

# Steyning Cricket Club

## Surface Water Drainage Strategy

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Job Number:

**31954**

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| March 2025 | -        | Draft for Comment              |
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| May 2026   | 2        | For Planning                   |

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| Acronyms |                                                            |
|----------|------------------------------------------------------------|
| AOD      | Above Ordnance Datum                                       |
| CIRIA    | Construction Industry Research and Information Association |
| EA       | Environment Agency                                         |
| FRA      | Flood Risk Assessment                                      |
| NPPF     | National Planning Policy Framework                         |
| PPG      | Planning Practice Guidance                                 |
| WSCC     | West Sussex County Council                                 |
| LLFA     | Lead Local Flood Authority                                 |
| SW       | Southern Water                                             |

# 1 Introduction

Price & Myers have been commissioned to undertake a Drainage Strategy for the new clubhouse at Steyning Cricket Club, Charlton Street, Steyning.

This report has been carried out in accordance with the DEFRA's National Standards for Sustainable Drainage Systems (SuDS) and the National Planning Policy Framework (NPPF). This report also incorporates advice and guidance from the Environment Agency (EA) and CIRIA documents.

The National Planning Policy Framework (NPPF) states that an appropriate Flood Risk Assessment (FRA) will be required for all development proposals of 1 ha or greater in Flood Zone 1 and for any development within Flood Zones 2 or 3. The Environment Agency's (EA) flood map for planning shows that the site is in Flood Zone 1. Furthermore, the site area is smaller than 1ha. Therefore, an FRA is not required for this planning application.

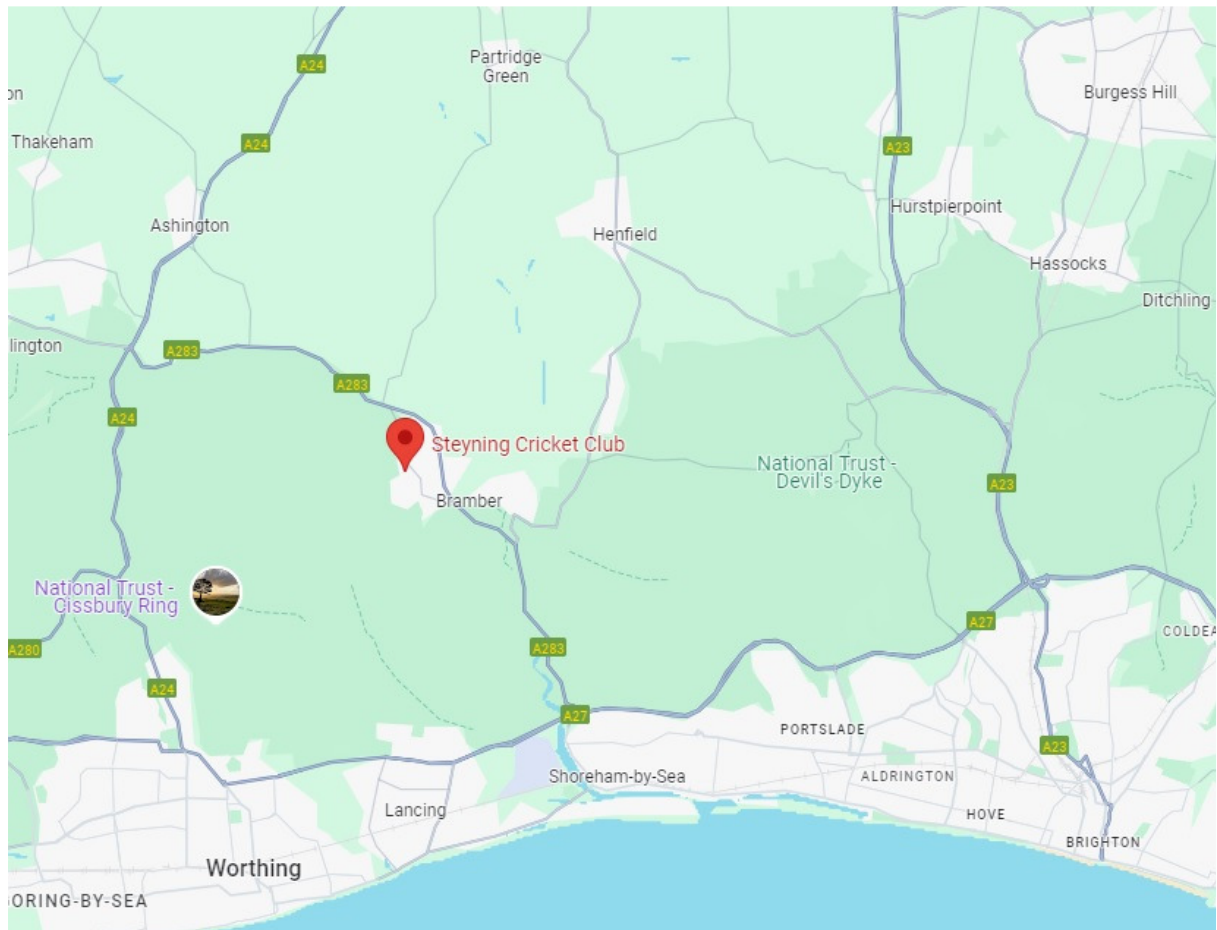


Figure 1.1: Site Location (Google Maps)

## 2 Site Description and Location

The new clubhouse will replace the existing clubhouse which is at the east side of the Cricket Club. The existing building is bounded by hardstanding areas to the north, east and south and soft landscaped areas to the west.

The site's postcode is BN44 3LE and the OS grid reference is 517509E 111179N. The site falls to the north and the average ground level at the building location is 22.50m AOD. Access to the site is available from Charlton Street.



Figure 2.1: Existing site and site boundary (Google Maps)

## 2.1 Existing Drainage

A CCTV drainage survey for the existing building was not available at the time of writing. Southern Water's asset location maps show that there is 225mm diameter surface water sewer in Charlton Street running in a northern direction and increasing to 300mm in diameter outside No 3 Charlton Street.

