# SITE B, WOODSIDE GRANGE

WOODSLANDS ROAD, HASSOCKS, BN6 8EX

**Flood Risk and Drainage Assessments**

December 2023

(Revised January 2024, February 2024, February 2025)

eas ltd

Environmental Assessment Services Ltd

# REPORT DATA SHEET

| Requirement | Data |
|---|---|
| Report Reference | 654/Lock/SiteBWoodsideGrangeHassocks/FR&DA |
| Date | November 2023 |
| Client | Tony Lock |
| Report type | Flood Risk and Drainage Assessment |
| Purpose | Submission to Planning |
| Revisions | January 2024, February 2024, February 2025 |
| Prepared by | Xanthe Lyford BSc (Hons)<br><br>Signed [redacted] |
| Approved by | Malcolm McKemey Eur Ing Malcolm McKemey BSc (Hons), CEng, CEnv, MICE, MIEAust, MCIWEM, MIEnvSc<br><br>[redacted]<br><br>Signed |

# MR TONY LOCK

## SITE B, WOODSIDE GRANGE, WOODSLAND ROAD, HASSOCKS BN6 8EX

## Flood Risk and Drainage Assessment

November 2023
(Revised January 2024, February 2024, February 2025)

**CONTENTS**

APPENDIX D: OUTPUT FROM DRAINAGE DESIGN SOFTWARE

APPENDIX E: TAYLOR WIMPEY SEWER AND DRAINAGE PLANS

APPENDIX F: GREENFIELD RUNOFF RATES FOR SITE

APPENDIX G: GOULD BAXTER REPORT

# MR TONY LOCK

## SITE B, WOODSIDE GRANGE, WOODSLAND ROAD, HASSOCKS BN6 8EX

## Flood Risk and Drainage Assessment

November 2023
(Revised January 2024, February 2024, February 2025)

## 1. INTRODUCTION

1.1 Environmental Assessment Services Ltd was instructed to prepare a Flood Risk and Drainage Assessment (FR&DA) in relation to a planning application for the proposed development at Woodside Grange, Hassocks.

1.2 The site-specific FR&DA is prepared generally in accordance with the Revised National Planning Policy Framework (NPPF) and its accompanying Update Planning Practice Guidance (PPG), published in July 2018.

1.3 This report has been prepared for the purposes of addressing the planning authority and Environment Agency's (EA) concerns over the flood risks relating to the proposed development. It should be appreciated that the potential for flooding at a site depends on many factors, some natural, some man-made and some arising from accident, and that these factors may change over the life of the proposed development. The flood risk in this report is assessed on the basis of available information, which is generally catalogued in the report but does not take into account any special risks or requirements of the development unless we have been specifically informed of them.

1.4 Any construction levels suggested in this report should therefore be considered as minimum levels and the client and any person appointed to undertake the design of the development should satisfy themselves that any such level is in all respects suitable for their purposes.

## 2. EXISTING SITE & PROPOSED DEVELOPMENT

2.1 The flood risk assessment is prepared for the proposed development of Woodside Grange, Hassocks to provide two new build two-storey houses with associated parking on site B, (the existing pond is to remain within site B - the boundary between the two properties lies through the centre of the pond). Also, a single-storey wheelchair accessible dwelling with parking provision and a pool on site A (the existing tennis court on site A is to remain). The existing property and garage are to be retained as a separate residence. The

Ordnance Survey reference for the site is TQ 30891 16422 and the site elevation is approximately + 44 m AOD. The total site area is 2500 $m^2$. See Figure 1 in Appendix A.

2.2 The site (as existing) is occupied by a house with a parking area, garage and swimming pool, which is to remain as a neighbouring residence to the proposed dwellings on site B. The rest of the property is currently laid to lawn, with extensive mature trees and shrubs. The proposed site is bordered to the east by the Taylor Wimpey housing development (currently under construction), to the north by the proposed Site A (a single-storey dwelling, with pool and tennis courts), to the south by the existing house and garage at Woodside Grange and to the west by the ditch which flows northwards before joining another watercourse that flows under the London to Brighton railway line. See Figure 2 in Appendix A for the existing site layout, Figure 5 in Appendix A for a map of the drainage ditch connection to the watercourse. Figure 3 in Appendix A shows the path of the watercourse/ditch.

2.3 According to the British Geological Survey, the site lies on Lower Greensand over Weald Clay. DEFRA classify the soil at the site as "slowly permeable, seasonally wet but rich based loamy and clay soil".

2.4 The south of the existing site lies on a Principal Aquifer (Lower Greensand) and is in an area of high groundwater vulnerability. This area however is situated under the existing property and not the proposed development sites.

2.5 The site borders directly onto a small stream/ditch that flows northwards alongside the railway line to the west of the site. Figure 5 and Figure 3 in Appendix A for maps show the connection of the ditch to the watercourse. There is also a drainage ditch towards the northeastern edge of the site. This lies largely under the hedge/vegetation and flows north towards the proposed Taylor Wimpey SuDS Pond. See Figure 5 in Appendix A for map.

2.6 The site is to be developed, excluding the existing house and garage and the area to the north (Site A), for use as two separate residential, two-storey dwellings with associated parking. The existing pond on the site is to be retained for use as an attenuation storage pond (the maintenance of which is to be shared as a party maintenance agreement by the proposed future residents of the two properties, the boundary of which bisects the pond). The pond currently overflows into the watercourse/drainage ditch at the western boundary of the site.

2.7 See Figure 3 in Appendix A for the proposed redevelopment plan.

## 3. FLOOD RISK & DEFENCES

### 3.1 Outline Flood Risk

3.1.1 The EA Flood Map for Planning showed the site as lying within Flood Zone 1, and with a 0.1% (or less) chance of flooding each year from fluvial sources, where defences are not considered. The EA's online 'Risk of Flooding from

Surface Water' map shows that the site is at very low risk of surface water flooding. See Appendix B.

3.1.2 The Level 1 Strategic Flood Risk Assessment (prepared by Gould Baxter - October 2023) provides a review of potential sources of flooding and proposed mitigation. The EA data provides modelled flood data and maps specific to the vicinity of the site. The modelled data indicates that the site lies within an area of very low risk of flooding from rivers, but partially on an area of low risk from flooding. (Low risk means that this area has a chance of flooding of between 0.1% and 1% each year).

### 3.2 Defences

3.2.1 The SFRA 2015 for the district did not identify any 'key flood defences' protecting the site. There are no fluvial defences affecting the site.

## 4. ALTERNATIVE SOURCES OF FLOODING

An assessment of alternative sources of flooding potentially affecting the site has also been made from a review of the Level 1 SFRA update 2017 and Level 2 West Sussex SFRA 2021 and EA online mapping.

The SFRA addresses alternative sources of flooding including fluvial flooding, surface water flooding, groundwater flooding, flooding from sewers and flooding from reservoirs.

### 4.1 Coastal Flooding

4.1.1 Due to the location and distance, the site is not at risk from coastal flooding.

### 4.2 Surface Water Flooding

4.2.1 The EA's online surface water flood risk map shows that the site is in an area at very low risk of surface water flooding (1 in 100 $\geq$ 1 in 1000), with a low risk also present at lower levels of the site (1 in 100). See Appendix B.

4.2.2 For consideration of flood mitigation measures, it is necessary to establish a design flood level for a designated Annual Exceedance Probability (AEP). For establishing a design flood level for the site, the probable life of the proposed development needs to be considered to adopt the appropriate climate change allowance, the design AEP and the appropriate flooding scenarios. The factors selected to establish the design flood level are summarised in Table 4.1 below.

Table 4.1

| **Factor** | **Value** |
|---|---|
| Probable life of proposed development (residence) | 100 years |
| Annual Exceedance Probability for fluvial flooding | 1.0% |
| Climate change allowance for fluvial flows (2115) | +20% peak river flow |

The design flood level is usually derived from the Environment Agency Product 4 for the site. It appears unlikely that any flood modelling will have extended this far into Flood Zone 1.

### 4.3 Sewer Flooding

4.3.1 The existing site does not have access to the mains sewer and foul water is disposed of directly into a cesspit on the site.

4.3.2 There does not appear to be any record of sewer flooding affecting the site due to the lack of any nearby sewer system.

### 4.4 Groundwater Flooding

4.4.1 Groundwater flooding occurs when the water table rises above the ground surface, normally as a result of persistent rainfall over a prolonged period. Increased levels of development in an area can increase the risk of groundwater flooding.

4.4.2 The site is not thought to be at risk from groundwater flooding.

### 4.5 Reservoirs

4.5.1 The EA online flood maps for planning tool shows that the site is not at risk of flooding from reservoirs.

## 5. HISTORY OF FLOODING

5.1 The history of flooding on site is taken from the West Sussex SFRA 2021, flooding has occurred in the village in 2000, 2003, 2008, 2012 and 2014.

5.2.1 The West Sussex County Council Strategic Flood Risk Assessment (SFRA) Level 1 was published in 2015. The SFRA considered flood risk within the district and appropriate policy responses. There are no records of historic flooding on site. The closest record of flooding is from the Herring Stream in the centre of the village of Hassocks, at a lower elevation than the site.

- In November 2008 three shops in Keymer Road were flooded due to a blocked drain.

- In February 2014 a garden was flooded due to a surge of water in the Herring Stream during heavy rainfall. The culvert on Downs View Road was not large enough to handle very heavy rainfall.

5.2.2 No evidence of historic flood events directly affecting the site or its immediate surroundings has been found.

## 6. PLANNING STATUS WITH RESPECT TO FLOODING

6.1 The site is shown on the current Environment Agency (EA) flood risk mapping as being within Flood Zone 1 (at less than 0.1% risk of flooding in any year). The site is shown to lie in an area of very low risk of surface water flooding.

6.2 Residential dwellings are classified as 'More Vulnerable' under Table 2 of the NPPF PPG. According to Table 3 of the PPG, 'More Vulnerable' development is appropriate within Flood Zone 1.

6.3 The site lies within a long developed semi-rural area, which includes residential premises. The Sequential Test appears to be satisfied and there is no need to apply the Exception Test.

## 7. RISK TO PROPERTY

7.1 The site is in Flood Zone 1 and at very low risk for flooding from surface water. As long as the finished ground floor level is a suitable margin above ground level, no flood related risk to property is envisaged.

7.2 Recommended ground floor level will be 0.6 m above any design flood level or 0.3 m above adjacent ground level, whichever is the higher. Ground level at the site varies between +42.66 m OD and +44.32 m.

7.3 The recommended finished floor level should be 0.6 m above the design flood level or 0.3 m above typical existing ground level.

## 8. RISK TO OCCUPIERS OF THE PROPOSED DEVELOPMENT

8.1 As the site lies in Flood Zone 1, is not at risk from coastal, groundwater or reservoir flooding and is at very low risk of surface water flooding, there should be very minimal flood related risk to the proposed occupants of the redevelopment whilst they are on site.

## 9. LIKELY IMPACT ON FLOOD RISK ELSEWHERE

9.1 The site is presently entirely under lawn and tree cover. The proposed redevelopment will leave the site partly under hard cover, where the access driveway enters the site and the properties themselves, with the rest laid to lawn. The drainage solutions outlined in the planning will mitigate any increase in surface water flood risk caused by the increase in impermeable areas of hard standing at the site. As such it is unlikely that the proposed redevelopment will increase flood risk elsewhere.

9.2 Flood risk downstream of the site may be reduced by including sustainable drainage (SuDS) measures in the proposed redevelopment such as permeable paving and rainwater harvesting for irrigation.

