



Ashford Homes Ltd

Wynsome Street, Southwick

Drainage Strategy

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## Drainage Strategy

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|----------------|----------------|----------------|------------------------|------------------------|----------------|
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| Checked by     | Paul Sloan     | Paul Sloan     | Paul Sloan             | Paul Sloan             | Paul Sloan     |
| File reference | 19862-R01-B    | 19862-R01-C    | 19862-R01-D            | 19862-R01-E            | 19862-R01-F    |

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# 1 INTRODUCTION

Tumu Consulting Ltd have been appointed by Ashford Homes Ltd to produce a Drainage Strategy to support a full planning application for a residential development at Wynsome Street, Southwick.

## 1.1 Site Location

The site is located to on Wynsome Street, Southwick , BA14 9RQ. The site is currently greenfield, where residential land use surrounds the site. The grid reference for the site is 384270,154960. The local planning authority for the development is Wiltshire Council.

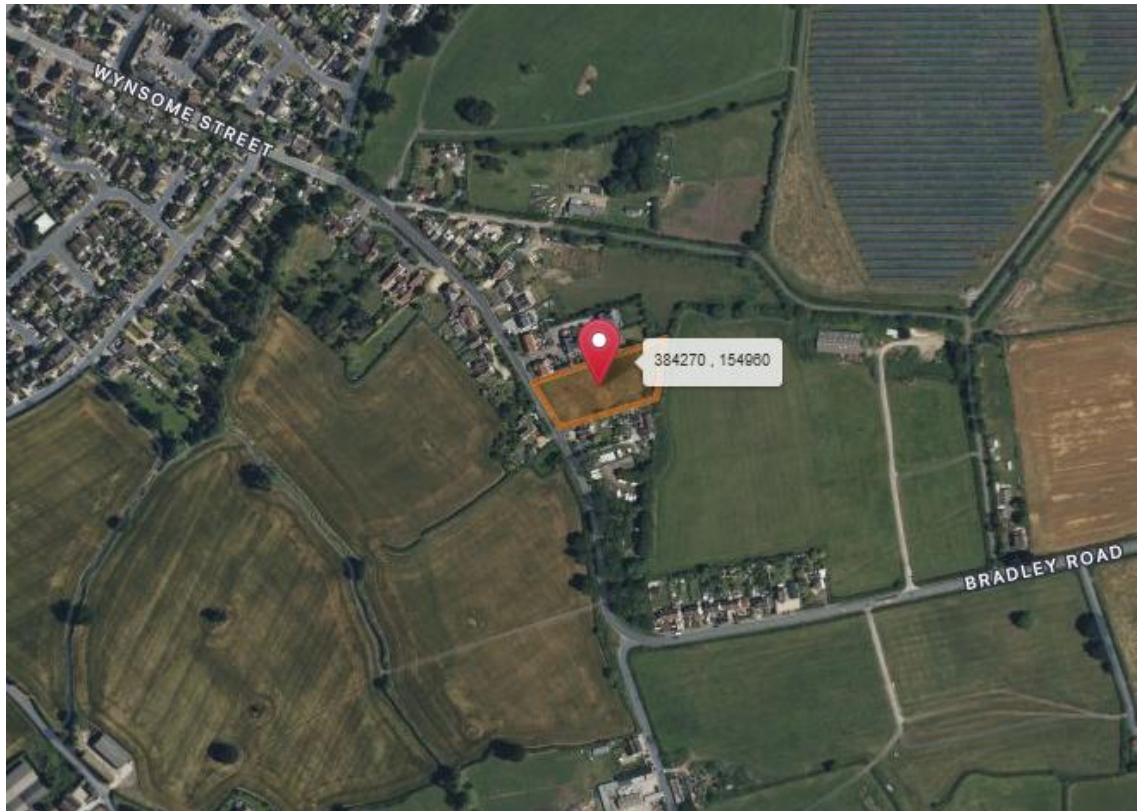


Figure 1-1 Site Location Plan

## 1.2 Existing Site Usage

The existing site is greenfield, having previously been used for agricultural purposes.

## 1.3 Topography

A topographic survey has been completed in December 2024 by Clifton Surveys Ltd, with project reference 989/6486/1. Levels generally fall slowly from east to west, with the highest elevation at approximately 49.80mAOD. The lowest elevation is approximately 47.00mAOD, in the west of the site.

## 1.4 Geology & Hydrogeology

According to the British Geological Survey (BGS) Viewer, the site is underlain with a bedrock geology of Kellaways Formation– a mudstone deposit. The LandIS Soilscales viewer notes the

underlying strata as 'impeded drainage' alluding to impermeability of the ground, aligning with the mudstone designation of the BGS viewer. Therefore, infiltration and soakaways are not a viable surface water receptor.

The site is not located within an Environment Agency (EA) Source Protection Zone (SPZ) for groundwater.

## 1.5 Hydrology

To the south west of the development, there is a ditch located across Wynsome Street. This eventually discharges to the western Lambrok Stream. There is also a culverted watercourse to the north east, which the highways drainage network discharges into.

## 1.6 Existing Drainage

The site is not served by mains sewerage, as it is greenfield. However, located to the south west of the site, on Wynsome Street, there is a 150Ø foul sewer located, which discharges northwards.

Bordering the southern frontage of the site is a Highways drain, which also discharges northwards and eventually into a culverted watercourse.

## 1.7 Existing Surface Water Runoff Rates

As the site is greenfield, the greenfield discharge rates have been estimated in accordance with the Wiltshire Council Drainage and Betterment Strategy (June 2024). The strategy outlines that *'Greenfield runoff rates should be calculated using appropriate rainfall data. Applicants should justify the rainfall methodology they are using. Applicants should compare Flood Estimation Handbook (FEH) and Flood Studies Report (FSR) rainfall data for the site and select the most conservative methodology on a site-by-site basis.'* In order to comply with the above standard, both FEH and FSR has been used to estimate greenfield runoff rates. Both of these sets of calculations can be found in Appendix A.

| Event            | FSR (l/s/ha) | FEH (l/s/ha) |
|------------------|--------------|--------------|
| Q <sub>1</sub> * | 3.9          | 5.5          |
| Q <sub>BAR</sub> | 5.1          | 6.1          |
| Q <sub>30</sub>  | 9.6          | 12.1         |
| Q <sub>100</sub> | 12.2         | 15.1         |

Table 1-1 FSR vs FEH Greenfield Runoff Rates.

*\*Q<sub>2</sub> has been used for FEH data as it does not enable the calculation of the 1-year storm.*

Table 1-1 shows the more conservative estimation of the greenfield rate for the site is the FSR data with a Q<sub>BAR</sub> of 5.1l/s/ha. The site area is approximately 0.45ha, the associated Q<sub>BAR</sub> discharge rate is therefore 2.3l/s.

## 2 DEVELOPMENT PROPOSALS

### 2.1 Description of the Proposed Works

It is proposed to develop the site with nine dwellings, as well as associated infrastructure and re-landscaping. A new access road will serve the dwellings.

### 2.2 Flood Risk Vulnerability Classification

In accordance with table D2 of the NPPF, the development is predominantly classified 'more vulnerable' as Figure 2-1 shows below.

#### **More vulnerable**

- Hospitals
- Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels.
- Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.
- Non-residential uses for health services, nurseries and educational establishments.
- Landfill\* and sites used for waste management facilities for hazardous waste.
- Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.

Figure 2-1 Annex 3 of the NPPF Flood Risk Vulnerability Classification

### 2.3 Design Life

As the nature of the redevelopment is residential, it is anticipated that the design life will be approximately 100 years.

## 2.4 Flood Risk

As the site area is less than 1.0ha and within Flood Zone 1, a flood risk assessment is not required for the site. However, the report will briefly detail any flood risk, for completeness using the readily available long term flood risk information from the EA:

- The risk of flooding from tidal and fluvial sources is <0.1% Annual Exceedance Probability (AEP) as the site is located in Flood Zone 1.
- Low risk of groundwater flooding.
- Low risk of reservoir flooding.

### Groundwater

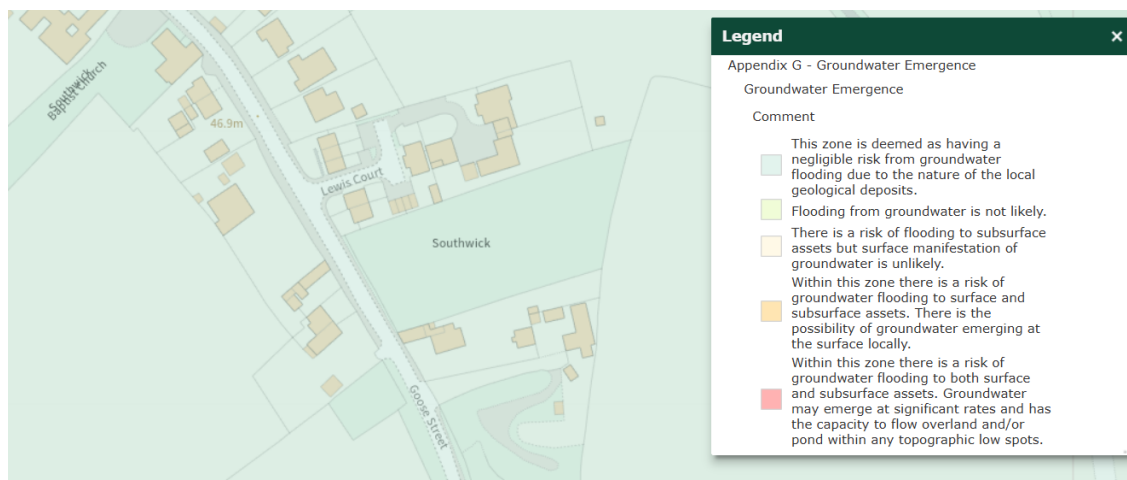


Figure 2-2 Wiltshire SFRA Data Explorer Appendix G – Groundwater Emergence

The Wiltshire Council SFRA Data Explorer considers the site to have a negligible risk from groundwater flooding due to the nature of the geological deposits. This is Wiltshire Council's lowest classification of groundwater flood risk.

