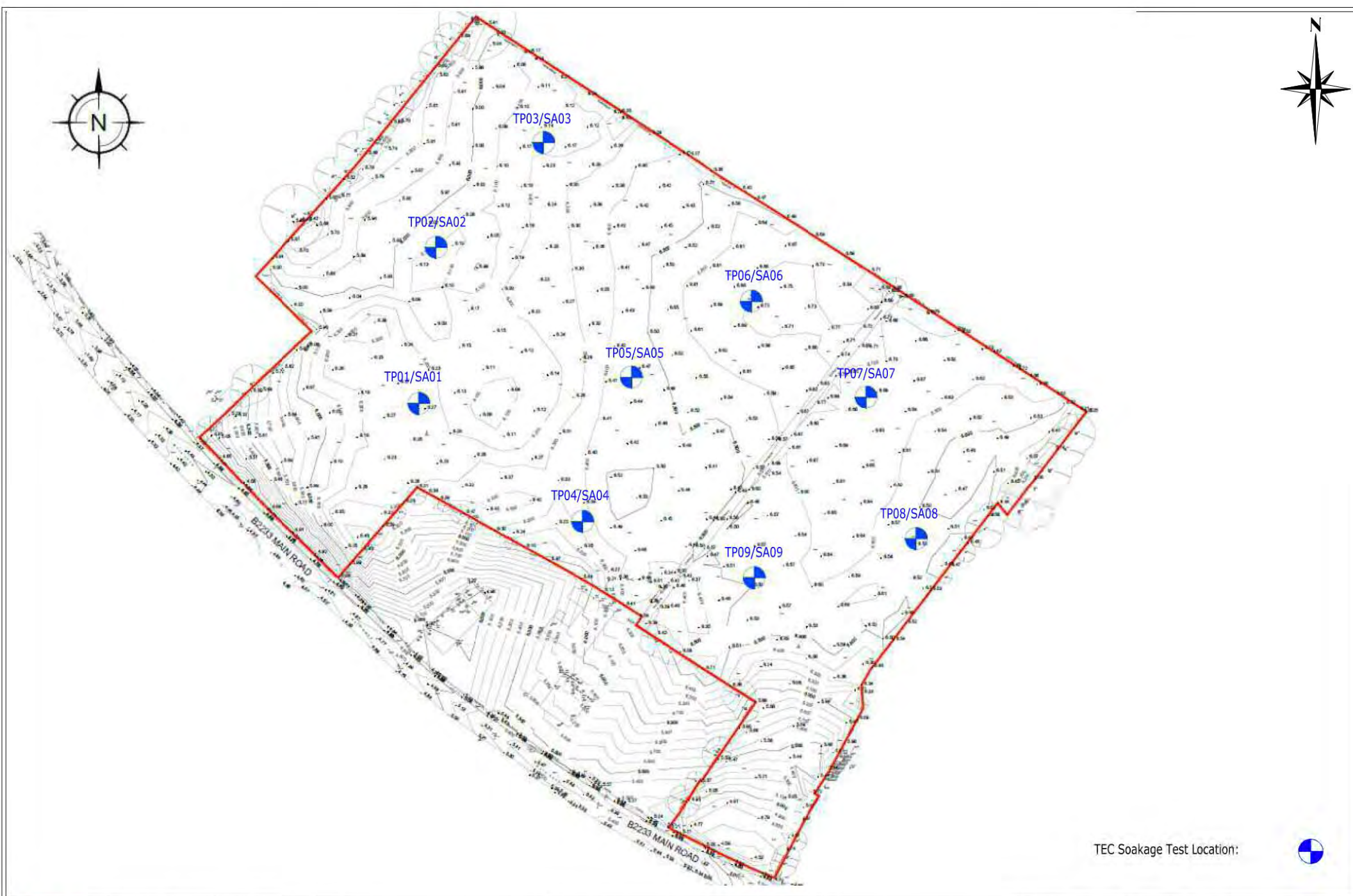
Mari Langreiter  
For and on behalf of

**TWEEDIE EVANS CONSULTING LIMITED**

#### Enclosed:

- Figure 1 - Exploratory Hole Location Plan
- Exploratory Hole Logs
- Soakage Test Results

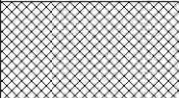
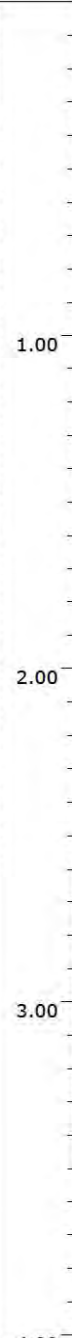
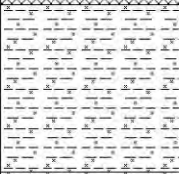
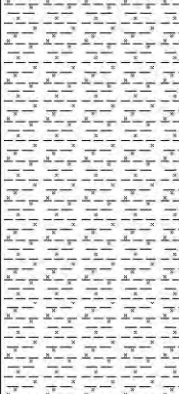
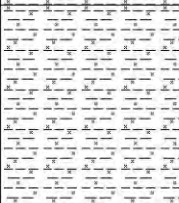

  
 Richard Evans



|                                                                                     |                                                                                                                                                                                                     |                                              |                                                         |                                                        |                                    |                         |                           |                       |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|---------------------------------------------------------|--------------------------------------------------------|------------------------------------|-------------------------|---------------------------|-----------------------|
|  | <p>Tweedie Evans Consulting<br/>The Old Chapel<br/>35a Southover<br/>Wells, Somerset<br/>BA5 1UH</p> <p>Tel: 01749 677760<br/>Fax: 01749 679345<br/>Email: info@tecon.co.uk<br/>www.tecon.co.uk</p> | <p>Site Name:<br/>Bonham's Field, Yapton</p> | <p>Drawing Name:<br/>Exploratory Hole Location Plan</p> | <p>Client Name:<br/>The Civil Engineering Practice</p> | <p>Project No:<br/>1909008.001</p> | <p>Figure No:<br/>1</p> | <p>Date:<br/>Nov 2019</p> | <p>Scale:<br/>NTS</p> |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|---------------------------------------------------------|--------------------------------------------------------|------------------------------------|-------------------------|---------------------------|-----------------------|

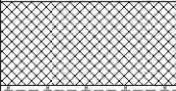
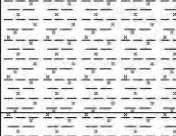
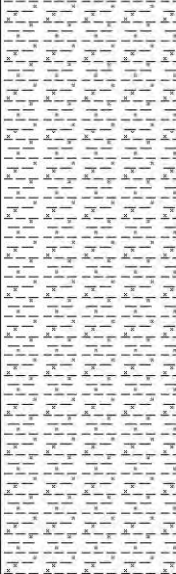
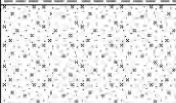
## **Engineering Logs**

|                                               |                                 |                                                                                                                                                                                                                                          |
|-----------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TRIAL PIT RECORD:</b>                      |                                 | <br><b>TWEEDIE EVANS CONSULTING</b><br><a href="http://www.tecon.co.uk">www.tecon.co.uk</a><br><a href="mailto:info@tecon.co.uk">info@tecon.co.uk</a> |
| <b>Project Title:</b> Bonhams Field, Yapton   | <b>Trial Pit:</b> TP01          |                                                                                                                                                                                                                                          |
| <b>Project No:</b> 1909008.002                | <b>Dates:</b> 22nd October 2019 |                                                                                                                                                                                                                                          |
| <b>Client:</b> The Civil Engineering Practice |                                 |                                                                                                                                                                                                                                          |

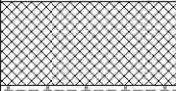
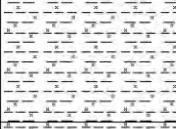
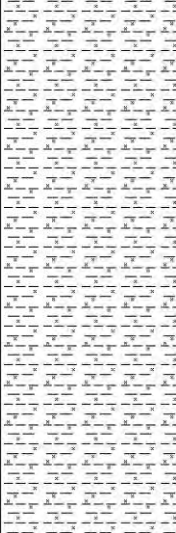
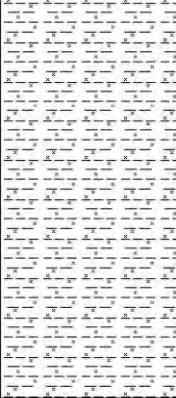
| Depth (m) | Description                                                                                                                                                                                                                                                                 | Legend                                                                              | Depth (m)                                                                           | Sample Details | Remarks                                                                                                                  |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------|--------------------------------------------------------------------------------------------------------------------------|
| 0.30      | MADE GROUND<br>Grass over brown slightly gravelly sandy organic silt/clay. Gravel is flint. Fine fibrous rootlets throughout.                                                                                                                                               |    |  |                | HSV at 1.0mbgl - 60-70 kPa<br><br>HSV at 1.5mbgl - 60 kPa<br><br>HSV at 2.0mbgl - 35-40kPa<br><br>HSV at 2.5mbgl - 35kPa |
| 0.80      | RIVER TERRACE DEPOSITS<br>Firm to stiff orange-brown slightly gravelly slightly sandy SILT/CLAY with low cobble content. Gravel and cobbles are strong angular to subrounded flint.                                                                                         |    |                                                                                     |                |                                                                                                                          |
| 2.00      | RIVER TERRACE DEPOSITS<br>Firm medium strength orange-brown slightly gravelly slightly sandy silty CLAY with low cobble content. Gravel and cobbles are strong angular to subrounded flint.                                                                                 |   |                                                                                     |                |                                                                                                                          |
| 2.60      | RIVER TERRACE DEPOSITS<br>Soft low strength grey, buff and orange sandy gravelly silty CLAY with low cobble content. Gravel is strong angular to subrounded flint and very weak subrounded to rounded fine to medium chalk. Cobbles are strong angular to subangular flint. |  |                                                                                     |                |                                                                                                                          |
|           | Trial Pit Terminated                                                                                                                                                                                                                                                        |                                                                                     | 3.00                                                                                |                |                                                                                                                          |

|                                                                                                                               |                                                                                                           |                                                 |                                   |
|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------|-----------------------------------|
| Excavation Details:                                                                                                           | Dimensions:                                                                                               | Notes and Remarks:                              |                                   |
| Date excavated: 22nd October 2019<br>Date backfilled: 22nd October 2019<br>Plant: JCB 3CX<br>Shoring: None<br>Stability: Good | B: 0.5m<br><br>A: 3.2m | Water observations: No groundwater encountered. |                                   |
|                                                                                                                               |                                                                                                           | Logged by: DH                                   | Checked by: RE<br>Approved by: ET |

|                                        |                          |                                                                                                                                                                                                                                   |
|----------------------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TRIAL PIT RECORD:                      |                          | <br>TWEEDIE EVANS CONSULTING<br><a href="http://www.tecon.co.uk">www.tecon.co.uk</a><br><a href="mailto:info@tecon.co.uk">info@tecon.co.uk</a> |
| Project Title: Bonhams Field, Yapton   | Trial Pit: TP02          |                                                                                                                                                                                                                                   |
| Project No: 1909008.002                | Dates: 22nd October 2019 |                                                                                                                                                                                                                                   |
| Client: The Civil Engineering Practice |                          |                                                                                                                                                                                                                                   |

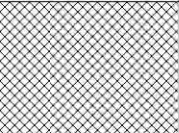
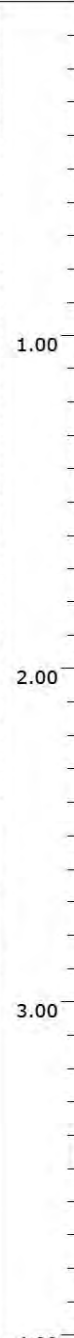
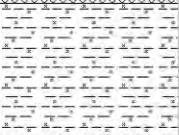
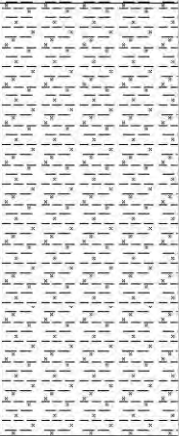
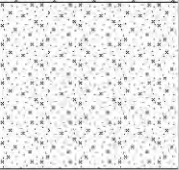
| Depth (m)                                                                                                                     | Description                                                                                                                                                                                                                                                                 | Legend                                                                                                    | Depth (m)                                       | Sample Details | Remarks                    |
|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------|----------------|----------------------------|
| 0.25                                                                                                                          | MADE GROUND<br>Grass over brown slightly gravelly sandy organic silt/clay. Gravel is flint. Fine fibrous rootlets throughout.                                                                                                                                               |                          |                                                 |                |                            |
| 0.60                                                                                                                          | RIVER TERRACE DEPOSITS<br>Firm to stiff orange-brown slightly gravelly slightly sandy SILT/CLAY with low cobble content. Gravel and cobbles are strong angular to subrounded flint.                                                                                         |                          |                                                 |                |                            |
|                                                                                                                               | RIVER TERRACE DEPOSITS<br>Firm medium strength orange-brown slightly gravelly slightly sandy silty CLAY with low cobble content. Gravel and cobbles are strong angular to subrounded flint.                                                                                 |                         | 1.00                                            |                | HSV at 1.0mbgl - 65-70 kPa |
|                                                                                                                               |                                                                                                                                                                                                                                                                             |                                                                                                           |                                                 |                | HSV at 1.5mbgl - 55-60 kPa |
|                                                                                                                               |                                                                                                                                                                                                                                                                             |                                                                                                           | 2.00                                            |                | HSV at 2.0mbgl - 50-55kPa  |
| 2.40                                                                                                                          |                                                                                                                                                                                                                                                                             |                                                                                                           |                                                 |                |                            |
| 2.60                                                                                                                          | RIVER TERRACE DEPOSITS<br>Soft low strength grey, buff and orange sandy gravelly silty CLAY with low cobble content. Gravel is strong angular to subrounded flint and very weak subrounded to rounded fine to medium chalk. Cobbles are strong angular to subangular flint. |                        |                                                 |                | HSV at 2.5mbgl - 40 kPa    |
| 2.90                                                                                                                          | RIVER TERRACE DEPOSITS<br>[Loose] yellow-brown clayey/silty gravelly SAND with low cobble content. Gravel is strong angular to subrounded flint and very weak subrounded to rounded fine to medium chalk. Cobbles are strong angular to subangular flint.                   |                        |                                                 |                |                            |
|                                                                                                                               | Trial Pit Terminated                                                                                                                                                                                                                                                        |                                                                                                           | 3.00                                            |                |                            |
| Excavation Details:                                                                                                           |                                                                                                                                                                                                                                                                             | Dimensions:                                                                                               | Notes and Remarks:                              |                |                            |
| Date excavated: 22nd October 2019<br>Date backfilled: 22nd October 2019<br>Plant: JCB 3CX<br>Shoring: None<br>Stability: Good |                                                                                                                                                                                                                                                                             | B: 0.5m<br><br>A: 3.2m | Water observations: No groundwater encountered. |                |                            |
|                                                                                                                               |                                                                                                                                                                                                                                                                             |                                                                                                           | Logged by: DH                                   | Checked by: RE | Approved by: ET            |