## 10. DRAINAGE

### 10.1 Surface Water Drainage

10.1.1 The existing surface water probably drains across the land into the ditch at the west of the site which runs over land alongside the railway line, moving to below ground flow as it flows north, as can be seen through the railway owned surface water drainage chambers. See Figure 1 for photographs of the railway owned surface water drainage chambers and the drainage ditch, Figure 3 for the plan of the site showing the direction of flow of the drainage ditch and watercourse and Figure 5 for a map showing the connection of the ditch to the watercourse in Appendix A.

10.1.2 The preferred surface water drainage solution is to drain directly into the pond on site, with a controlled flow overflow into the drainage ditch at the western border of the site. An orifice-controlled overflow pipe from the western edge of the pond will lead to the ditch/watercourse which drains northwards alongside the railway embankment before joining the watercourse flowing from the east (Taylor Wimpey site) and flowing under the railway. The course of this drainage ditch can be seen on the map in Figure 5, the plans in Figure 3 and the Photographs in Figure 4. The proposed future residents of the two houses would have a legal joint/co-ownership agreement for the pond and all management and maintenance related to the drainage scheme feeding into it (both parties holding equal rights, interests, title, and responsibility). The Pond can be drained into the drainage ditch/watercourse at the western border of the site via an overflow pipe which can be added to the pond at the time of drainage construction. The pond currently overflows across the surface of the land to the ditch/watercourse. See Appendix A Figure 4 for photographs of the pond.

10.1.3 An alternative drainage solution would comprise draining the existing pond into the proposed Taylor Wimpey SuDS Pond (leading to the proposed downstream drainage pond), adjacent to the northern border of the site being developed by Taylor Wimpey. This requires an agreement from Taylor Wimpey. This proposal is deemed unsuitable as, due to the number of residences already using the proposed Taylor Wimpey SuDS drainage system,

an increase in the size of the SuDS Pond would be needed. See Appendix D for the plan of the Taylor Wimpey site.

10.1.4 Attenuation storage would have the discharge limited to a maximum of Greenfield Qbar. See Table 10.1 below:

TABLE 10.1

GREENFIELD FLOWS

| Factor/Return Period | Runoff Rate l/s |
|---|---|
| Qbar | 1.58 |
| 1 Year | 1.34 |
| 30 Year | 3.63 |
| 100 Year | 5.03 |

See Appendix F for full Greenfields Runoff Data

10.1.5 The estimated storage volume required would be approximately 23 $m^3$, as the lowest flow practicably achievable with a flow control device is 2 l/s using a vortex valve or drainage orifice.

10.1.6 The estimated freeboard for attenuation storage is 0.3m. The area of the pond is 673 $m^2$. Climate change additional volume has been taken into account with a 1:100 plus storm event margin.

10.1.7 Other SuDS measures that would reduce peak surface water flows include permeable paving for the external areas, rainwater harvesting and a green roof for the building.

## 10.2 **Foul Sewerage**

10.2.1 Foul sewage from the existing house on the site is presently discharged to a cesspit. The proposed dwelling on site B plans to attach to the public foul sewer (currently under construction) at the edge of the Taylor Wimpey site. This requires an agreement with Taylor Wimpey and Southern Water. See Appendix E for plans for the Taylor Wimpey sewer and Appendix A figure 4 for photographs of the Taylor Wimpey site boundary.

10.2.2 The foul sewerage from the proposed development should be connected to the main sewage system at the proposed Foul Chamber situated on the western edge of the Taylor Wimpey site, as outlined in the planning. A connection pipe from the chamber to the eastern border of the site will be required at the time of the sewer construction by Taylor Wimpey.

10.2.3 It is intended that the foul sewerage on the Taylor Wimpey development should be adopted by Southern Water.

### 10.3 Drainage Design

10.3.1 A surface water and foul sewerage drainage design has been prepared for the site using the MasterDrain SW and MasterDrain Foul network models. See Appendix C for the drainage plan and Appendix D for the output from the drainage models.

## 11. SUMMARY

11.1 The site lies within Flood Zone 1 and is unlikely to be at risk of flooding from fluvial sources. The site is not at risk from flooding from reservoirs or coastal waters and is at very low risk of flooding from surface water. No other flood risks likely to affect the site have been identified.

11.2 A design flood level at the site, based on the 1 in 100-year return period event plus a 40% allowance for climate change, has been derived based on the Environment Agency's flood model for the location at +44 m OD. The ground floor level of the residential part of the development and the access to the access road should be 0.6 m above the design flood level or 0.3 m above ground level, whichever is the higher.

11.3 There should be no significant flood risk to buildings or occupants and safe access should be available to the northwest onto the access road under all eventualities.

11.4 The underlying geology and presence of a permanent pond on site suggests that drainage to soakaway will not be practicable and that the surface water at the site may be most suited to being drained to attenuation storage with controlled flow discharge. The existing pond at site B is suitable for this with the addition of an overflow pipe leading to the drainage ditch (which connects to a watercourse to the north) at the western edge of the site. It would be jointly owned and maintained by the future residents of both houses via a party maintenance agreement. This would be the preferred option and would be the simplest and most practicable solution. See Appendix C for the proposed drainage design.

11.5 The alternative to drainage to the existing pond would be drainage to the proposed Taylor Wimpey SuDS Pond and downstream drainage pond, adjacent to site A. This has been discounted due to the capacity already taken by the residences on the estate.

11.6 Additional sustainable drainage (SuDS) measures would be permeable paving for the external parking and access areas, rainwater harvesting and a green roof.

11.7 Foul sewerage from the redeveloped site should be drained to the public foul sewer at the proposed connection point via the proposed Southern Water foul

chamber situated at the western most edge of the Taylor Wimpey development site, adjacent to the eastern boundary of the site.

## 12. RECOMMENDATIONS

12.1 A capacity check should be commissioned from Southern Water to confirm that there is adequate capacity in the existing foul sewer for the increased flow from the redeveloped site.

12.2 It is recommended that the external paved areas should have permeable surfacing laid over a drainage blanket of no-fines stone wrapped in permeable geotextile.

12.3 It is recommended that a formal legal party boundary and maintenance agreement be drawn up for the management of the drainage pond between the residences.