### Surface Water

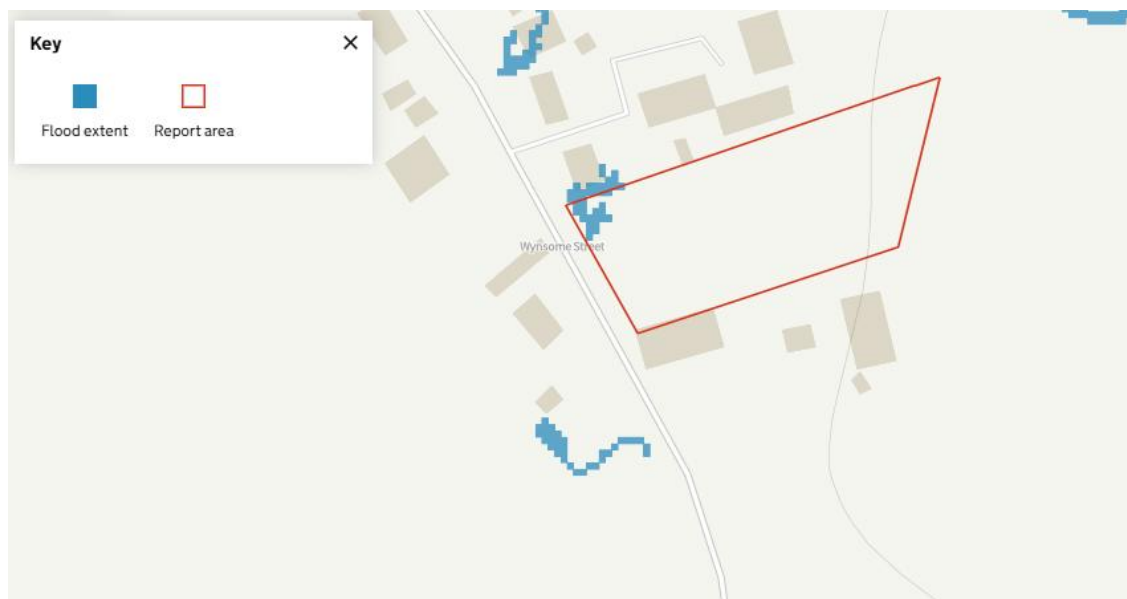


Figure 2-3 30 Year Return Period Surface Water Flooding

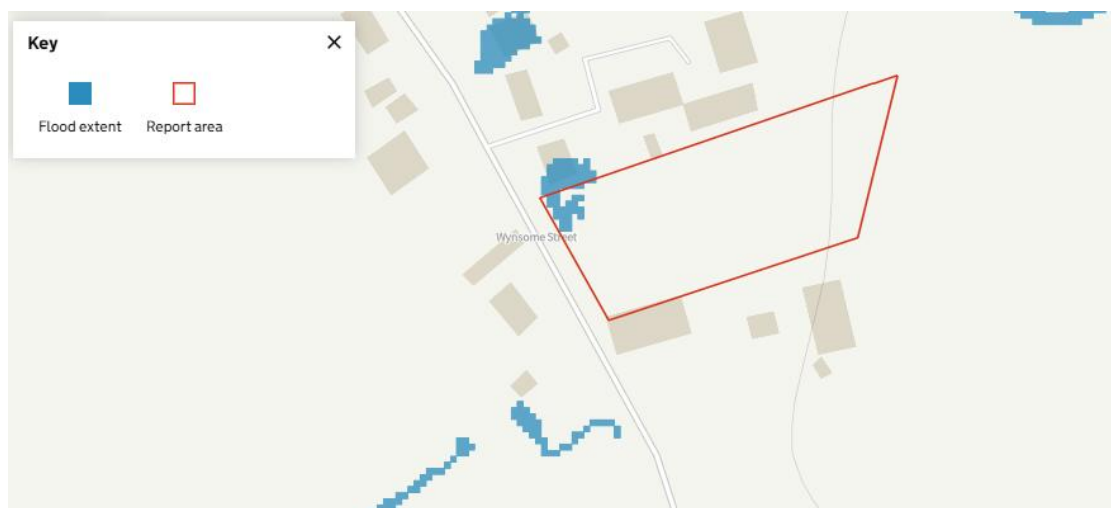


Figure 2-4 100 Year Return Period Surface Water Flooding

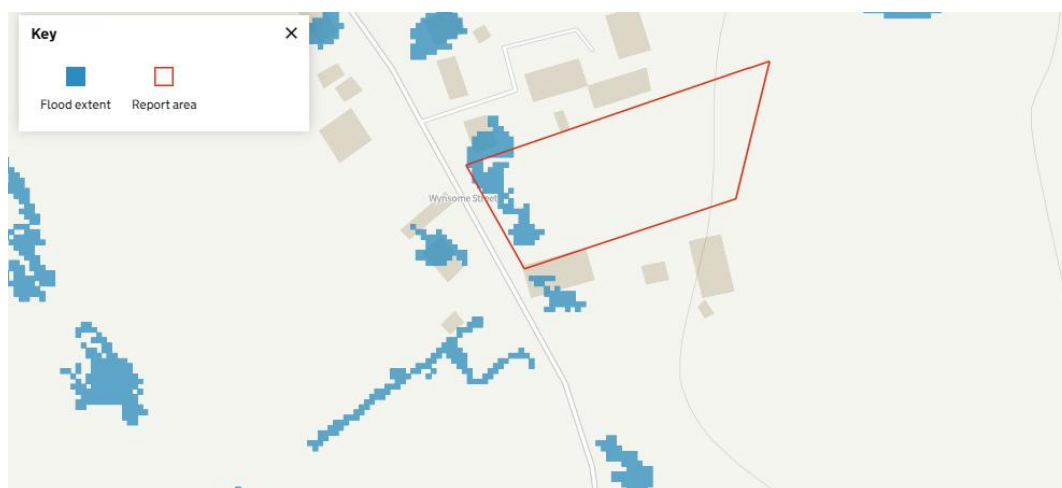


Figure 2-5 1000 Year Return Period Surface Water Flooding

The figures above show some minor surface water flooding, which increases in area as the return period increases, and the storms become more intense. The flooding is situated at the low point of the site, as the elevation decrease to the north west of site. With the introduction of a new surface water drainage system, the flooding will be reduced, as flows arising on the developed site will be attenuated and discharged at a betterment on greenfield rates. The surface water system will convey rainfall to watercourses, rather than ponding in natural depressions as overland flows.

## 3 SURFACE WATER DRAINAGE STRATEGY

The surface water drainage strategy has been developed in accordance with the relevant design standard and guidance, including but not limited to; CIRIA C753 The SuDS Manual, The Approved Documents: Building Regulations 2010 Part H: Drainage and Waste Disposal, and the Non-Statutory Technical Standards for SuDS (NTSS). The Wiltshire council Drainage and Betterment Strategy (June 2024) has been consulted.

The NTSS states that for a previously developed site, the rate of discharge should never exceed the rate pre redevelopment. The NTSS also states that flooding should not occur to any part of the site in the 1 in 30 year event, and no flooding to buildings or utility plant should occur in the 1 in 100 year event.

### 3.1 Surface Water Discharge Arrangement

In line with the surface water drainage discharge hierarchy, consideration should be given to discharge in order of priority to: Soakaways/Infiltrating Drainage System, Watercourse, Public Surface Water Sewer then finally, Public Combined Sewer.

Infiltration has been ruled out as a surface water discharge receptor, due to the poor permeability of the underlying strata, in which the site is situated as discussed in section 1.4 of this report.

A ditch is located to the south west of the development. It is proposed to discharge surface water flows into this ditch, at reduced rate. This will utilise the private access road permeable paving sub-base' free porosity as attenuation.

Due to the fall across the development, it is proposed to introduce baffles within the permeable paving sub-base. These will be placed at an appropriate distance apart, in falling increments of 100mm, spacing set out by the fall of the private access road. This will enable surface water to be 'held back' by each baffle, enabling utilisation of the full sub-base. A 100mm underdrain will be incorporated, to enable the sections separated by the baffle to drain between storm events.

Refer to Appendix B for the Proposed Drainage Strategy, and Appendix C for the Standard Drainage Details.

### 3.2 Climate Change

As the site's usage is residential, a lifespan of 100 years should be considered. Therefore, when developed (approximately 2025), the end of life can be estimated as 2125. According to government guidance, a building with a lifespan beyond 2100 should use a 'upper end allowance' for a 2070s epoch when considering rainfall climate change allowances. For the Avon Bristol and North Somerset Streams Management Catchment area, the climate change allowance to consider should be 40% and 45% as shown in Figure 3-1 below, for the 30 and 100 year return period storms respectively.

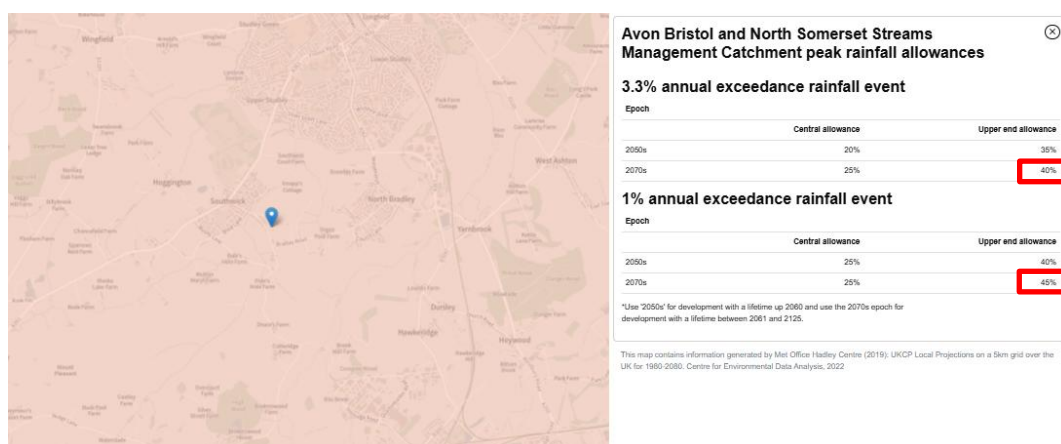


Figure 3-1 Avon Bristol and North Somerset Streams Management Catchment

## 3.3 Discharge Rates

The Wiltshire Council Drainage and Betterment Strategy (June 2024) states that ‘*Wiltshire Council requires post development discharges from greenfield sites to provide 30% betterment over pre-development discharges for all storm events between the 1 in 1year and 1 in 100year return period events.*’ As such, the greenfield rates calculated within section 1.7 of this report will be reduced by 30%, as outlined in Table 3-1.

| Parameter            | Pre-Development Discharge (l/s/ha) | Pre-Development Site Discharge (l/s/) | Post-Development Site Discharge (l/s) | Betterment (%) |
|----------------------|------------------------------------|---------------------------------------|---------------------------------------|----------------|
| Q <sub>BAR</sub>     | 5.1                                | 2.3                                   | 1.6                                   | 30%            |
| Q <sub>30+40%</sub>  | 9.6                                | 4.3                                   | 1.6                                   | 63%            |
| Q <sub>100+45%</sub> | 12.2                               | 5.5                                   | 1.6                                   | 71%            |

Table 3-1 Pre and Post Development Discharge Rates

## 3.4 Surface Water Calculations

Calculations have been undertaken to ensure that there is no flooding in the 1 in 100 year rainfall event with an allowance for climate change. MicroDrainage Source Control software has been used, with an additional 10% urban creep allowance for contributing dwelling roof areas, amounting to an increase of 59m<sup>2</sup>. This increases the contributing dwelling roof area from 0.059ha to 0.065ha, with a total contributing area including urban creep of 0.180ha.