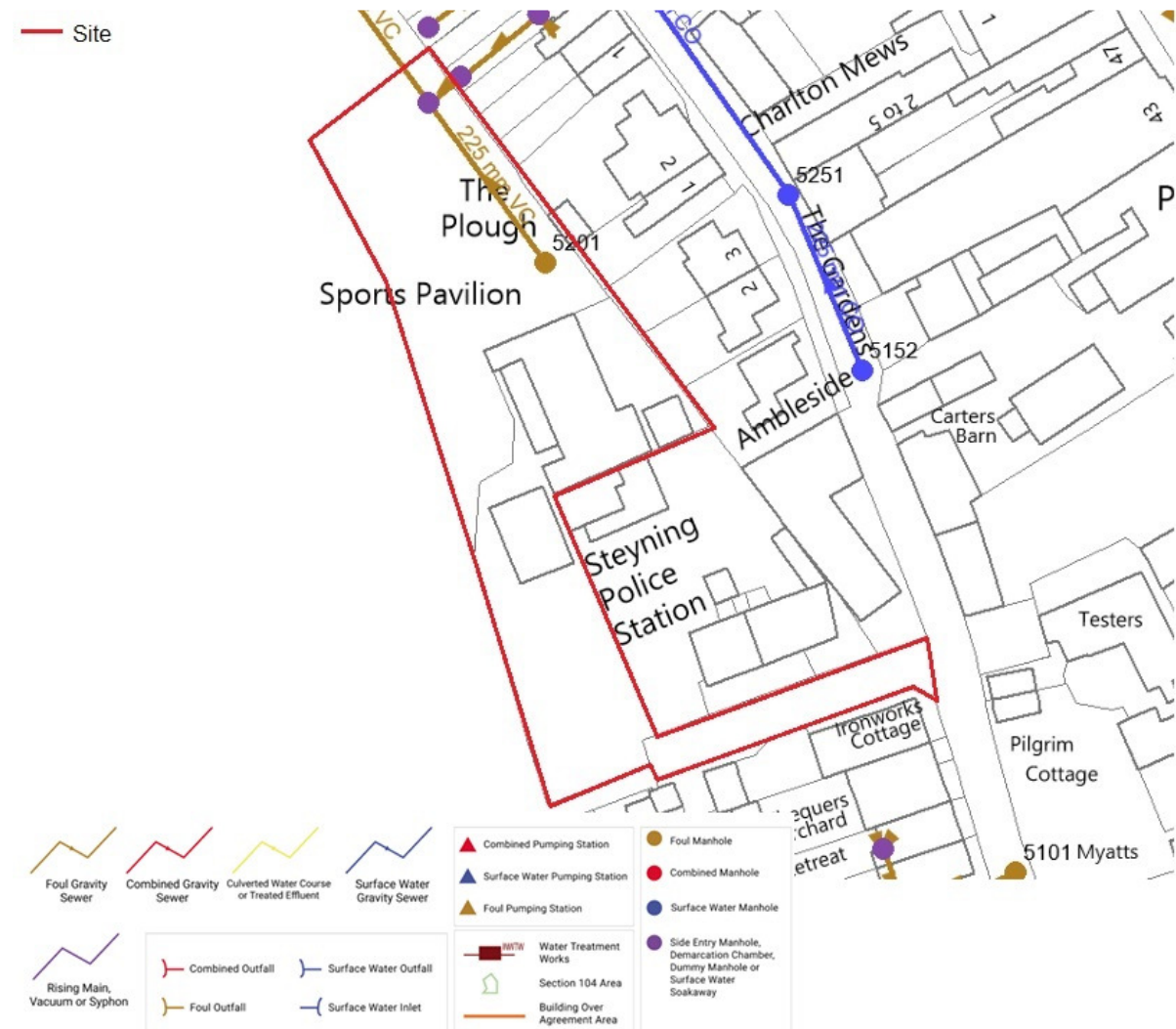


Figure 2.2: Southern Water's Sewer Records

### 3 Development Proposal

The proposals involve the demolition of the existing main clubhouse and erection of a double storey clubhouse. The club house will be linked to the existing changing room building which will be reconfigured and refurbished. The proposals also include new paved surfaces around both buildings.

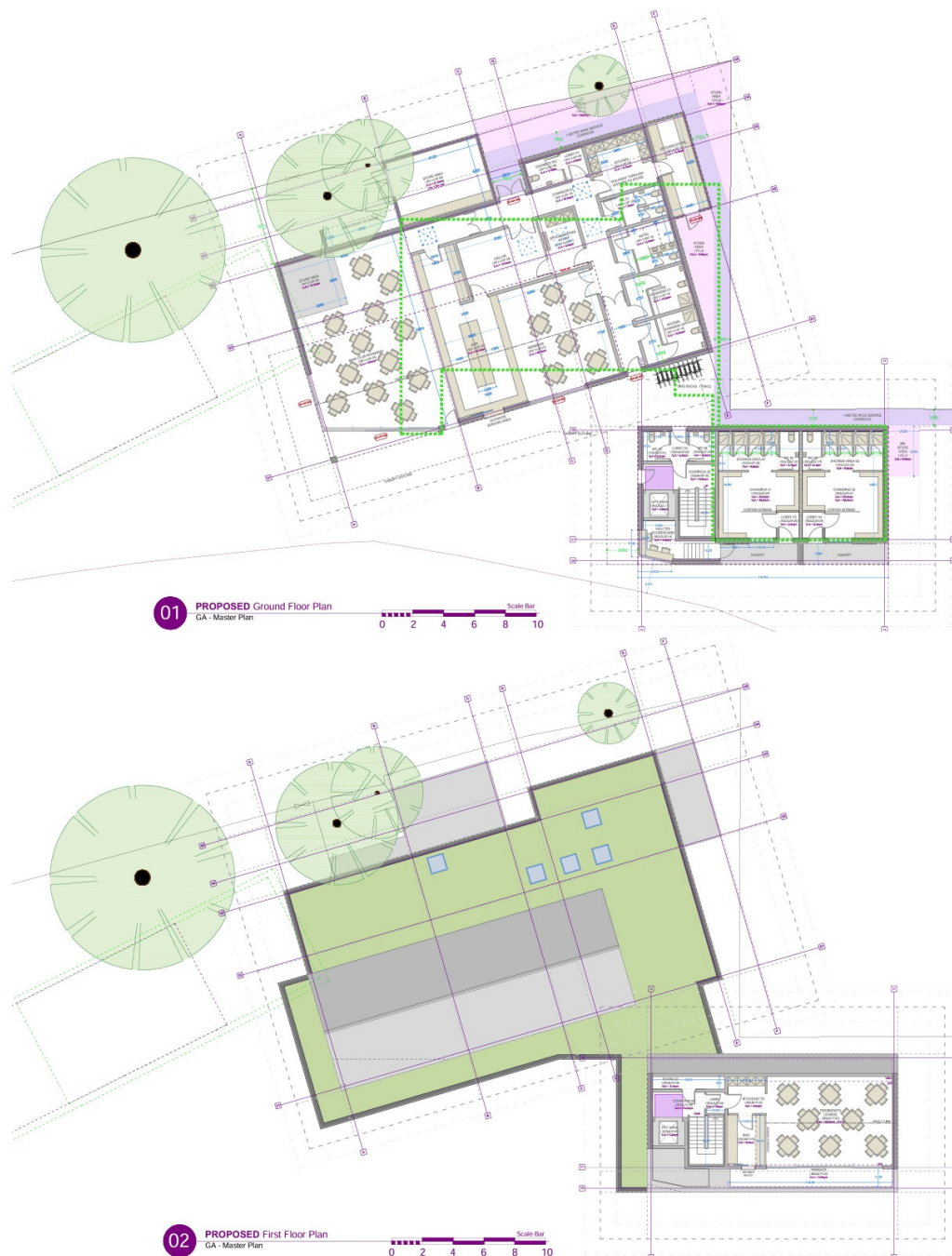


Figure 3.1: Proposed Site Layout

## 4 Surface Water Run-off Assessment

### 4.1 Existing Run-off

The planning application site area is approximately 2,244m<sup>2</sup> of which 1,350m<sup>2</sup> is impermeable. The peak run-off rates for the design storm events were calculated using the modified rational method as shown below:

$$Q = 2.78 \times A \times i$$

Where "A" is the catchment area in hectares and "i" is the rainfall intensity in mm/hr.

|           |                                     |                        |
|-----------|-------------------------------------|------------------------|
| $Q_1$     | $= 2.78 \times 0.135 \times 27.563$ | $= 10.344 \text{ l/s}$ |
| $Q_{30}$  | $= 2.78 \times 0.135 \times 92.088$ | $= 34.561 \text{ l/s}$ |
| $Q_{100}$ | $= 2.78 \times 0.135 \times 142.04$ | $= 53.308 \text{ l/s}$ |

### 4.2 Post Development Run-off

The proposed works will increase the site's impermeable area to 1,480 m<sup>2</sup>. Therefore, the proposed peak runoff rates would be as follows:

|           |                                     |                        |
|-----------|-------------------------------------|------------------------|
| $Q_1$     | $= 2.78 \times 0.148 \times 27.563$ | $= 11.341 \text{ l/s}$ |
| $Q_{30}$  | $= 2.78 \times 0.148 \times 92.088$ | $= 37.889 \text{ l/s}$ |
| $Q_{100}$ | $= 2.78 \times 0.148 \times 142.04$ | $= 58.441 \text{ l/s}$ |

### 4.3 Climate Change

The EA's "climate change allowances for peak rainfall in England" map shows that the site is within the Adur and Ouse Management catchment area where the rainfall intensities are expected to increase up to 45% in the future due to the climate change.

### 4.4 Proposed Surface Water Drainage

In accordance with EA guidelines, LLFA design guidelines for surface water drainage systems and CIRIA documents, surface water run-off should be managed as close to its source as possible. The preferred means of surface water drainage for any new development is an infiltration drainage system. SUDS can reduce the impact of urbanisation on watercourse flows, ensure the protection and enhancement of water quality and encourage recharge of groundwater in a manner that mimics nature. If drainage to an infiltration system or soakaways proves to be an unsuitable option for the site, then drainage to a watercourse must be assessed. Drainage to the public sewers can be considered only when all other alternative options are unsuitable.