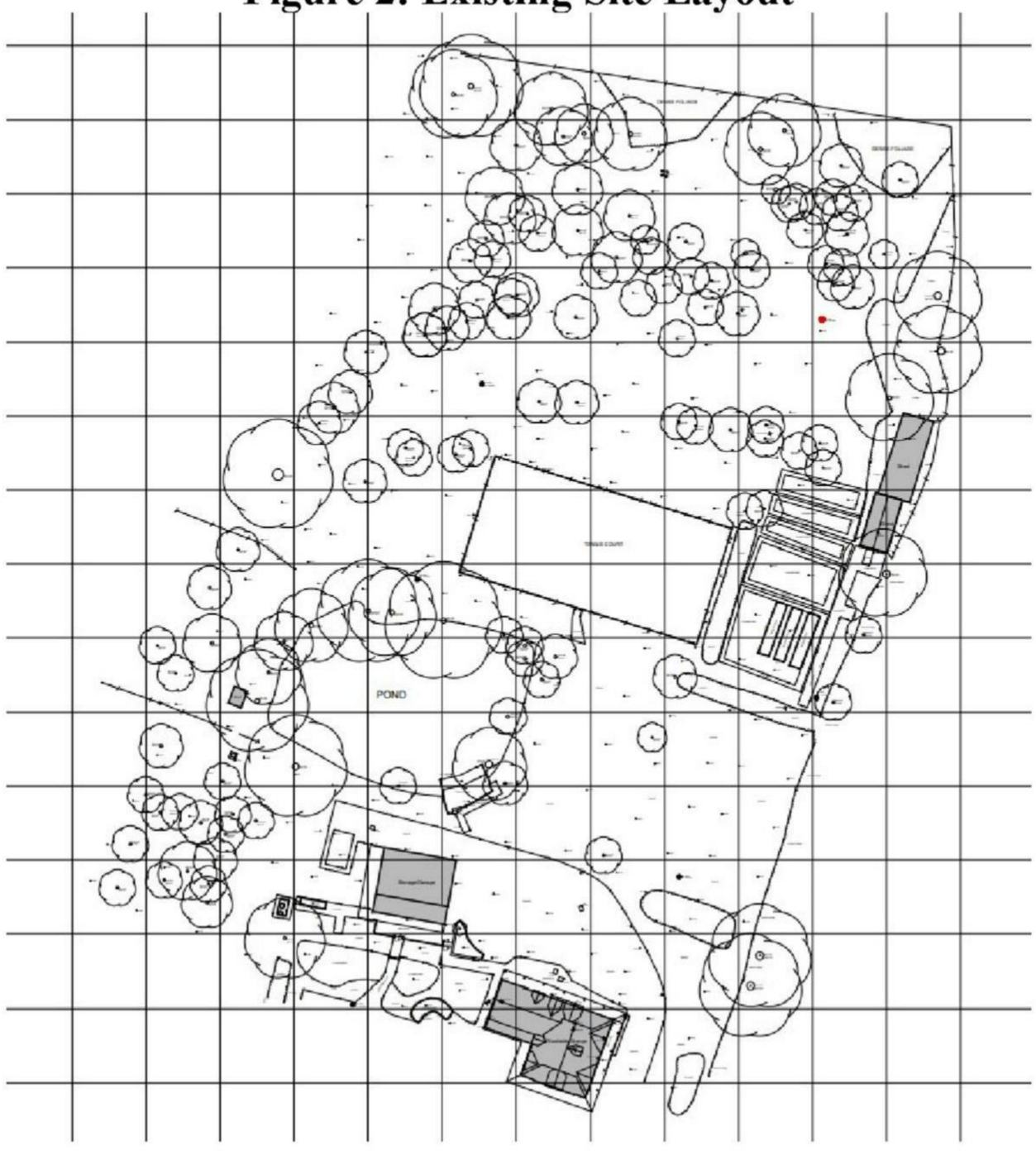
☆ ☆ ☆ ☆ ☆ ☆ ☆

# APPENDIX A

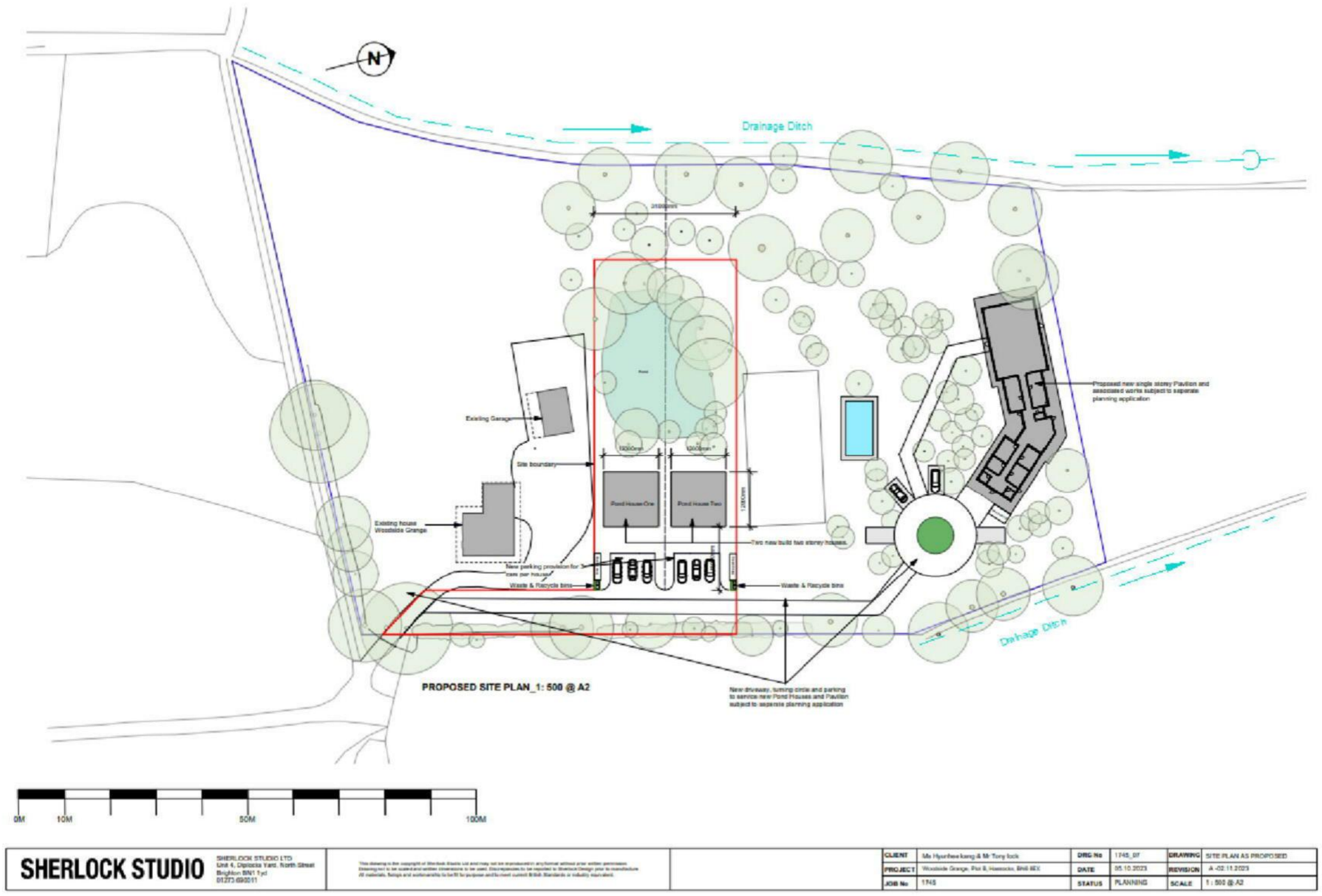
**Figure 1:** Site location
**Figure 2:** Existing Site Layout
**Figure 3:** Proposed Redevelopment
**Figure 4:** Site Photographs
**Figure 5:** Map of Tributary Connection to Watercourse

**Figure 1: Site Location**


**Figure 2: Existing Site Layout**



## Figure 3: Proposed development




## Figure 4: Site Photographs

Existing House

View onto Site B showing existing pond and tennis courts on Site A

Site B pond (eastern edge)

Site B Pond (western edge)

Boundary of Site (facing railway line)

Taylor Wimpey Site boundary showing path/location of proposed foul sewer line

Ditch and boundary fence, western edge of the site.

Showing culvert under the footpath to the southwest of the site

Ditch at the northeastern boundary of the site used by Taylor Wimpey for Surface water SuDS drainage.

Drainage ditch to the east of the site (proposed overflow ditch from the attenuation pond)

The drainage ditch to the east of the site flowing underground northwards

Top of chamber showing the northwards flow of the drainage ditch

Internal view of the 1st chamber

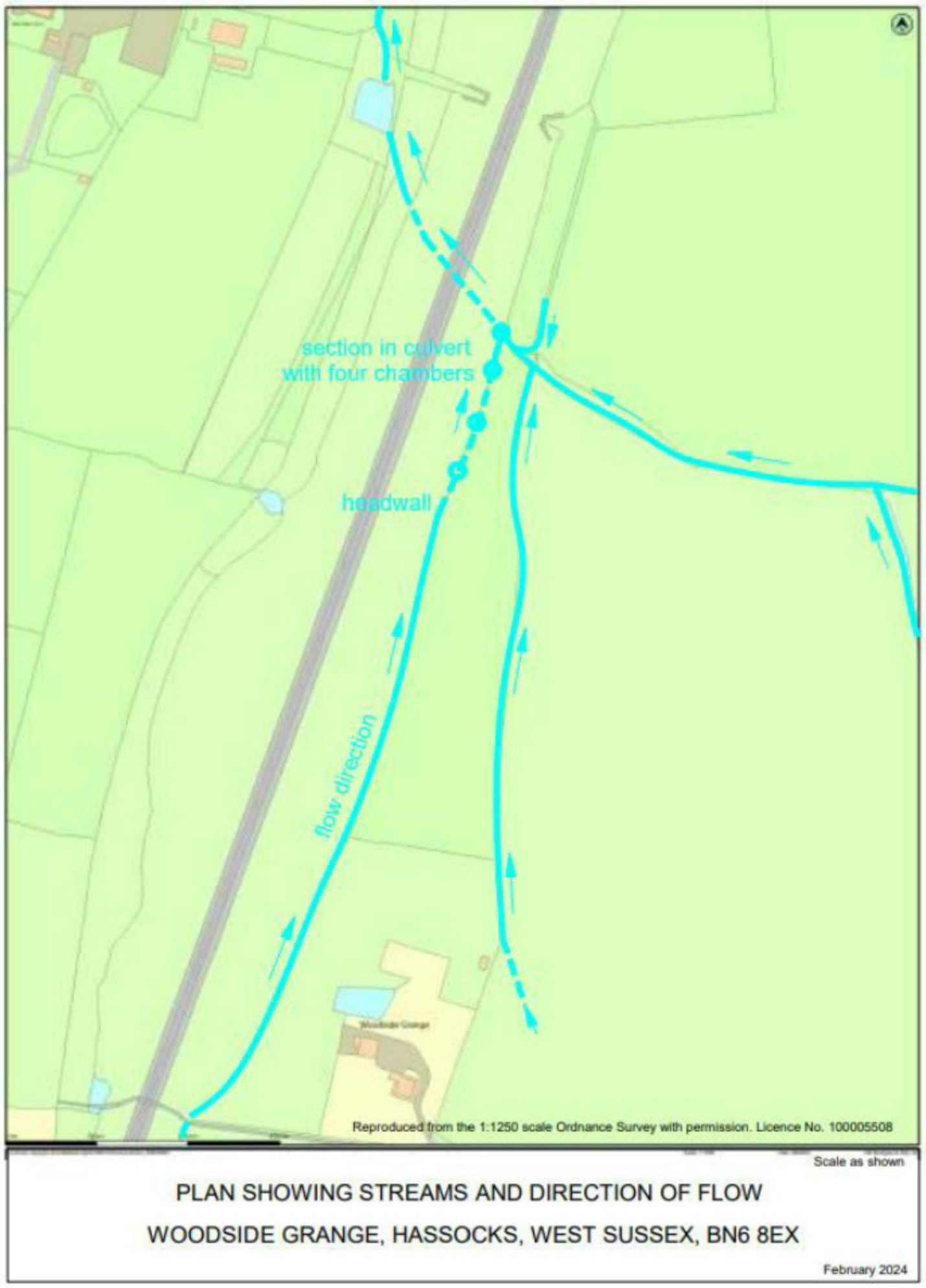
Internal view of the 2nd chamber

Internal view of the 3rd chamber

Internal view of the 4th chamber, with drainage ditch from the Taylor Wimpey site (from the east) joining the watercourse (already draining from the south, past the Site A). The watercourse flows northwest under in embankment via this chamber.

Taylor Wimpey ditch flowing from the east.

## Figure 5: Maps of Drainage Ditch Connection to Watercourse



# APPENDIX B
# Environment Agency Flood Mapping

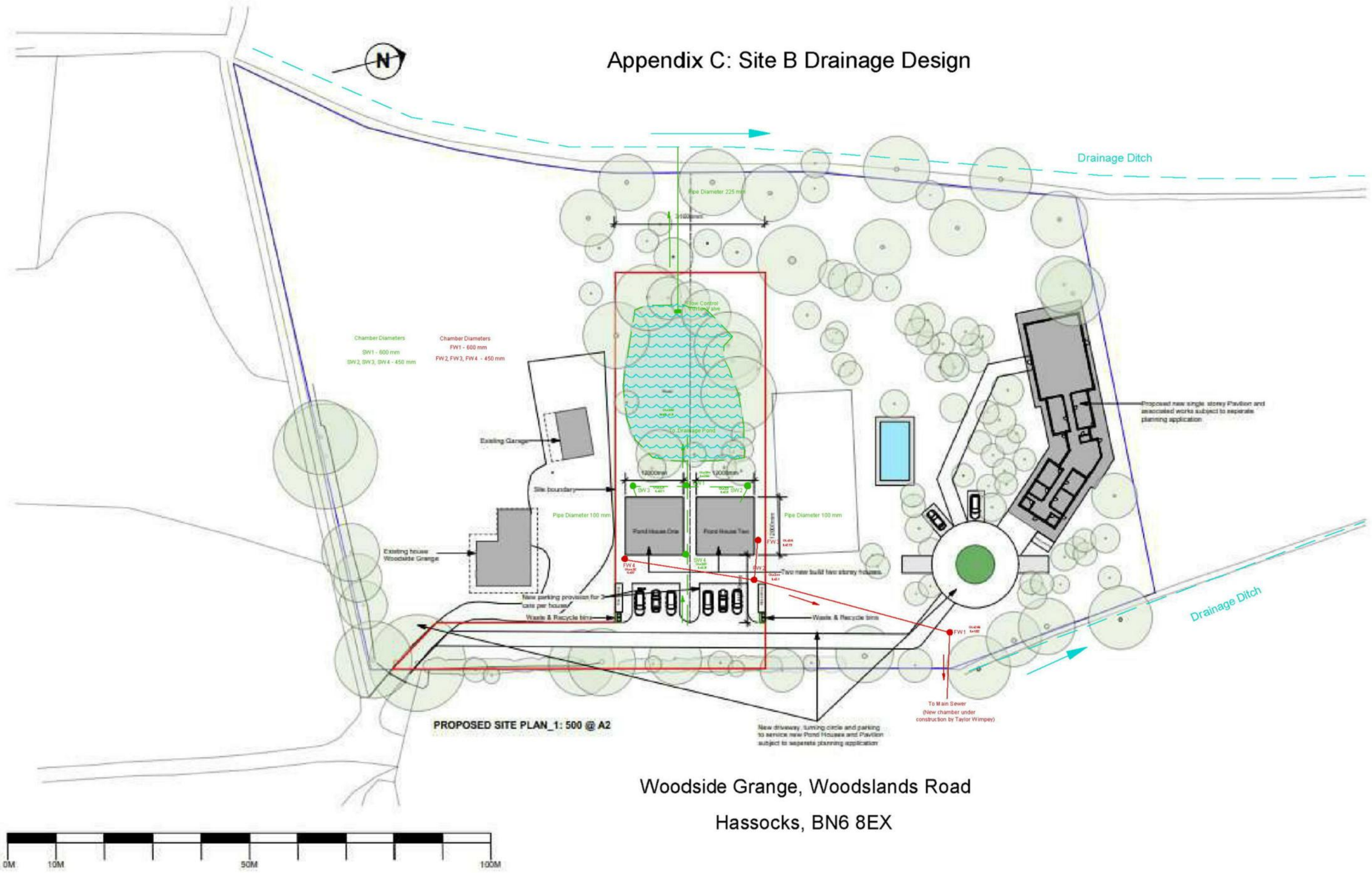

Site in Flood Zone 1


Extent of flooding from surface water

High Medium Low Very low Location you selected

# APPENDIX C:
# Proposed Drainage Layout

# Appendix C: Site B Drainage Design




Woodside Grange, Woodslands Road

Hassocks, BN6 8EX

| | | | | | |
|---|---|---|---|---|---|
| **SHERLOCK STUDIO** | SHERLOCK STUDIO LTD<br>Unit 4, Diplocks Yard, North Street<br>Brighton BN1 1yd<br>01273 690011 |  | | | |

| | | | | | |
|---|---|---|---|---|---|
| CLIENT | Ms Hyunhee Ieong & Mr Tony Iock | DRG No | 1745_07 | DRAWING | SITE PLAN AS PROPOSED |
| PROJECT | Woodside Grange, Pod St, Hassocks, BN6 8EX | DATE | 05.10.2023 | REVISION | A -03.11.2023 |
| JOB No | 1745 | STATUS | PLANNING | SCALE | 1: 500 @ A2 |