The  $C_v$  values utilised within MicroDrainage are 0.75 for the summer storm and 0.84 for the winter storm. The Modified Rational method is shown in the figure below:

**EQ. 24.5 Modified rational method equation to determine peak flow rates**

$$Q = 2.78 C i A$$

where:

$Q$  = design event peak rate of runoff (l/s)

$C$  = non-dimensional runoff coefficient which is dependent on the catchment characteristics

$$C = C_V C_R$$

where  $C_V$  = volumetric runoff coefficient

$C_R$  = dimensionless routing coefficient

$i$  = rainfall intensity for the design return period (in mm/hr) and for a duration equal to the "time of concentration" of the network

$A$  = total catchment area being drained (ha)

Note: 2.78 is a conversion factor to address the rainfall unit being in mm/hr.

Figure 3-2 CIRIA 753 The SuDS Manual, Equation 24.5 – Modified Rational method

MicroDrainage sets the dimensionless routing coefficient,  $C_R$ , as 1.3 by default within the software, which aligns with CIRIA 753 The SuDS Manual. Therefore when entering the volumetric runoff coefficient 0.75 and 0.84, for the summer and winter storms, the actual runoff coefficients are 0.975 and 1.092 respectively. Therefore there is nearly a 10% increase in runoff in the winter storm, which allows for runoff from saturated areas of soft landscaping running on to impermeable areas.

The Flood Studies Report (FSR) rainfall data has been used for the modelling of the surface water system, as it has been used to calculate the greenfield runoff rate. This provides consistency within the input data used for both calculations.

Calculations have been provided in Appendix D, and show no flooding in the 1 in 100 year rainfall event with a 45% allowance for climate change.

## 3.5 Sustainable Drainage Systems (SuDS)

In order to clarify that the proposed SuDS sufficiently remove pollutants in order to achieve water quality goals, a Simple Index Approach has been undertaken. Each form of SuDS has its own mitigation indices, which can be combined. The indices are based on TSS (Total Suspended Solids), Metals and Hydrocarbons. To prove sufficient, the mitigation indices must be higher than the pollution indices for the associated land use of the proposed development. The pollution and mitigation indices used are described in CIRIA 753 The SuDS Manual, Tables 26.2 and 26.3, and below.

| Land Use                          | Pollution Hazard Level | TSS | Metals | Hydrocarbons |
|-----------------------------------|------------------------|-----|--------|--------------|
| General low traffic access roads. | Low                    | 0.5 | 0.4    | 0.4          |

Table 3-3 CIRIA 753 Table 26.2 Pollution Hazard Indices for General Low Traffic Access Roads

| Land Use         | TSS        | Metals     | Hydrocarbons |
|------------------|------------|------------|--------------|
| Permeable Paving | 0.7        | 0.6        | 0.7          |
| <b>Total</b>     | <b>0.7</b> | <b>0.6</b> | <b>0.7</b>   |

Table 3-4 CIRIA 753 Table 26.3 Mitigation Indices for Permeable Paving

As it is shown in Table 3-2 & 3-3, the SuDS mitigation indices are higher than the pollution indices for the associated land use. Therefore, the proposed SuDS successfully mitigate against the anticipated pollutants of the site.

## 3.6 Flood Exceedance

In the unlikely event that the drainage system's capacity is exceeded, or the drainage system fails, any exceedance flows will be directed away from other structures and neighbouring properties. The routing will follow the contouring of the access road, before discharging into an exceedance depression in the south west corner of the development, where flows will be stored.

## 3.7 Maintenance Arrangements

All shared surface water drainage features, such as the permeable paving and hydrobrake will be privately managed and maintained by the maintenance company selected by Ashford Homes Ltd. All drainage serving individual dwellings will be owned and maintained by the individual property owners. Operation and maintenance will be by the client with the recommendations outlined in the SuDS Manual (CIRIA C753), provided in tables 3-5 & 3-6.

| Maintenance Schedule | Required Action                                                                                                                          | Typical Frequency |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| Regular Maintenance  | Inspect surface structures, removing obstructions and silt as necessary. Check there is no physical damage.                              | Monthly           |
|                      | Remove cover and inspect, ensuring water is flowing freely and that the exit route for water is unobstructed. Remove any debris and silt | Annually          |
|                      | Undertake inspection after leaf fall in autumn.                                                                                          |                   |
|                      | Jet the pipes leading from overflow structures and check water is going through the overflow                                             | Annually          |
| Remedial Actions     | Repair physical damage                                                                                                                   | As required       |

Table 3-5 Operation and Maintenance Requirements for Inlets, Outlets, Controls and Inspection Chambers

| Maintenance schedule   | Required action                                                                                                                                                                       | Typical frequency                                                                                                                                                                                                                                                                                                            |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Regular inspections    | Brushing and vacuuming (standard cosmetic sweep over whole surface)                                                                                                                   | Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturers recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment. |
| Occasional Maintenance | Removal of weeds                                                                                                                                                                      | As required – once per year on less frequently used pavements.                                                                                                                                                                                                                                                               |
| Remedial action        | Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material. | As required                                                                                                                                                                                                                                                                                                                  |
|                        | Rehabilitation of surface and upper substructure by remedial sweeping                                                                                                                 | Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)                                                                                                                                                                                                                     |
| Monitoring             | Initial inspection                                                                                                                                                                    | Monthly for three months after installation                                                                                                                                                                                                                                                                                  |
|                        | Inspect for evidence of poor operation and/or weed growth – if required, take remedial action                                                                                         | Three-monthly, 48h after large storms in first six months                                                                                                                                                                                                                                                                    |
|                        | Inspect silt accumulation rates and establish appropriate brushing frequencies                                                                                                        | Annually                                                                                                                                                                                                                                                                                                                     |
|                        | Monitor inspection chambers                                                                                                                                                           | Annually                                                                                                                                                                                                                                                                                                                     |

Table 3-6 Operation and Maintenance Requirements for Permeable Paving

## 4 FOUL WATER DRAINAGE STRATEGY

It is proposed to discharge foul water flows from the development to the existing 150Ø Wessex Water sewer within Wynsome Street. Wessex Water have been consulted through a pre-development enquiry and have confirmed adequate capacity within their foul sewerage network for the development. Refer to Appendix E for the consultation with Wessex Water.

## 5 CONCLUSION

- It is proposed to develop the site greenfield site with nine residential dwellings.
- The site suffers from a minor area of surface water flooding at the depression to the north west of the existing site. This will be alleviated through the introduction of a surface water drainage system, limiting the discharge rate.
- Surface water will discharge at a 30% betterment on the calculated greenfield rates, achieved by attenuating within the sub-base of the proposed private permeable paved access. All runoff arising from hardstanding areas will be conveyed to the permeable paving, and as such will provide SuDS treatment benefits which will mitigate pollutants which could arise with the associated residential land-use.
- Calculations have been provided which show no flooding in the 1 in 100 year rainfall event with a 45% allowance for climate change.
- It is proposed to discharge foul water to the Wessex Water foul sewer within Wynsome Street. A pre-developer enquiry consultation with Wessex Water has confirmed capacity within their foul sewerage network.

## Appendix A

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### Greenfield Discharge Rates

ICP SUDS Mean Annual Flood

Input

Return Period (years) 100 SAAR (mm) 790 Urban 0.000  
Area (ha) 1.000 Soil 0.450 Region Number Region 8

**Results 1/s**

QBAR Rural 5.1  
QBAR Urban 5.1  
  
Q100 years 12.2  
  
Q1 year 3.9  
Q30 years 9.6  
Q100 years 12.2

### Simulation Settings

|                      |        |                                         |      |                        |     |
|----------------------|--------|-----------------------------------------|------|------------------------|-----|
| Rainfall Methodology | FEH-22 | Skip Steady State                       | x    | 2 year (l/s)           | 0.0 |
| Summer CV            | 0.750  | Drain Down Time (mins)                  | 240  | 30 year (l/s)          | 0.0 |
| Winter CV            | 0.840  | Additional Storage (m <sup>3</sup> /ha) | 20.0 | 100 year (l/s)         | 0.0 |
| Analysis Speed       | Normal | Check Discharge Rate(s)                 | ✓    | Check Discharge Volume | x   |

### Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

| Return Period<br>(years) | Climate Change<br>(CC %) | Additional Area<br>(A %) | Additional Flow<br>(Q %) |
|--------------------------|--------------------------|--------------------------|--------------------------|
| 2                        | 0                        | 0                        | 0                        |
| 30                       | 0                        | 0                        | 0                        |
| 100                      | 0                        | 0                        | 0                        |

