



Y/35/21/HH  
#35 Park Drive  
Yapton  
BN18 0JF



## Surface Water Drainage Proposal Checklist

This 'Surface Water Drainage Proposals Checklist' has been designed to clearly define Arun District Council's and Chichester District Council's expectations and requirements for any surface water drainage proposals, submitted for appraisal by the council's Engineers, during the planning process.

Please be aware that it is in your interest to provide all of the requested information, as this will allow the council's Engineers to quickly and efficiently review your proposals. The omission of any requested information may lead to delays in the planning process.

This document will be of help to any applicant, or drainage consultant, preparing to submit a 'Discharge of Conditions Application' relating to surface water drainage conditions. Alternatively, it can also be used earlier in the planning process, if the applicant wishes to avoid pre-commencement conditions relating to surface water drainage. The Town and Country Planning Regulations now require pre-commencement conditions to have the prior agreement of the applicant regarding their wording and use. Therefore, if you wish to avoid pre-commencement conditions, in relation to surface water drainage, you will need to submit proposals that provide the information requested in this checklist and also align with the requirements of the following documents:

West Sussex Policy for the Management of Surface Water (WSCC)

'Supplementary Requirements for Surface Water Drainage Proposals'. (Arun DC)

'Supplementary Requirements for Surface Water Drainage Proposals'. (Chichester DC)

By submitting all of the information requested by this checklist you will enable the council's Engineers to determine whether your proposals follow the hierarchy for sustainable drainage and will adequately drain the site.

Please be aware that it will be difficult for the council's Engineers to undertake a timely assessment of your application if you fail to provide any of the information requested.

## Surface Water Drainage Proposal Checklist

| Ground Investigation Results                                                    |                    |            |      |     |
|---------------------------------------------------------------------------------|--------------------|------------|------|-----|
| Results Required                                                                | Results Provided?  |            |      |     |
| Winter groundwater monitoring results (Please refer to guidance note 1 below)   | Yes                | X          | No   |     |
| Period of winter groundwater monitoring <sup>Note 1</sup>                       | From               | 17/01/2021 |      |     |
|                                                                                 | To                 | 28/02/2021 |      |     |
| Maximum recorded groundwater level                                              |                    | 5.770      | mAOD |     |
|                                                                                 |                    | 1.085      | mBGL |     |
| Winter infiltration test results <sup>Note 2</sup>                              | Yes                | X          | No   |     |
| Date of winter infiltration testing                                             | 10th-13th /02/2021 |            |      |     |
| Details of the location and depth of the infiltration testing <sup>Note 3</sup> | Yes                | X          | No   |     |
| Minimum infiltration rate <sup>Note 4</sup>                                     |                    | 2.367      | E-05 | m/s |

### Guidance Notes

1. A full winters groundwater monitoring should be undertaken, (October to March inclusive) to enable the peak annual groundwater levels to be established. The extent of winter monitoring for developments of less than 5 properties should be discussed with the council's Engineers.
2. Infiltration testing should be undertaken during the wet winter months (typically January) and in line with BRE365, or a similar approved method. Tests should be repeated 3x, to replicate saturated ground conditions. Please note that infiltration testing is to be carried out at a time and depth agreed with the Councils engineers.
3. Infiltration testing should be undertaken at the location and depth of any proposed infiltration structures. This must be above the maximum recorded groundwater level in that vicinity.
4. The minimum infiltration rate obtained at the location and depth of the proposed infiltration structures should be used to inform the design of the structures.

| Proposed Method of Surface Water Disposal                                                               |     |   |    |     |
|---------------------------------------------------------------------------------------------------------|-----|---|----|-----|
| Infiltration                                                                                            | Yes | X | No |     |
| On-site, via soak-away structures                                                                       |     |   |    |     |
| If on-site infiltration is not to be used, has justification for this been provided? <sup>Note 5</sup>  | Yes |   | No | n/a |
| Attenuation (on-site) with a restricted discharge to a watercourse on, or adjacent to, the site         | Yes |   | No | n/a |
| Attenuation (on-site) with a restricted discharge to a surface water sewer on, or adjacent to, the site | Yes |   | No | n/a |
| Attenuation (on-site) with a restricted discharge to a foul water sewer on, or adjacent to, the site    | Yes |   | No | n/a |

### Guidance Notes

5. If on-site infiltration is not being used to drain the site you will need to provide evidence that demonstrates on-site infiltration is unviable.