|                                               |                                 |                                                                                                                                                                                                                                          |
|-----------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TRIAL PIT RECORD:</b>                      |                                 | <br><b>TWEEDIE EVANS CONSULTING</b><br><a href="http://www.tecon.co.uk">www.tecon.co.uk</a><br><a href="mailto:info@tecon.co.uk">info@tecon.co.uk</a> |
| <b>Project Title:</b> Bonhams Field, Yapton   | <b>Trial Pit:</b> TP03          |                                                                                                                                                                                                                                          |
| <b>Project No:</b> 1909008.002                | <b>Dates:</b> 22nd October 2019 |                                                                                                                                                                                                                                          |
| <b>Client:</b> The Civil Engineering Practice |                                 |                                                                                                                                                                                                                                          |

| Depth (m) | Description                                                                                                                                                                                                                                                                 | Legend                                                                              | Depth (m) | Sample Details | Remarks                    |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------|----------------|----------------------------|
| 0.25      | MADE GROUND<br>Grass over brown slightly gravelly sandy organic silt/clay. Gravel is flint. Fine fibrous rootlets throughout.                                                                                                                                               |    |           |                |                            |
| 0.65      | RIVER TERRACE DEPOSITS<br>Firm to stiff orange-brown slightly gravelly slightly sandy SILT/CLAY with low cobble content. Gravel and cobbles are strong angular to subrounded flint.                                                                                         |    |           |                |                            |
|           | RIVER TERRACE DEPOSITS<br>Firm medium strength orange-brown slightly gravelly slightly sandy silty CLAY with low cobble content. Gravel and cobbles are strong angular to subrounded flint.                                                                                 |   | 1.00      |                | HSV at 1.0mbgl - 65-70 kPa |
|           |                                                                                                                                                                                                                                                                             |                                                                                     |           |                | HSV at 1.5mbgl - 60-65 kPa |
|           |                                                                                                                                                                                                                                                                             |                                                                                     | 2.00      |                | HSV at 2.0mbgl - 45-50 kPa |
| 2.30      |                                                                                                                                                                                                                                                                             |                                                                                     |           |                | HSV at 2.5mbgl - 35 kPa    |
|           | RIVER TERRACE DEPOSITS<br>Soft low strength grey, buff and orange sandy gravelly silty CLAY with low cobble content. Gravel is strong angular to subrounded flint and very weak subrounded to rounded fine to medium chalk. Cobbles are strong angular to subangular flint. |  | 3.00      |                | HSV at 3.0mbgl - 35-40 kPa |
| 3.50      |                                                                                                                                                                                                                                                                             |                                                                                     |           |                |                            |
|           | Trial Pit Terminated                                                                                                                                                                                                                                                        |                                                                                     |           |                |                            |

|                                                                                                                               |                                                                                                           |                                                 |                |                 |
|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------|----------------|-----------------|
| Excavation Details:                                                                                                           | Dimensions:                                                                                               | Notes and Remarks:                              |                |                 |
| Date excavated: 22nd October 2019<br>Date backfilled: 22nd October 2019<br>Plant: JCB 3CX<br>Shoring: None<br>Stability: Good | B: 0.5m<br><br>A: 3.1m | Water observations: No groundwater encountered. |                |                 |
|                                                                                                                               |                                                                                                           | Logged by: DH                                   | Checked by: RE | Approved by: ET |

|                                               |                                 |                                                                                                                                                                                                                                                 |
|-----------------------------------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TRIAL PIT RECORD:</b>                      |                                 | <br><b>TEC</b><br>TWEEDIE EVANS CONSULTING<br><a href="http://www.tecon.co.uk">www.tecon.co.uk</a><br><a href="mailto:info@tecon.co.uk">info@tecon.co.uk</a> |
| <b>Project Title:</b> Bonhams Field, Yapton   | <b>Trial Pit:</b> TP04          |                                                                                                                                                                                                                                                 |
| <b>Project No:</b> 1909008.002                | <b>Dates:</b> 23rd October 2019 |                                                                                                                                                                                                                                                 |
| <b>Client:</b> The Civil Engineering Practice |                                 |                                                                                                                                                                                                                                                 |

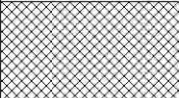
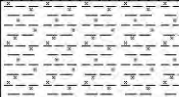
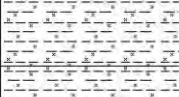
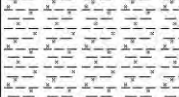
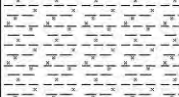
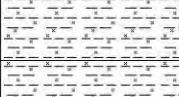
| Depth (m)                                                                                                                     | Description                                                                                                                                                                                                                                                                 | Legend                                                                                                    | Depth (m)                                                                           | Sample Details | Remarks                                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------|------------------------------------------------------------------------------------------------------|
| 0.40                                                                                                                          | MADE GROUND<br>Grass over brown slightly gravelly sandy organic silt/clay. Gravel is flint. Fine fibrous rootlets throughout.                                                                                                                                               |                          |  |                | <p>HSV at 1.0mbgl - 70-75kPa</p> <p>HSV at 1.5mbgl - 60-65kPa</p> <p>HSV at 2.0mbgl - 55 -60 kPa</p> |
| 0.80                                                                                                                          | RIVER TERRACE DEPOSITS<br>Firm to stiff orange-brown slightly gravelly slightly sandy SILT/CLAY with low cobble content. Gravel and cobbles are strong angular to subrounded flint.                                                                                         |                          |                                                                                     |                |                                                                                                      |
| 2.10                                                                                                                          | RIVER TERRACE DEPOSITS<br>Firm medium strength orange-brown slightly gravelly slightly sandy silty CLAY with low cobble content. Gravel and cobbles are strong angular to subrounded flint.                                                                                 |                         |                                                                                     |                |                                                                                                      |
| 2.40                                                                                                                          | RIVER TERRACE DEPOSITS<br>Soft low strength grey, buff and orange sandy gravelly silty CLAY with low cobble content. Gravel is strong angular to subrounded flint and very weak subrounded to rounded fine to medium chalk. Cobbles are strong angular to subangular flint. |                        |                                                                                     |                |                                                                                                      |
| 2.90                                                                                                                          | RIVER TERRACE DEPOSITS<br>[Loose] yellow-brown clayey/silty gravelly SAND with low cobble content. Gravel is strong angular to subrounded flint and very weak subrounded to rounded fine to medium chalk. Cobbles are strong angular to subangular flint.                   |                        |                                                                                     |                |                                                                                                      |
| Trial Pit Terminated                                                                                                          |                                                                                                                                                                                                                                                                             |                                                                                                           | 3.00                                                                                |                |                                                                                                      |
| Excavation Details:                                                                                                           |                                                                                                                                                                                                                                                                             | Dimensions:                                                                                               | Notes and Remarks:                                                                  |                |                                                                                                      |
| Date excavated: 23rd October 2019<br>Date backfilled: 23rd October 2019<br>Plant: JCB 3CX<br>Shoring: None<br>Stability: Good |                                                                                                                                                                                                                                                                             | B: 0.5m<br><br>A: 3.0m | Water observations: No groundwater encountered.                                     |                |                                                                                                      |
|                                                                                                                               |                                                                                                                                                                                                                                                                             |                                                                                                           | Logged by: DH                                                                       | Checked by: RE | Approved by: ET                                                                                      |

3.00

HSV at 2.0mbgl - 55 -60 kPa

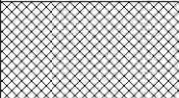
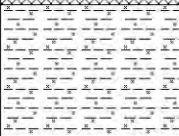
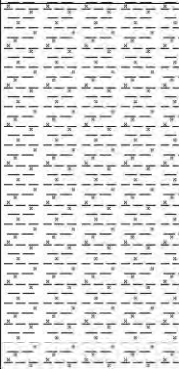
Approved by: ET

|                                               |                                 |                                                                                                                                                                                                                                          |
|-----------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TRIAL PIT RECORD:</b>                      |                                 | <br><b>TWEEDIE EVANS CONSULTING</b><br><a href="http://www.tecon.co.uk">www.tecon.co.uk</a><br><a href="mailto:info@tecon.co.uk">info@tecon.co.uk</a> |
| <b>Project Title:</b> Bonhams Field, Yapton   | <b>Trial Pit:</b> TP05          |                                                                                                                                                                                                                                          |
| <b>Project No:</b> 1909008.002                | <b>Dates:</b> 23rd October 2019 |                                                                                                                                                                                                                                          |
| <b>Client:</b> The Civil Engineering Practice |                                 |                                                                                                                                                                                                                                          |

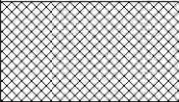
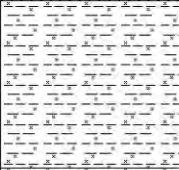
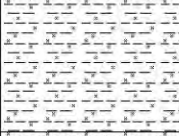
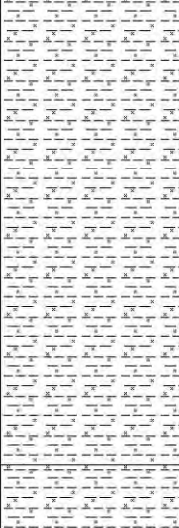
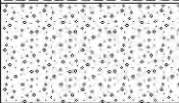
| Depth (m) | Description                                                                                                                                                                                                                                                                      | Legend                                                                              | Depth (m) | Sample Details | Remarks                    |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------|----------------|----------------------------|
| 0.30      | MADE GROUND<br>Grass over brown slightly gravelly sandy organic silt/clay. Gravel is flint. Fine fibrous rootlets throughout.                                                                                                                                                    |    |           |                |                            |
| 0.80      | RIVER TERRACE DEPOSITS<br>Firm to stiff orange-brown slightly gravelly slightly sandy SILT/CLAY with low cobble content. Gravel and cobbles are strong angular to subrounded flint.                                                                                              |    |           |                |                            |
|           | RIVER TERRACE DEPOSITS<br>Firm medium strength orange-brown slightly gravelly slightly sandy silty CLAY with low cobble content. Gravel and cobbles are strong angular to subrounded flint.                                                                                      |    | 1.00      |                | HSV at 1.0mbgl - 65-70 kPa |
|           |                                                                                                                                                                                                                                                                                  |    |           |                | HSV at 1.5mbgl - 55-60 kPa |
|           |                                                                                                                                                                                                                                                                                  |   | 2.00      |                | HSV at 2.0mbgl - 45-50 kPa |
| 2.30      | RIVER TERRACE DEPOSITS<br>Soft low strength grey, buff and orange sandy gravelly silty CLAY with low cobble content. Gravel is strong angular to subrounded flint and very weak subrounded to rounded fine to medium chalk. Cobbles are strong angular to subangular flint.      |  |           |                | HSV at 2.5mbgl - 35-40 kPa |
| 2.70      | RIVER TERRACE DEPOSITS<br>Soft low strength grey, buff and orange gravelly very sandy silty CLAY with low cobble content. Gravel is strong angular to subrounded flint and very weak subrounded to rounded fine to medium chalk. Cobbles are strong angular to subangular flint. |  |           |                | HSV at 3.0mbgl - 30-35 kPa |
| 3.00      | Trial Pit Terminated                                                                                                                                                                                                                                                             |  | 3.00      |                |                            |

|                                                                                                                               |                                                                                                           |                                                 |                                     |
|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------|-------------------------------------|
| Excavation Details:                                                                                                           | Dimensions:                                                                                               | Notes and Remarks:                              |                                     |
| Date excavated: 23rd October 2019<br>Date backfilled: 23rd October 2019<br>Plant: JCB 3CX<br>Shoring: None<br>Stability: Good | B: 0.5m<br><br>A: 3.2m | Water observations: No groundwater encountered. |                                     |
|                                                                                                                               |                                                                                                           | Logged by: DH                                   | Checked by: RE      Approved by: ET |