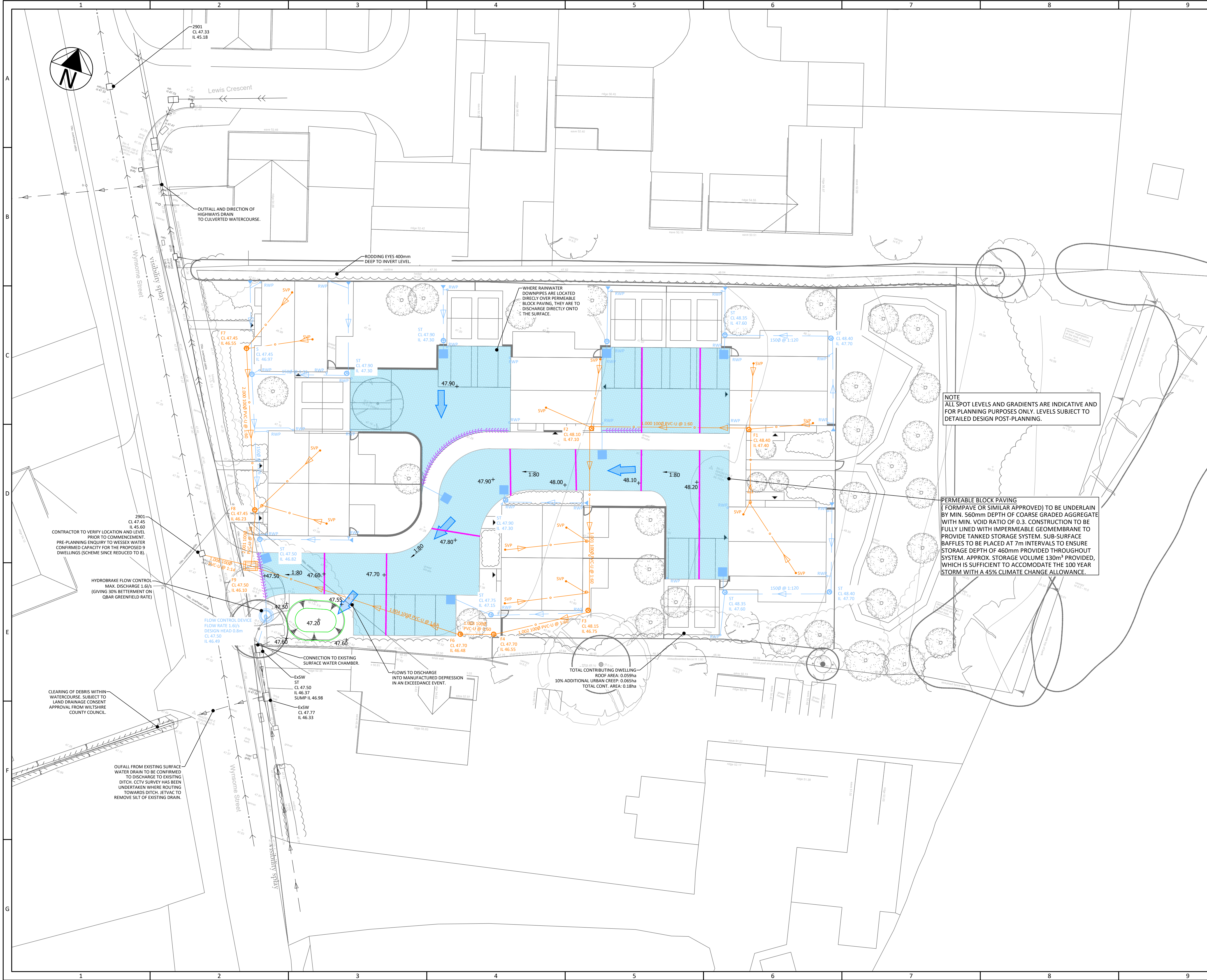
### Pre-development Discharge Rate

|                              |            |                        |      |
|------------------------------|------------|------------------------|------|
| Site Makeup                  | Greenfield | Growth Factor 30 year  | 1.99 |
| Greenfield Method            | FEH        | Growth Factor 100 year | 2.48 |
| Positively Drained Area (ha) | 1.000      | Betterment (%)         | 0    |
| SAAR (mm)                    | 751        | QMed                   | 5.5  |
| Host                         | 1          | QBar                   | 6.1  |
| BFIHost                      | 0.326      | Q 2 year (l/s)         | 5.5  |
| Region                       | 1          | Q 30 year (l/s)        | 12.1 |
| QBar/QMed conversion factor  | 1.111      | Q 100 year (l/s)       | 15.1 |
| Growth Factor 2 year         | 0.90       |                        |      |

## Appendix B

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### Proposed Drainage Strategy



KEY

EXISTING FOUL SEWER

EXISTING PRIVATE SURFACE WATER CULVERT

EXISTING HIGHWAYS DRAIN

PROPOSED PRIVATE FOUL WATER DRAINAGE

PROPOSED PRIVATE SURFACE WATER DRAINAGE

450Ø POLYPROPYLENE INSPECTION CHAMBER

320Ø MINI-ACCESS CHAMBER

1240x675 RECTANGULAR BRICK CHAMBER

SURFACE WATER RODDING EYE

INDICATIVE RWP/SVP

TANKED 'TYPE C' PERMEABLE BLOCK PAVING WITH FIN DRAIN OUTLET

PERMEABLE PAVING BAFFLE

PERMEABLE PAVING DISTRIBUTION TANK

INDICATIVE SPOT LEVEL

SILT TRAP

NOTES

DRAINAGE STRATEGY FOR PLANNING PURPOSES ONLY AND SUBJECT TO DETAILED DESIGN IN ACCORDANCE WITH BUILDING REGULATIONS APPROVED DOCUMENT H. SUBJECT TO SETTING OUT OF SVRS RWPS AND DETAILED LEVELS DESIGN. ALL LEVELS ARE INDICATIVE AND SUBJECT TO DETAILED LEVELS DESIGN.

47.60

ST

|      |                     |          |    |     |
|------|---------------------|----------|----|-----|
| F    | SITE LAYOUT AMENDED | 30.04.26 | RP | PS  |
| E    | P5 POSITION AMENDED | 05.01.26 | RP | PS  |
| D    | UPDATED NOTES       | 12.08.25 | RP | PS  |
| C    | PLANNING ISSUE      | 07.08.25 | RP | PS  |
| B    | UPDATED SITE PLAN   | 19.06.25 | RP | PS  |
| A    | FIRST ISSUE         | 06.06.25 | RP | PS  |
| REV. | DESCRIPTION         | Date     | BY | CHK |

DESIGN BY:

CUSTOMER:

DRAWING STATUS:PLANNING APPLICATION

SCALE @ A1:

010

metres

PROJECT:WYNSOME STREET, SOUTHWICK

TITLE:DRAINAGE STRATEGY

PROJECT No:19862

DRAWING No:19862-TUM-PL-XXX-0200

REV:F

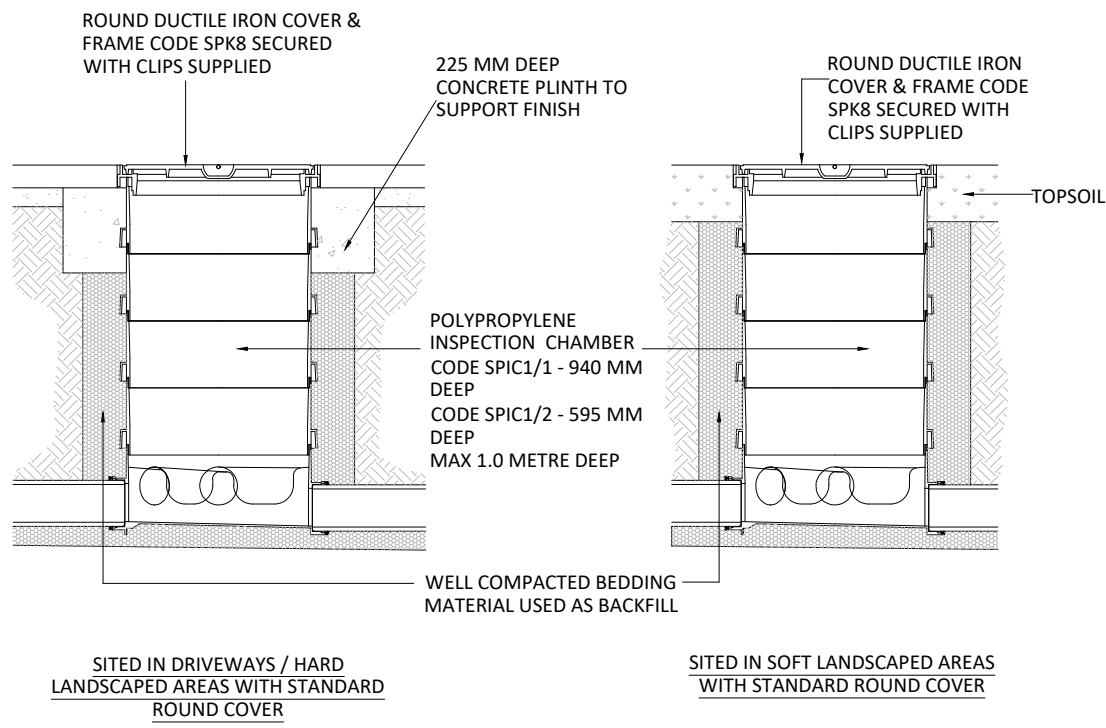
## Appendix C

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### Standard Drainage Details