The National Standards for SUDS states that surface water runoff shall be treated as a resource and managed in a way that avoids negative impacts of the development on flood risk. Runoff from the

development shall be discharged to the following final destinations, to the maximum extent practicable, in accordance with the below hierarchy:

- priority 1: collected for non-potable use
- priority 2: infiltrated to ground
- priority 3: discharged to an above ground surface water body
- priority 4: discharged to a surface water sewer, or another piped surface water drainage system
- priority 5: discharged to a combined sewer.

#### **4.4.1 Surface Water Destination**

The British Geological Survey (BGS) maps show that chalk forms the bedrock geology at this location. Site investigation works also confirmed the anticipated geology, showing that the chalk formation was recorded below a 1.2m layer of clay with chalk fragments. A soakaway test in accordance with BRE Digest 365 was performed in the chalk to assess its porosity properties. However, no infiltration rate was estimated due to the poor soakage rate that was observed during the investigation works. Refer to Appendix D for the site investigation records. Therefore, an alternative method for the disposal of surface water should be considered in the design.

As there are no watercourses in the vicinity of the site, a drainage connection to the public sewers is deemed the only available option for the proposed development.

The National Standards for SuDS state that surface water from new developments should be restricted to greenfield run-off rates, and that a relaxation factor can apply to previously developed sites where attenuation to the greenfield rate is not achievable. This relaxation factor shall be no greater than five times the greenfield run-off rate. Part of the site will remain unaffected by the proposed works and will continue to drain into the existing drainage system. Greenfield run-off rates for the catchment area to be served by the new drainage system (850m<sup>2</sup>) were calculated using the FEH method for various storm events using the UK SuDS software, refer to Appendix C for the calculations.

|           |           |
|-----------|-----------|
| $Q_{bar}$ | = 0.1 l/s |
| $Q_1$     | = 0.1 l/s |
| $Q_{30}$  | = 0.2 l/s |
| $Q_{100}$ | = 0.3 l/s |

The  $Q_{bar}$  rate from the proposed impermeable areas is 0.1 l/s, requiring a very small diameter flow control device to achieve this rate. The flow control device should be sized to restrict surface water to the desired flow rate, while also ensuring that the risk of flooding from blockages remains low. The National Standards for SuDS state that flow controls smaller than 50mm in diameter should be robustly protected against blockage risks. The only way to effectively manage this risk is to ensure that the flow control device is not smaller than 50mm in diameter. It is therefore proposed to restrict the site's run-off rate to 1.5 l/sec for all storm events with a return period up to the 1 in 100 year plus 45%. This flow rate is almost 77% lower than the existing 1 in 1 year flow rate and 96% lower than the existing 1 in 100 year flow rate. Therefore, the proposed development will benefit the surrounding areas.

The green spaces outside the red-line boundary for this application will remain unaffected by the proposed works. As these areas are used for sporting activities, Sustainable Drainage Systems (SuDS), such as ponds, detention basins, and swales, cannot be located there. All new SuDS should therefore be located within the paved areas surrounding the existing and proposed buildings, limiting the available SuDS options to permeable paving and underground attenuation tanks.

Preliminary calculations indicate that the proposed SuDS should provide approximately 70m<sup>3</sup> of surface water storage.

#### 4.4.2 Water Pollution

SuDS have the potential to provide water quality benefits to runoff entering the environment. The SuDS Manual states that SuDS should be designed to treat runoff to reduce the risk of environmental pollution. Chapter 26 of The SuDS Manual sets out the 'simple index approach' to water quality risk management. This approach has been used to quantify the benefits of the proposed SuDS scheme on water quality.

Step 1 of the simple index approach is to identify the pollution hazard indices for the proposed land use. The proposed residential development is considered to have a 'Very Low/Low' pollution hazard level as Table 4.1 below shows.

| Land Use                                                                                                                       | Pollution Hazard Level | Total Suspended Solids (TSS) | Metals | Hydrocarbons |
|--------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------------|--------|--------------|
| Roofs                                                                                                                          | Low                    | 0.3                          | 0.2    | 0.05         |
| Individual property driveways, residential car parks, low traffic roads and non-residential car parking with infrequent change | Low                    | 0.5                          | 0.4    | 0.4          |

Table 4.1: Pollution Hazard Indices, taken from Table 26.2 of The SuDS Manual (CIRIA, 2015)

Step 2 of the simple index approach is to select SuDS with a total pollution mitigation index that equals or exceeds the pollution hazard index. As the destination of the runoff is to surface water and there is no infiltration from the SuDS to groundwater, the surface water pollution mitigation indices should be used as shown in Table 4.2. The indicative surface water pollution mitigation indices for permeable pavements are shown in Table 4.2 below:

| Type of SuDS Component | TSS | Metals | Hydrocarbons |
|------------------------|-----|--------|--------------|
| Permeable Pavement     | 0.7 | 0.6    | 0.7          |

Table 4.2 Surface Water Pollution Mitigation Indices, taken from Table 26.3 of The SuDS Manual

Provided that the mitigation indices of the treatment techniques are greater than or equal to the hazard indices for the proposed development then there should be no reduction in the overall water quality within the receiving watercourse.

## 5 Surface Water Maintenance Strategy

The successful implementation and operation of a SuDS system depend on a robust and clear maintenance strategy being implemented. The following measures should form part of the site's proposed management plan. The drainage system will be maintained by a private management company and will form part of the overall maintenance regime for the site.

Maintenance and cleaning of gullies, gutters, rainwater pipes and stormwater manholes will ensure adequate performance. This maintenance program is outlined below;

*Regular maintenance should include:*

1. Inspect channel drains, gutters and gully inlet grates and remove any debris every 3 months or as determined to be reasonable based on experience with the installed systems to ensure that all drainage components are working in their intended fashion and that they are free of debris; quarterly, inspect gully sumps and bottom of drain manholes; if the depth of sediment in sumps exceeds 50% capacity, the sediment must be removed. Excessive sediment shall be removed and properly disposed of by a licensed drainage cleaning company.
2. Inspect all vegetated areas and remove litter and debris as necessary. Replant bare areas or areas with sparse growth.
3. Inspection of external bin stores for spillage and scattered litter must be performed on a regular basis to prevent the spread of pollutants into the stormwater management system.
4. The porous surfacing must be brushed three times a year with a mechanical suction brush. It is recommended that this should be carried in the spring, mid-summer and after leaf fall in autumn.

*Winter Maintenance Program:*

Ensure that drainage structures are not blocked by ice, snow, debris, or rubbish during the winter months.

*Fertiliser Use*

Only slow-release organic low-phosphorous fertilisers will be used in any landscaped areas in order to limit the amount of nutrients that could enter the stormwater system.

| SUDS<br>Element  | Maintenance                 |                                                                                               |                                                                |
|------------------|-----------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------|
|                  | Activity                    | Required Action                                                                               | Typical Frequency                                              |
| Permeable Paving | Monitoring /<br>Inspections | 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, 48 hours after large storms in first six months |
|                  |                             | Inspect silt accumulation rates and establish appropriate brushing frequencies                | Annually                                                       |
|                  |                             | Monitor inspection chambers                                                                   | Annually                                                       |

| <b>SUDS<br/>Element</b> | <b>Maintenance</b>             |                                                                                                                                                                                      |                                     |
|-------------------------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
|                         | <b>Activity</b>                | <b>Required Action</b>                                                                                                                                                               | <b>Typical Frequency</b>            |
|                         | <b>Regular<br/>Maintenance</b> | Brushing and vacuuming -standard cosmetic sweep over whole surface                                                                                                                   | Once a year after autumn leaf fall  |
|                         |                                | Rubbish and litter removal                                                                                                                                                           | As required                         |
|                         | <b>Remedial<br/>Actions</b>    | Remediate any landscaping which through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving.                                              | As required                         |
|                         |                                | 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 |                                     |
|                         |                                | Rehabilitation of surface and upper substructure by remedial sweeping                                                                                                                | Every 10 to 15 years or as required |