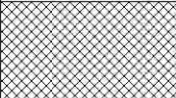
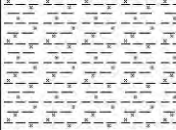
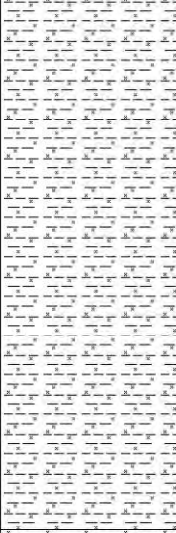
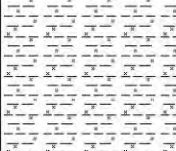
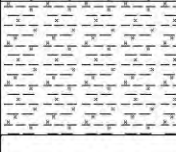
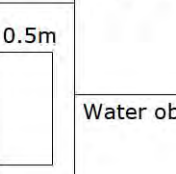
|                                               |                                 |                                                                                                                                                                                                                                          |
|-----------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TRIAL PIT RECORD:</b>                      |                                 | <br><b>TWEEDIE EVANS CONSULTING</b><br><a href="http://www.tecon.co.uk">www.tecon.co.uk</a><br><a href="mailto:info@tecon.co.uk">info@tecon.co.uk</a> |
| <b>Project Title:</b> Bonhams Field, Yapton   | <b>Trial Pit:</b> TP06          |                                                                                                                                                                                                                                          |
| <b>Project No:</b> 1909008.002                | <b>Dates:</b> 23rd October 2019 |                                                                                                                                                                                                                                          |
| <b>Client:</b> The Civil Engineering Practice |                                 |                                                                                                                                                                                                                                          |

| Depth (m)                                                                                                                     | Description                                                                                                                                                                                      | Legend                                                                                                    | Depth (m)           | Sample Details | Remarks                                                   |
|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|---------------------|----------------|-----------------------------------------------------------|
| 0.30                                                                                                                          | MADE GROUND<br>Grass over brown slightly gravelly sandy organic silt/clay. Gravel is flint. Fine fibrous rootlets throughout.                                                                    |                          | 1.00                |                | HSV at 1.0mbgl - 65-70 kPa<br><br>HSV at 1.5mbgl - 60 kPa |
| 0.70                                                                                                                          | RIVER TERRACE DEPOSITS<br>Firm to stiff orange-brown slightly gravelly slightly sandy SILT/CLAY with low cobble content. Gravel and cobbles are strong angular to subrounded flint.              |                          |                     |                |                                                           |
| 1.80                                                                                                                          | RIVER TERRACE DEPOSITS<br>Firm medium strength dark orange-brown slightly gravelly slightly sandy silty CLAY with low cobble content. Gravel and cobbles are strong angular to subrounded flint. |                         |                     |                |                                                           |
|                                                                                                                               | Trial Pit Terminated                                                                                                                                                                             |                                                                                                           | 2.00                |                |                                                           |
|                                                                                                                               |                                                                                                                                                                                                  |                                                                                                           | 3.00                |                |                                                           |
| Excavation Details:                                                                                                           |                                                                                                                                                                                                  | Dimensions:                                                                                               | Notes and Remarks:  |                |                                                           |
| Date excavated: 23rd October 2019<br>Date backfilled: 23rd October 2019<br>Plant: JCB 3CX<br>Shoring: None<br>Stability: Good |                                                                                                                                                                                                  | B: 0.5m<br><br>A: 2.9m | Water observations: |                |                                                           |
|                                                                                                                               |                                                                                                                                                                                                  |                                                                                                           | Logged by: DH       | Checked by: RE | Approved by: ET                                           |

|                                        |                          |                                                                                                                                                                                                                                   |
|----------------------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TRIAL PIT RECORD:                      |                          | <br>TWEEDIE EVANS CONSULTING<br><a href="http://www.tecon.co.uk">www.tecon.co.uk</a><br><a href="mailto:info@tecon.co.uk">info@tecon.co.uk</a> |
| Project Title: Bonhams Field, Yapton   | Trial Pit: TP07          |                                                                                                                                                                                                                                   |
| Project No: 1909008.002                | Dates: 24th October 2019 |                                                                                                                                                                                                                                   |
| Client: The Civil Engineering Practice |                          |                                                                                                                                                                                                                                   |

| Depth (m)                                                                                                                     | Description                                                                                                                                                                                                                                                                          | Legend                                                                                                    | Depth (m)                                       | Sample Details | Remarks                                                      |
|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------|----------------|--------------------------------------------------------------|
| 0.30                                                                                                                          | MADE GROUND<br>Grass over brown slightly gravelly sandy organic silt/clay. Gravel is flint. Fine fibrous rootlets and roots up to 10mm diameter throughout.                                                                                                                          |                          |                                                 |                |                                                              |
| 0.80                                                                                                                          | RIVER TERRACE DEPOSITS<br>Firm to stiff orange-brown slightly gravelly slightly sandy SILT/CLAY with low cobble content. Gravel and cobbles are strong angular to subrounded flint.                                                                                                  |                          |                                                 |                |                                                              |
| 1.20                                                                                                                          | RIVER TERRACE DEPOSITS<br>Stiff high strength orange-brown slightly gravelly slightly sandy silty CLAY. Gravel is strong fine to medium angular to subrounded flint.                                                                                                                 |                          | 1.00                                            |                | HSV at 1.0mbgl - 75-80 kPa                                   |
| 2.60                                                                                                                          | RIVER TERRACE DEPOSITS<br>Firm medium strength orange-brown slightly gravelly slightly sandy silty CLAY. Gravel is strong fine to medium angular to subrounded flint.                                                                                                                |                         | 2.00                                            |                | HSV at 1.5mbgl - 65-70 kPa<br><br>HSV at 2.0mbgl - 45-50 kPa |
| 2.80                                                                                                                          | RIVER TERRACE DEPOSITS<br>Soft low strength grey, buff and orange slightly sandy gravelly silty CLAY with low cobble content. Gravel is strong angular to subrounded flint and very weak subrounded to rounded fine to medium chalk. Cobbles are strong angular to subangular flint. |                        |                                                 |                | HSV at 2.5mbgl - 40-45 kPa                                   |
| 3.10                                                                                                                          | RIVER TERRACE DEPOSITS<br>[Loose] yellow-brown slightly clayey/silty gravelly to very gravelly SAND with low cobble content. Gravel is strong angular to subrounded flint and very weak subrounded to rounded fine to medium chalk. Cobbles are strong angular to subangular flint.  |                        | 3.00                                            |                |                                                              |
|                                                                                                                               | Trial Pit Terminated                                                                                                                                                                                                                                                                 |                                                                                                           |                                                 |                |                                                              |
| Excavation Details:                                                                                                           |                                                                                                                                                                                                                                                                                      | Dimensions:                                                                                               | Notes and Remarks:                              |                |                                                              |
| Date excavated: 24th October 2019<br>Date backfilled: 24th October 2019<br>Plant: JCB 3CX<br>Shoring: None<br>Stability: Good |                                                                                                                                                                                                                                                                                      | B: 0.5m<br><br>A: 3.0m | Water observations: No groundwater encountered. |                |                                                              |
|                                                                                                                               |                                                                                                                                                                                                                                                                                      |                                                                                                           | Logged by: DH                                   | Checked by: RE | Approved by: ET                                              |

|                                        |                          |                                                                                                                                                                                                                                   |
|----------------------------------------|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TRIAL PIT RECORD:                      |                          | <br>TWEEDIE EVANS CONSULTING<br><a href="http://www.tecon.co.uk">www.tecon.co.uk</a><br><a href="mailto:info@tecon.co.uk">info@tecon.co.uk</a> |
| Project Title: Bonhams Field, Yapton   | Trial Pit: TP08          |                                                                                                                                                                                                                                   |
| Project No: 1909008.002                | Dates: 24th October 2019 |                                                                                                                                                                                                                                   |
| Client: The Civil Engineering Practice |                          |                                                                                                                                                                                                                                   |

| Depth (m)                                                                                                                     | Description                                                                                                                                                                                                                                                                          | Legend                                                                                                    | Depth (m)                                       | Sample Details | Remarks                    |
|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------|----------------|----------------------------|
| 0.30                                                                                                                          | MADE GROUND<br>Grass over brown slightly gravelly sandy organic silt/clay. Gravel is flint. Fine fibrous rootlets throughout.                                                                                                                                                        |                          |                                                 |                |                            |
| 0.70                                                                                                                          | RIVER TERRACE DEPOSITS<br>Stiff orange-brown slightly gravelly slightly sandy SILT/CLAY with low cobble content. Gravel and cobbles are strong angular to subrounded flint.                                                                                                          |                          |                                                 |                |                            |
|                                                                                                                               | RIVER TERRACE DEPOSITS<br>Stiff high strength orange-brown slightly gravelly slightly sandy silty CLAY. Gravel is strong fine to medium angular to subrounded flint.                                                                                                                 |                         | 1.00                                            |                | HSV at 1.0mbgl - 80-85 kPa |
|                                                                                                                               |                                                                                                                                                                                                                                                                                      |                        |                                                 |                |                            |
|                                                                                                                               |                                                                                                                                                                                                                                                                                      |                        | 2.00                                            |                | HSV at 1.5mbgl - 80 kPa    |
| 2.30                                                                                                                          | RIVER TERRACE DEPOSITS<br>Firm medium strength orange-brown slightly gravelly slightly sandy silty CLAY. Gravel is strong fine to medium angular to subrounded flint.                                                                                                                |                        |                                                 |                | HSV at 2.0mbgl - 75 kPa    |
| 2.80                                                                                                                          | RIVER TERRACE DEPOSITS<br>Soft low strength grey, buff and orange slightly gravelly sandy silty CLAY with low cobble content. Gravel is strong angular to subrounded flint and very weak subrounded to rounded fine to medium chalk. Cobbles are strong angular to subangular flint. |                        | 3.00                                            |                | HSV at 2.5mbgl - 65-70 kPa |
| 3.20                                                                                                                          | Trial Pit Terminated                                                                                                                                                                                                                                                                 |                                                                                                           |                                                 |                | HSV at 3.0mbgl - 40-45 kPa |
| Excavation Details:                                                                                                           |                                                                                                                                                                                                                                                                                      | Dimensions:                                                                                               | Notes and Remarks:                              |                |                            |
| Date excavated: 24th October 2019<br>Date backfilled: 24th October 2019<br>Plant: JCB 3CX<br>Shoring: None<br>Stability: Good |                                                                                                                                                                                                                                                                                      | B: 0.5m<br><br>A: 2.8m | Water observations: No groundwater encountered. |                |                            |
|                                                                                                                               |                                                                                                                                                                                                                                                                                      |                                                                                                           | Logged by: DH                                   | Checked by: RE | Approved by: ET            |



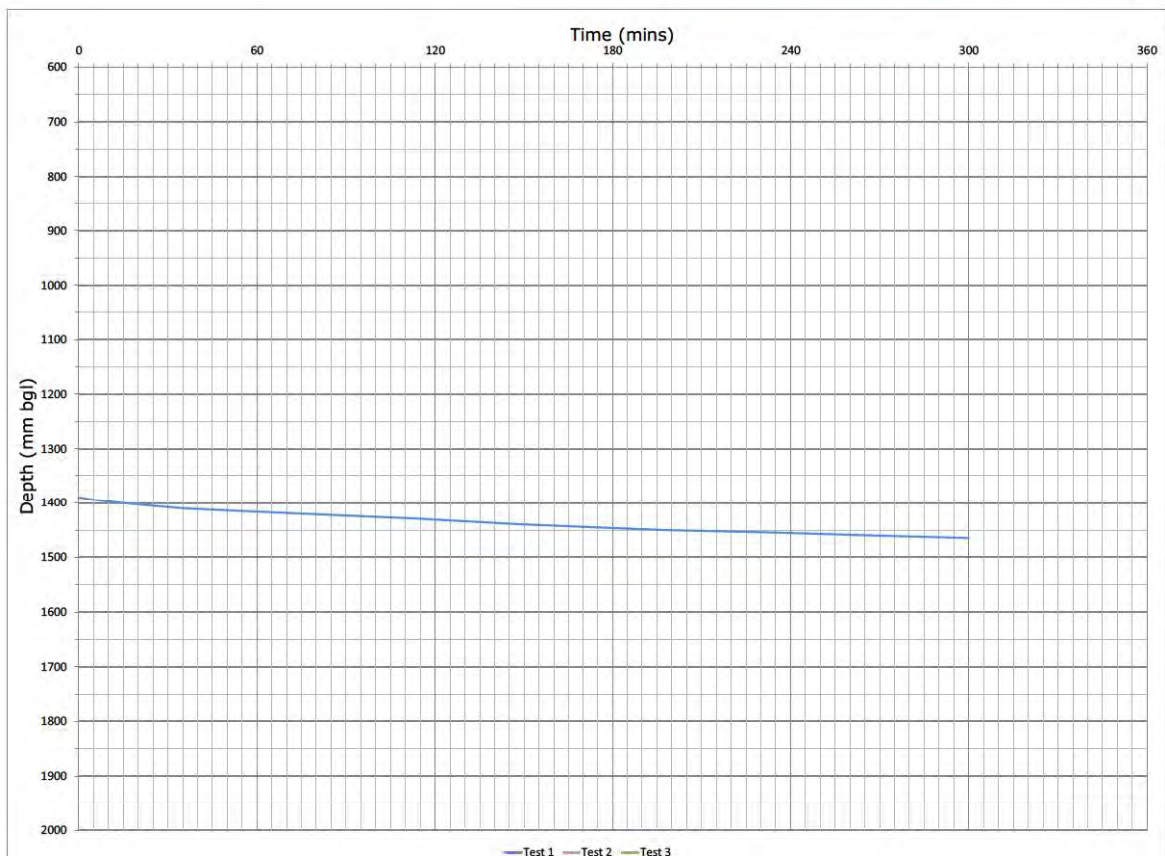
## **BRE365 Soakage Test Data**

**TEC**  
TWEEDIE EVANS CONSULTING

|                     |                               |
|---------------------|-------------------------------|
| Project:            | <b>Bonhams Fields, Yapton</b> |
| Project Number:     | <b>1909008.001</b>            |
| Test Pit Reference: | TP01                          |
| Client:             | Seaward Homes                 |
| Operator:           | DH                            |
| Test Date:          | 22/10/2019                    |

[illegible]

|                                |    |  |  |
|--------------------------------|----|--|--|
| Soil Infiltration Rate (m/sec) |    |  |  |
| Soil Infiltration Rate (mm/hr) |    |  |  |
| Extrapolated Data?             | No |  |  |