| Drainage Design: Supporting Calculations        |                                                                                                                                                                                                                                                                 |                        |   |       |     |
|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---|-------|-----|
| Calculations Required                           |                                                                                                                                                                                                                                                                 | Calculations Provided? |   |       |     |
| Infiltration Structures                         | Half-drain time for 10 year event (plus climate change allowance)                                                                                                                                                                                               | Yes                    | X | No    |     |
|                                                 |                                                                                                                                                                                                                                                                 | 2.00                   |   | Hours |     |
|                                                 | Half-drain time for 100 year event (plus climate change allowance)                                                                                                                                                                                              | Yes                    | X | No    |     |
|                                                 |                                                                                                                                                                                                                                                                 | 3.46                   |   | Hours |     |
|                                                 | Calculations demonstrating that the 1 in 100 year event, plus climate change allowance can be accommodated on-site. <small>Note 7</small>                                                                                                                       | Yes                    | X | No    |     |
| Attenuation and Subsequent Restricted Discharge | Lowest base level of infiltration structure                                                                                                                                                                                                                     | 6.005                  |   | mAOD  |     |
|                                                 |                                                                                                                                                                                                                                                                 | 0.85                   |   | mBGL  |     |
|                                                 | Has the design sought to provide treatment of potential contaminants? E.g. hydrocarbons.                                                                                                                                                                        | Yes                    |   | No    | X   |
|                                                 | Pre-development run-off rate calculations                                                                                                                                                                                                                       | Yes                    |   | No    | n/a |
|                                                 | Proposed discharge rate <small>Note 6</small>                                                                                                                                                                                                                   | n/a                    |   | l/s   |     |
| Attenuation and Subsequent Restricted Discharge | Calculations demonstrating that the 1 in 100 year event, plus climate change allowance can be accommodated on-site. <small>Note 7</small>                                                                                                                       | Yes                    |   | No    | n/a |
|                                                 | Has the design sought to provide treatment of potential contaminants? E.g. hydrocarbons.                                                                                                                                                                        | Yes                    |   | No    | n/a |
|                                                 | If your proposed scheme incorporates any impermeable lined attenuation features we require calculations to demonstrate that appropriate resistance to floatation (due to groundwater levels) is catered for in the design                                       | Yes                    |   | No    | n/a |
|                                                 | If you propose discharging into or altering an ordinary watercourse; have you sought Ordinary Watercourse/Land Drainage Consent? <small>Note 8</small>                                                                                                          | Yes                    |   | No    | n/a |
|                                                 | If discharging to a watercourse, piped system or the sea, has the proposed drainage network been modelled against predicted top water levels for the 1 in 100 year storm event plus climate change allowance, within the existing system? <small>Note 9</small> | Yes                    |   | No    | n/a |

### Guidance Notes

- Any proposed discharge rate must be less than, or equal to, the pre-development rate. Greenfield sites must use the mean flow rate (Qbar) and be based upon the area occupied by the development, ignoring significant open spaces. Please note that the minimum acceptable discharge rate is 2l/s when using formal flow control devices, unless otherwise agreed. Additionally, if you are developing a brownfield site, we expect you to provide fully detailed plans of the existing surface water drainage arrangements on site, including impermeable areas, gullies, outfalls, pipes & diameters, manholes, etc. We generally seek 50% betterment in terms of run off from brownfield sites.
- The appropriate factor of safety from the table below must be applied to your calculations to ensure your design is fully in accordance with CIRIA R156/ CIRIA C753.

| Factor of Safety Table                  |                            |         |                                                     |         |                                             |         |
|-----------------------------------------|----------------------------|---------|-----------------------------------------------------|---------|---------------------------------------------|---------|
| Size of Area to be Drained              | Consequences of failure    |         |                                                     |         |                                             |         |
|                                         | No damage or inconvenience |         | Minor inconvenience, e.g. surface water on car park |         | Damage to buildings or structures or roads. |         |
|                                         | Cv=1.0                     | Cv=0.75 | Cv=1.0                                              | Cv=0.75 | Cv=1.0                                      | Cv=0.75 |
| <100 m <sup>2</sup>                     | 1.5                        | 2       | 2                                                   | 3       | 10                                          | 13      |
| 100m <sup>2</sup> to 1000m <sup>2</sup> | 1.5                        | 2       | 3                                                   | 4       | 10                                          | 13      |
| >1000m <sup>2</sup>                     | 1.5                        | 2       | 5                                                   | 6.5     | 10                                          | 13      |