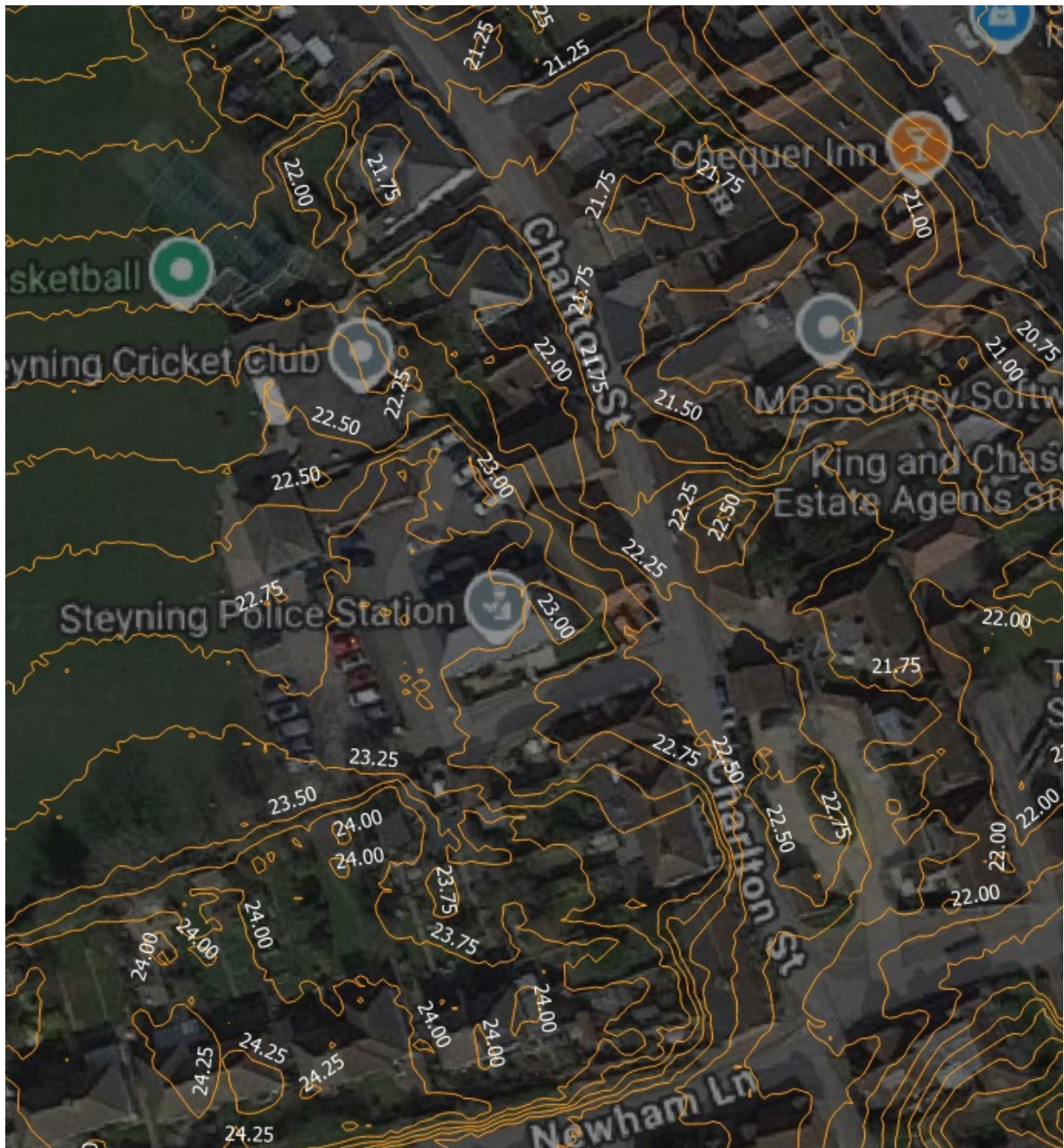
**Table 5.1 SuDS Maintenance Strategy as taken from the CIRIA SUDS Manual**

## 6 Conclusions

- The proposals are for the demolition of an existing clubhouse and the erection of a new two-storey clubhouse, the refurbishment of the existing changing room building and the reconstruction of the external paved areas.
- The proposed development will slightly increase the impermeable area on site.
- Soakaway test results indicate that the ground conditions are unsuitable for infiltration techniques; therefore, surface water from the proposed development will be discharged to the public sewer system.
- SuDS will be used for surface water management, including permeable paving and an attenuation tank. A flow control device will be used to restrict the site's runoff rates as closely as possible to greenfield rates. The proposed SuDS will also treat surface water before it is discharged into the public sewer system.
- The proposed drainage system will be designed for the 1 in 100-year plus climate change storm event. Preliminary calculations show that the proposed SuDS should provide approximately 70m<sup>3</sup> of surface water storage.