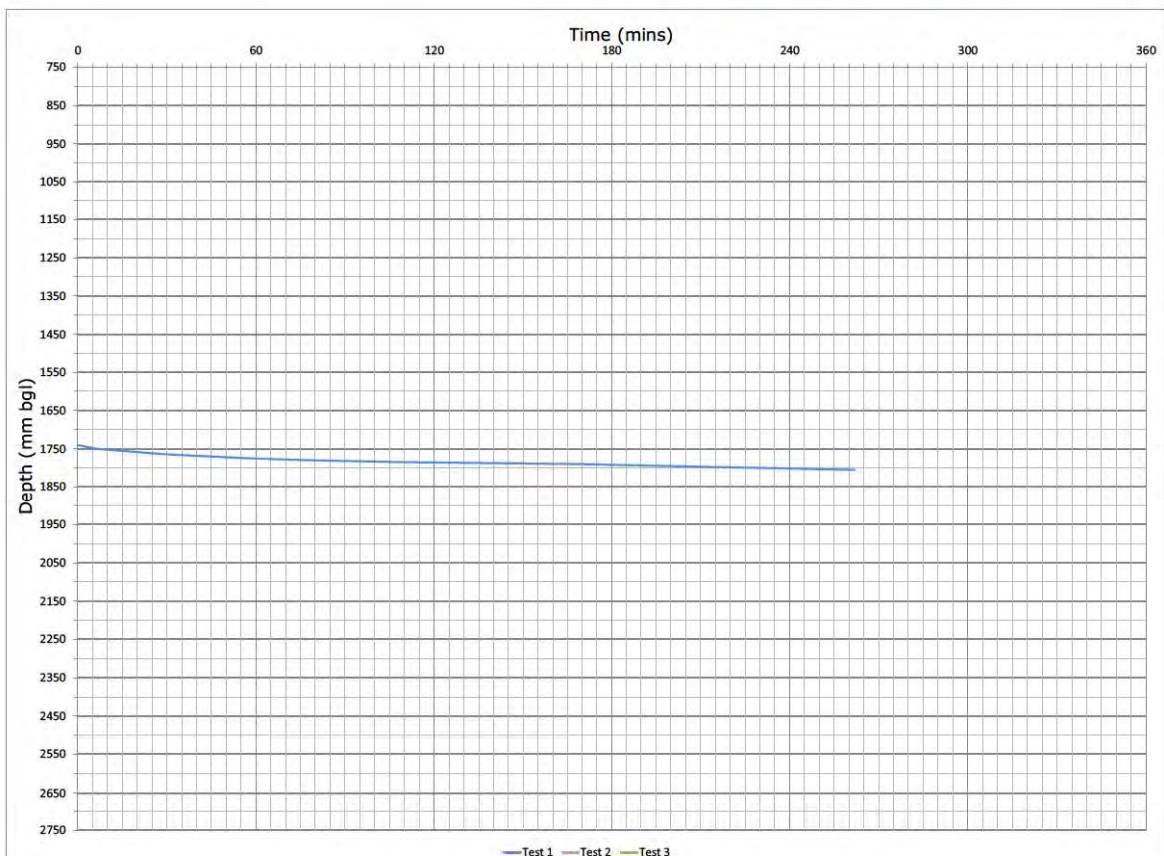


**TEC**  
TWEEDIE EVANS CONSULTING

|                     |                        |
|---------------------|------------------------|
| Project:            | Bonhams Fields, Yapton |
| Project Number:     | 1909008.001            |
| Test Pit Reference: | TP02                   |
| Client:             | Seaward Homes          |
| Operator:           | DH                     |
| Test Date:          | 22/10/2019             |

[illegible]

|                                |    |  |  |
|--------------------------------|----|--|--|
| Soil Infiltration Rate (m/sec) |    |  |  |
| Soil Infiltration Rate (mm/hr) |    |  |  |
| Extrapolated Data?             | No |  |  |



**TEC**  
TWEEDIE EVANS CONSULTING

|                     |                               |
|---------------------|-------------------------------|
| Project:            | <b>Bonhams Fields, Yapton</b> |
| Project Number:     | <b>1909008.001</b>            |
| Test Pit Reference: | TP03                          |
| Client:             | Seaward Homes                 |
| Operator:           | DH                            |
| Test Date:          | 22/10/2019                    |

[illegible]

|                                |    |  |  |
|--------------------------------|----|--|--|
| Soil Infiltration Rate (m/sec) |    |  |  |
| Soil Infiltration Rate (mm/hr) |    |  |  |
| Extrapolated Data?             | No |  |  |

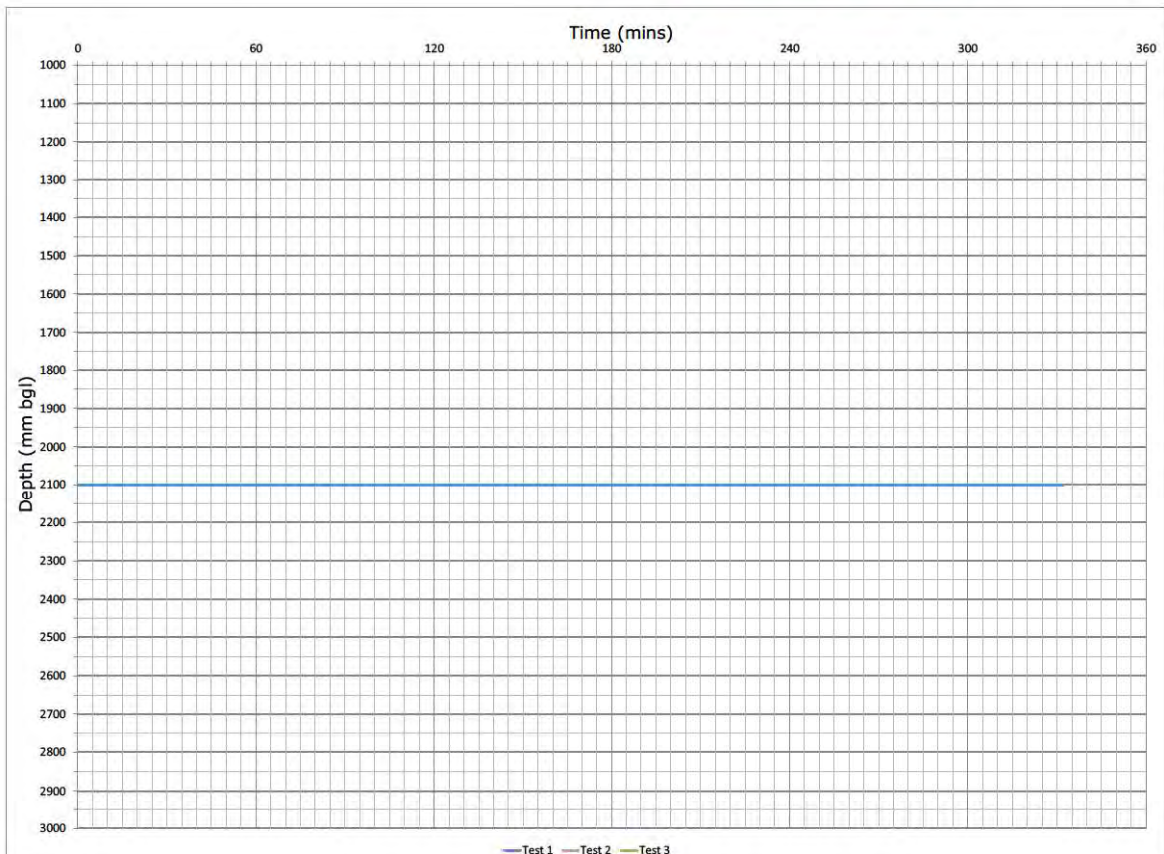


**TEC**  
TWEEDIE EVANS CONSULTING

|                     |                               |
|---------------------|-------------------------------|
| Project:            | <b>Bonhams Fields, Yapton</b> |
| Project Number:     | <b>1909008.001</b>            |
| Test Pit Reference: | TP04                          |
| Client:             | Seaward Homes                 |
| Operator:           | DH                            |
| Test Date:          | 23/10/2019                    |

[illegible]

|                                |    |  |  |
|--------------------------------|----|--|--|
| Soil Infiltration Rate (m/sec) |    |  |  |
| Soil Infiltration Rate (mm/hr) |    |  |  |
| Extrapolated Data?             | No |  |  |



**TEC**  
TWEEDIE EVANS CONSULTING

|                     |                        |
|---------------------|------------------------|
| Project:            | Bonhams Fields, Yapton |
| Project Number:     | 1909008.001            |
| Test Pit Reference: | TP05                   |
| Client:             | Seaward Homes          |
| Operator:           | DH                     |
| Test Date:          | 22/10/2019             |

[illegible]

Note: Where granular fill used to stabilise the test pit, assume there to be 30% free volume.

The graph displays the depth of a water column over a 360-minute period for three different tests. The y-axis represents depth in millimeters below the ground line (mm bgl), ranging from 500 to 2500. The x-axis represents time in minutes, ranging from 0 to 360. All three tests start at a depth of approximately 1480 mm bgl at time 0. Test 1 (blue line) shows a gradual decrease to about 1570 mm bgl at 360 minutes. Test 2 (grey line) shows a similar trend, ending at approximately 1570 mm bgl. Test 3 (green line) also shows a gradual decrease, ending at about 1570 mm bgl. The lines for all three tests are very close to each other throughout the duration.

| Time (mins) | Test 1 Depth (mm bgl) | Test 2 Depth (mm bgl) | Test 3 Depth (mm bgl) |
|-------------|-----------------------|-----------------------|-----------------------|
| 0           | 1480                  | 1480                  | 1480                  |
| 60          | 1490                  | 1490                  | 1490                  |
| 120         | 1500                  | 1500                  | 1500                  |
| 180         | 1510                  | 1510                  | 1510                  |
| 240         | 1520                  | 1520                  | 1520                  |
| 300         | 1530                  | 1530                  | 1530                  |
| 360         | 1570                  | 1570                  | 1570                  |

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|                     |                               |
|---------------------|-------------------------------|
| Project:            | <b>Bonhams Fields, Yapton</b> |
| Project Number:     | <b>1909008.001</b>            |
| Test Pit Reference: | TP05                          |
| Client:             | Seaward Homes                 |
| Operator:           | DH                            |
| Test Date:          | 23/10/2019                    |

[illegible]

|                                |    |  |  |
|--------------------------------|----|--|--|
| Soil Infiltration Rate (m/sec) |    |  |  |
| Soil Infiltration Rate (mm/hr) |    |  |  |
| Extrapolated Data?             | No |  |  |



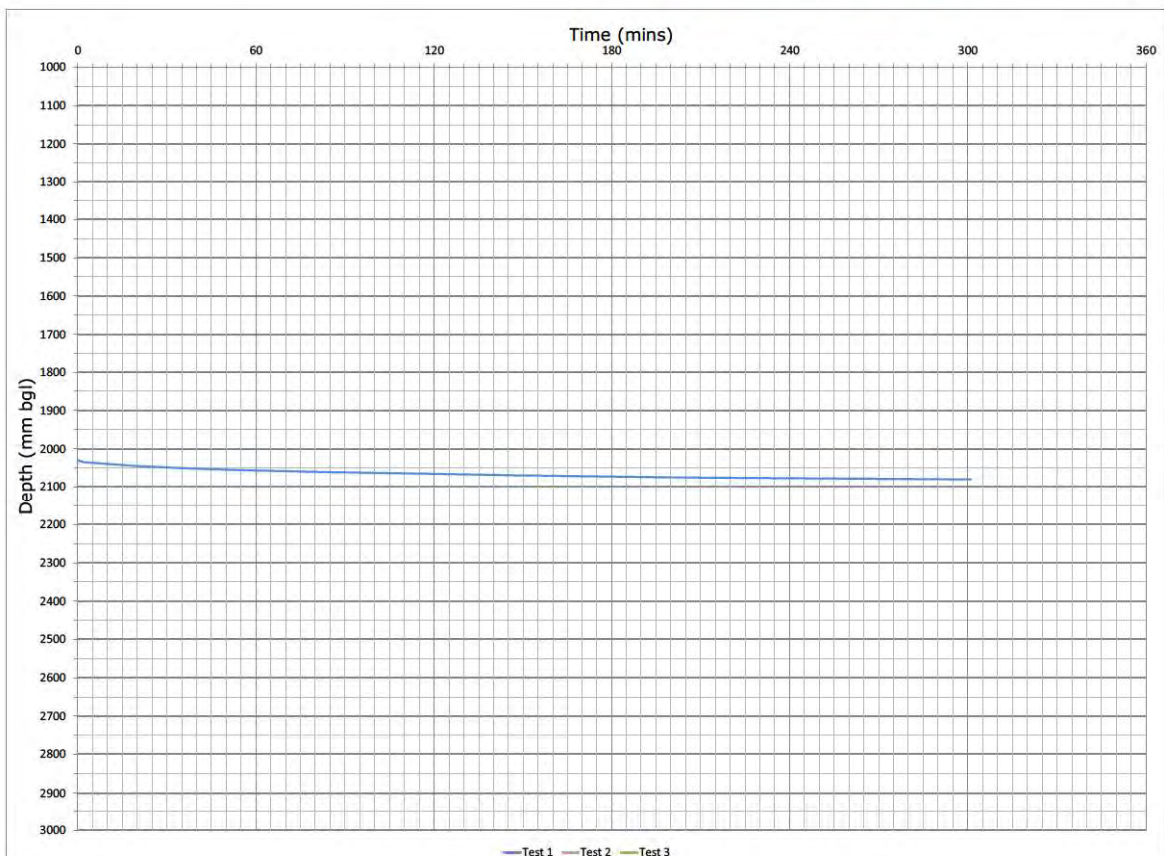
**TEC**  
TWEEDIE EVANS CONSULTING

|                     |                        |
|---------------------|------------------------|
| Project:            | Bonhams Fields, Yapton |
| Project Number:     | 1909008.001            |
| Test Pit Reference: | TP07                   |
| Client:             | Seaward Homes          |
| Operator:           | DH                     |
| Test Date:          | 24/10/2019             |

[illegible]

|                                           |      |  |  |
|-------------------------------------------|------|--|--|
| $V_{\text{appt-25}} \text{ (m}^3\text{)}$ | 0.80 |  |  |
| $B_{\text{appt}} \text{ (m}^2\text{)}$    | 5.25 |  |  |
| $t_{\text{appt-25}} \text{ (min)}$        | 0    |  |  |

|                                |    |  |  |
|--------------------------------|----|--|--|
| Soil Infiltration Rate (m/sec) |    |  |  |
| Soil Infiltration Rate (mm/hr) |    |  |  |
| Extrapolated Data?             | No |  |  |