8. Ordinary Watercourse/Land Drainage Consent will need to be sought, ideally in parallel with planning permission, if you propose discharging into, culverting or altering a watercourse.
9. Modelling is required to ensure that problems, such as surcharged outfalls, are addressed.

| Plans/Drawings/Diagrams                                                                                                                                                                                                      |           |   |    |     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---|----|-----|
| Required                                                                                                                                                                                                                     | Provided? |   |    |     |
| Plan detailing the location of groundwater monitoring and infiltration testing                                                                                                                                               | Yes       | X | No |     |
| Detailed drainage layout plan <small>Note 10</small>                                                                                                                                                                         | Yes       | X | No |     |
| Construction detail plans <small>Note 11</small>                                                                                                                                                                             | Yes       | X | No |     |
| Exceedance flow route plans <small>Note 12</small>                                                                                                                                                                           | Yes       |   | No | X   |
| Impermeable area plan                                                                                                                                                                                                        | Yes       | X | No |     |
| If ground levels are being raised $\geq 300\text{mm}$ above existing levels and is unavoidable, have fully detailed plans been provided, together with drainage proposals, to address any potential drainage related issues. | Yes       |   | No | n/a |

#### Guidance Notes

10. Drainage layout plans should include:
  - All surface water drainage pipes labelled with; diameters, pipe materials, falls and invert levels.
  - All infiltrating and attenuating structures (including permeable paving) labelled with; dimensions, invert and cover levels.
  - All manholes labelled with; cover levels, invert levels, cover types detailed.
  - All silt traps clearly labelled with sump depths.
  - Control structures with outflow rates and invert levels.
  - Proposed/existing levels of any areas subject to ground raising, together with suitable measures/detailed drawings for the associated management of surface water runoff. Please note that ground raising should be avoided unless there are exceptional circumstances.
11. Site specific construction detail plans should be supplied if your proposed drainage scheme includes any of the following elements: pipe bed and surround; infiltrating structures; attenuating structures; manholes; catch-pits/silt traps; control devices; permeable paving; headwalls.
12. Unless specifically requested by the council's drainage engineers 'Exceedance Flow Route Plans' are only required for developments of more than 5 residential properties or more than 0.5ha of commercial development.

# Mate Geo-Technic Services

Report prepared by RC on 4th April 2021

#35 Park Drive, Yapton, BN18 0JF -- Planning Reference Y/35/21/HH

**The Design Parameters for the Proposed Geocellular Structure Soakaway Installation S/A #1, located in the rear garden, are as follows :-**

Soil Infiltration Rate for the Sides is  $2.367E-5$  metres / second.

Soil Infiltration Rate for the Base is  $2.367E-5$  metres / second.

The Installation consists of a GeoCellular Structure of 5.00 metres Long by 2.00 metres Wide and 0.40 metres in Depth.

With a Cover Depth of 0.45 metres.

Percentage Void Space of 95%.

Impermeable Area specified as 74 square metres.

Using a Safety Factor of 2.0

The Design adopts a Factored Soil Infiltration Rate for the Sides of  $1.184E-5$  metres / second.

And a Factored Soil Infiltration Rate for the Base of  $1.184E-5$  metres / second.

The Rainfall Ratio for the Location is  $r=0.36$

Rainfall Base Rate M5-60min the 5 Year Return Period Rainfall of 60 minutes Duration is 19.0mm.

Lowest Incoming Pipe Invert Height is 300mm above the Installation Base.

The Base Area of the Installation is Included in the calculation.

All Levels are referenced to 'Above Ordinance Datum' (AOD)

The Highest Recorded Groundwater at the Location of the Proposed Soakaway is 5.770 metres at a depth of 1.085 metres Below Ground Level (BGL)

The Ground Level at the Location of the Proposed Soakaway is 6.855 metres

The Soffit Level of the Proposed Soakaway is 6.405 metres

The Invert Level of the Lowest Incoming Pipe on the Proposed Soakaway is 6.305 metres

The Base Level of the Proposed Soakaway is 6.005 metres

The Base of the Soakaway Structure is 0.235 metres above the Highest Recorded Groundwater at the location of the Soakaway. This meets Building Regulations.

**The Design Summary for the Proposed Geocellular Structure Soakaway Installation S/A #1 is as follows :-**

For a 10 Year Return Storm Includes a 40% Increase for Climate Change.