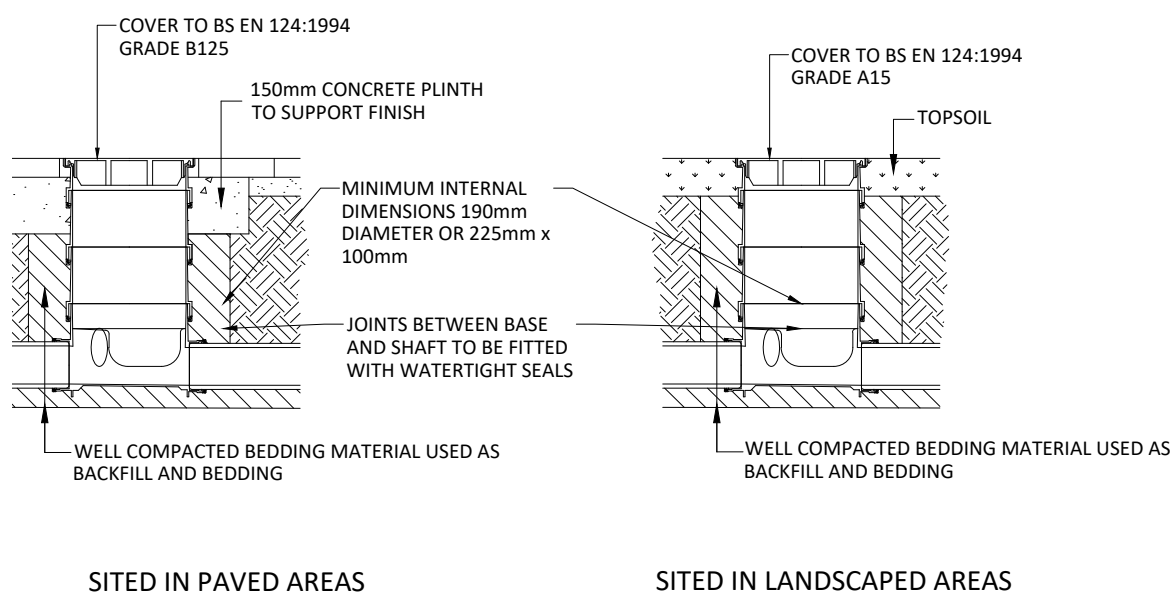
TYPICAL INSPECTION CHAMBER

SCALE 1:20



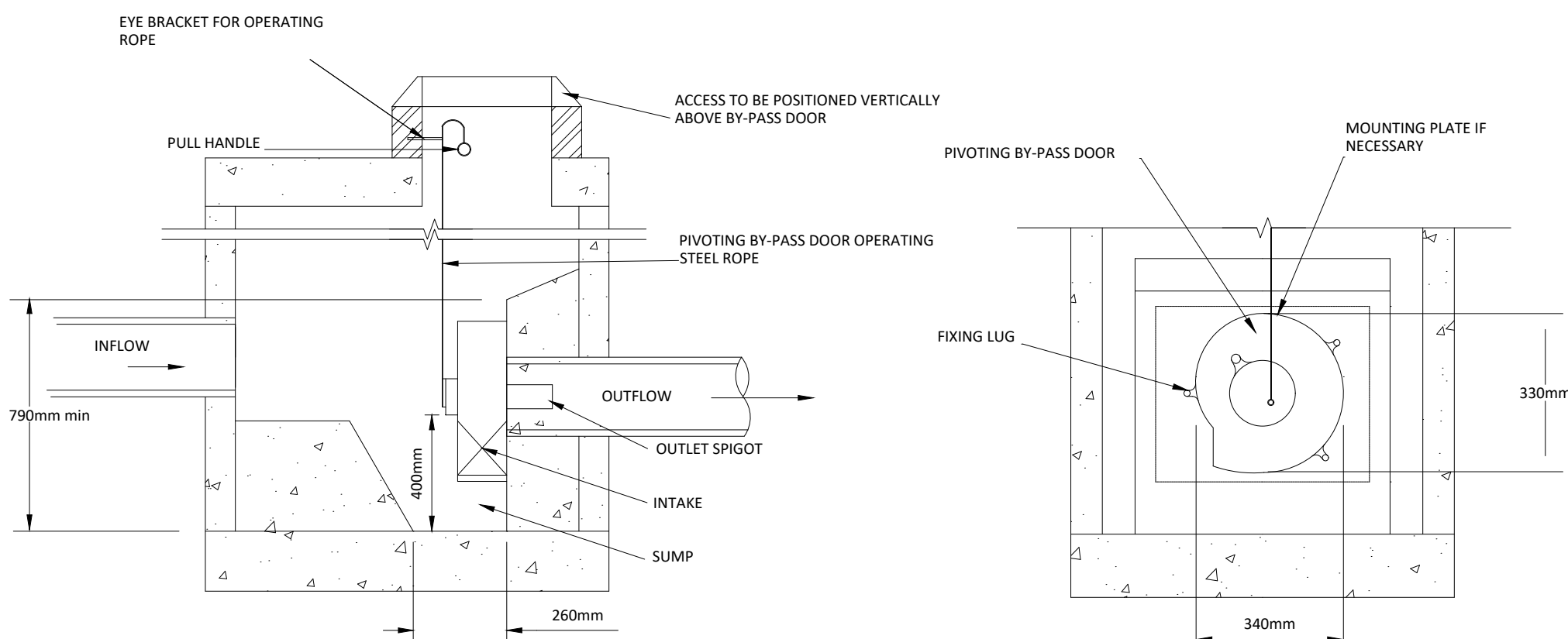
TYPICAL MINI ACCESS CHAMBER

MAX 600mm DEEP (NON ENTRY) SCALE 1:20



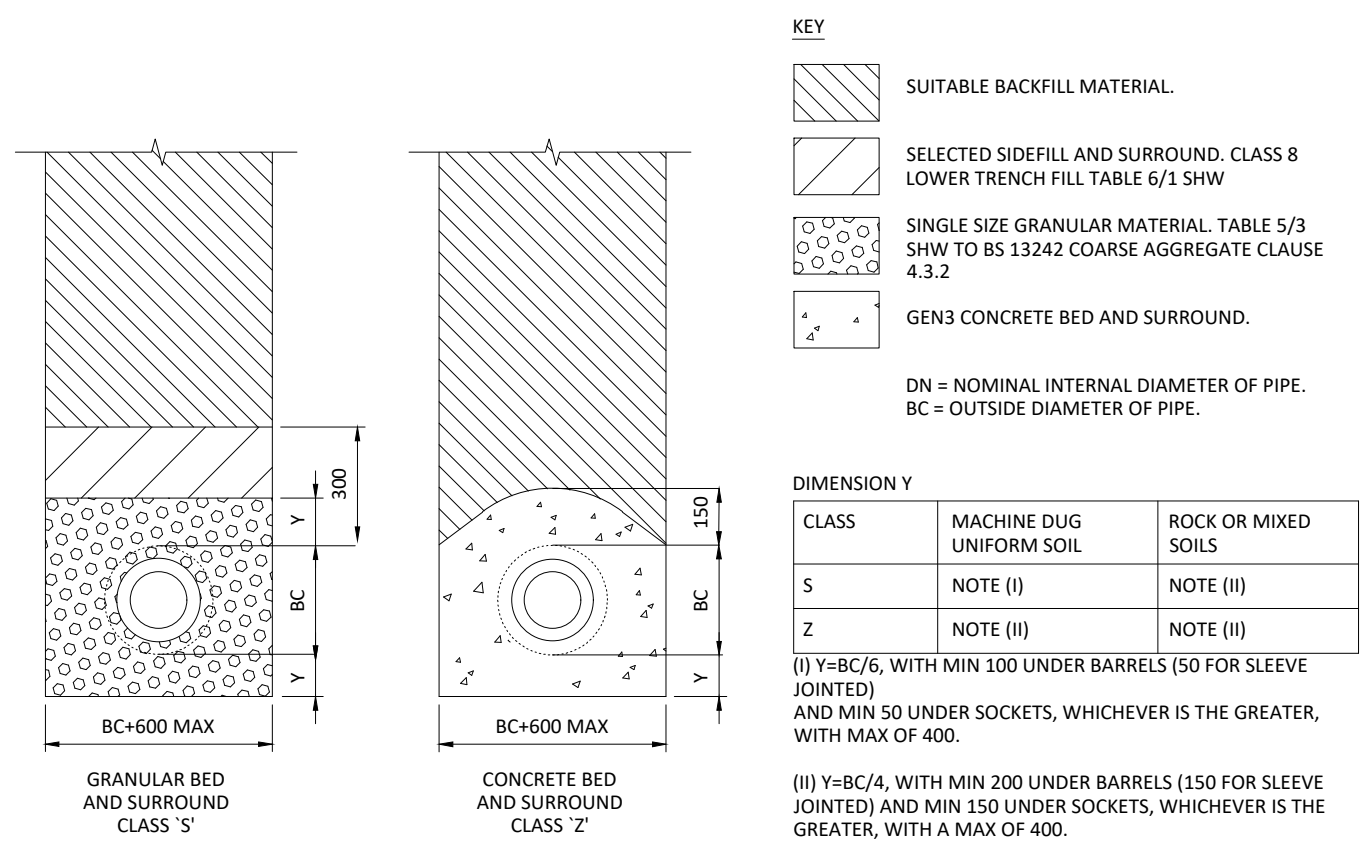
HYDROBRAKE FLOW CONTROL CHAMBER

NOT TO SCALE



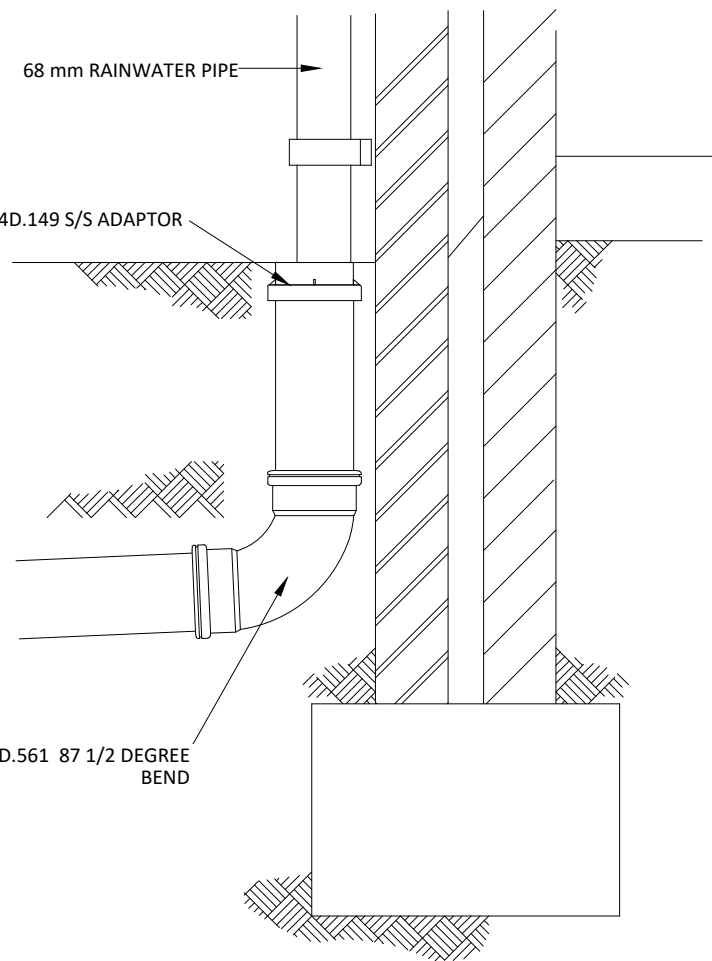
PIPE BEDDING DETAILS

SCALE 1:20



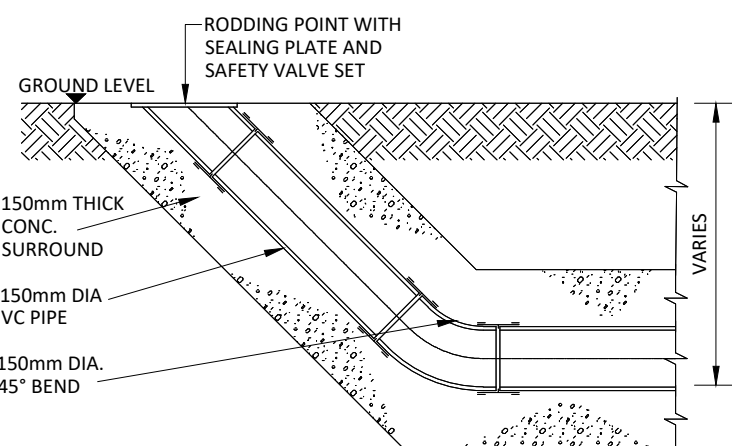
EXTERNAL R.W.P. TO DRAIN

SCALE 1:20



RODDING EYE DETAIL

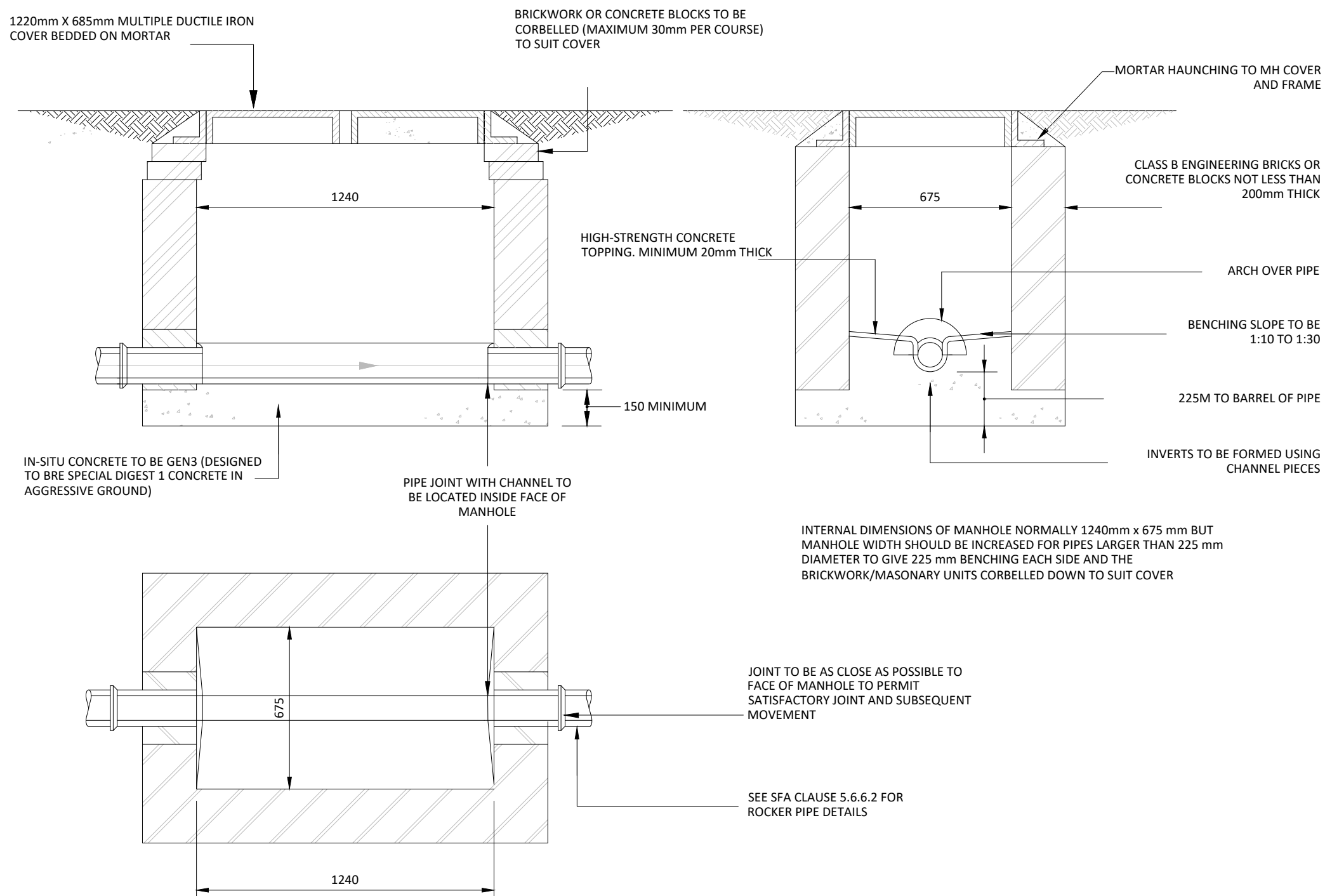
SCALE 1:20



TYPICAL 1240x675 BRICK MANHOLE

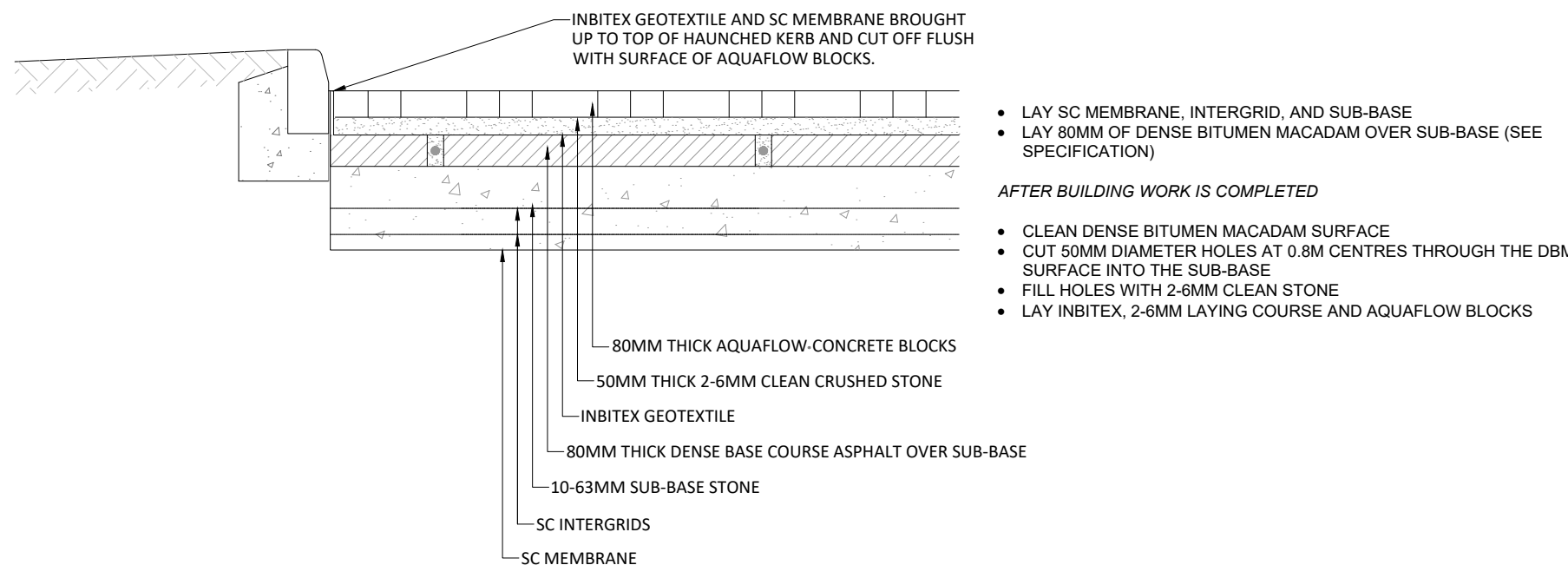
DETAIL

SCALE 1:20



TYPICAL SECTION THROUGH FORMPAVE AQUAFLOW ATTENUATION SYSTEM

(HEAVY DUTY CONSTRUCTION) NTS



|                                                                                       |                       |          |    |     |
|---------------------------------------------------------------------------------------|-----------------------|----------|----|-----|
| A                                                                                     | FIRST ISSUE           | 06.06.25 | RP | PS  |
| REV.                                                                                  | DESCRIPTION           | Date     | BY | CHK |
| DESIGN BY:                                                                            |                       |          |    |     |
|  |                       |          |    |     |
| CLIENT:                                                                               |                       |          |    |     |
|  |                       |          |    |     |
| DRAWING STATUS:                                                                       |                       |          |    |     |
| PLANNING APPLICATION                                                                  |                       |          |    |     |
| SCALE @ A1:                                                                           |                       |          |    |     |
| AS SHOWN                                                                              |                       |          |    |     |
| PROJECT:                                                                              |                       |          |    |     |
| WYNSOME STREET, SOUTHWICK                                                             |                       |          |    |     |
| TITLE:                                                                                |                       |          |    |     |
| STANDARD DRAINAGE DETAILS                                                             |                       |          |    |     |
| PROJECT No:                                                                           | DRAWING No:           | REV:     |    |     |
| 19862                                                                                 | 19862-TUM-PL-XXX-0280 | A        |    |     |

## Appendix D

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### MicroDrainage Calculations

|                                                           |                                                                                     |                                                                                     |
|-----------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Tumu Consulting                                           |                                                                                     | Page 1                                                                              |
| 20 East Sands<br>Burbage Marlborough<br>Wiltshire SN8 3AN | 19862-MD-PL-XXX-0001-RevA<br>Wynsome Street, Southwick<br>Surface Water Attenuation |  |
| Date 06/06/2025<br>File 19862-MD-PL-XXX-0001 REVA ATTE... | Designed by RP<br>Checked by PS                                                     |                                                                                     |
| Micro Drainage                                            | Source Control 2018.1                                                               |                                                                                     |