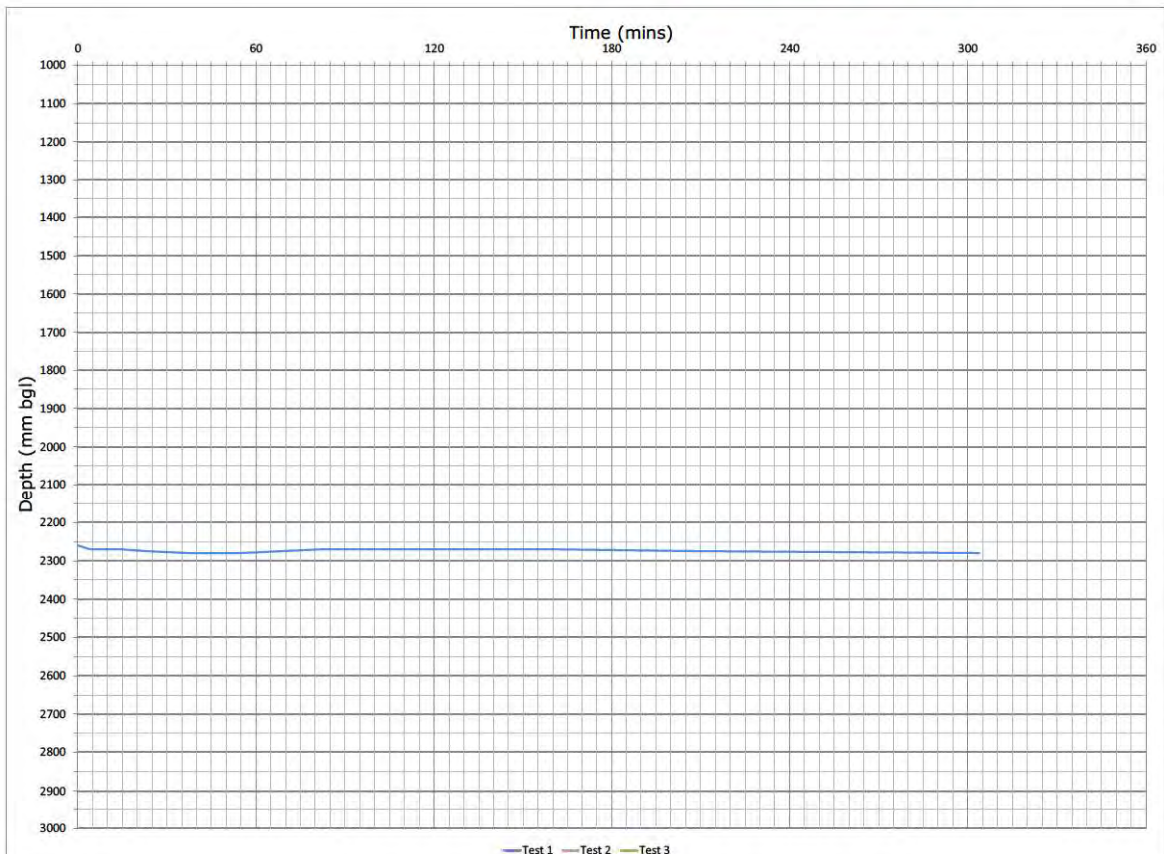


**TEC**  
TWEEDIE EVANS CONSULTING

|                     |                               |
|---------------------|-------------------------------|
| Project:            | <b>Bonhams Fields, Yapton</b> |
| Project Number:     | <b>1909008.001</b>            |
| Test Pit Reference: | TP08                          |
| Client:             | Seaward Homes                 |
| Operator:           | DH                            |
| Test Date:          | 24/10/2019                    |

[illegible]

|                                |    |  |  |
|--------------------------------|----|--|--|
| Soil Infiltration Rate (m/sec) |    |  |  |
| Soil Infiltration Rate (mm/hr) |    |  |  |
| Extrapolated Data?             | No |  |  |



**TEC**  
TWEEDIE EVANS CONSULTING

|                     |                               |
|---------------------|-------------------------------|
| Project:            | <b>Bonhams Fields, Yapton</b> |
| Project Number:     | <b>1909008.001</b>            |
| Test Pit Reference: | TP09                          |
| Client:             | Seaward Homes                 |
| Operator:           | DH                            |
| Test Date:          | 25/10/2019                    |

[illegible]

Note: Where granular fill used to stabilise the test pit, assume there to be 30% free volume.

The graph displays the depth of water in millimeters below the ground level (mm bgl) over a period of 360 minutes for three different tests. The y-axis represents Depth (mm bgl) from 0 to 2000, and the x-axis represents Time (mins) from 0 to 360. All three tests start at a depth of 700 mm bgl at time 0. Test 1 (blue line) shows a steady decrease in depth, reaching 900 mm bgl at 240 minutes. Test 2 (grey line) shows a similar trend, reaching 900 mm bgl at 240 minutes. Test 3 (green line) shows a slightly faster initial decrease, reaching 900 mm bgl at 240 minutes.

| Time (mins) | Test 1 Depth (mm bgl) | Test 2 Depth (mm bgl) | Test 3 Depth (mm bgl) |
|-------------|-----------------------|-----------------------|-----------------------|
| 0           | 700                   | 700                   | 700                   |
| 60          | 750                   | 750                   | 750                   |
| 120         | 800                   | 800                   | 800                   |
| 180         | 850                   | 850                   | 850                   |
| 240         | 900                   | 900                   | 900                   |

**TP1 - Alternate Method based on actual volume discharged over observed time period**

|                                                |                    |                       |
|------------------------------------------------|--------------------|-----------------------|
| Width of Trial Pit                             | 0.5 m              |                       |
| Length of Trial Pit                            | 3.2 m              |                       |
| or                                             |                    |                       |
| Diameter of Borehole                           | 0 m                |                       |
| Surface area of pit                            | 1.6 m <sup>2</sup> |                       |
| Start Depth                                    | 1.21 m             |                       |
| End Depth                                      | 1.135 m            |                       |
| Volume of water lost from pit                  |                    | 0.12 m <sup>3</sup>   |
| Average effective drainage area including base |                    | 1.8775 m <sup>2</sup> |
| Test Duration                                  | 18000 s            |                       |

Infiltration rate = Volume discharged / (effective drainage area x test duration)

|                                   |                     |
|-----------------------------------|---------------------|
| Infiltration rate =               | 3.55E-06 m/s        |
| Factor of Safety                  | 1                   |
| <b>Design Infiltration Rate =</b> | <b>3.55E-06 m/s</b> |

**TP2 - Alternate Method based on actual volume discharged over observed time period**

|                                                |                    |                       |
|------------------------------------------------|--------------------|-----------------------|
| Width of Trial Pit                             | 0.5 m              |                       |
| Length of Trial Pit                            | 3.2 m              |                       |
| or                                             |                    |                       |
| Diameter of Borehole                           | 0 m                |                       |
| Surface area of pit                            | 1.6 m <sup>2</sup> |                       |
| Start Depth                                    | 1.16 m             |                       |
| End Depth                                      | 1.095 m            |                       |
| Volume of water lost from pit                  |                    | 0.104 m <sup>3</sup>  |
| Average effective drainage area including base |                    | 1.8405 m <sup>2</sup> |
| Test Duration                                  | 15720 s            |                       |

Infiltration rate = Volume discharged / (effective drainage area x test duration)

|                                   |                     |
|-----------------------------------|---------------------|
| Infiltration rate =               | 3.59E-06 m/s        |
| Factor of Safety                  | 1                   |
| <b>Design Infiltration Rate =</b> | <b>3.59E-06 m/s</b> |

**TP3 - Alternate Method based on actual volume discharged over observed time period**

|                                                |                     |                       |
|------------------------------------------------|---------------------|-----------------------|
| Width of Trial Pit                             | 0.5 m               |                       |
| Length of Trial Pit                            | 3.1 m               |                       |
| or                                             |                     |                       |
| Diameter of Borehole                           | 0 m                 |                       |
| Surface area of pit                            | 1.55 m <sup>2</sup> |                       |
| Start Depth                                    | 1.47 m              |                       |
| End Depth                                      | 1.44 m              |                       |
| Volume of water lost from pit                  |                     | 0.0465 m <sup>3</sup> |
| Average effective drainage area including base |                     | 1.658 m <sup>2</sup>  |
| Test Duration                                  | 14400 s             |                       |

Infiltration rate = Volume discharged / (effective drainage area x test duration)

|                                   |                     |
|-----------------------------------|---------------------|
| Infiltration rate =               | 1.95E-06 m/s        |
| Factor of Safety                  | 1                   |
| <b>Design Infiltration Rate =</b> | <b>1.95E-06 m/s</b> |

**TP5 - Alternate Method based on actual volume discharged over observed time period**

|                                                |                    |                      |
|------------------------------------------------|--------------------|----------------------|
| Width of Trial Pit                             | 0.5 m              |                      |
| Length of Trial Pit                            | 3.2 m              |                      |
| or                                             |                    |                      |
| Diameter of Borehole                           | 0 m                |                      |
| Surface area of pit                            | 1.6 m <sup>2</sup> |                      |
| Start Depth                                    | 1.52 m             |                      |
| End Depth                                      | 1.43 m             |                      |
| Volume of water lost from pit                  |                    | 0.144 m <sup>3</sup> |
| Average effective drainage area including base |                    | 1.933 m <sup>2</sup> |
| Test Duration                                  | 18360 s            |                      |

Infiltration rate = Volume discharged / (effective drainage area x test duration)

|                                   |                     |
|-----------------------------------|---------------------|
| Infiltration rate =               | 4.06E-06 m/s        |
| Factor of Safety                  | 1                   |
| <b>Design Infiltration Rate =</b> | <b>4.06E-06 m/s</b> |

**Alternate Method based on actual volume discharged over observed time period**

|                                                |                     |                      |
|------------------------------------------------|---------------------|----------------------|
| Width of Trial Pit                             | 0.5 m               |                      |
| Length of Trial Pit                            | 2.9 m               |                      |
| or                                             |                     |                      |
| Diameter of Borehole                           | 0 m                 |                      |
| Surface area of pit                            | 1.45 m <sup>2</sup> |                      |
| Start Depth                                    | 1.23 m              |                      |
| End Depth                                      | 1.07 m              |                      |
| Volume of water lost from pit                  |                     | 0.232 m <sup>3</sup> |
| Average effective drainage area including base |                     | 1.994 m <sup>2</sup> |
| Test Duration                                  | 17340 s             |                      |

Infiltration rate = Volume discharged / (effective drainage area x test duration)

|                                   |                     |
|-----------------------------------|---------------------|
| Infiltration rate =               | 6.71E-06 m/s        |
| Factor of Safety                  | 1                   |
| <b>Design Infiltration Rate =</b> | <b>6.71E-06 m/s</b> |

**TP7 Alternate Method based on actual volume discharged over observed time period**

|                                                |                    |                      |
|------------------------------------------------|--------------------|----------------------|
| Width of Trial Pit                             | 0.5 m              |                      |
| Length of Trial Pit                            | 3 m                |                      |
| or                                             |                    |                      |
| Diameter of Borehole                           | 0 m                |                      |
| Surface area of pit                            | 1.5 m <sup>2</sup> |                      |
| Start Depth                                    | 0.97 m             |                      |
| End Depth                                      | 0.92 m             |                      |
| Volume of water lost from pit                  |                    | 0.075 m <sup>3</sup> |
| Average effective drainage area including base |                    | 1.675 m <sup>2</sup> |
| Test Duration                                  | 18060 s            |                      |

Infiltration rate = Volume discharged / (effective drainage area x test duration)

|                                   |                     |
|-----------------------------------|---------------------|
| Infiltration rate =               | 2.48E-06 m/s        |
| Factor of Safety                  | 1                   |
| <b>Design Infiltration Rate =</b> | <b>2.48E-06 m/s</b> |

**TP8 - Alternate Method based on actual volume discharged over observed time period**

|                                                |                    |                      |
|------------------------------------------------|--------------------|----------------------|
| Width of Trial Pit                             | 0.5 m              |                      |
| Length of Trial Pit                            | 2.8 m              |                      |
| or                                             |                    |                      |
| Diameter of Borehole                           | 0 m                |                      |
| Surface area of pit                            | 1.4 m <sup>2</sup> |                      |
| Start Depth                                    | 0.94 m             |                      |
| End Depth                                      | 0.92 m             |                      |
| Volume of water lost from pit                  |                    | 0.028 m <sup>3</sup> |
| Average effective drainage area including base |                    | 1.466 m <sup>2</sup> |
| Test Duration                                  | 18240 s            |                      |

Infiltration rate = Volume discharged / (effective drainage area x test duration)

|                                   |                     |
|-----------------------------------|---------------------|
| Infiltration rate =               | 1.05E-06 m/s        |
| Factor of Safety                  | 1                   |
| <b>Design Infiltration Rate =</b> | <b>1.05E-06 m/s</b> |

**TP9 - Alternate Method based on actual volume discharged over observed time period**

|                                                |                     |                       |
|------------------------------------------------|---------------------|-----------------------|
| Width of Trial Pit                             | 0.5 m               |                       |
| Length of Trial Pit                            | 2.9 m               |                       |
| or                                             |                     |                       |
| Diameter of Borehole                           | 0 m                 |                       |
| Surface area of pit                            | 1.45 m <sup>2</sup> |                       |
| Start Depth                                    | 1.01 m              |                       |
| End Depth                                      | 0.8 m               |                       |
| Volume of water lost from pit                  |                     | 0.3045 m <sup>3</sup> |
| Average effective drainage area including base |                     | 2.164 m <sup>2</sup>  |
| Test Duration                                  | 15120 s             |                       |

Infiltration rate = Volume discharged / (effective drainage area x test duration)

|                                   |                     |
|-----------------------------------|---------------------|
| Infiltration rate =               | 9.31E-06 m/s        |
| Factor of Safety                  | 1                   |
| <b>Design Infiltration Rate =</b> | <b>9.31E-06 m/s</b> |