The Design requires storage of 1.94 cubic metres out of 2.85 cubic metres available.

Therefore Storage is Passed with a Critical Storm occurring at 1 hour.

And the Half Drain Time is OK within the Allowable 24 hours Period at 2.00 hours.

For a 100 Year Return Storm Includes a 40% Increase for Climate Change.

The Design requires storage of 3.76 cubic metres out of 3.80 cubic metres available.

Therefore Storage is Passed with a Critical Storm occurring at 3 hours.

And the Half Drain Time is OK within the Allowable 24 hours Period at 3.46 hours.

**10 Year Return Storm Includes a 40% Increase for Climate Change.**

| Storm Duration | Factor Z1-5 | M5 Return Rainfall | Factor Z2-10 | M10 Return Rainfall | Inflow Cu Metres | Outflow Cu Metres | Internal Water Level | Required Storage | Soakaway Status |
|----------------|-------------|--------------------|--------------|---------------------|------------------|-------------------|----------------------|------------------|-----------------|
| 5 minutes      | 0.360       | 6.80               | 1.190        | 11.40               | 0.843            | 0.043             | 84                   | 0.800            | -OK-            |
| 10 minutes     | 0.510       | 9.70               | 1.220        | 16.60               | 1.225            | 0.086             | 120                  | 1.139            | -OK-            |
| 15 minutes     | 0.620       | 11.80              | 1.220        | 20.10               | 1.489            | 0.129             | 143                  | 1.360            | -OK-            |
| 30 minutes     | 0.790       | 15.00              | 1.240        | 26.10               | 1.928            | 0.258             | 176                  | 1.670            | -OK-            |
| 1 hour         | 1.000       | 19.00              | 1.250        | 33.20               | 2.460            | 0.516             | 205                  | 1.945            | -OK-            |
| 2 hours        | 1.216       | 23.10              | 1.240        | 40.10               | 2.968            | 1.031             | 204                  | 1.937            | -OK-            |
| 3 hours        | 1.364       | 25.90              | 1.240        | 45.00               | 3.329            | 1.547             | 188                  | 1.783            | -OK-            |
| 4 hours        | 1.495       | 28.40              | 1.220        | 48.50               | 3.590            | 2.062             | 161                  | 1.528            | -OK-            |
| 5 hours        | 1.593       | 30.30              | 1.220        | 51.70               | 3.826            | 2.578             | 131                  | 1.248            | -OK-            |
| 6 hours        | 1.670       | 31.70              | 1.220        | 54.20               | 4.010            | 3.093             | 97                   | 0.917            | -OK-            |
| 7 hours        | 1.745       | 33.20              | 1.203        | 55.80               | 4.132            | 3.609             | 55                   | 0.523            | -OK-            |
| 8 hours        | 1.805       | 34.30              | 1.203        | 57.80               | 4.274            | 4.124             | 16                   | 0.150            | -OK-            |
| 9 hours        | 1.863       | 35.40              | 1.203        | 59.60               | 4.412            | 4.640             | empty                | none             | -OK-            |
| 10 hours       | 1.915       | 36.40              | 1.203        | 61.30               | 4.535            | 5.155             | empty                | none             | -OK-            |
| 11 hours       | 1.960       | 37.20              | 1.203        | 62.70               | 4.641            | 5.671             | empty                | none             | -OK-            |
| 12 hours       | 2.005       | 38.10              | 1.190        | 63.50               | 4.697            | 6.186             | empty                | none             | -OK-            |
| 14 hours       | 2.085       | 39.60              | 1.190        | 66.00               | 4.884            | 7.217             | empty                | none             | -OK-            |
| 16 hours       | 2.155       | 40.90              | 1.190        | 68.20               | 5.048            | 8.249             | empty                | none             | -OK-            |
| 18 hours       | 2.225       | 42.30              | 1.190        | 70.40               | 5.212            | 9.280             | empty                | none             | -OK-            |
| 20 hours       | 2.295       | 43.60              | 1.180        | 72.00               | 5.331            | 10.311            | empty                | none             | -OK-            |
| 22 hours       | 2.360       | 44.80              | 1.180        | 74.10               | 5.482            | 11.342            | empty                | none             | -OK-            |
| 24 hours       | 2.430       | 46.20              | 1.180        | 76.30               | 5.644            | 12.373            | empty                | none             | -OK-            |

Effective Volume of the Geocellular Structure Soakaway Installation for an M10 Return Period is 2.85 cubic metres.