# APPENDIX D:
# Output From Drainage Design

MasterDrain SW

# Environmental Assessment Services Ltd

http://www.easltd.co.uk

London Rd, Hickstead
Haywards Heath,
West Sussex, RH17 5LZ
[redacted]

| | |
|---|---|
| Job No. | 654 |
| Sheet no. | 1 |
| Date | 27/02/25 |
| Project | Woodside Grange Site B |
| By | XL |
| Checked | |
| Reviewed | |

Title: **Surcharge calcs (Sized at 30 yrs storm) for WOODSIDE GRANGE SITE B.SW CCF = 45%**

Free flowing outlet
Return period = 100 yrs
Climate change factor = 45

PEAK hydrograph values printed
Storm duration = 15 mins
No offline storage

Mean rain intens. 140.00 mm/hr
Storm profile = Summer
Using FSR data

Peak rain intens. 548.80 mm/hr
Sample period = 7.5 secs.

| Entry No. | | SECT. No. | MANHOLE REF | PIPE CAPACITY l/s | RATE FLOW l/s | PIPE SIZE mm | CHAMBER DIAM/LxW mm | INVERT LEVEL m | WATER LEVEL m | GRND LEVEL m | SURCHARGE fract. | SURCHARGE Depth | EXCESS FLOW l/s | FLOODED VOL $m^3$ | DRAINED AREA ($m^2$) x FACTOR | STATUS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | I | 1.01 | SW4 | 19.3 | 13.4 | 100 | 1200 | 43.37 | 43.44 | 43.87 | 0.69 | 0.07 | 0.00 | 0.000 | 201 | OK |
| 2 | B | 2.01 | SW3 | 30.6 | 6.6 | 100 | 1200 | 43.71 | 43.74 | 44.21 | 0.22 | 0.03 | 0.00 | 0.000 | 99 | OK |
| 3 | B | 3.01 | SW2 | 10.6 | 6.6 | 100 | 1200 | 42.80 | 42.86 | 43.30 | 0.63 | 0.06 | 0.00 | 0.000 | 99 | OK |
| 4 | I | 1.02 | SW1 | 62.2 | 26.6 | 225 | 1200 | 42.66 | 42.76 | 43.94 | 0.43 | 0.10 | 0.00 | 0.000 | 399 | OK |

MasterDrain SW

# Environmental Assessment Services Ltd

http://www.easltd.co.uk

London Rd, Hickstead
Haywards Heath,
West Sussex, RH17 5LZ
[redacted]

Project **Woodside Grange Site B**

Title **Surcharge calcs (Sized at 30 yrs storm) for WOODSIDE GRANGE SITE B.SW CCF = 45%**

## Notes

*Printout headings*

1) Entry no - position in file

2) Section no - pipe identifier

3) Manhol

4) Pipe cap - full bore capacity of that pipe

5) Rate of flow - calculated flow rate (l/s) ‡ = flow restrictor.

6) Pipe dia

7) Chamber diam - chamber diam. at base of MH

8) Invert level - invert level of manhole

9) Water l

10) Grnd level - ground / cover level

11) Surch. fract - calc.flow/pipe capacity

12) Surch

13) Overflow - surcharged flow rate (l/s)

14) Flooded vol - volume of water above cover

15) Upstrr

16) Status - OK - outlet not surcharged

17) Status - Surcharged - outlet surcharged

18) Status

19) Status - Flooded - cover over-topped

20) § against diameter indicates throttle pipe used.

*Title box*

Hydrograph data

1) Ret. period - that used to calculate profile

2) Duration - length of storm (mins)

3) Profile -

# Environmental Assessment Services Ltd

http://www.easltd.co.uk

London Rd, Hickstead
Haywards Heath,
West Sussex, RH17 5LZ
[redacted]


MasterDrain SW

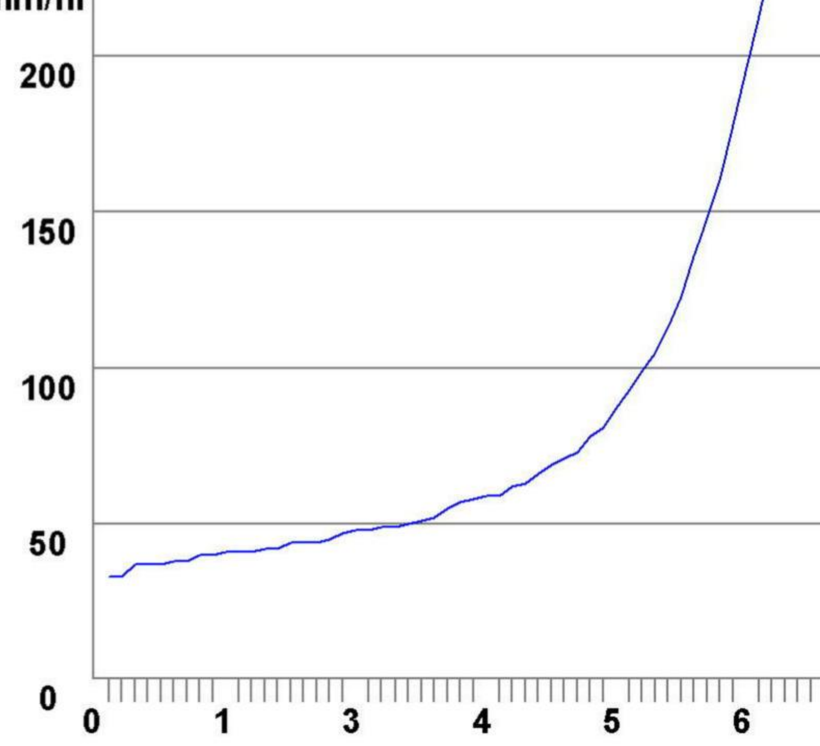
Project **Woodside Grange Site B**

Title **Surcharge calcs (Sized at 30 yrs storm) for WOODSIDE GRANGE SITE B.SW CCF = 45%**

| Time mins | Rain mm/hr | Time mins | Rain mm/hr | Time mins | Rain mm/hr |
|---|---|---|---|---|---|
| 0:08 | 32.56 | 5:08 | 93.04 | 10:08 | 100.02 |
| 0:15 | 32.56 | 5:15 | 98.85 | 10:15 | 94.20 |
| 0:22 | 37.22 | 5:22 | 104.67 | 10:22 | 88.39 |
| 0:30 | 37.22 | 5:30 | 112.81 | 10:30 | 82.57 |
| 0:38 | 37.22 | 5:38 | 123.28 | 10:38 | 79.08 |
| 0:45 | 38.38 | 5:45 | 136.07 | 10:45 | 74.43 |
| 0:52 | 38.38 | 5:52 | 147.70 | 10:52 | 70.94 |
| 1:00 | 39.54 | 6:00 | 160.49 | 11:00 | 68.62 |
| 1:08 | 39.54 | 6:08 | 177.94 | 11:08 | 66.29 |
| 1:15 | 40.70 | 6:15 | 195.38 | 11:15 | 65.13 |
| 1:22 | 40.70 | 6:22 | 212.83 | 11:22 | 61.64 |
| 1:30 | 40.70 | 6:30 | 231.43 | 11:30 | 59.31 |
| 1:38 | 41.87 | 6:38 | 251.20 | 11:38 | 59.31 |
| 1:45 | 41.87 | 6:45 | 269.81 | 11:45 | 58.15 |
| 1:52 | 44.19 | 6:52 | 290.75 | 11:52 | 56.99 |
| 2:00 | 44.19 | 7:00 | 316.33 | 12:00 | 55.82 |
| 2:08 | 44.19 | 7:08 | 340.75 | 12:08 | 52.33 |
| 2:15 | 45.36 | 7:15 | 366.34 | 12:15 | 51.17 |
| 2:22 | 46.52 | 7:22 | 395.41 | 12:22 | 50.01 |
| 2:30 | 47.68 | 7:30 | 425.65 | 12:30 | 50.01 |
| 2:38 | 47.68 | 7:38 | 455.89 | 12:38 | 48.85 |
| 2:45 | 48.85 | 7:45 | 455.89 | 12:45 | 47.68 |
| 2:52 | 48.85 | 7:52 | 431.47 | 12:52 | 47.68 |
| 3:00 | 50.01 | 8:00 | 400.07 | 13:00 | 46.52 |
| 3:08 | 51.17 | 8:08 | 372.16 | 13:08 | 45.36 |
| 3:15 | 52.33 | 8:15 | 345.41 | 13:15 | 45.36 |
| 3:22 | 54.66 | 8:22 | 319.82 | 13:22 | 44.19 |
| 3:30 | 56.99 | 8:30 | 296.56 | 13:30 | 44.19 |
| 3:38 | 58.15 | 8:38 | 274.46 | 13:38 | 41.87 |
| 3:45 | 59.31 | 8:45 | 254.69 | 13:45 | 41.87 |
| 3:52 | 59.31 | 8:52 | 234.92 | 13:52 | 40.70 |
| 4:00 | 61.64 | 9:00 | 215.15 | 14:00 | 40.70 |
| 4:08 | 62.80 | 9:08 | 198.87 | 14:08 | 40.70 |
| 4:15 | 66.29 | 9:15 | 180.26 | 14:15 | 39.54 |
| 4:22 | 68.62 | 9:22 | 165.14 | 14:22 | 39.54 |
| 4:30 | 70.94 | 9:30 | 150.03 | 14:30 | 38.38 |
| 4:38 | 73.27 | 9:38 | 137.23 | 14:38 | 38.38 |
| 4:45 | 77.92 | 9:45 | 125.60 | 14:45 | 38.38 |
| 4:52 | 81.41 | 9:52 | 113.97 | 14:52 | 37.22 |
| 5:00 | 87.22 | 10:00 | 105.83 | 15:00 | 37.22 |