## **Appendix 5**

### **Flood Maps**

# Flood map for planning

Your reference  
**Bonhams Field**

Location (easting/northing)  
**497486/103397**

Created  
**9 Sep 2020 15:44**

**Your selected location is in flood zone 1, an area with a low probability of flooding.**

## This means:

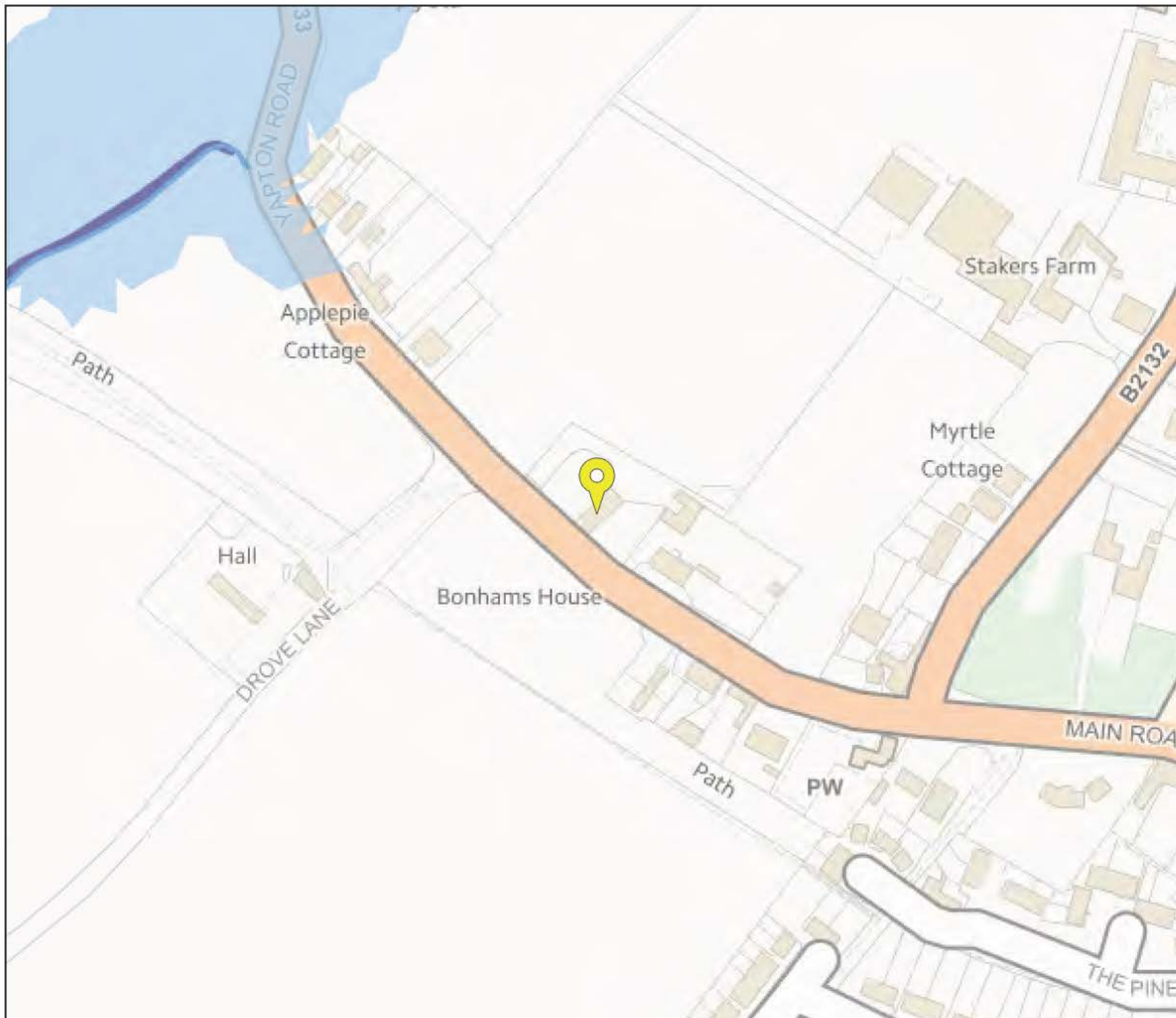
- you don't need to do a flood risk assessment if your development is smaller than 1 hectare and not affected by other sources of flooding
- you may need to do a flood risk assessment if your development is larger than 1 hectare or affected by other sources of flooding or in an area with critical drainage problems

## Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

The Open Government Licence sets out the terms and conditions for using government data.  
<https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>



## Flood map for planning

Your reference  
**Bonhams Field**

Location (easting/northing)  
**497486/103397**

Scale  
**1:2500**

Created  
**9 Sep 2020 15:44**

-  Selected point
-  Flood zone 3
-  Flood zone 3: areas benefitting from flood defences
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Flood storage area

0 20 40 60m



#### Notes:

The Arun SFRA is a strategic assessment of flooding. Users of the SFRA should be aware of this when interpreting the information presented. The user is directed to the SFRA reports which outline the uncertainties associated with the studies. Particular attention is drawn to the following:

- Flood extent boundaries are not considered definitive. Land adjacent to these areas may also be at risk.
- Some flooding mechanisms have not been included in the assessment. The 'coastal risk area' is based on advice from LA Engineers and requires further assessment.

## Arun District Council SFRA

Map A1-F - Actual and Residual Risk of Flooding from Rivers



**CAPITA SYMONDS**

#### Legend

- Arun District Boundary
- Actual Defended Fluvial Flood Risk (1% AEP, 2006)
- Residual Defended Fluvial Flood Risk (0.1% AEP, 2006)



0 2 4  
Kilometres

Scale at A3: 1:80,000

Date: 31/01/2008

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Map\_A1-F.wor



#### Notes:

The Arun SFRA is a strategic assessment of flooding. Users of the SFRA should be aware of this when interpreting the information presented. The user is directed to the SFRA reports which outline the uncertainties associated with the studies. Particular attention is drawn to the following:

- Flood extent boundaries are not considered definitive. Land adjacent to these areas may also be at risk.
- Some flooding mechanisms have not been included in the assessment. The 'coastal risk area' is based on advice from LA Engineers and requires further assessment.

## Arun District Council SFRA

Map A1-T - Actual and Residual Flooding from the Sea



**CAPITA SYMONDS**

#### Legend

- Arun District Boundary
- Actual Defended Tidal Flood Risk (0.5% AEP, 2006)
- Residual Defended Tidal Flood Risk (0.1% AEP, 2006)
- Coastal Risk Area



0 2 4  
Kilometres

Scale at A3: 1:80,000

Date: 31/01/2008

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Map\_A1-T wor



# Arun District Council SFRA

Map B - Residual Risk from Breach



**CAPITA SYMONDS**

## Legend

- Arun District Boundary
- Main River
- Modelled Fluvial Breach Extents - Residual Risk
- Modelled Tidal Breach Extents - Residual Risk
- ▲ Proposed Breach Locations



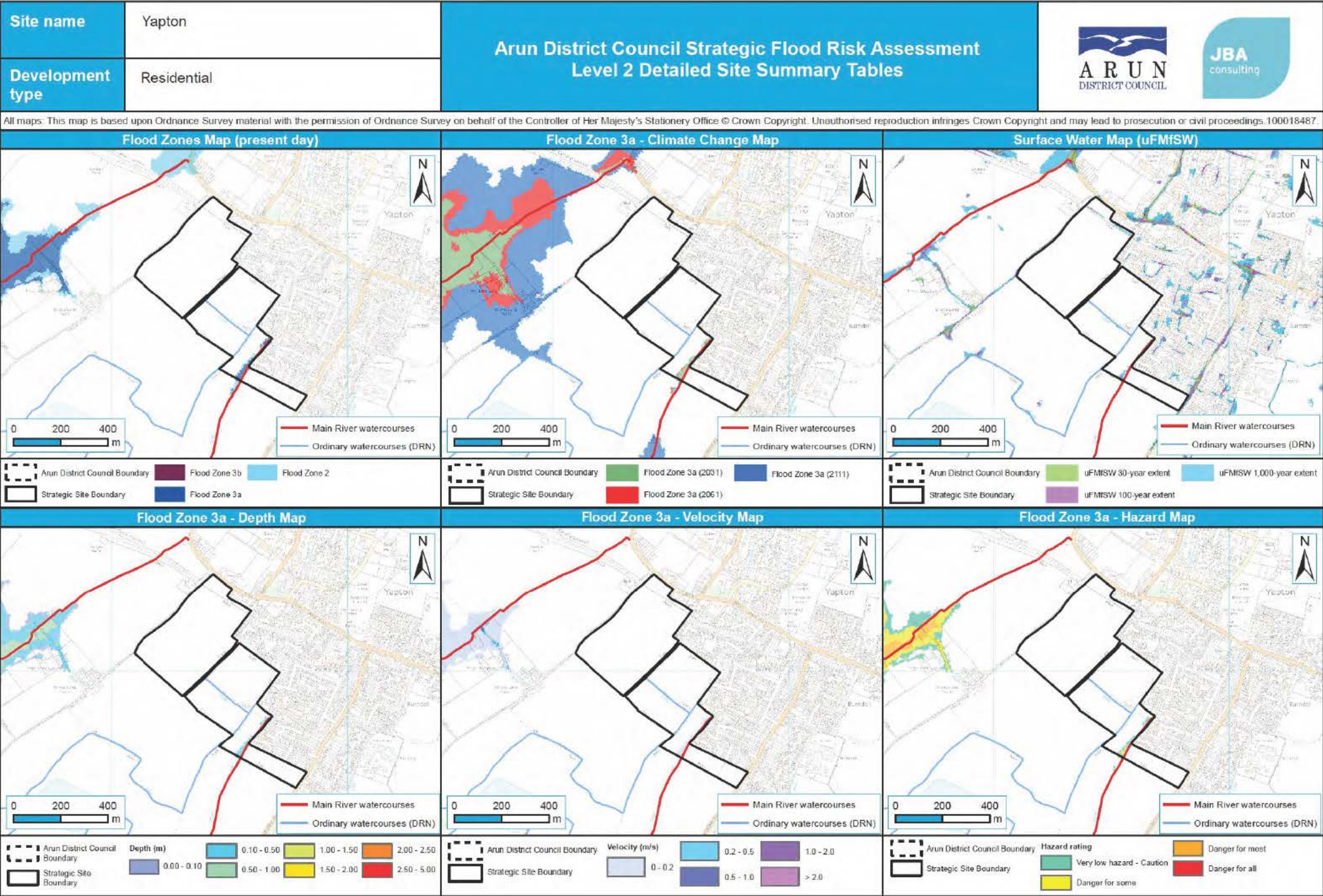
0 2 4  
Kilometres

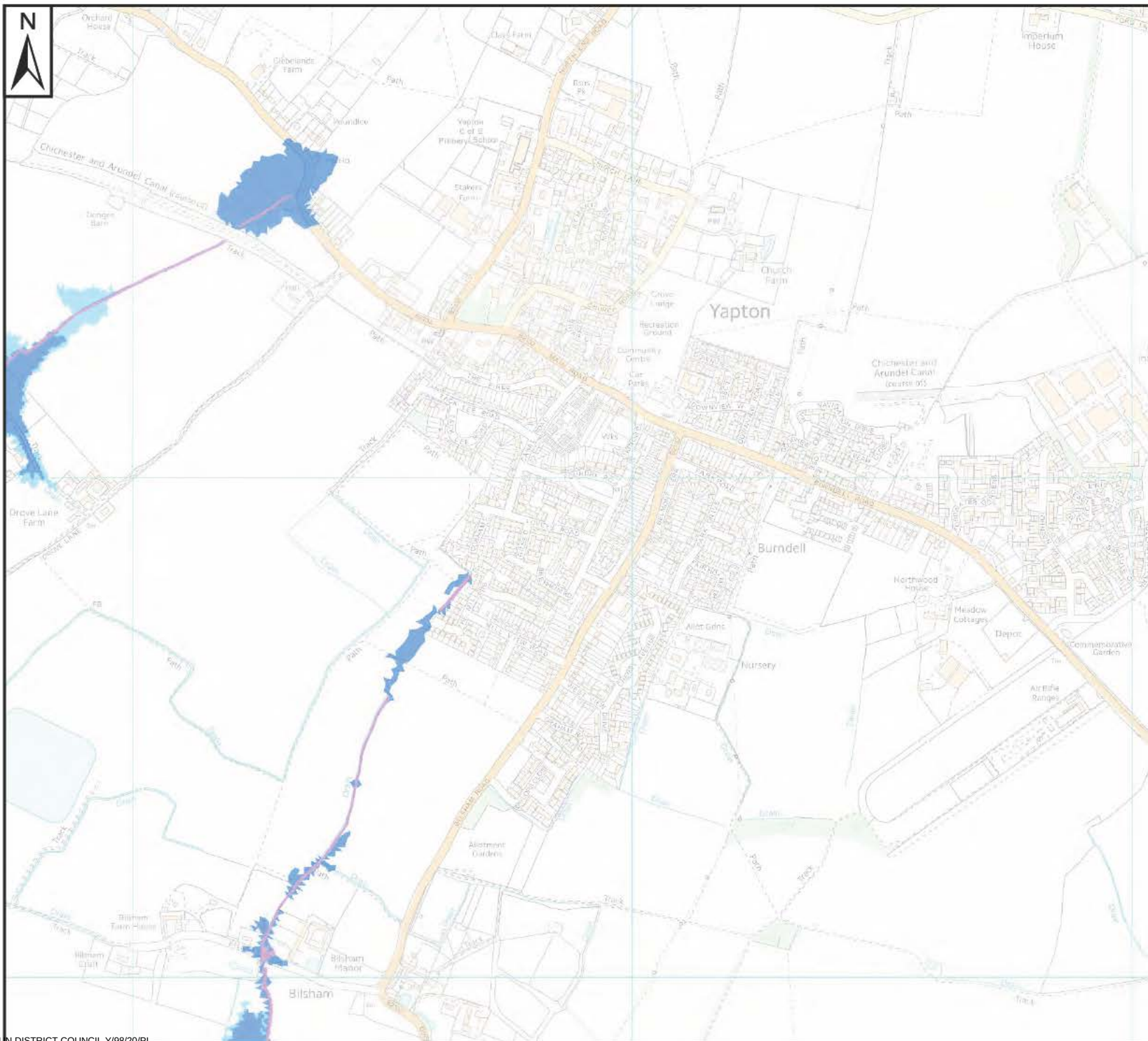
Scale at A3: 1:80,000

Date: 31/01/2008

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Map\_B.wor





## Notes

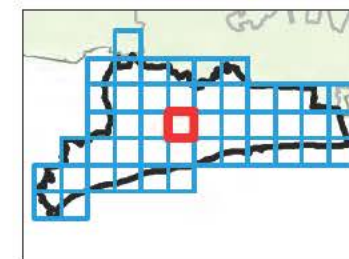
Zone 1: Comprised of land having a less than 1 in 1,000 annual probability of river or sea flooding in any year.