### Summary of Results for 100 year Return Period (+45%)

Half Drain Time : 611 minutes.

| Storm Event     | Max Level (m) | Max Depth (m) | Max Infiltration (l/s) | Max Control (l/s) | Max $\Sigma$ Outflow (l/s) | Max Volume (m <sup>3</sup> ) | Status |
|-----------------|---------------|---------------|------------------------|-------------------|----------------------------|------------------------------|--------|
| 15 min Summer   | 46.912        | 0.182         | 0.0                    | 1.6               | 1.6                        | 43.0                         | O K    |
| 30 min Summer   | 46.973        | 0.243         | 0.0                    | 1.6               | 1.6                        | 57.6                         | O K    |
| 60 min Summer   | 47.034        | 0.304         | 0.0                    | 1.6               | 1.6                        | 71.9                         | O K    |
| 120 min Summer  | 47.087        | 0.357         | 0.0                    | 1.6               | 1.6                        | 84.4                         | O K    |
| 180 min Summer  | 47.110        | 0.380         | 0.0                    | 1.6               | 1.6                        | 89.9                         | O K    |
| 240 min Summer  | 47.118        | 0.388         | 0.0                    | 1.6               | 1.6                        | 91.9                         | O K    |
| 360 min Summer  | 47.123        | 0.393         | 0.0                    | 1.6               | 1.6                        | 93.0                         | O K    |
| 480 min Summer  | 47.115        | 0.385         | 0.0                    | 1.6               | 1.6                        | 91.2                         | O K    |
| 600 min Summer  | 47.103        | 0.373         | 0.0                    | 1.6               | 1.6                        | 88.4                         | O K    |
| 720 min Summer  | 47.094        | 0.364         | 0.0                    | 1.6               | 1.6                        | 86.1                         | O K    |
| 960 min Summer  | 47.076        | 0.346         | 0.0                    | 1.6               | 1.6                        | 82.0                         | O K    |
| 1440 min Summer | 47.046        | 0.316         | 0.0                    | 1.6               | 1.6                        | 74.7                         | O K    |
| 2160 min Summer | 46.999        | 0.269         | 0.0                    | 1.6               | 1.6                        | 63.7                         | O K    |
| 2880 min Summer | 46.949        | 0.219         | 0.0                    | 1.6               | 1.6                        | 51.9                         | O K    |
| 15 min Winter   | 46.936        | 0.206         | 0.0                    | 1.6               | 1.6                        | 48.8                         | O K    |
| 30 min Winter   | 47.006        | 0.276         | 0.0                    | 1.6               | 1.6                        | 65.4                         | O K    |
| 60 min Winter   | 47.075        | 0.345         | 0.0                    | 1.6               | 1.6                        | 81.7                         | O K    |
| 120 min Winter  | 47.137        | 0.407         | 0.0                    | 1.6               | 1.6                        | 96.4                         | O K    |
| 180 min Winter  | 47.165        | 0.435         | 0.0                    | 1.6               | 1.6                        | 103.0                        | O K    |
| 240 min Winter  | 47.177        | 0.447         | 0.0                    | 1.6               | 1.6                        | 105.9                        | O K    |
| 360 min Winter  | 47.188        | 0.458         | 0.0                    | 1.6               | 1.6                        | 108.5                        | O K    |

| Storm Event     | Rain (mm/hr) | Flooded Volume (m <sup>3</sup> ) | Discharge Volume (m <sup>3</sup> ) | Time-Peak (mins) |
|-----------------|--------------|----------------------------------|------------------------------------|------------------|
| 15 min Summer   | 143.760      | 0.0                              | 44.4                               | 22               |
| 30 min Summer   | 95.134       | 0.0                              | 60.1                               | 37               |
| 60 min Summer   | 59.944       | 0.0                              | 76.8                               | 66               |
| 120 min Summer  | 36.426       | 0.0                              | 94.0                               | 126              |
| 180 min Summer  | 26.815       | 0.0                              | 104.3                              | 184              |
| 240 min Summer  | 21.426       | 0.0                              | 111.2                              | 244              |
| 360 min Summer  | 15.659       | 0.0                              | 122.1                              | 362              |
| 480 min Summer  | 12.512       | 0.0                              | 130.2                              | 480              |
| 600 min Summer  | 10.506       | 0.0                              | 136.7                              | 548              |
| 720 min Summer  | 9.103        | 0.0                              | 142.2                              | 604              |
| 960 min Summer  | 7.254        | 0.0                              | 151.1                              | 728              |
| 1440 min Summer | 5.259        | 0.0                              | 163.9                              | 998              |
| 2160 min Summer | 3.806        | 0.0                              | 177.4                              | 1408             |
| 2880 min Summer | 3.022        | 0.0                              | 187.1                              | 1788             |
| 15 min Winter   | 143.760      | 0.0                              | 50.3                               | 22               |
| 30 min Winter   | 95.134       | 0.0                              | 67.8                               | 37               |
| 60 min Winter   | 59.944       | 0.0                              | 86.5                               | 66               |
| 120 min Winter  | 36.426       | 0.0                              | 105.9                              | 124              |
| 180 min Winter  | 26.815       | 0.0                              | 117.3                              | 182              |
| 240 min Winter  | 21.426       | 0.0                              | 125.0                              | 238              |
| 360 min Winter  | 15.659       | 0.0                              | 137.4                              | 354              |

|                                                           |                                                                                     |                                                                                     |
|-----------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Tumu Consulting                                           |                                                                                     | Page 2                                                                              |
| 20 East Sands<br>Burbage Marlborough<br>Wiltshire SN8 3AN | 19862-MD-PL-XXX-0001-RevA<br>Wynsome Street, Southwick<br>Surface Water Attenuation |  |
| Date 06/06/2025<br>File 19862-MD-PL-XXX-0001 REVA ATTE... | Designed by RP<br>Checked by PS                                                     |                                                                                     |
| Micro Drainage                                            | Source Control 2018.1                                                               |                                                                                     |

Summary of Results for 100 year Return Period (+45%)

| Storm<br>Event  | Max<br>Level<br>(m) | Max<br>Depth<br>(m) | Max<br>Infiltration<br>(l/s) | Max<br>Control<br>(l/s) | Max<br>Σ Outflow<br>(l/s) | Max<br>Volume<br>(m³) | Status |
|-----------------|---------------------|---------------------|------------------------------|-------------------------|---------------------------|-----------------------|--------|
| 480 min Winter  | 47.186              | 0.456               | 0.0                          | 1.6                     | 1.6                       | 107.8                 | O K    |
| 600 min Winter  | 47.176              | 0.446               | 0.0                          | 1.6                     | 1.6                       | 105.6                 | O K    |
| 720 min Winter  | 47.162              | 0.432               | 0.0                          | 1.6                     | 1.6                       | 102.4                 | O K    |
| 960 min Winter  | 47.138              | 0.408               | 0.0                          | 1.6                     | 1.6                       | 96.6                  | O K    |
| 1440 min Winter | 47.096              | 0.366               | 0.0                          | 1.6                     | 1.6                       | 86.7                  | O K    |
| 2160 min Winter | 47.028              | 0.298               | 0.0                          | 1.6                     | 1.6                       | 70.5                  | O K    |
| 2880 min Winter | 46.950              | 0.220               | 0.0                          | 1.6                     | 1.6                       | 52.2                  | O K    |

| Storm<br>Event  | Rain<br>(mm/hr) | Flooded<br>Volume<br>(m³) | Discharge<br>Volume<br>(m³) | Time-Peak<br>(mins) |
|-----------------|-----------------|---------------------------|-----------------------------|---------------------|
| 480 min Winter  | 12.512          | 0.0                       | 146.5                       | 466                 |
| 600 min Winter  | 10.506          | 0.0                       | 153.8                       | 574                 |
| 720 min Winter  | 9.103           | 0.0                       | 160.0                       | 676                 |
| 960 min Winter  | 7.254           | 0.0                       | 169.9                       | 768                 |
| 1440 min Winter | 5.259           | 0.0                       | 184.3                       | 1074                |
| 2160 min Winter | 3.806           | 0.0                       | 199.6                       | 1536                |
| 2880 min Winter | 3.022           | 0.0                       | 210.4                       | 1932                |

|                                                           |                                                                                     |                                                                                     |
|-----------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Tumu Consulting                                           |                                                                                     | Page 3                                                                              |
| 20 East Sands<br>Burbage Marlborough<br>Wiltshire SN8 3AN | 19862-MD-PL-XXX-0001-RevA<br>Wynsome Street, Southwick<br>Surface Water Attenuation |  |
| Date 06/06/2025                                           | Designed by RP                                                                      |                                                                                     |
| File 19862-MD-PL-XXX-0001 REVA ATTE...                    | Checked by PS                                                                       |                                                                                     |
| Micro Drainage                                            | Source Control 2018.1                                                               |                                                                                     |

Rainfall Details

|                       |                   |                       |       |
|-----------------------|-------------------|-----------------------|-------|
| Rainfall Model        | FSR               | Winter Storms         | Yes   |
| Return Period (years) | 100               | Cv (Summer)           | 0.750 |
| Region                | England and Wales | Cv (Winter)           | 0.840 |
| M5-60 (mm)            | 20.400            | Shortest Storm (mins) | 15    |
| Ratio R               | 0.381             | Longest Storm (mins)  | 2880  |
| Summer Storms         | Yes               | Climate Change %      | +45   |

Time Area Diagram

Total Area (ha) 0.180

| Time (mins) Area |     |       | Time (mins) Area |     |       |
|------------------|-----|-------|------------------|-----|-------|
| From:            | To: | (ha)  | From:            | To: | (ha)  |
| 0                | 4   | 0.090 | 4                | 8   | 0.090 |

|                                                           |                                                                                     |                                                                                     |
|-----------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Tumu Consulting                                           |                                                                                     | Page 4                                                                              |
| 20 East Sands<br>Burbage Marlborough<br>Wiltshire SN8 3AN | 19862-MD-PL-XXX-0001-RevA<br>Wynsome Street, Southwick<br>Surface Water Attenuation |  |
| Date 06/06/2025                                           | Designed by RP                                                                      |                                                                                     |
| File 19862-MD-PL-XXX-0001 REVA ATTE...                    | Checked by PS                                                                       |                                                                                     |
| Micro Drainage                                            | Source Control 2018.1                                                               |                                                                                     |