Hydrograph profile derived f

Return period= 100 yrs D



# Environmental Assessment Services Ltd

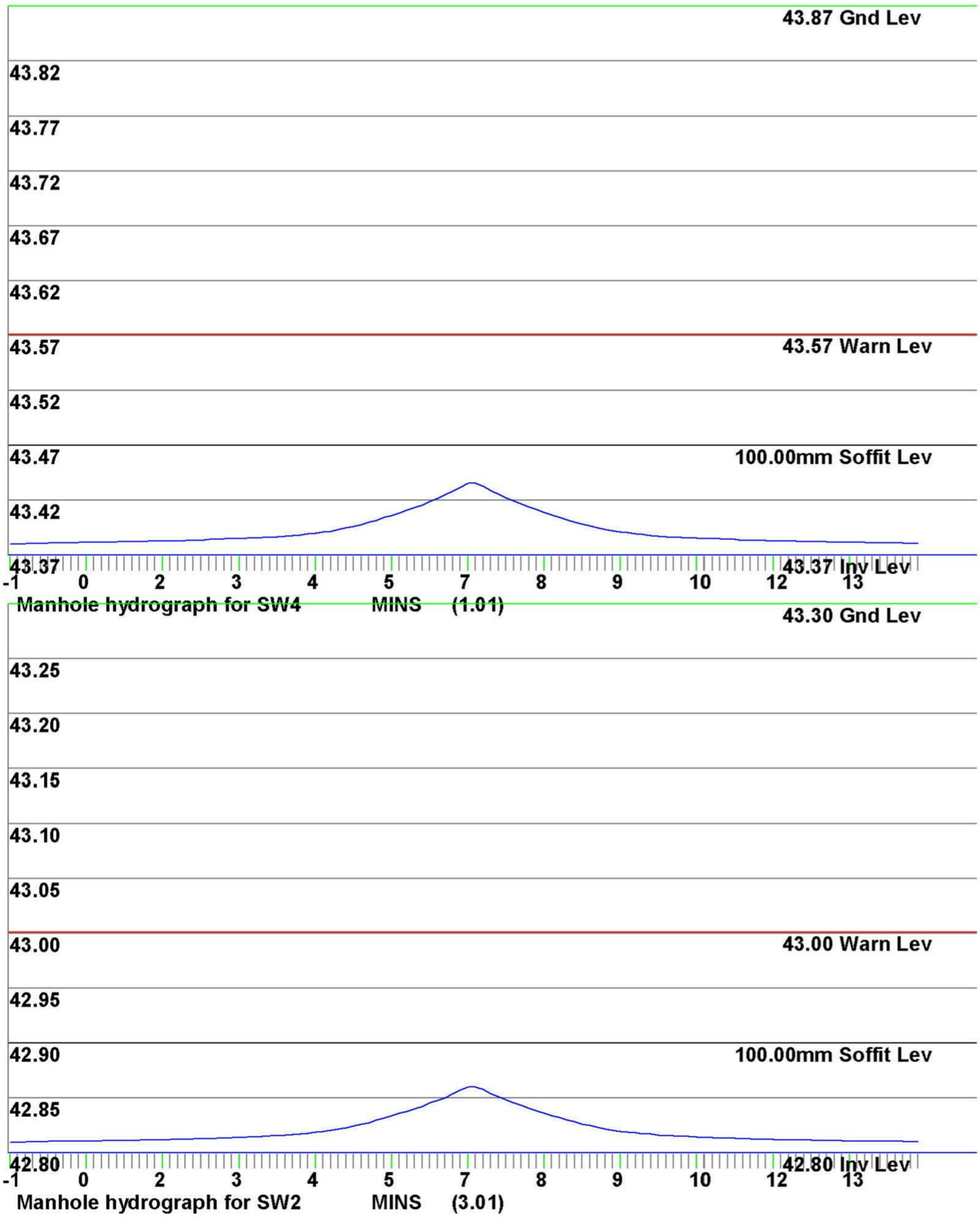
http://www.easltd.co.uk

London Rd, Hickstead
Haywards Heath,
West Sussex, RH17 5LZ
[redacted]


MasterDrain SW

Project Woodside Grange Site B

Title Surcharge calcs (Sized at 30 yrs storm) for WOODSIDE GRANGE SITE B.SW CCF = 45%



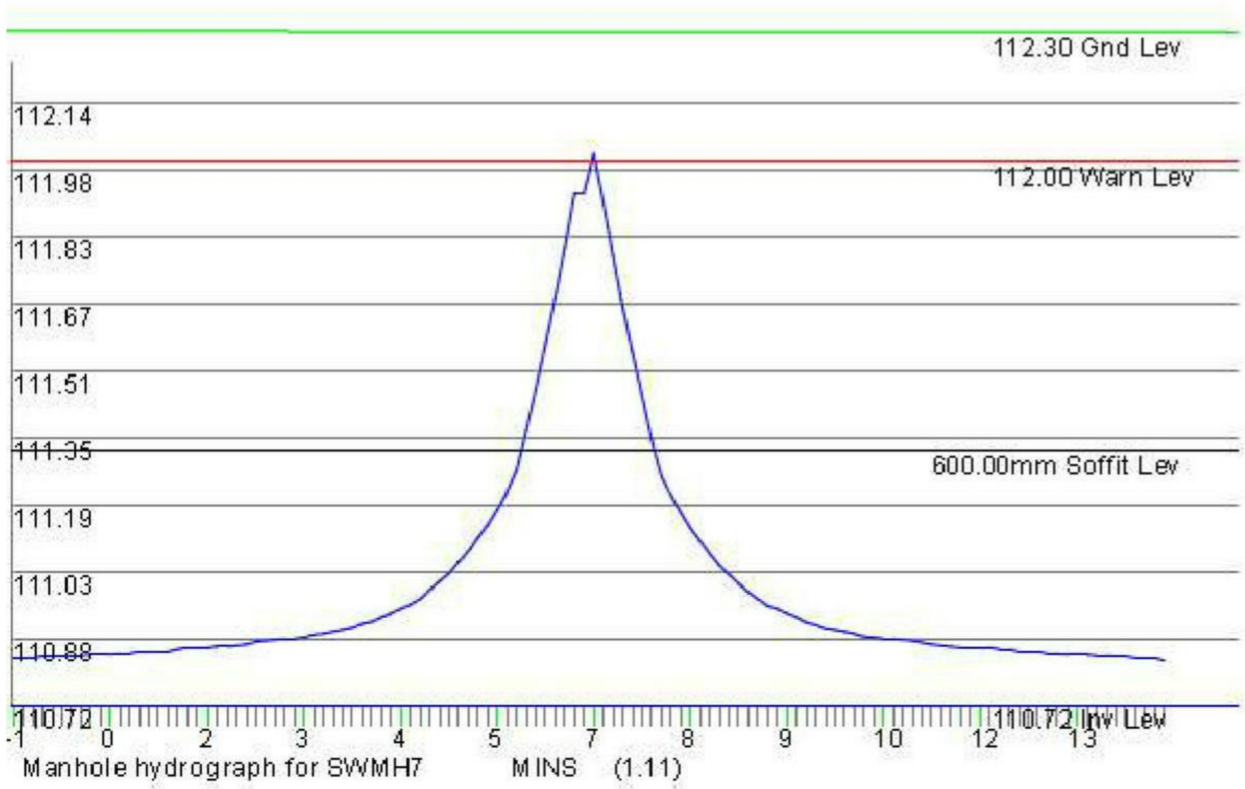

MasterDrain
SW

**Environmental Assessment Services Ltd**
http://www.easltd.co.uk

London Rd, Hickstead
Haywards Heath,
West Sussex, RH17 5LZ
[redacted]

Project **Woodside Grange Site B**

Title **Surcharge calcs (Sized at 30 yrs storm) for WOODSIDE GRANGE SITE B.SW CCF = 45%**




1) Ground / cover level

2) Warning level - in this case, set at 300mm below cover le

3) Soffit level of outflow pipe.

4) Invert level of chamber.

**Notes**

a) Lower section of the graph shows the water depth filling the channel. Channel is assumed to be a full pipe dian

b) Upper section of the graph shows the water depth filling the chamber. Chamber has a greater width/diameter th proportionally less.

c) The top of the graph clips the warning level and would be marked thus on the printout.

d) In many cases the invert of the offline storage is required to enter at the channel soffit level, meaning that the p

e) The diagram above is a general one and is not part of the current calculation.

# Environmental Assessment Services Ltd

http://www.easltd.co.uk

London Rd, Hickstead
Haywards Heath,
West Sussex, RH17 5LZ
[redacted]


Project **Woodside Grange Site B**

Title **Manhole printout for WOODSIDE GRANGE SITE B.SW**

| Manhole ref. | X ref | Y ref | Form | Cham diam. or length | Rect. width | Chamb. height | Shaft height | MH Volume | Exit Diam | Exit Crown | Exit Invert |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SW4 | 9.83 | 12.06 | circ | 450 | N/A | 0.50 | | 0.08 | 100 | 43.495 | 43.370 |
| SW3 | 5.58 | 18.4 | circ | 450 | N/A | 0.50 | | 0.08 | 100 | 43.835 | 43.710 |
| SW2 | 14.6 | 18.46 | circ | 450 | N/A | 0.50 | | 0.08 | 100 | 42.925 | 42.800 |
| SW1 | 9.95 | 18.82 | circ | 600 | N/A | 1.28 | | 0.36 | 225 | 42.910 | 42.660 |

All manholes to be as per 'Sewers for Adoption'

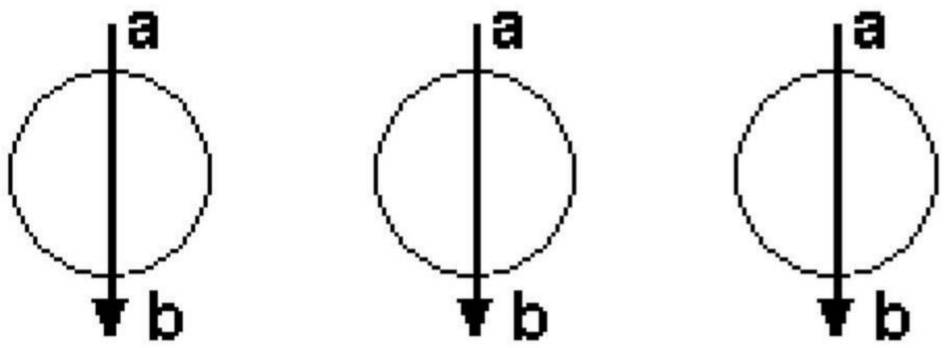
# Environmental Assessment Services Ltd

http://www.easltd.co.uk

London Rd, Hickstead
Haywards Heath,
West Sussex, RH17 5LZ
[redacted]


Project **Woodside Grange Site B**

Title **Manhole printout for WOODSIDE GRANGE SITE B.SW**




**MH = SW4**
**a=head**
**b = 100**

**MH = SW3**
**a=head**
**b = 100**

**MH = SW2**
**a=head**
**b = 100**

**MH = SW1**
**a= 100**
**b = 225**
**c = 225**
**d = 100**

**Environmental Assessment Services Ltd**
http://www.easltd.co.uk

London Rd, Hickstead
Haywards Heath,
West Sussex, RH17 5LZ
[redacted]

Project **Woodside Grange Site B**

Title **Manhole printout for WOODSIDE GRANGE SITE B.SW**

These explanatory notes should be read in conjunction with the Manhol

1) Manhole ref - the reference for the manhole in question
2) Form - either circular or rectangular
3) Chamber diam or length - diameter of chamber if circular, or leng
4) Rectangular width - if form is rectangular, this gives the width
5) Chamber height - height of chamber from invert
6) Shaft height - height of access shaft if applicable, from top of
7) Manhole volume - cubic capacity of manhole chamber
8) Exit diameter - diameter of pipe leaving this manhole
9) Exit crown - crown level of pipe leaving this manhole
10) Exit invert - invert level of pipe leaving this manhole
11) Chamb const - manhole construction :-
    N/A - not specified
    Conc - concrete rings
    Poly - polypropylene rings surrounded by selected fill
    Poly/conc - polypropylene rings surrounded by concrete
    Brick - brick built with waterproof render
    In situ - concrete cast in situ
12) Slab level - surface level of base slab (if no sump, this is plac
    allow levels manipulation).
13) Manhole diameters of 9999 have exceeded the sizes available in Sf
14) Manhole diameters may have to be modified due to the number of br

| | | | |
|---|---|---|---|
| **Environmental Assessment Services Ltd**<br>http://www.easltd.co.uk | London Rd, Hickstead<br>Haywards Heath,<br>West Sussex, RH17 5LZ<br>[redacted] | Job No. 654<br>Sheet no. 1<br>Date 19/12/23 | |
| Project: Woodside Grange Site B | | By: MDM | Checked / Reviewed |
| Title: Hydrograph storage analysis (Winter profile) for HASSOCKS | | | |

MasterDrain SW

Data:-

| | | | |
|---|---|---|---|
| Location | = HASSOCKS | Grid reference | = TQ3015 |
| M5-60 (mm) | = 20.4 | r | = 0.35 |
| Soil index | = 0.45 | SAAR (mm/yr) | = 910 |
| Return period | = 100 | WRAP | = 4 |
| UCWI | = 0.0 | Climate change | = +45% |

Clayey, or loamy over clayey soils with an impermeable layer at shallow depth.