Zone 2: Comprised of land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding or 1 in 200 and 1 in 1,000 annual probability of sea flooding in any year.

Zone 3a: This zone comprises land assessed as having a greater than 1 in 100 annual probability of river flooding or a greater than 1 in 200 annual probability of flooding from sea in any year.

Zone 3b: This zone comprises land where water has to flow or be stored in times of flood (the functional floodplain). The SFRA identified this Flood Zone as land which would flood with an annual probability of 1 in 20 years, where detailed modelling exists. In the absence of detailed hydraulic model information, a precautionary approach has been adopted with the assumption that the extent of Flood Zone 3b would be equal to Flood Zone 3a. If development is shown to be in Flood Zone 3a, further work should be undertaken as part of a detailed site specific

## Key Plan



## Legend

Arun District SFRA boundary

Flood Zone 3b

Flood Zone 3a

Flood Zone 2



| REF | Date      | Comments |
|-----|-----------|----------|
| A   | June 2016 | -        |
| B   |           |          |
| C   |           |          |

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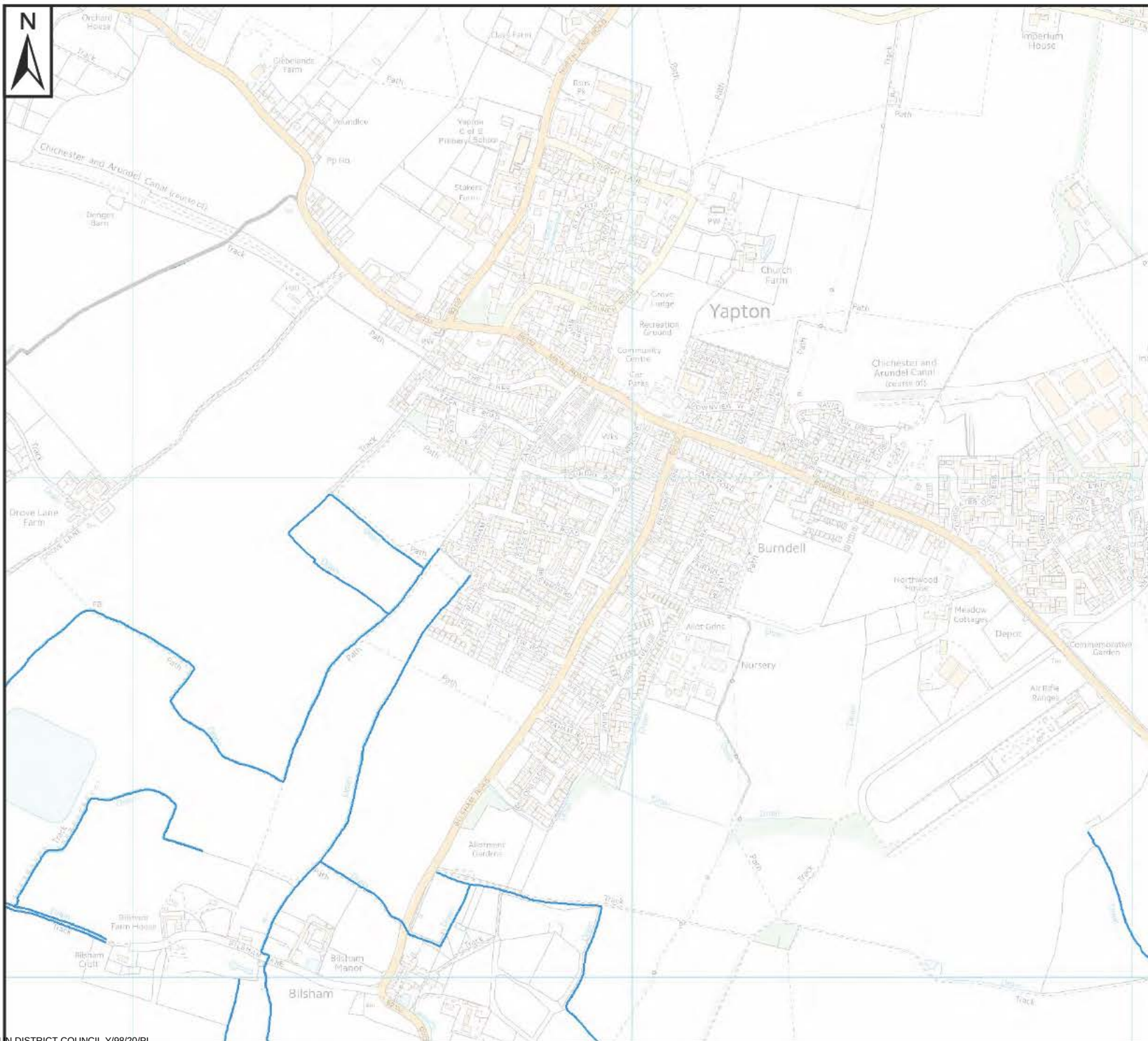
### LEVEL 1 SFRA: APPENDIX C FLOOD ZONES

Sheet No: 23 of 46

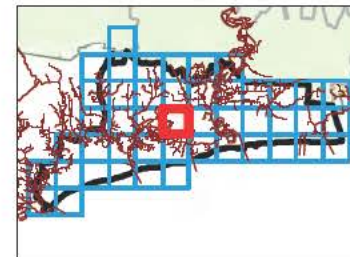
Index Number: ADC\_23

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## Key Plan



## Legend

- Arun District SFRA boundary
- Main Rivers**
- Aldingbourne Rife
  - Ash Grove
  - Barnham Lane Ditch
  - Barnham Rife
  - Black Ditch
  - Decoy Ponds Ditch
  - East Poling Drain
  - Eel Springs Ditch
  - Ferring Rife
  - Forebridge Rife
  - Lidsey Rife
  - Little Tortington Stream
  - North Bersted Ditch
  - Pagham Harbour Channels
  - Pagham Rife
  - River Arun
  - Rope Walk Ditch
  - Ryebank Rife
  - Shipney Manor Ditch
  - West Poling Drain
  - Yapton Rife
  - Ordinary watercourse



| REF | Date      | Comments |
|-----|-----------|----------|
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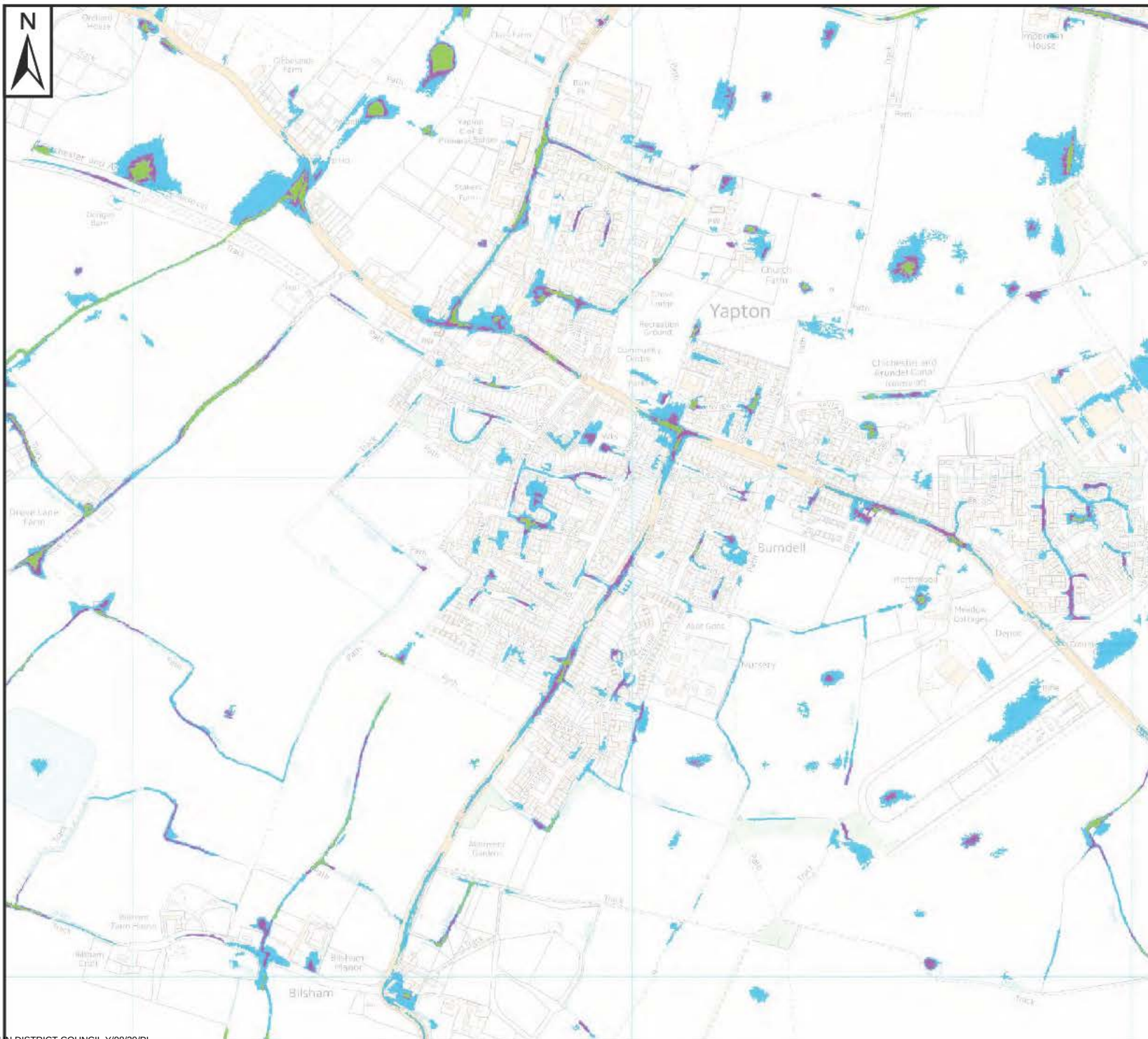
## ARUN DISTRICT COUNCIL

### LEVEL 1 SFRA: APPENDIX B WATERCOURSES

Sheet No: 23 of 46 Index Number: ADC\_23

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## Notes

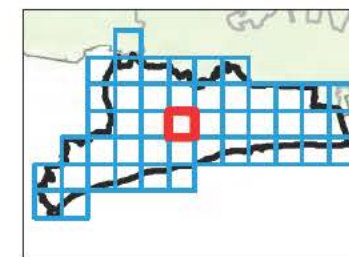
The updated Flood Map for Surface Water (uFMfSW) shows the flooding that takes place from the 'surface runoff' generated by rainwater (including snow and other precipitation) which:

- (a) is on the surface of the ground (whether or not it is moving), and
- (b) has not yet entered a watercourse, drainage system or public sewer.

The uFMfSW will pick out natural drainage channels, rivers, low areas in the floodplain and flow paths between buildings but it will only indicate flooding caused by local rainfall.

Note: The uFMfSW shows predictions of flooded areas but does not show whether individual properties will be affected by surface water flooding or have been affected in the past. The uFMfSW should not be used to predict if individual properties will flood.