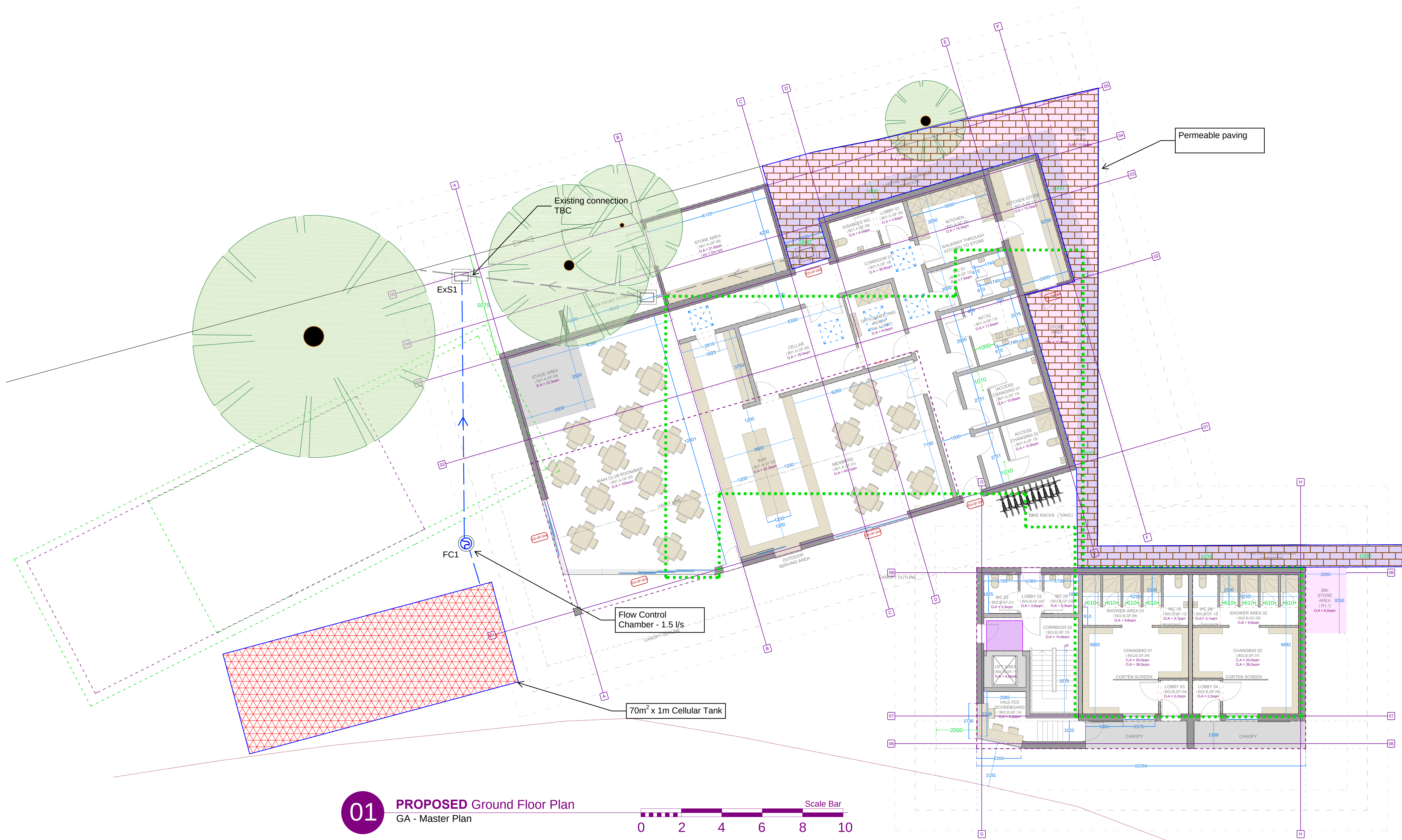
## Appendix A

### Topographical Survey Information



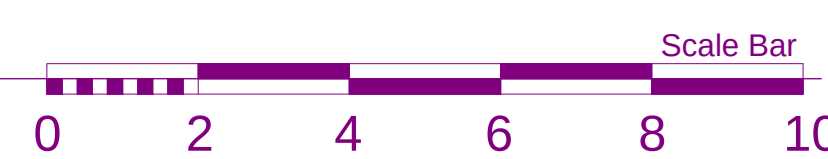
## Appendix B

### Preliminary Drainage Layout



01

**PROPOSED** Ground Floor Plan  
GA - Master Plan



**PRICE &  
MYERS**

# Appendix C

## Preliminary Calculations

Greenfield Run-off

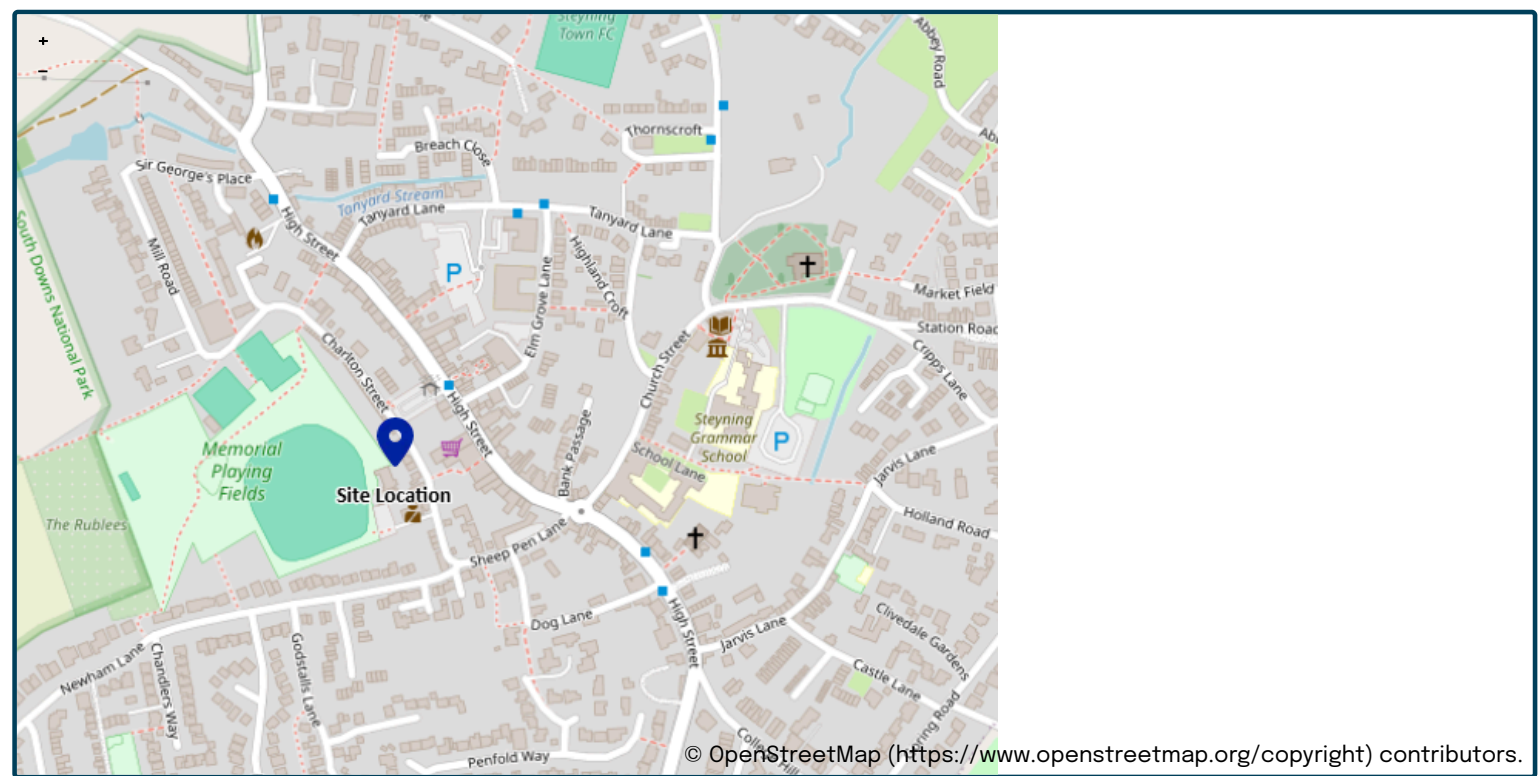
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015).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

## Project details

|               |            |
|---------------|------------|
| Date          | 19/05/2026 |
| Calculated by | DLin       |
| Reference     | 31954      |
| Model version | 2.2.3      |

## Location

|               |                       |
|---------------|-----------------------|
| Site name     | Steining Cricket Club |
| Site location | Steining              |



|                                       |        |
|---------------------------------------|--------|
| Site easting (British National Grid)  | 517518 |
| Site northing (British National Grid) | 111175 |

## Site details

|                      |       |    |
|----------------------|-------|----|
| Total site area (ha) | 0.085 | ha |
|----------------------|-------|----|

# Greenfield runoff

## Method

|        |                        |
|--------|------------------------|
| Method | FEH statistical (2025) |
|--------|------------------------|

## FEH statistical (2025)

|                                   | My value                          | Map value                          |
|-----------------------------------|-----------------------------------|------------------------------------|
| SAAR9120 (mm)                     | <input type="text" value="855"/>  | <input type="text" value="mm"/>    |
| BFIHOST19scaled                   | <input type="text" value=".82"/>  | <input type="text" value=""/>      |
| QMed-QBar conversion              | <input type="text" value="1.07"/> | <input type="text" value="1.136"/> |
| QMed (l/s)                        | <input type="text" value="0.1"/>  | <input type="text" value="l/s"/>   |
| QBar (FEH statistical 2025) (l/s) | <input type="text" value="0.1"/>  | <input type="text" value="l/s"/>   |

## Growth curve factors

|                        | My value                          | Map value                     |
|------------------------|-----------------------------------|-------------------------------|
| Hydrological region    | <input type="text" value="7"/>    | <input type="text" value=""/> |
| 1 year growth factor   | <input type="text" value="0.85"/> | <input type="text" value=""/> |
| 2 year growth factor   | <input type="text" value="0.93"/> | <input type="text" value=""/> |
| 10 year growth factor  | <input type="text" value="1.62"/> | <input type="text" value=""/> |
| 30 year growth factor  | <input type="text" value="2.3"/>  | <input type="text" value=""/> |
| 100 year growth factor | <input type="text" value="3.19"/> | <input type="text" value=""/> |
| 200 year growth factor | <input type="text" value="3.74"/> | <input type="text" value=""/> |

## Results

|                           |                                  |                                  |
|---------------------------|----------------------------------|----------------------------------|
| Method                    | FEH statistical (2025)           |                                  |
| Flow rate 1 year (l/s)    | <input type="text" value="0.1"/> | <input type="text" value="l/s"/> |
| Flow rate 2 year (l/s)    | <input type="text" value="0.1"/> | <input type="text" value="l/s"/> |
| Flow rate 10 years (l/s)  | <input type="text" value="0.1"/> | <input type="text" value="l/s"/> |
| Flow rate 30 years (l/s)  | <input type="text" value="0.2"/> | <input type="text" value="l/s"/> |
| Flow rate 100 years (l/s) | <input type="text" value="0.3"/> | <input type="text" value="l/s"/> |
| Flow rate 200 years (l/s) | <input type="text" value="0.3"/> | <input type="text" value="l/s"/> |

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent ‘zero’ figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

### Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.3) developed by HR Wallingford and available at uksuds.com (<https://www.uksuds.com/>). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at [uksuds.com/terms-conditions](https://www.uksuds.com/terms-conditions) (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

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### Design Settings

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

### Nodes

| Name | Area<br>(ha) | T of E<br>(mins) | Cover<br>Level<br>(m) | Diameter<br>(mm) | Depth<br>(m) |
|------|--------------|------------------|-----------------------|------------------|--------------|
| FC1  | 0.000        | 5.00             | 22.500                | 1200             | 1.050        |
| ExS1 | 0.000        |                  | 22.500                | 1200             | 1.100        |
| Tank | 0.085        | 5.00             | 22.500                | 450              | 1.000        |