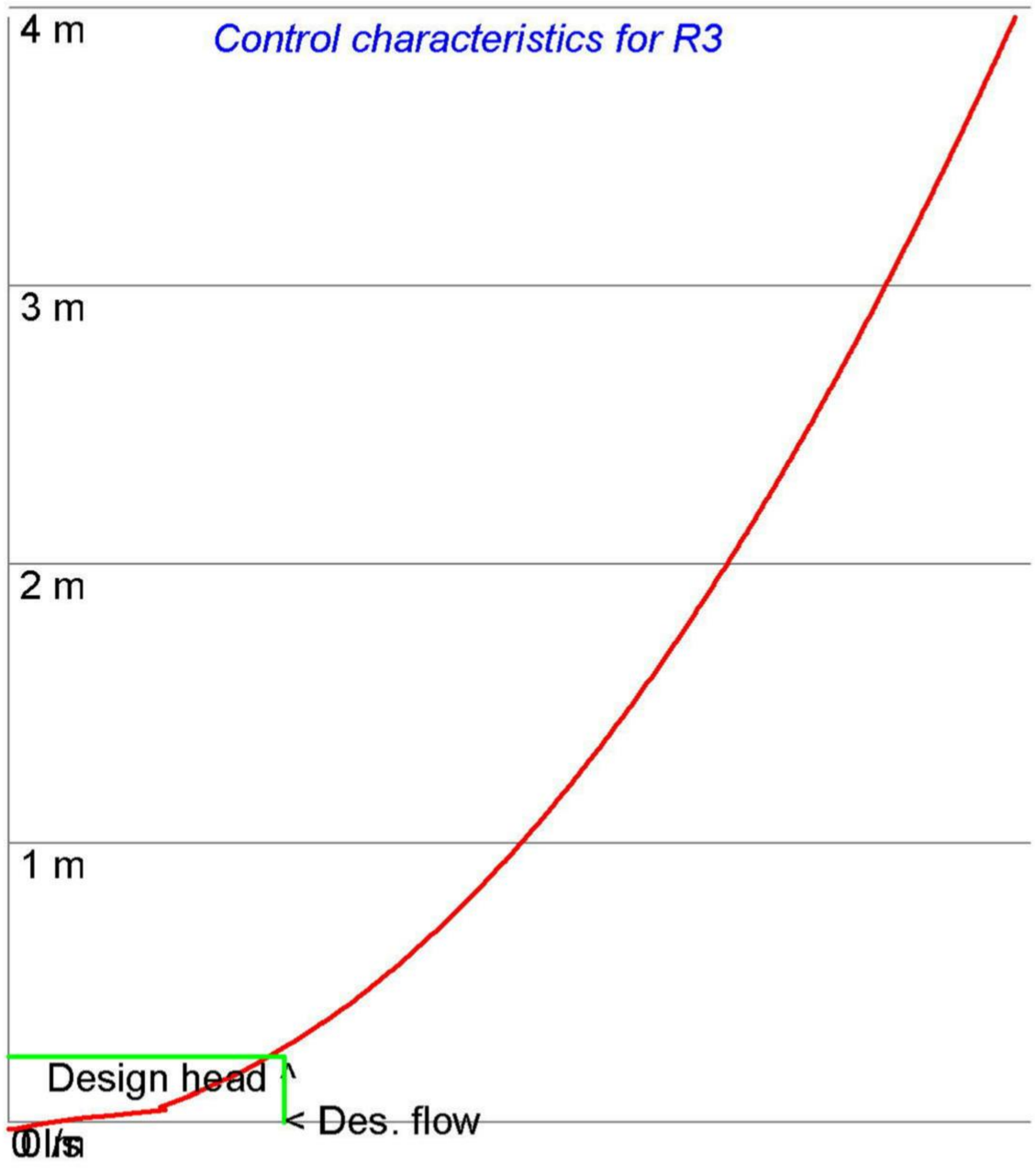
Percentage runoff = 95.0% (manual setting)

| | | | |
|---|---|---|---|
| Imperv. area | = 420 m² | Pervious area | = 0 m² |
| Total area | = 420 m² | Equiv area | = 399 m² (Tot. area x % runoff). |
| Total runoff | = 32.7 m³ | Discharge rate | = 2.000 l/s |
| Design Head | = 0.3m | Peak flow | = 1.97 l/s |
| Control device | = R3 | Orifice diam | = 53.4 mm |
| Max. calc. depth | = 0.3 m | Available depth | = 0.0 m³ |
| Mean discharge | = 0.80 l/s | | |

Available system storage = 0.00 m³ under a system plane at the design head level.

Offline storage = 0.0 m³

Total storage = 23.0 m³ Peak input flow =7.58 l/s




| Head (m) | Flow (l/s) | Head (m) | Flow (l/s) |
|---|---|---|---|
| 0.01 | 0.05 | 2.01 | 5.18 |
| 0.05 | 0.56 | 2.05 | 5.23 |
| 0.10 | 1.15 | 2.10 | 5.29 |
| 0.15 | 1.41 | 2.15 | 5.35 |
| 0.20 | 1.63 | 2.20 | 5.42 |
| 0.25 | 1.83 | 2.25 | 5.48 |
| 0.30 | 2.00 | 2.30 | 5.54 |
| 0.35 | 2.16 | 2.35 | 5.60 |
| 0.40 | 2.31 | 2.40 | 5.66 |
| 0.45 | 2.45 | 2.45 | 5.72 |
| 0.50 | 2.58 | 2.50 | 5.77 |
| 0.55 | 2.71 | 2.55 | 5.83 |
| 0.60 | 2.83 | 2.60 | 5.89 |
| 0.65 | 2.94 | 2.65 | 5.94 |
| 0.70 | 3.06 | 2.70 | 6.00 |
| 0.75 | 3.16 | 2.75 | 6.06 |
| 0.80 | 3.27 | 2.80 | 6.11 |
| 0.85 | 3.37 | 2.85 | 6.16 |
| 0.90 | 3.46 | 2.90 | 6.22 |
| 0.95 | 3.56 | 2.95 | 6.27 |
| 1.00 | 3.65 | 3.00 | 6.32 |
| 1.05 | 3.74 | 3.05 | 6.38 |
| 1.10 | 3.83 | 3.10 | 6.43 |
| 1.15 | 3.92 | 3.15 | 6.48 |
| 1.20 | 4.00 | 3.20 | 6.53 |
| 1.25 | 4.08 | 3.25 | 6.58 |
| 1.30 | 4.16 | 3.30 | 6.63 |
| 1.35 | 4.24 | 3.35 | 6.68 |
| 1.40 | 4.32 | 3.40 | 6.73 |
| 1.45 | 4.40 | 3.45 | 6.78 |
| 1.50 | 4.47 | 3.50 | 6.83 |
| 1.55 | 4.55 | 3.55 | 6.88 |
| 1.60 | 4.62 | 3.60 | 6.93 |
| 1.65 | 4.69 | 3.65 | 6.98 |
| 1.70 | 4.76 | 3.70 | 7.02 |
| 1.75 | 4.83 | 3.75 | 7.07 |
| 1.80 | 4.90 | 3.80 | 7.12 |
| 1.85 | 4.97 | 3.85 | 7.16 |
| 1.90 | 5.03 | 3.90 | 7.21 |
| 1.95 | 5.10 | 3.95 | 7.26 |
| 2.00 | 5.16 | 4.00 | 7.30 |

*Calculation data provided by Crown Water Ltd, SL5 7NT*

MasterDrain
SW

# Environmental Assessment Services Ltd

http://www.easltd.co.uk

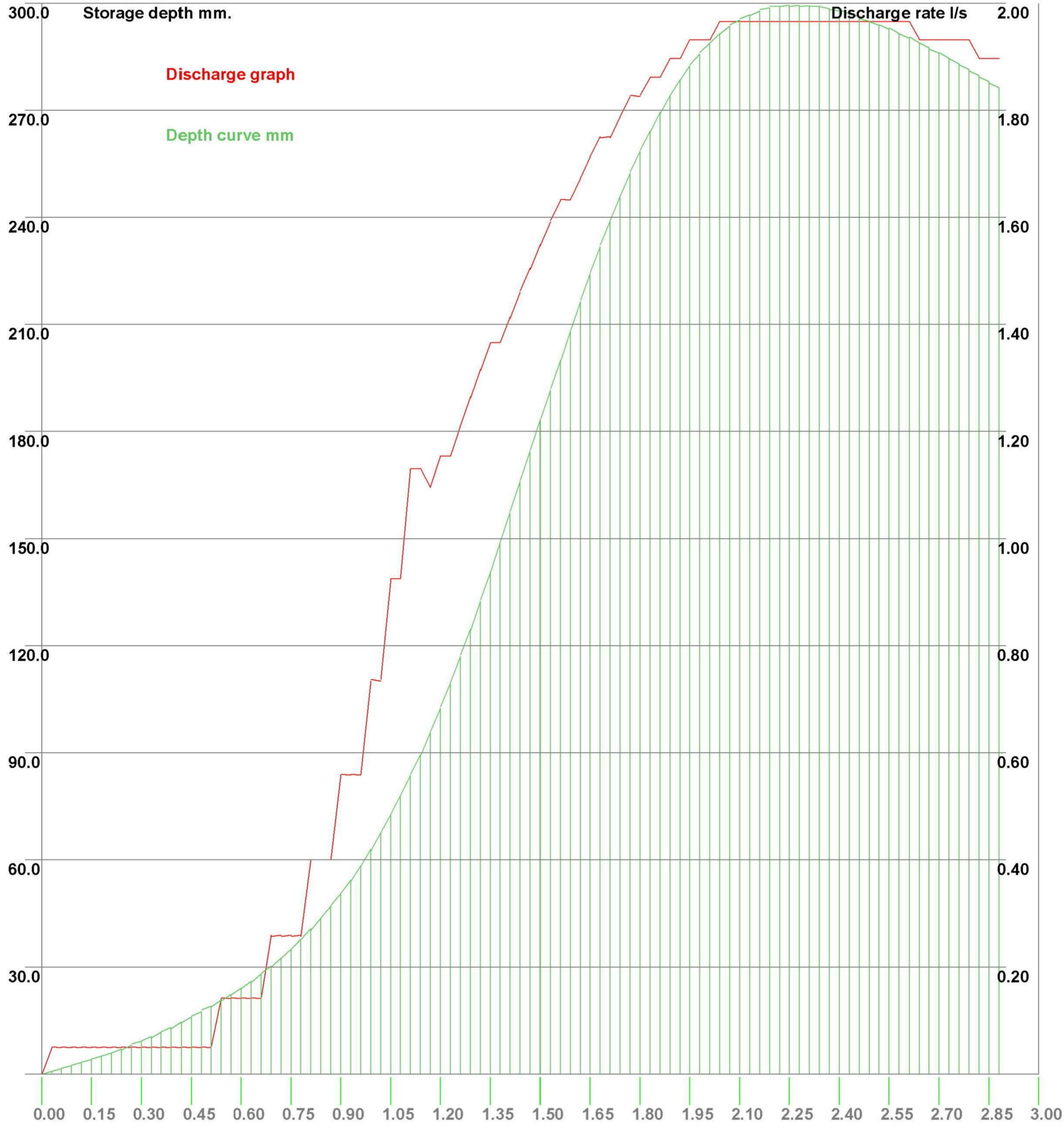
London Rd, Hickstead
Haywards Heath,
West Sussex, RH17 5LZ
[redacted]

| Job No. | Sheet no. | Date | By | Checked | Reviewed |
|---|---|---|---|---|---|
| 654 | 2 | 19/12/23 | MDM | | |