Maximum Available (Effective) Outflow Surface Area at M10 Return is 12.10 square metres referenced to the Invert of the lowest incoming pipe.

Maximum Allowable Pre-Flood Water Level for 10 Year Return (Lowest Pipe Invert Level for Building Control) is 300mm.

For a 10 Year Return Period the Critical Storm occurs at 1 hour

With a Maximum Internal Structure Critical Water Level of 205mm.

Requiring a Maximum (Critical) Storage Capacity of 1.94 cubic metres.

The Outflow Surface Area for the Critical Storm Duration for the M10 Return is 11.43 square metres referenced to the Critical Water Level.

Half Drain Time for a 10 Year Return Critical Storm is 2.00 hours.

**100 Year Return Storm Includes a 40% Increase for Climate Change.**

| Storm Duration | Factor Z1-5 | M5 Return Rainfall | Factor Z2-100 | M100 Return Rainfall | Inflow Cu Metres | Outflow Cu Metres | Internal Water Level | Required Storage | Soakaway Status |
|----------------|-------------|--------------------|---------------|----------------------|------------------|-------------------|----------------------|------------------|-----------------|
| 5 minutes      | 0.360       | 6.80               | 1.790         | 17.10                | 1.268            | 0.045             | 129                  | 1.223            | -OK-            |
| 10 minutes     | 0.510       | 9.70               | 1.910         | 25.90                | 1.917            | 0.091             | 192                  | 1.827            | -OK-            |
| 15 minutes     | 0.620       | 11.80              | 1.910         | 31.50                | 2.331            | 0.136             | 231                  | 2.195            | -OK-            |
| 30 minutes     | 0.790       | 15.00              | 1.990         | 41.80                | 3.095            | 0.273             | 297                  | 2.822            | -OK-            |
| 1 hour         | 1.000       | 19.00              | 2.030         | 54.00                | 3.996            | 0.545             | 363                  | 3.450            | -OK-            |
| 2 hours        | 1.216       | 23.10              | 2.010         | 65.00                | 4.811            | 1.091             | 392                  | 3.720            | -OK-            |
| 3 hours        | 1.364       | 25.90              | 2.010         | 72.90                | 5.397            | 1.636             | 396                  | 3.761            | -OK-            |
| 4 hours        | 1.495       | 28.40              | 1.970         | 78.30                | 5.797            | 2.181             | 381                  | 3.616            | -OK-            |
| 5 hours        | 1.593       | 30.30              | 1.970         | 83.50                | 6.177            | 2.727             | 363                  | 3.450            | -OK-            |
| 6 hours        | 1.670       | 31.70              | 1.970         | 87.50                | 6.476            | 3.272             | 337                  | 3.204            | -OK-            |
| 7 hours        | 1.745       | 33.20              | 1.930         | 89.60                | 6.629            | 3.817             | 296                  | 2.812            | -OK-            |
| 8 hours        | 1.805       | 34.30              | 1.930         | 92.70                | 6.857            | 4.363             | 263                  | 2.494            | -OK-            |
| 9 hours        | 1.863       | 35.40              | 1.930         | 95.60                | 7.078            | 4.908             | 228                  | 2.169            | -OK-            |
| 10 hours       | 1.915       | 36.40              | 1.930         | 98.30                | 7.275            | 5.454             | 192                  | 1.822            | -OK-            |
| 11 hours       | 1.960       | 37.20              | 1.930         | 100.60               | 7.446            | 5.999             | 152                  | 1.447            | -OK-            |
| 12 hours       | 2.005       | 38.10              | 1.890         | 100.80               | 7.459            | 6.544             | 96                   | 0.915            | -OK-            |
| 14 hours       | 2.085       | 39.60              | 1.890         | 104.80               | 7.757            | 7.635             | 13                   | 0.122            | -OK-            |
| 16 hours       | 2.155       | 40.90              | 1.890         | 108.30               | 8.017            | 8.726             | empty                | none             | -OK-            |
| 18 hours       | 2.225       | 42.30              | 1.890         | 111.90               | 8.278            | 9.816             | empty                | none             | -OK-            |
| 20 hours       | 2.295       | 43.60              | 1.855         | 113.20               | 8.380            | 10.907            | empty                | none             | -OK-            |
| 22 hours       | 2.360       | 44.80              | 1.855         | 116.40               | 8.617            | 11.998            | empty                | none             | -OK-            |
| 24 hours       | 2.430       | 46.20              | 1.855         | 119.90               | 8.873            | 13.089            | empty                | none             | -OK-            |

Effective Volume of the Geocellular Structure Soakaway Installation for an M100 Return Period is 3.80 cubic metres.