### Model Details

Storage is Online Cover Level (m) 47.500

### Porous Car Park Structure

|                                      |         |                         |      |
|--------------------------------------|---------|-------------------------|------|
| Infiltration Coefficient Base (m/hr) | 0.00000 | Width (m)               | 10.0 |
| Membrane Percolation (mm/hr)         | 1000    | Length (m)              | 78.9 |
| Max Percolation (l/s)                | 219.2   | Slope (1:X)             | 0.0  |
| Safety Factor                        | 2.0     | Depression Storage (mm) | 5    |
| Porosity                             | 0.30    | Evaporation (mm/day)    | 3    |
| Invert Level (m)                     | 46.730  | Membrane Depth (m)      | 210  |

### Hydro-Brake® Optimum Outflow Control

|                                   |                            |  |  |
|-----------------------------------|----------------------------|--|--|
| Unit Reference                    | MD-SHE-0063-1600-0800-1600 |  |  |
| Design Head (m)                   | 0.800                      |  |  |
| Design Flow (l/s)                 | 1.6                        |  |  |
| Flush-Flo™                        | Calculated                 |  |  |
| Objective                         | Minimise upstream storage  |  |  |
| Application                       | Surface                    |  |  |
| Sump Available                    | Yes                        |  |  |
| Diameter (mm)                     | 63                         |  |  |
| Invert Level (m)                  | 46.490                     |  |  |
| Minimum Outlet Pipe Diameter (mm) | 75                         |  |  |
| Suggested Manhole Diameter (mm)   | 1200                       |  |  |

| Control Points            | Head (m) | Flow (l/s) | Control Points            | Head (m) | Flow (l/s) |
|---------------------------|----------|------------|---------------------------|----------|------------|
| Design Point (Calculated) | 0.800    | 1.6        | Kick-Flo®                 | 0.508    | 1.3        |
| Flush-Flo™                | 0.246    | 1.6        | Mean Flow over Head Range | -        | 1.4        |

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

| Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) | Depth (m) | Flow (l/s) |
|-----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|
| 0.100     | 1.4        | 0.800     | 1.6        | 2.000     | 2.4        | 4.000     | 3.3        | 7.000     | 4.3        |
| 0.200     | 1.6        | 1.000     | 1.8        | 2.200     | 2.5        | 4.500     | 3.5        | 7.500     | 4.5        |
| 0.300     | 1.6        | 1.200     | 1.9        | 2.400     | 2.6        | 5.000     | 3.7        | 8.000     | 4.6        |
| 0.400     | 1.5        | 1.400     | 2.1        | 2.600     | 2.7        | 5.500     | 3.9        | 8.500     | 4.8        |
| 0.500     | 1.3        | 1.600     | 2.2        | 3.000     | 2.9        | 6.000     | 4.0        | 9.000     | 4.9        |
| 0.600     | 1.4        | 1.800     | 2.3        | 3.500     | 3.1        | 6.500     | 4.2        | 9.500     | 5.0        |

# Wessex Water Pre-Development Enquiry

**From:** Planning Liaison <planning.liaison@wessexwater.co.uk>  
**Sent:** 29 January 2025 10:08  
**To:** robbie.parnham@tumuconsulting.com  
**Cc:** Alison Kurobasa  
**Subject:** WWDevResp WW/NC/ 3236 Drainage -Wynsome Street, Southwick, Wiltshire  
**Attachments:** WWMap Wynsome Street Southwick.pdf

Hello Robbie

**Wynsome Street, Southwick, Wiltshire BA14 9RD.  
9 Dwellings**

Thank you for your pre-development enquiry.

Foul Drainage

There is a 150mm public foul sewer in Wynsome Street and manhole ST8454**2901** would be an acceptable point of discharge for foul only flows from the proposed development.

The point of connection to the public foul network is by application and agreement, and Wessex Water will accommodate domestic type foul flows in the public foul sewer with connections made on a 'size for size' basis, Developers fund the cost of connecting to the nearest 'size for size' foul sewer and Wessex Water will manage the foul sewer network to accommodate foul flows from granted development. We fund this through our infrastructure charging arrangements.

Separated systems of drainage are required: Wessex Water will not accept surface water or land drainage flows to the public foul sewer and treatment works, either directly or indirectly.

Surface Water Drainage

Surface Water to be disposed of in accordance with SUDS Hierarchy and NPPF Guidelines and should be discharged to local land drainage systems.

Surface water strategy is subject to the approval of the Lead Local Flood Authority and drainage arrangements and discharge rates must be discussed and agreed with the Wiltshire Council drainage engineer.

No surface water, land drainage or ground water discharge will be accepted into sewers that mix surface water with sewage, either directly or indirectly.

Note; Surface water sewers in adjoining Lewis Court discharge to a foul sewer; new surface water connections will not be permitted to the Lewis Court SW system as it mixes rainfall runoff with sewage, which is not permitted, no exceptions.

This pre-planning response is based on the level of information provided.

**Note:** These comments are based upon known circumstances prevailing at the time of writing. A review of the contents of this email is required where 18 months or more have elapsed since issue or in the light of significant changes likely to impact upon the response (e.g. changes in development numbers or phasing). Please email review requests to [planning.liaison@wessexwater.co.uk](mailto:planning.liaison@wessexwater.co.uk)

Regards

**Alison Kurobasa**  
Planning Liaison



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This email is being sent to you on behalf of [Wessex Water Limited](#), a company registered in England and Wales with number 02366633. Its registered office is Wessex Water Operations Centre, Claverton Down Road, Claverton Down, Bath, BA2 7WW.

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**From:** robbie.parnham@tumuconsulting.com <robbie.parnham@tumuconsulting.com>

**Sent:** 21 January 2025 08:39

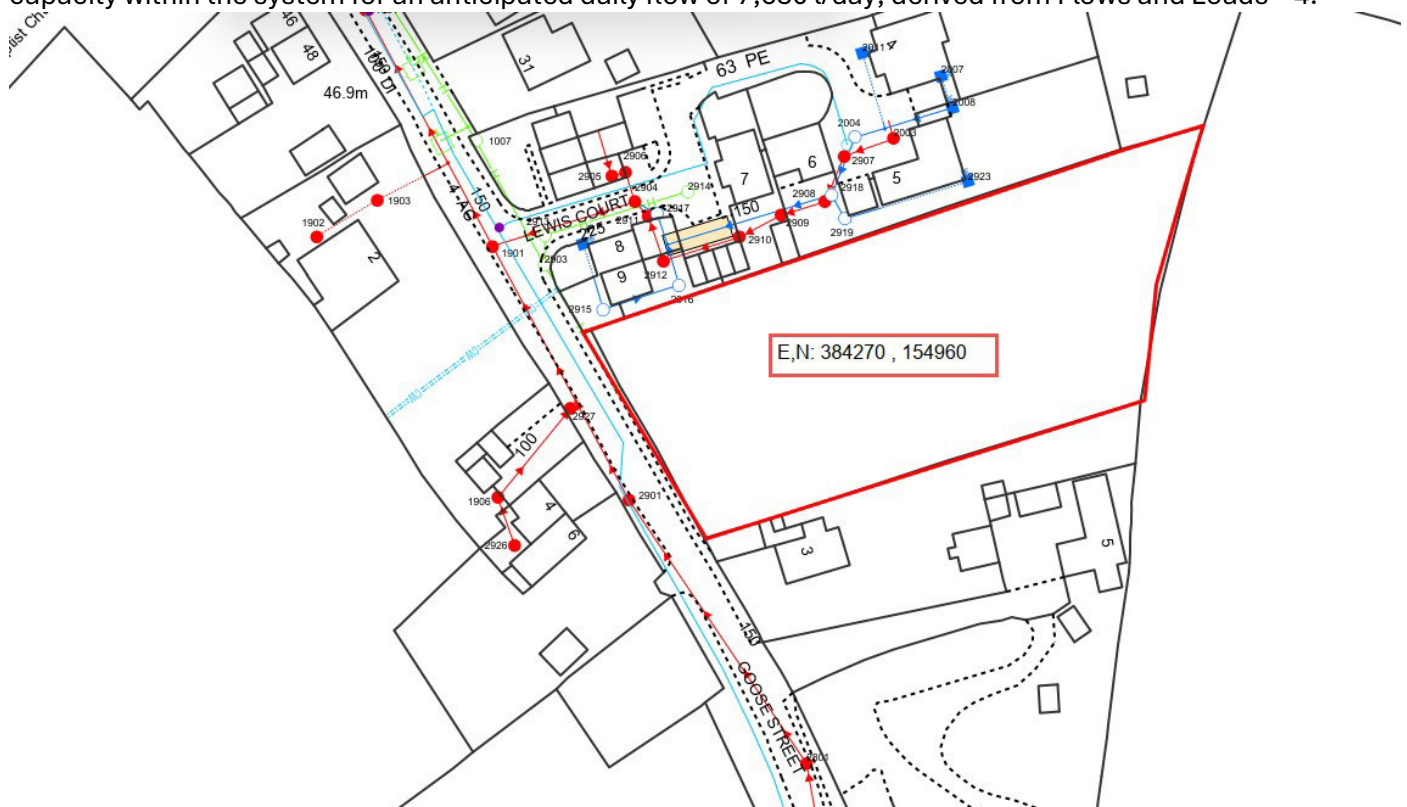
**To:** Planning Liaison <planning.liaison@wessexwater.co.uk>

**Subject:** Southwick Pre-Planning Enquiry

Good Morning,

Please can I submit a pre-planning enquiry for the discharge of foul water only to the Wessex Water foul sewer, at our site on Wynsome St, Southwick, BA14 9RD.

We will be developing 9 dwellings (3x3-bed, 6x4-bed) within the RLB shown below. Could we please confirm capacity within the system for an anticipated daily flow of 7,650 l/day, derived from Flows and Loads – 4.



Can we confirm that chamber 2901 is the most appropriate location to connect? This can be achieved by a gravity connection (1.92m deep).

Kind Regards,

**Robbie Parnham**

Infrastructure Engineer

tel: 07508 945099

email: [robbie.parnham@tumuconsulting.com](mailto:robbie.parnham@tumuconsulting.com)

web: [www.tumuconsulting.com](http://www.tumuconsulting.com)



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