### Links

| Name  | US<br>Node | DS<br>Node | Length<br>(m) | ks (mm) /<br>n | US IL<br>(m) | DS IL<br>(m) | Fall<br>(m) | Slope<br>(1:X) | Dia<br>(mm) | T of C<br>(mins) | Rain<br>(mm/hr) |
|-------|------------|------------|---------------|----------------|--------------|--------------|-------------|----------------|-------------|------------------|-----------------|
| 1.000 | Tank       | FC1        | 5.000         | 0.600          | 21.500       | 21.450       | 0.050       | 100.0          | 100         | 5.11             | 50.0            |
| 1.001 | FC1        | ExS1       | 5.000         | 0.600          | 21.450       | 21.400       | 0.050       | 100.0          | 100         | 5.22             | 50.0            |

| Name  | Vel<br>(m/s) | Cap<br>(l/s) | Flow<br>(l/s) | US<br>Depth<br>(m) | DS<br>Depth<br>(m) | Σ Area<br>(ha) | Σ Add<br>Inflow<br>(l/s) | Pro<br>Depth<br>(mm) | Pro<br>Velocity<br>(m/s) |
|-------|--------------|--------------|---------------|--------------------|--------------------|----------------|--------------------------|----------------------|--------------------------|
| 1.000 | 0.769        | 6.0          | 15.4          | 0.900              | 0.950              | 0.085          | 0.0                      | 100                  | 0.790                    |
| 1.001 | 0.769        | 6.0          | 15.4          | 0.950              | 1.000              | 0.085          | 0.0                      | 100                  | 0.790                    |

### Pipeline Schedule

| Link  | Length<br>(m) | Slope<br>(1:X) | Dia<br>(mm) | Link<br>Type | US CL<br>(m) | US IL<br>(m) | US Depth<br>(m) | DS CL<br>(m) | DS IL<br>(m) | DS Depth<br>(m) |
|-------|---------------|----------------|-------------|--------------|--------------|--------------|-----------------|--------------|--------------|-----------------|
| 1.000 | 5.000         | 100.0          | 100         | Circular     | 22.500       | 21.500       | 0.900           | 22.500       | 21.450       | 0.950           |
| 1.001 | 5.000         | 100.0          | 100         | Circular     | 22.500       | 21.450       | 0.950           | 22.500       | 21.400       | 1.000           |

| Link  | US<br>Node | Dia<br>(mm) | Node<br>Type | MH<br>Type | DS<br>Node | Dia<br>(mm) | Node<br>Type | MH<br>Type |
|-------|------------|-------------|--------------|------------|------------|-------------|--------------|------------|
| 1.000 | Tank       | 450         | Manhole      | Adoptable  | FC1        | 1200        | Manhole      | Adoptable  |
| 1.001 | FC1        | 1200        | Manhole      | Adoptable  | ExS1       | 1200        | Manhole      | Adoptable  |

### Manhole Schedule

| Node | CL<br>(m) | Depth<br>(m) | Dia<br>(mm) | Connections | Link  | IL<br>(m) | Dia<br>(mm) |
|------|-----------|--------------|-------------|-------------|-------|-----------|-------------|
| FC1  | 22.500    | 1.050        | 1200        | 1           | 1.000 | 21.450    | 100         |
|      |           |              |             | 0           | 1.001 | 21.450    | 100         |
| ExS1 | 22.500    | 1.100        | 1200        | 1           | 1.001 | 21.400    | 100         |

### Manhole Schedule

| Node | CL<br>(m) | Depth<br>(m) | Dia<br>(mm) | Connections                                                                       | Link  | IL<br>(m) | Dia<br>(mm) |
|------|-----------|--------------|-------------|-----------------------------------------------------------------------------------|-------|-----------|-------------|
| Tank | 22.500    | 1.000        | 450         |  |       |           |             |
|      |           |              |             | 0                                                                                 | 1.000 | 21.500    | 100         |

### Simulation Settings

|                      |          |                            |        |                         |   |
|----------------------|----------|----------------------------|--------|-------------------------|---|
| Rainfall Methodology | FEH-22   | Analysis Speed             | Normal | Starting Level (m)      |   |
| Rainfall Events      | Singular | Skip Steady State          | x      | Check Discharge Rate(s) | x |
| Summer CV            | 1.000    | Drain Down Time (mins)     | 240    | Check Discharge Volume  | x |
| Winter CV            | 1.000    | Additional Storage (m³/ha) | 20.0   |                         |   |

### Storm Durations

|    |     |     |     |     |      |      |
|----|-----|-----|-----|-----|------|------|
| 15 | 60  | 180 | 360 | 600 | 960  | 2160 |
| 30 | 120 | 240 | 480 | 720 | 1440 | 2880 |

| Return Period<br>(years) | Climate Change<br>(CC %) | Additional Area<br>(A %) | Additional Flow<br>(Q %) |
|--------------------------|--------------------------|--------------------------|--------------------------|
| 2                        | 0                        | 0                        | 0                        |
| 30                       | 45                       | 0                        | 0                        |
| 100                      | 45                       | 0                        | 0                        |

### Node FC1 Online ACO Q-Brake Control

|                          |        |                         |       |                        |       |
|--------------------------|--------|-------------------------|-------|------------------------|-------|
| Flap Valve               | x      | Design Depth (m)        | 1.000 | Min Node Diameter (mm) | 1050  |
| Replaces Downstream Link | ✓      | Design Flow (l/s)       | 1.4   | Orifice Diameter (m)   | 0.055 |
| Invert Level (m)         | 21.450 | Min Outlet Diameter (m) | 0.095 |                        |       |

### Node Tank Depth/Area Storage Structure

|                             |         |               |      |                           |        |
|-----------------------------|---------|---------------|------|---------------------------|--------|
| Base Inf Coefficient (m/hr) | 0.00000 | Safety Factor | 2.0  | Invert Level (m)          | 21.500 |
| Side Inf Coefficient (m/hr) | 0.00000 | Porosity      | 0.95 | Time to half empty (mins) |        |

| Depth<br>(m) | Area<br>(m²) | Inf Area<br>(m²) | Depth<br>(m) | Area<br>(m²) | Inf Area<br>(m²) | Depth<br>(m) | Area<br>(m²) | Inf Area<br>(m²) |
|--------------|--------------|------------------|--------------|--------------|------------------|--------------|--------------|------------------|
| 0.000        | 70.0         | 0.0              | 1.000        | 70.0         | 0.0              | 1.001        | 0.0          | 0.0              |

**Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%**

| Node Event        | US<br>Node | Peak<br>(mins) | Level<br>(m) | Depth<br>(m) | Inflow<br>(l/s) | Node<br>Vol (m³) | Flood<br>(m³) | Status     |
|-------------------|------------|----------------|--------------|--------------|-----------------|------------------|---------------|------------|
| 240 minute summer | FC1        | 164            | 21.662       | 0.212        | 1.4             | 0.2399           | 0.0000        | SURCHARGED |
| 15 minute summer  | ExS1       | 1              | 21.400       | 0.000        | 1.2             | 0.0000           | 0.0000        | OK         |
| 240 minute summer | Tank       | 164            | 21.666       | 0.166        | 5.9             | 11.3357          | 0.0000        | SURCHARGED |

| Link Event<br>(Upstream Depth) | US<br>Node | Link        | DS<br>Node | Outflow<br>(l/s) | Velocity<br>(m/s) | Flow/Cap | Link<br>Vol (m³) | Discharge<br>Vol (m³) |
|--------------------------------|------------|-------------|------------|------------------|-------------------|----------|------------------|-----------------------|
| 240 minute summer              | FC1        | ACO Q-Brake | ExS1       | 1.4              |                   |          |                  | 22.0                  |
| 240 minute summer              | Tank       | 1.000       | FC1        | 1.4              | 0.531             | 0.234    | 0.0391           |                       |