Project: Woodside Grange Site B

Title: Hydrograph storage analysis (Winter profile) for HASSOCKS

**Storage curves for a 3 hours storm.**



MasterDrain SW

# Environmental Assessment Services Ltd

http://www.easltd.co.uk

London Rd, Hickstead
Haywards Heath,
West Sussex, RH17 5LZ
[redacted]

| | |
|---|---|
| Job No. | 654 |
| Sheet no. | 3 |
| Date | 19/12/23 |

| Project | By | Checked | Reviewed |
|---|---|---|---|
| Woodside Grange Site B | MDM | | |

Title: Hydrograph storage analysis (Winter profile) for HASSOCKS

## Incremental rainfall figures.

| Storm Mins | Storage Depth mm | Control Flow l/s | Storm Mins | Storage Depth mm | Control Flow l/s |
|---|---|---|---|---|---|
| 1.8 | 0.9 | 0.05 | 91.8 | 191.7 | 1.59 |
| 3.6 | 1.6 | 0.05 | 93.6 | 200.1 | 1.63 |
| 5.4 | 2.5 | 0.05 | 95.4 | 208.4 | 1.63 |
| 7.2 | 3.3 | 0.05 | 97.2 | 216.5 | 1.67 |
| 9.0 | 4.2 | 0.05 | 99.0 | 224.3 | 1.71 |
| 10.8 | 5.1 | 0.05 | 100.8 | 231.9 | 1.75 |
| 12.6 | 6.0 | 0.05 | 102.6 | 239.0 | 1.75 |
| 14.4 | 7.1 | 0.05 | 104.4 | 245.9 | 1.79 |
| 16.2 | 8.2 | 0.05 | 106.2 | 252.5 | 1.83 |
| 18.0 | 9.3 | 0.05 | 108.0 | 258.6 | 1.83 |
| 19.8 | 10.6 | 0.05 | 109.8 | 264.3 | 1.86 |
| 21.6 | 11.9 | 0.05 | 111.6 | 269.5 | 1.86 |
| 23.4 | 13.2 | 0.05 | 113.4 | 274.3 | 1.90 |
| 25.2 | 14.6 | 0.05 | 115.2 | 278.6 | 1.90 |
| 27.0 | 16.1 | 0.05 | 117.0 | 282.5 | 1.93 |
| 28.8 | 17.6 | 0.05 | 118.8 | 285.9 | 1.93 |
| 30.6 | 19.2 | 0.05 | 120.6 | 289.0 | 1.93 |
| 32.4 | 20.8 | 0.14 | 122.4 | 291.6 | 1.97 |
| 34.2 | 22.4 | 0.14 | 124.2 | 293.7 | 1.97 |
| 36.0 | 24.2 | 0.14 | 126.0 | 295.4 | 1.97 |
| 37.8 | 26.1 | 0.14 | 127.8 | 296.8 | 1.97 |
| 39.6 | 28.1 | 0.14 | 129.6 | 297.9 | 1.97 |
| 41.4 | 30.4 | 0.26 | 131.4 | 298.7 | 1.97 |
| 43.2 | 32.6 | 0.26 | 133.2 | 299.3 | 1.97 |
| 45.0 | 35.1 | 0.26 | 135.0 | 299.5 | 1.97 |
| 46.8 | 37.8 | 0.26 | 136.8 | 299.6 | 1.97 |
| 48.6 | 40.7 | 0.40 | 138.6 | 299.4 | 1.97 |
| 50.4 | 43.7 | 0.40 | 140.4 | 299.1 | 1.97 |
| 52.2 | 47.0 | 0.40 | 142.2 | 298.6 | 1.97 |
| 54.0 | 50.7 | 0.56 | 144.0 | 297.9 | 1.97 |
| 55.8 | 54.3 | 0.56 | 145.8 | 297.1 | 1.97 |
| 57.6 | 58.4 | 0.56 | 147.6 | 296.1 | 1.97 |
| 59.4 | 63.0 | 0.73 | 149.4 | 295.0 | 1.97 |
| 61.2 | 67.7 | 0.73 | 151.2 | 293.9 | 1.97 |
| 63.0 | 72.8 | 0.93 | 153.0 | 292.8 | 1.97 |
| 64.8 | 78.1 | 0.93 | 154.8 | 291.6 | 1.97 |
| 66.6 | 83.8 | 1.13 | 156.6 | 290.2 | 1.97 |
| 68.4 | 89.6 | 1.13 | 158.4 | 288.9 | 1.93 |
| 70.2 | 95.8 | 1.10 | 160.2 | 287.5 | 1.93 |
| 72.0 | 102.5 | 1.15 | 162.0 | 286.1 | 1.93 |
| 73.8 | 109.6 | 1.15 | 163.8 | 284.6 | 1.93 |
| 75.6 | 117.0 | 1.21 | 165.6 | 283.1 | 1.93 |
| 77.4 | 124.7 | 1.26 | 167.4 | 281.5 | 1.93 |
| 79.2 | 132.6 | 1.32 | 169.2 | 279.8 | 1.90 |
| 81.0 | 140.7 | 1.37 | 171.0 | 278.1 | 1.90 |
| 82.8 | 148.9 | 1.37 | 172.8 | 276.3 | 1.90 |
| 84.6 | 157.4 | 1.41 | 174.6 | 274.6 | 1.90 |
| 86.4 | 166.0 | 1.46 | 176.4 | 272.8 | 1.90 |
| 88.2 | 174.6 | 1.51 | 178.2 | 271.0 | 1.90 |
| 90.0 | 183.2 | 1.55 | 180.0 | 269.1 | 1.86 |

Using the Get Max button causes the program to step through a series of storm durations until a maximum volume is obtained.
Each duration is sampled 600 times and the results recorded. The storm durations (hrs) are:-

0.25, 0.5, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 18, 20, 24, 30, 36, 42, 48, 54, 60, 66, 72, 84, 96, 120, 150, 175, 200, 250, 300, 375, 500, 750, 1000, 1250, 1500, 1570, 2000, 2500, 3000, 3500, 4000

It should be noted that the six hour storm frequently requested rarely demonstrates the worst case for storage.

MasterDrain SW

**Environmental Assessment Services Ltd**
http://www.easltd.co.uk

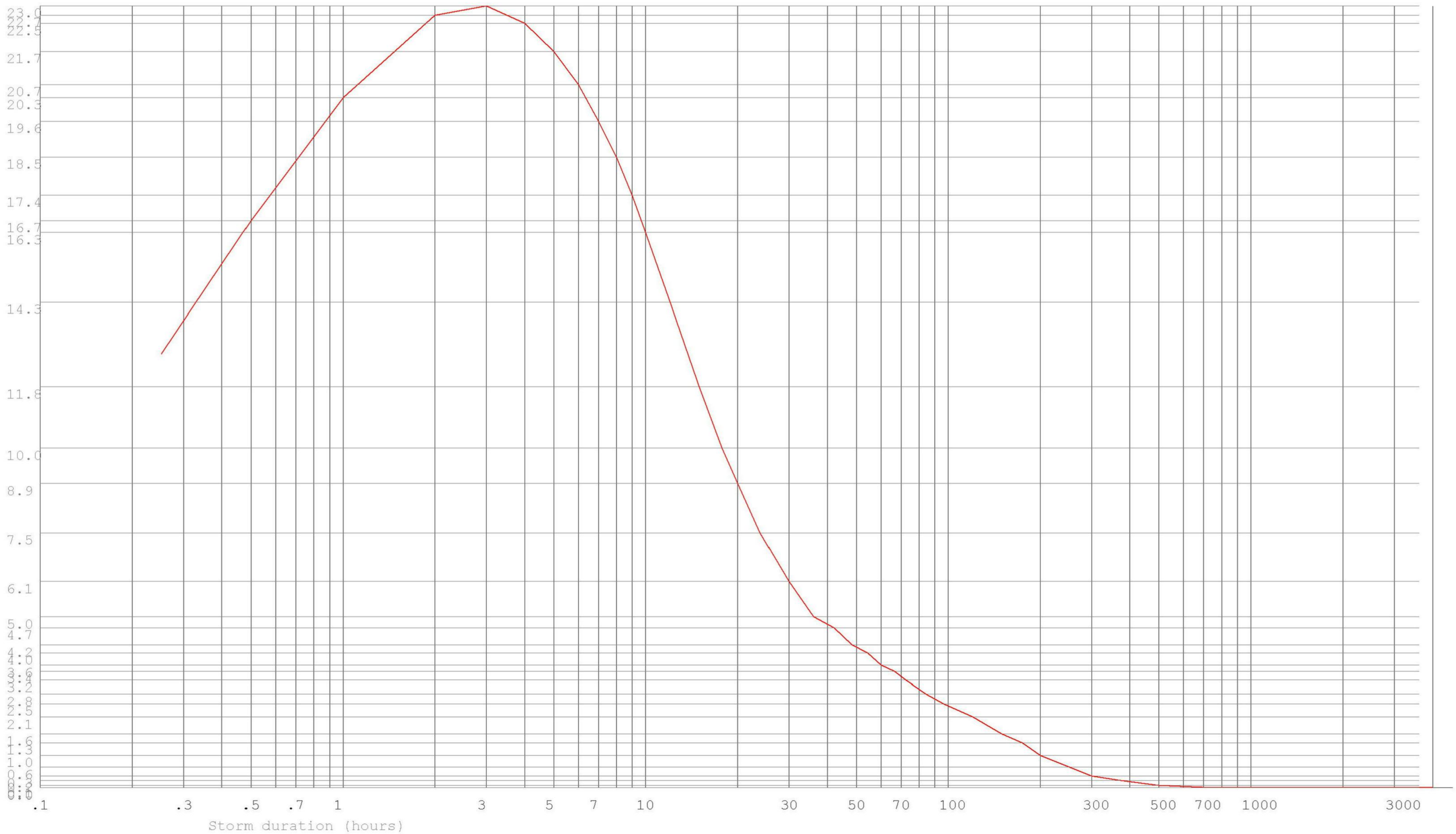
London Rd, Hickstead
Haywards Heath,
West Sussex, RH17 5LZ
[redacted]

| | |
|---|---|
| Job No. | 654 |
| Sheet no. | 4 |
| Date | 19/12/23 |
| By | MDM |
| Checked | |
| Reviewed | |

Project: **Woodside Grange Site B**

Title: **Hydrograph storage analysis (Winter profile) for HASSOCKS**

Sequential storage volume at specific storm durations.