## Key Plan



## Legend

- Arun District SFRA boundary
- uFMfSW 30-year extent
- uFMfSW 100-year extent
- uFMfSW 1,000-year extent



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|-----|-----------|----------|
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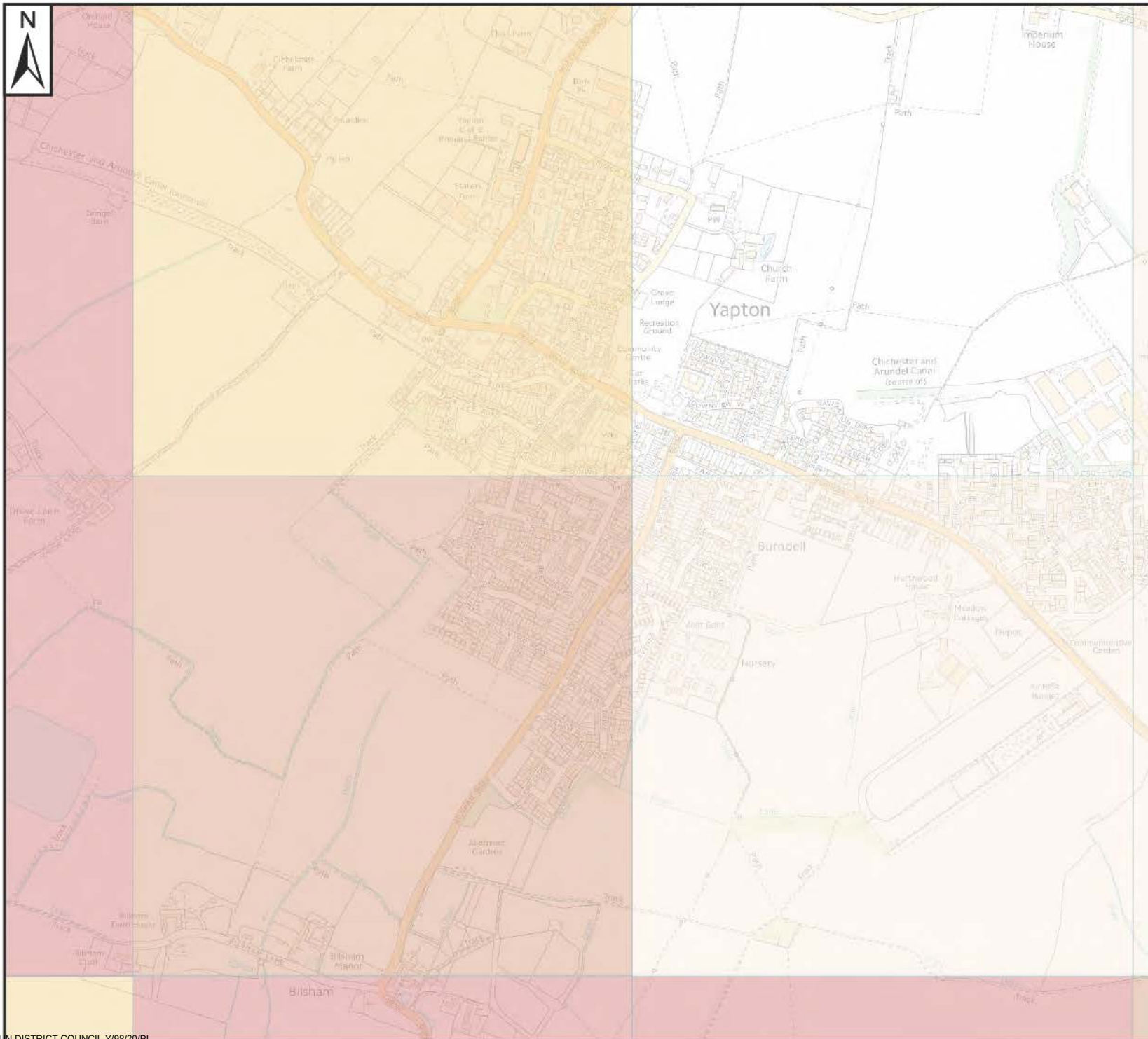
### LEVEL 1 SFRA: APPENDIX E SURFACE WATER FLOOD RISK

Sheet No: 23 of 46

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## Notes

The Areas Susceptible to Groundwater Flooding (ASGW) is a strategic scale map showing groundwater flood areas on a 1km square grid. The data was produced to annotate indicative Flood Risk Areas for Preliminary Flood Risk Assessment (PFRA) studies and allow the Lead Local Flood Authorities (LLFAs) to determine whether there may be a risk of flooding from groundwater.

This data shows the proportion of each 1km grid square where geological and hydrogeological condition show that groundwater might emerge. It does not show the likelihood of groundwater flooding occurring. It does not take account of the chance of flooding from groundwater rebound. This dataset covers a large area of land, and only isolated locations within the overall susceptible area are actually likely to suffer the consequences of groundwater flooding.

The ASGW data should be used only in combination with other information, for example local data or historic data. It should not be used as sole evidence for any specific flood risk management, land use planning or other decisions at any scale. However, the data can help to identify areas for assessment at a local scale where finer resolution datasets exist.

## Key Plan



## Legend



Arun District SFRA boundary

< 25%

>= 25% <50%

>= 50% <75%

>= 75%



| REF | Date      | Comments |
|-----|-----------|----------|
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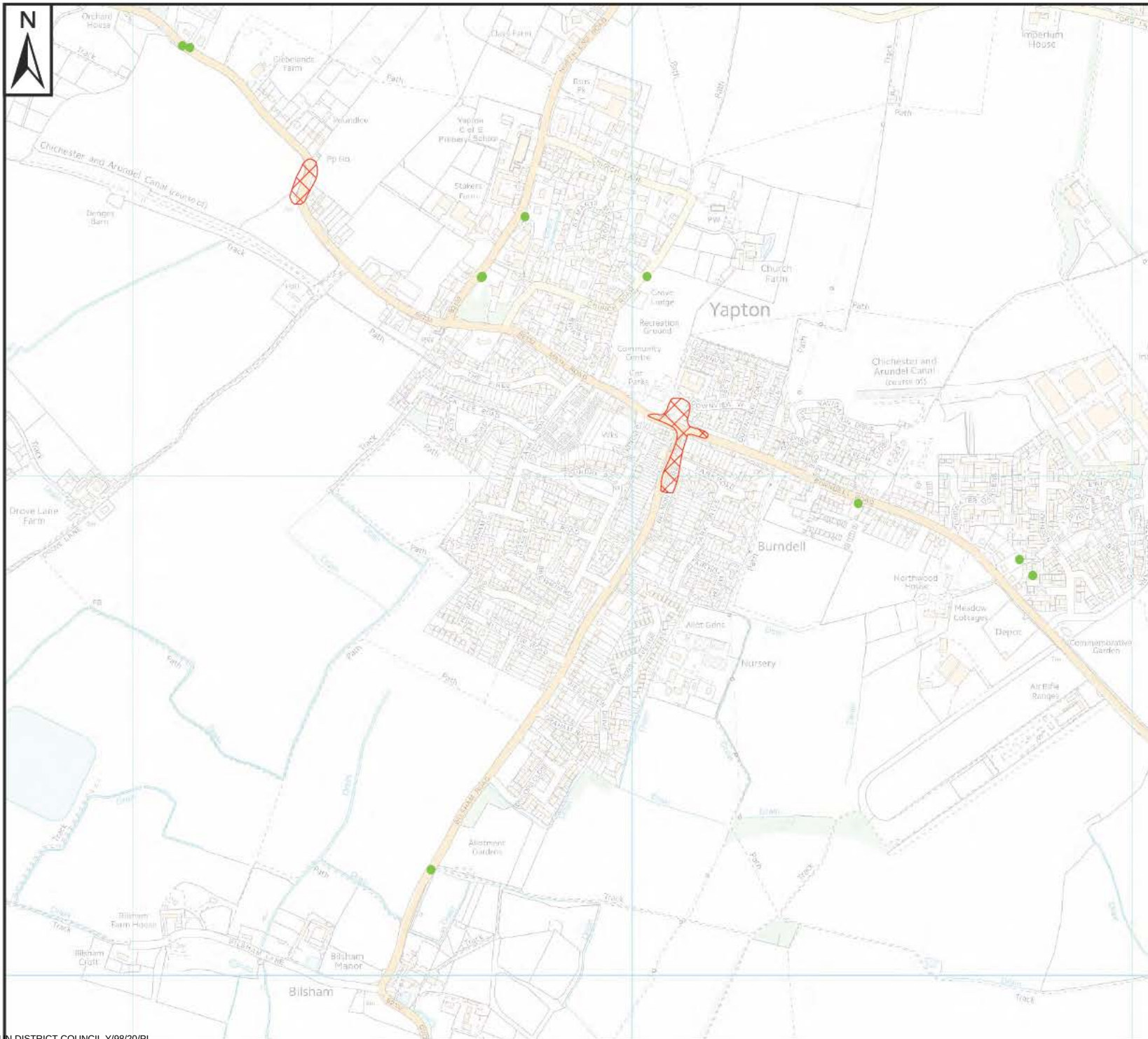
## ARUN DISTRICT COUNCIL LEVEL 1 SFRA: APPENDIX F AREAS SUSCEPTIBLE TO GROUNDWATER

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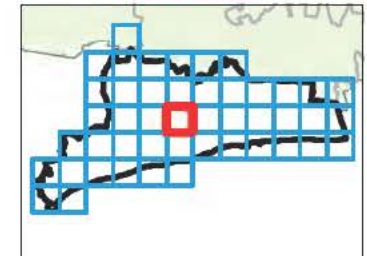
## Notes

The Historic Flooding Map shows the recorded incidents and flood outlines provided by Arun District Council, West Sussex County Council, Southern Water and Environment Agency. Historical flood extent was obtained from the Environment Agency.

Flooding incidents provided have been categorised based upon the details provided in the records. Unknown flood points could not be determined from the information provided, and therefore could be from a number of sources.

Please note that not all historical records may be shown on this map, and that it is therefore advised you contact Arun District Council for updated information post 2015.

## Key Plan



## Legend

- Arun District SFRA boundary
- Historic flood outline
- Tidal
- Surface Water
- Fluvial
- Coastal
- Failure
- Unknown

| Source of flooding |               |  |
|--------------------|---------------|--|
|                    | Fluvial       |  |
|                    | Coastal       |  |
|                    | Surface Water |  |
|                    | Failure       |  |
|                    | Unknown       |  |

| REF | Date      | Comments |
|-----|-----------|----------|
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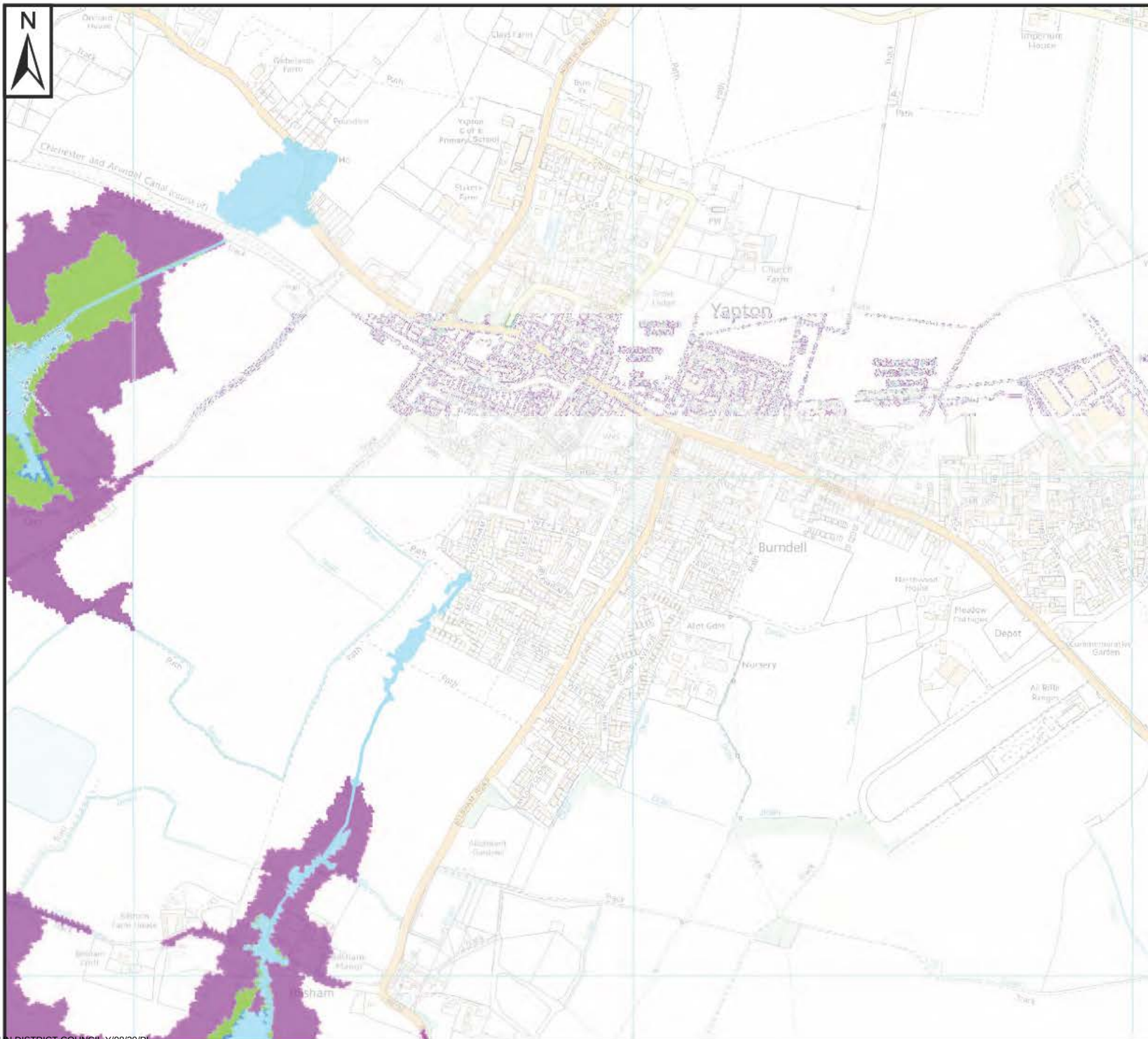
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## ARUN DISTRICT COUNCIL LEVEL 1 SFRA: APPENDIX H HISTORIC FLOODING RECORDS

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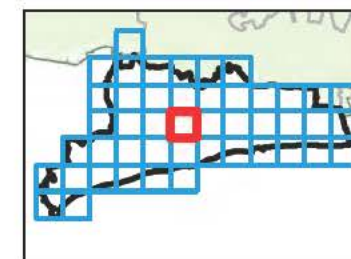
## Notes

Hydraulic modelling has been undertaken as part of this SFRA to provide updated climate change flood mapping in the Arun District for Flood Zone 3a. This modelling followed the latest guidance for climate change in FRAs/SFRAs released by the Environment Agency in February 2016 (and updated in April 2016). Climate change for fluvial events has been based on the Higher Central estimates for the years 2031, 2061 and 2111. Present day flood risk information is available for comparison. Arun District is within the South East River Basin District and therefore allowance are:

- 2031 = +15% flows
- 2061 = +30% flows
- 2111 = +45% flows

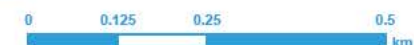
For tidal/coastal models, undefended case still water level and defended case still water level with wave overtopping simulations have been completed to inform future flood risk within the Arun District. Again, climate change allowance predictions are for the years 2031, 2061 and 2111, with present day outputs for comparison.

## Key Plan



## Legend

- Arun District SFRA boundary
- Present Flood Zone 3a
- Future Flood Zone 3a (2031)
- Future Flood Zone 3a (2061)
- Future Flood Zone 3a (2111)



| REF | Date        | Comments |
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| C   |             |          |

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## ARUN DISTRICT COUNCIL

### LEVEL 1 SFRA: APPENDIX D CLIMATE CHANGE MAPPING

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