**Results for 30 year +45% CC Critical Storm Duration. Lowest mass balance: 100.00%**

| Node Event        | US<br>Node | Peak<br>(mins) | Level<br>(m) | Depth<br>(m) | Inflow<br>(l/s) | Node<br>Vol (m³) | Flood<br>(m³) | Status     |
|-------------------|------------|----------------|--------------|--------------|-----------------|------------------|---------------|------------|
| 240 minute winter | FC1        | 236            | 22.249       | 0.799        | 1.5             | 0.9036           | 0.0000        | FLOOD RISK |
| 15 minute summer  | ExS1       | 1              | 21.400       | 0.000        | 1.4             | 0.0000           | 0.0000        | OK         |
| 240 minute winter | Tank       | 236            | 22.252       | 0.752        | 11.8            | 51.4001          | 0.0000        | FLOOD RISK |

| Link Event<br>(Upstream Depth) | US<br>Node | Link        | DS<br>Node | Outflow<br>(l/s) | Velocity<br>(m/s) | Flow/Cap | Link<br>Vol (m³) | Discharge<br>Vol (m³) |
|--------------------------------|------------|-------------|------------|------------------|-------------------|----------|------------------|-----------------------|
| 240 minute winter              | FC1        | ACO Q-Brake | ExS1       | 1.4              |                   |          |                  | 31.6                  |
| 240 minute winter              | Tank       | 1.000       | FC1        | 1.5              | 0.536             | 0.251    | 0.0391           |                       |

**Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 100.00%**

| Node Event        | US<br>Node | Peak<br>(mins) | Level<br>(m) | Depth<br>(m) | Inflow<br>(l/s) | Node<br>Vol (m³) | Flood<br>(m³) | Status     |
|-------------------|------------|----------------|--------------|--------------|-----------------|------------------|---------------|------------|
| 360 minute winter | FC1        | 344            | 22.469       | 1.019        | 1.5             | 1.1522           | 0.0000        | FLOOD RISK |
| 15 minute summer  | ExS1       | 1              | 21.400       | 0.000        | 1.4             | 0.0000           | 0.0000        | OK         |
| 360 minute winter | Tank       | 344            | 22.473       | 0.973        | 10.8            | 66.4835          | 0.0000        | FLOOD RISK |

| Link Event<br>(Upstream Depth) | US<br>Node | Link        | DS<br>Node | Outflow<br>(l/s) | Velocity<br>(m/s) | Flow/Cap | Link<br>Vol (m³) | Discharge<br>Vol (m³) |
|--------------------------------|------------|-------------|------------|------------------|-------------------|----------|------------------|-----------------------|
| 360 minute winter              | FC1        | ACO Q-Brake | ExS1       | 1.4              |                   |          |                  | 43.5                  |
| 360 minute winter              | Tank       | 1.000       | FC1        | 1.5              | 0.511             | 0.245    | 0.0391           |                       |

# Appendix D

## Ground Investigation Information

24<sup>th</sup> February 2025

RP/RML 9092

Sports Clubhouses Ltd  
34 Croydon Road  
Caterham  
Surrey  
CR3 6QB

For the attention of Andy MacDonald

Dear Andy,

**BRE 365 SOIL INFILTRATION TEST AT  
STEYNING CC, CHARLTON STREET, STEYNING, SUSSEX, BN44 3LE**

Further to the Signed Instruction to Proceed, received from Mr Gary Hunt of Steyning CC, dated 6<sup>th</sup> February 2025, we confirm that we attended the above noted site on Friday 14<sup>th</sup> February 2025 in order to carry out the required work.

We now have pleasure in enclosing the following factual information.

1. *Figure 1 - Trial Pit Record (TP1)*
2. *BRE 365 Soil Infiltration Test Result Sheets (SA1)*
3. *Drawing No. RML 9092/1 - Sketch Fieldwork Location Plan*

**BRE 365 Soil Infiltration Test**

Soil Infiltration Test SA1 was undertaken within Trial Pit TP1, at the location as indicated on the appended Drawing No. RML 9092/1, in accordance with the methods described in BRE Digest 365 "Soakaway Design" and B.S. 5930:2015+A1:2020. The location of Trial Pit TP1 was moved slightly from the proposed position owing to the proximity of drainage manholes and power services being picked up on the CAT scanner.

Trial Pit TP1 was mechanically excavated to a depth of 2.20m below existing ground level and was approximately 2.20m long and 0.30m wide. Full details of the ground conditions encountered are shown on the appended Figure 1 – Trial Pit Record TP1. The trial pit was filled by a pumped water bowser and the depth to water measured regularly.

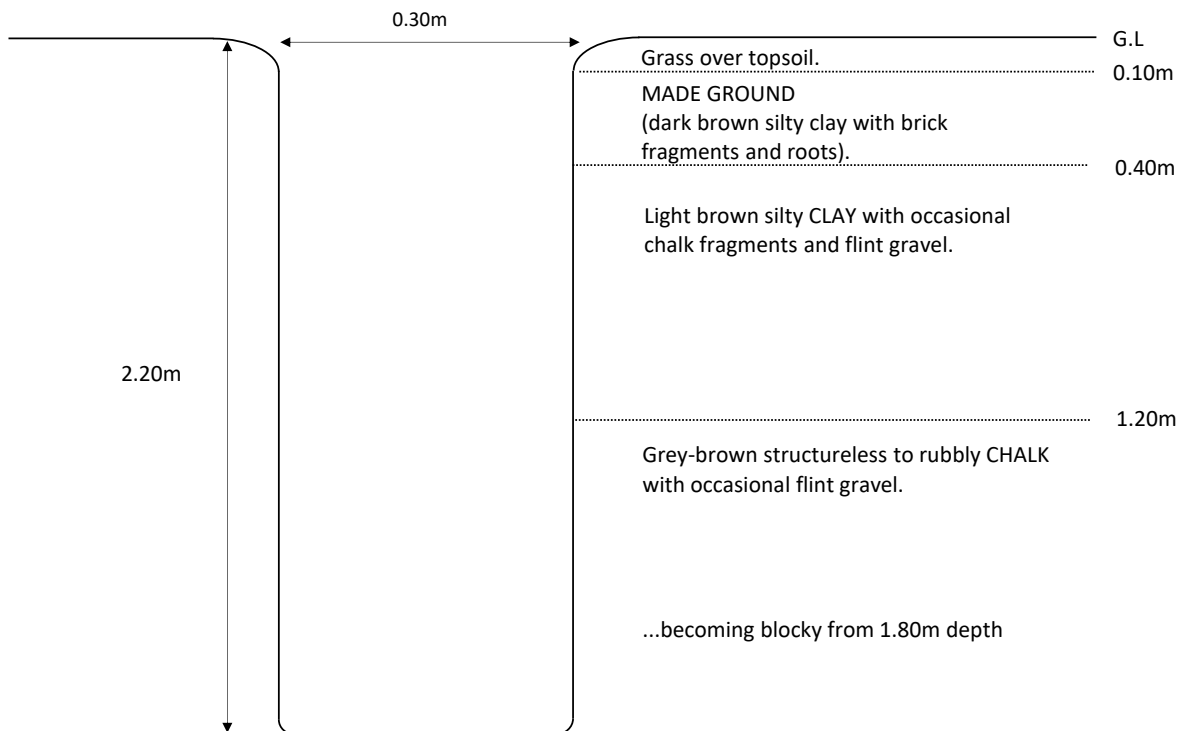
Owing to the poor soakage rate observed, no Soil Infiltration Rate could be calculated. Based on the above results conventional shallow soakaways would not be successful at the site.