# Environmental Assessment Services Ltd

http://www.easltd.co.uk

London Rd, Hickstead
Haywards Heath,
West Sussex, RH17 5LZ
[redacted]


MasterDrain
Foul 11.5

Project **Woodside Grange Site B**

Title **Manhole printout for WOODSIDE GRANGE SITE B.FL**

| Manhole ref. | Form | Cham diam. or length | Rect. width | Chamb. height | Shaft height | MH Volume | Ent. Diam | Ent. Crown | Ent. Invert | Exit Diam | Exit Crown | Exi Inv |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FW4 | circ | 450 | N/A | 0.62 | | 0.10 | Head | ---- | ---- | 100 | 43.825 | 43. |
| FW3 | circ | 450 | N/A | 0.50 | | 0.08 | Head | ---- | ---- | 100 | 43.225 | 43. |
| FW2 | circ | 450 | N/A | 0.71 | | 0.11 | 100 | 0.000 | 0.000 | 100 | 42.855 | 42. |
| FW1 | circ | 600 | N/A | 0.64 | | 0.18 | 100 | 0.000 | 0.000 | 100 | 42.145 | 42. |

All manholes to be as per 'Sewers for Adoption'

Levels calculated for level inverts

MasterDrain
Foul 11.5

**Environmental Assessment Services Ltd**
http://www.easltd.co.uk

London Rd, Hickstead
Haywards Heath,
West Sussex, RH17 5LZ
[redacted]

Project **Woodside Grange Site B**

Title **Manhole printout for WOODSIDE GRANGE SITE B.FL**

These explanatory notes should be read in conjunction with the Manhol

1) Manhole ref - the reference for the manhole in question

2) Form - either circular or rectangular

3) Chamber diam or length - diameter of chamber if circular, or length if rectangular - in m

4) Rectangular width - if form is rectangular, this gives the width of the chamber

5) Chamber height - height of chamber from invert

6) Shaft height - height of access shaft if applicable, from top of chamber to ground level

7) Manhole volume - cubic capacity of manhole chamber

8) Exit diameter - diameter of pipe leaving this manhole

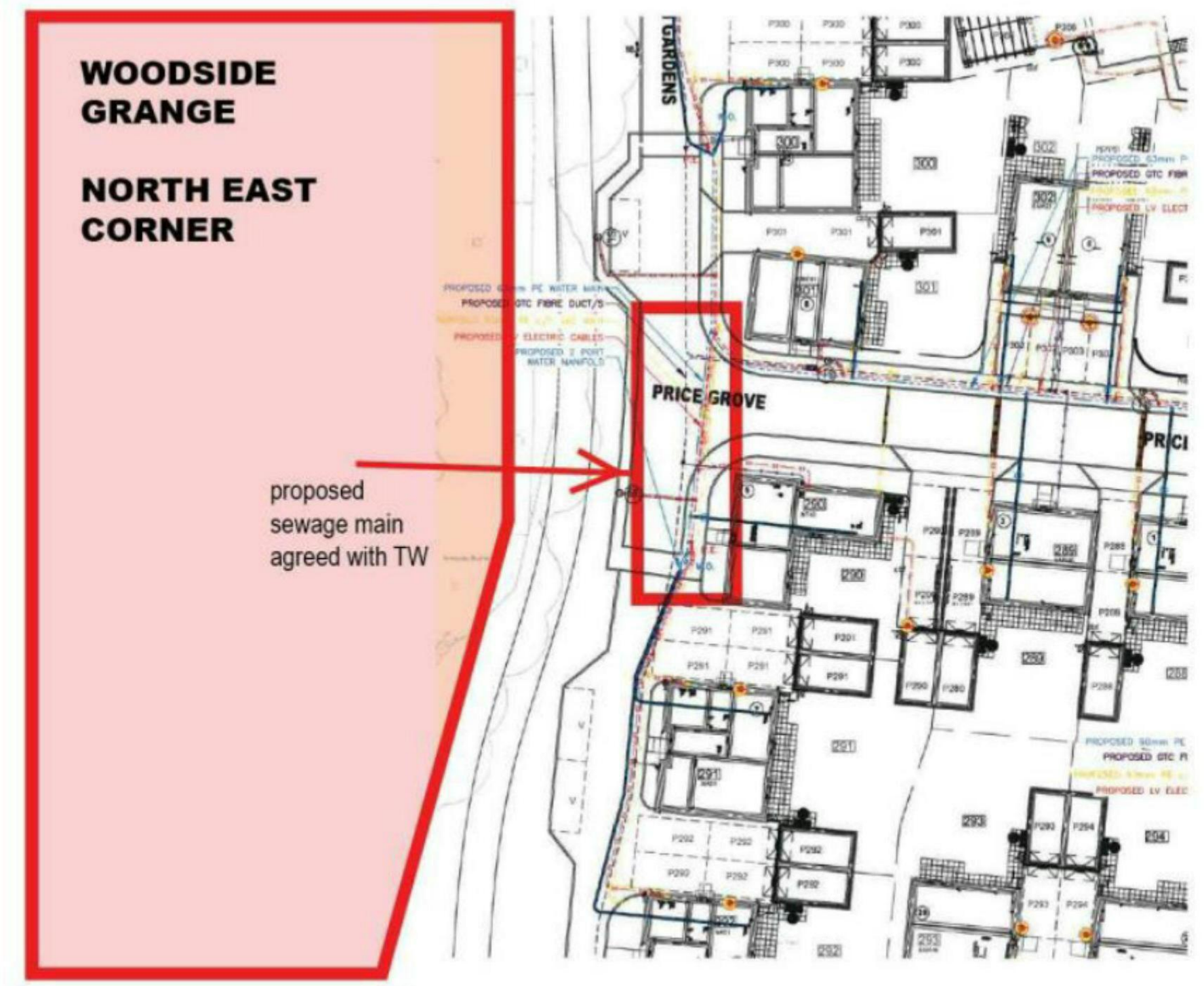
9) Exit crown - crown level of pipe leaving this manhole

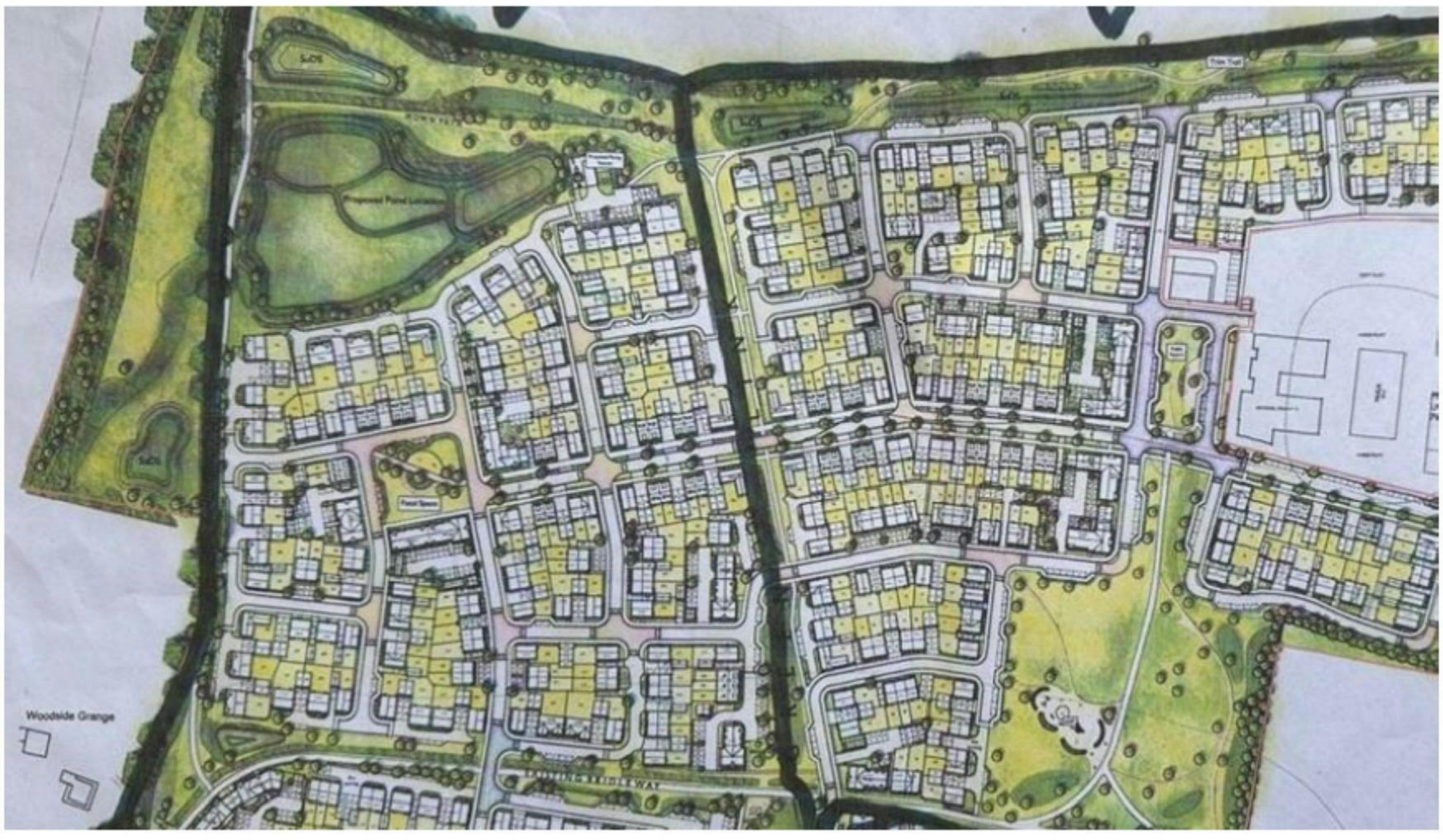
10) Exit invert - invert level of pipe leaving this manhole

11) Manhole diameters of 9999 have exceeded the sizes available in SfA

12) Manhole diameters may have to be modified due to the number of branches

# APPENDIX E:
# Taylor Wimpey Proposed Sewer and Drainage Plan


WOODSIDE GRANGE
NORTH EAST CORNER
proposed sewage main agreed with TW
GARDENS
PRICE GROVE
PROPOSED GTC FIBRE DUCT/S
PROPOSED 2 PORT WATER MANIFOLD


Woodside Grange

# APPENDIX F:
# Greenfield Runoff Rates for Site

PRINT Close Report

hr wallingford

# Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

| | |
|---|---|
| **Calculated by:** | Malcolm McKemey |
| **Site name:** | |
| **Site location:** | |

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

## Site Details

| | |
|---|---|
| **Latitude:** | 50.93273° N |
| **Longitude:** | 0.13893° W |
| **Reference:** | 2506362079 |
| **Date:** | Nov 29 2023 15:15 |

## Runoff estimation approach IH124

## Site characteristics

| | |
|---|---|
| **Total site area (ha):** | 0.25 |

## Methodology

| | |
|---|---|
| **$Q_{BAR}$ estimation method:** | Calculate from SPR and SAAR |
| **SPR estimation method:** | Calculate from SOIL type |

## Soil characteristics

| | Default | Edited |
|---|---|---|
| **SOIL type:** | 4 | 4 |
| **HOST class:** | N/A | N/A |
| **SPR/SPRHOST:** | 0.47 | 0.47 |

## Hydrological characteristics

| | Default | Edited |
|---|---|---|
| **SAAR (mm):** | 880 | 880 |
| **Hydrological region:** | 7 | 7 |
| **Growth curve factor 1 year:** | 0.85 | 0.85 |
| **Growth curve factor 30 years:** | 2.3 | 2.3 |
| **Growth curve factor 100 years:** | 3.19 | 3.19 |
| **Growth curve factor 200 years:** | 3.74 | 3.74 |

## Notes

### (1) Is $Q_{BAR}$ < 2.0 l/s/ha?

When $Q_{BAR}$ is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

### (2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

### (3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

## Greenfield runoff rates

| | Default | Edited |
|---|---|---|
| **$Q_{BAR}$ (l/s):** | 1.58 | 1.58 |
| **1 in 1 year (l/s):** | 1.34 | 1.34 |
| **1 in 30 years (l/s):** | 3.63 | 3.63 |
| **1 in 100 year (l/s):** | 5.03 | 5.03 |
| **1 in 200 years (l/s):** | 5.9 | 5.9 |

eas ltd
Environmental Assessment Services Ltd
Unit 4B, The Courtyard, Holmsted Farm, Staplefield Road, Cuckfield,
West Sussex, RH17 5JT
Phone : +44 (0) 1444 882552 email : info@easltd.co.uk
web site : www.easltd.co.uk