Maximum Available (Effective) Outflow Surface Area at M100 Return is 12.80 square metres referenced to the top of the GeoCell Installation.

Maximum Allowable Pre-Flood Water Level for 100 Year Return (Soakaway Height) is 400mm.

For a 100 Year Return Period the Critical Storm occurs at 3 hours

With a Maximum Internal Structure Critical Water Level of 396mm.

Requiring a Maximum (Critical) Storage Capacity of 3.76 cubic metres.

The Outflow Surface Area for the Critical Storm Duration for the M100 Return is 12.77 square metres referenced to the Critical Water Level.

Half Drain Time for a 100 Year Return Critical Storm is 3.46 hours.

\* \* \* END of REPORT \* \* \*

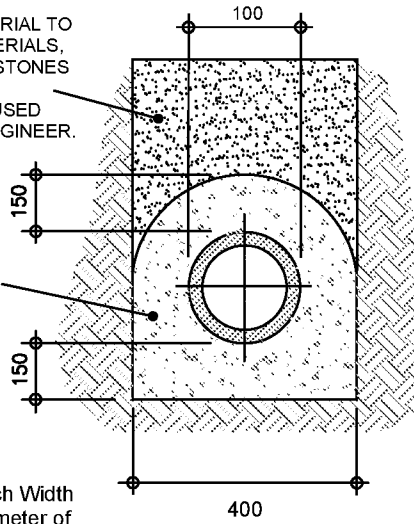
### Pipe Bedding Constructional Details scale 1:20

## CONCRETE SURROUND (CLASS Z)

TO BE USED WHERE COVER TO CROWN OF PIPE  
IS LESS THAN 1200mm IN VEHICULAR AREAS  
OR LESS THAN 900mm ELSEWHERE.

SELECTED EXCAVATED MATERIAL TO  
BE FREE FROM FROZEN MATERIALS  
NON-ORGANIC MATTER AND STONES  
GREATER THAN 40mm. —  
CLASS 6F1 MATERIAL TO BE USED  
WHERE DIRECTED BY THE ENGINEER

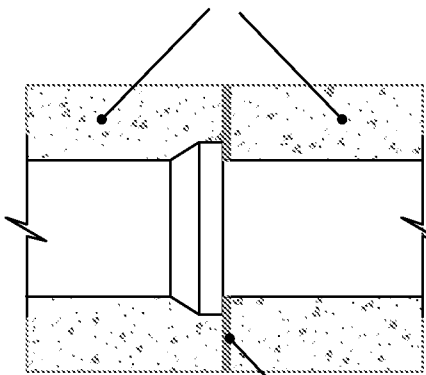
PLAIN CONCRETE CLASS ST4  
TO BE SEPARATED AT EACH  
JOINT WITH AN APPROVED  
COMPRESSIBLE MATERIAL.



**Minimum Trench Width  
to be Pipe Diameter of  
100mm plus 300mm.**

PIPE SURROUND EXPANSION JOINT DETAIL  
(TO BE USED IN CONJUNCTION WITH CLASS Z)

PLAIN CONCRETE CLASS ST4  
TO BE SEPARATED AT EVERY  
JOINT WITH AN APPROVED  
COMPRESSIBLE MATERIAL.



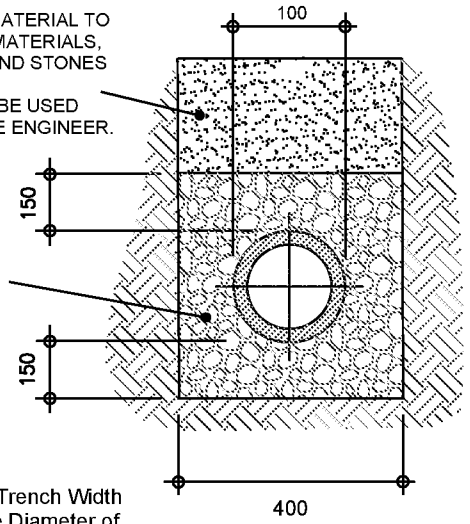
APPROVED 18mm THICK  
• COMPRESSIBLE BOARD TO BE  
USED AT EVERY PIPE JOINT.