We trust that you will find the enclosed self-explanatory, however, should you have any queries please do not hesitate to contact the writer at the above noted address.

yours faithfully,  
for RISK MANAGEMENT LIMITED



Richard Price B.Sc. (Hons), F.G.S., M.I.Env.Sc.  
Director



Title : **TRIAL PIT TP1 - SA1**

Project Location : Steyning CC, Charlton Street,  
Steyning, Sussex, BN44 3LE

## RECORD OF MECHANICALLY EXCAVATED TRIAL PIT

Job No : RML 9092

Scale : Not To Scale

Date : 14th February 2025

Project Name : Steyning CC, Charlton Street, Steyning,  
Sussex, BN44 3LE

One Filling

Job No. RML 9092

Date : February 2025

1st Filling

2nd Filling

Test Depth (m)

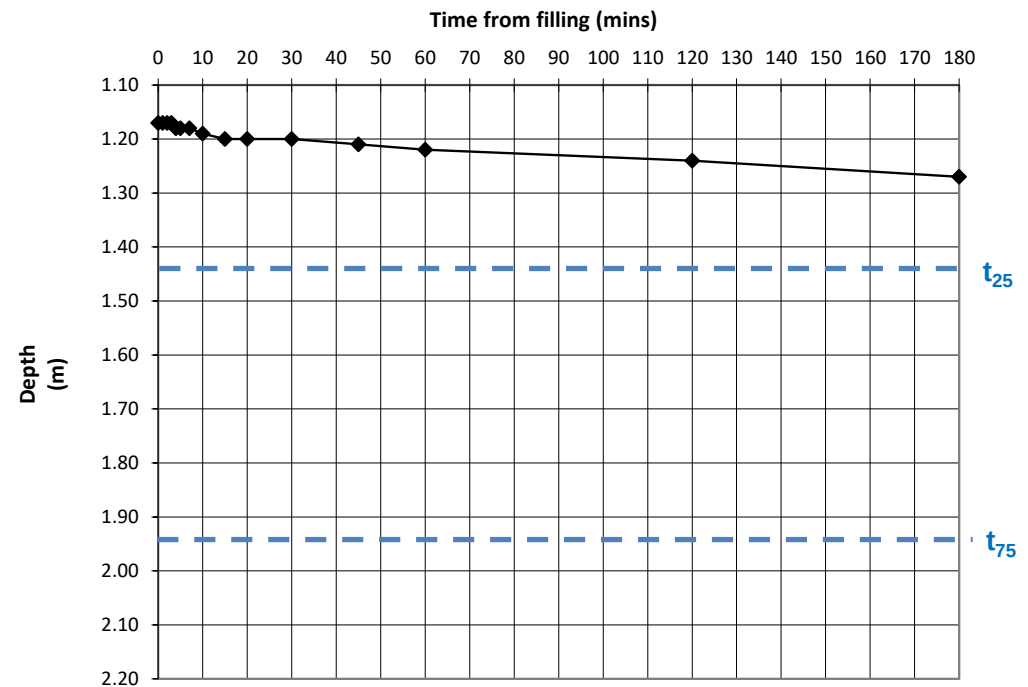
2.20

Depth (m) Time (mins)

|       |     |
|-------|-----|
| 1.170 | 0   |
| 1.170 | 1   |
| 1.170 | 2   |
| 1.170 | 3   |
| 1.180 | 4   |
| 1.180 | 5   |
| 1.180 | 7   |
| 1.190 | 10  |
| 1.200 | 15  |
| 1.200 | 20  |
| 1.200 | 30  |
| 1.210 | 45  |
| 1.220 | 60  |
| 1.240 | 120 |
| 1.270 | 180 |

TIME TAKEN TO FALL BETWEEN 25% and 75% - N/A

1st Filling



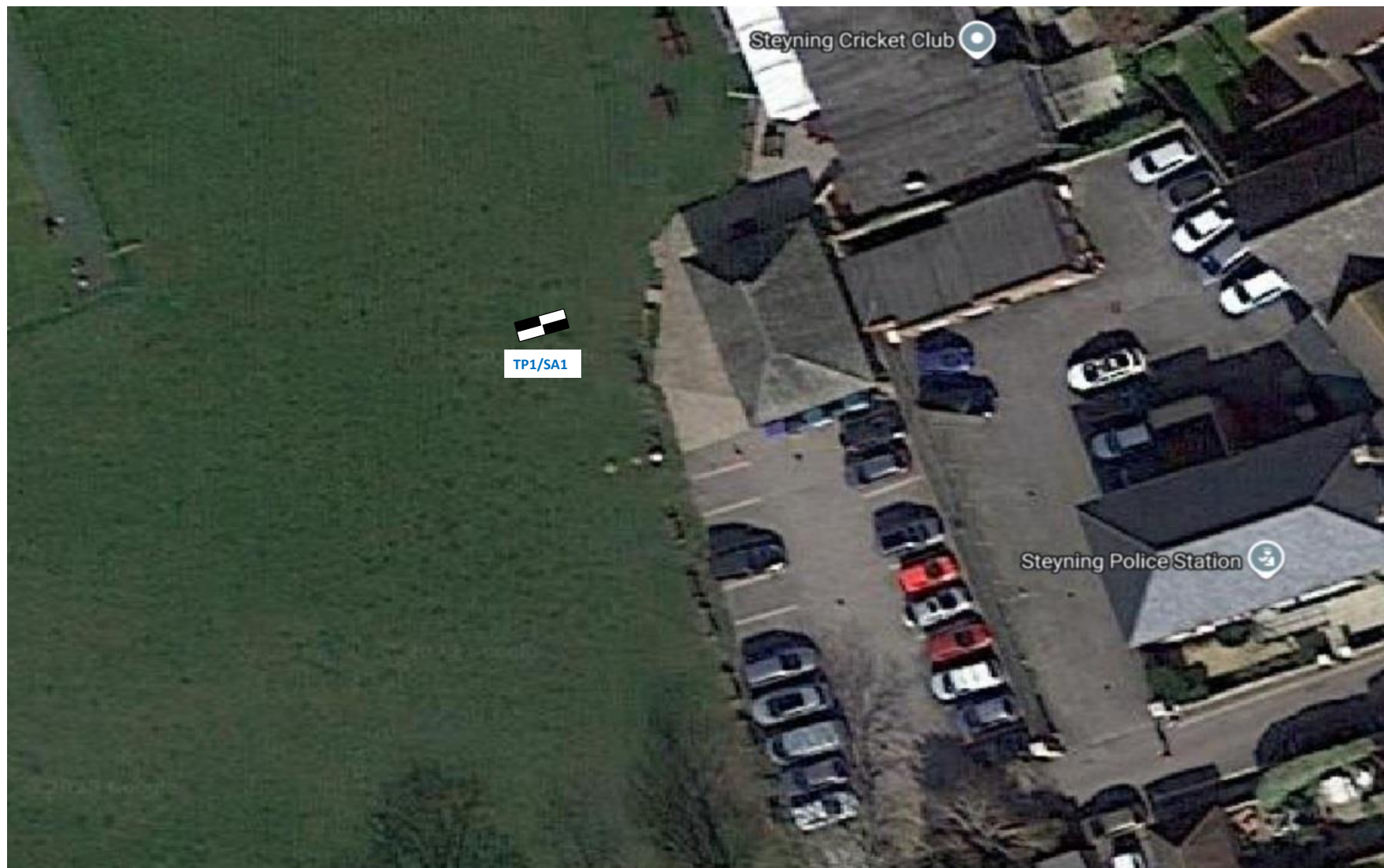
## BRE 365 SOIL INFILTRATION TEST SA1 - TP1

Project Name : Steyning CC, Charlton Street, Steyning, Sussex, BN44 3LE

Project No: RML 9092

Date : February 2025

|                                                           |      |
|-----------------------------------------------------------|------|
| Trial Pit No.                                             | TP1  |
| Depth of pit (m)                                          | 2.20 |
| Width of pit (m)                                          | 0.30 |
| Length of pit (m)                                         | 2.20 |
| Depth of water in pit (m)                                 | 1.03 |
| Volume of 75% to 25% ( $V_{p75}$ )                        | 0.34 |
| Mean surface area through which flow occurs ( $a_{p50}$ ) | 3.24 |
| Time for outflow (minutes) 75% to 25% ( $t_{p75-25}$ )    | N/A  |
| Time for outflow (seconds) 75% to 25% ( $t_{p75-25}$ )    | N/A  |
| Soil Infiltration Rate (f) m/s =                          | N/A  |



|                                                                                                                                                                                                         |                                                                            |                         |                                                                                                                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>Risk Management</b><br>Unit 10 Coopers Place, Combe Lane, Godalming,<br>Surrey, GU8 5SZ<br>Tel : 01883 343572 | Title: <b>SKETCH FIELDWORK LOCATION PLAN</b>                               | Drawing No. RML 9092 /1 | <b>KEY</b><br><br> Trial Pit/Soakaway Test Location |
|                                                                                                                                                                                                         | Project Location: Steyning CC, Charlton Street, Steyning, Sussex, BN44 3LE | Scale: N.T.S.           |                                                                                                                                          |
|                                                                                                                                                                                                         | Report Date: February 2025                                                 | Drawn By: R. Price      |                                                                                                                                          |