## GRANULAR SURROUND (CLASS S)

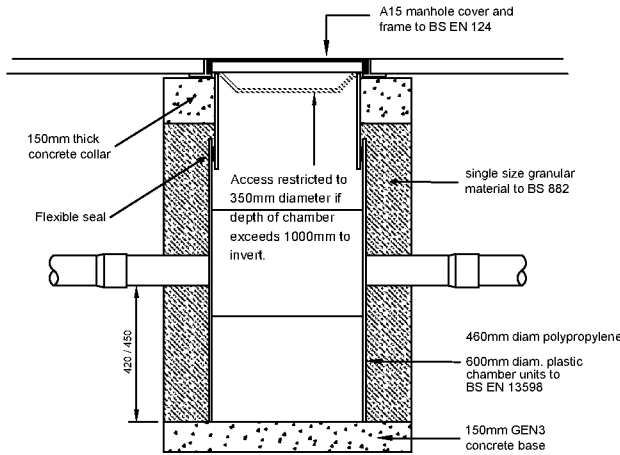
TO BE USED WHERE COVER TO CROWN OF PIPE  
IS GREATER THAN 1200mm IN VEHICULAR AREAS  
OR GREATER THAN 900mm ELSEWHERE.

SELECTED EXCAVATED MATERIAL TO  
BE FREE FROM FROZEN MATERIALS,  
NON-ORGANIC MATTER AND STONES  
GREATER THAN 40mm.  
CLASS 6F1 MATERIAL TO BE USED  
WHERE DIRECTED BY THE ENGINEER.

FOR 100mm PIPES THE  
GRANULAR BEDDING AND  
SURROUND MATERIAL TO  
BE OF SINGLE SIZE 10mm.

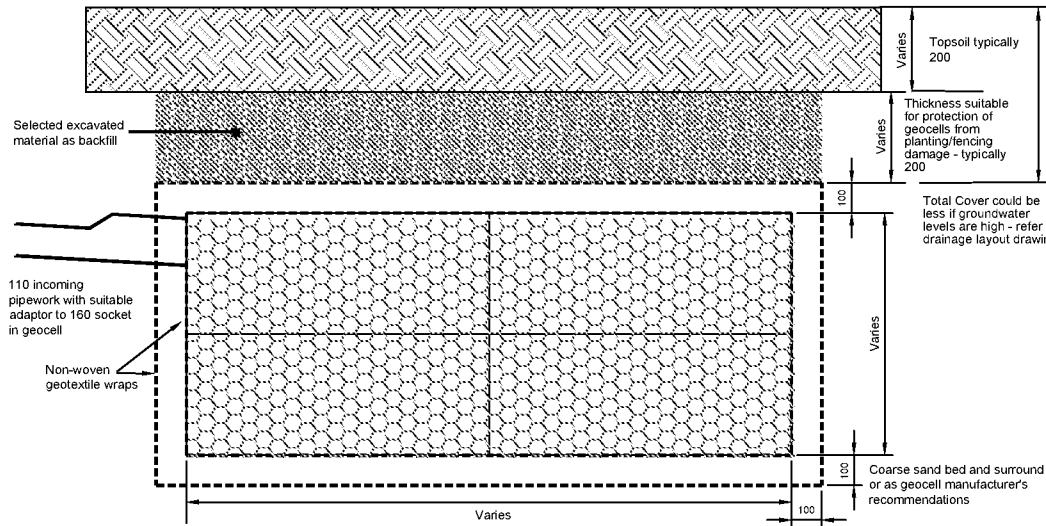


**Minimum Trench Width to be Pipe Diameter of 100mm plus 300mm.**



Typical Silt Trap Inspection Chamber  
(for use in soft landscaped areas and footways)

Typical Geocellular soakaway Unit (for use in soft landscaped areas)



## Surface Water Chamber & Soakaway Constructional Details scale 1:25

# Mate GeoTechnic Services

|      |                  |      |          |
|------|------------------|------|----------|
|      |                  |      |          |
|      |                  |      |          |
| 02   | Final            | RC   | 04-04-21 |
| 02   | Update Silt Trap | RC   | 16-03-21 |
| 01   | Original         | RC   | 6-03-21  |
| Rev. | Description      | Drn. | Date     |

## Project

Proposed  
Single Storey Rear Extension  
#35 Park Drive  
Yapton  
BN18 0JF

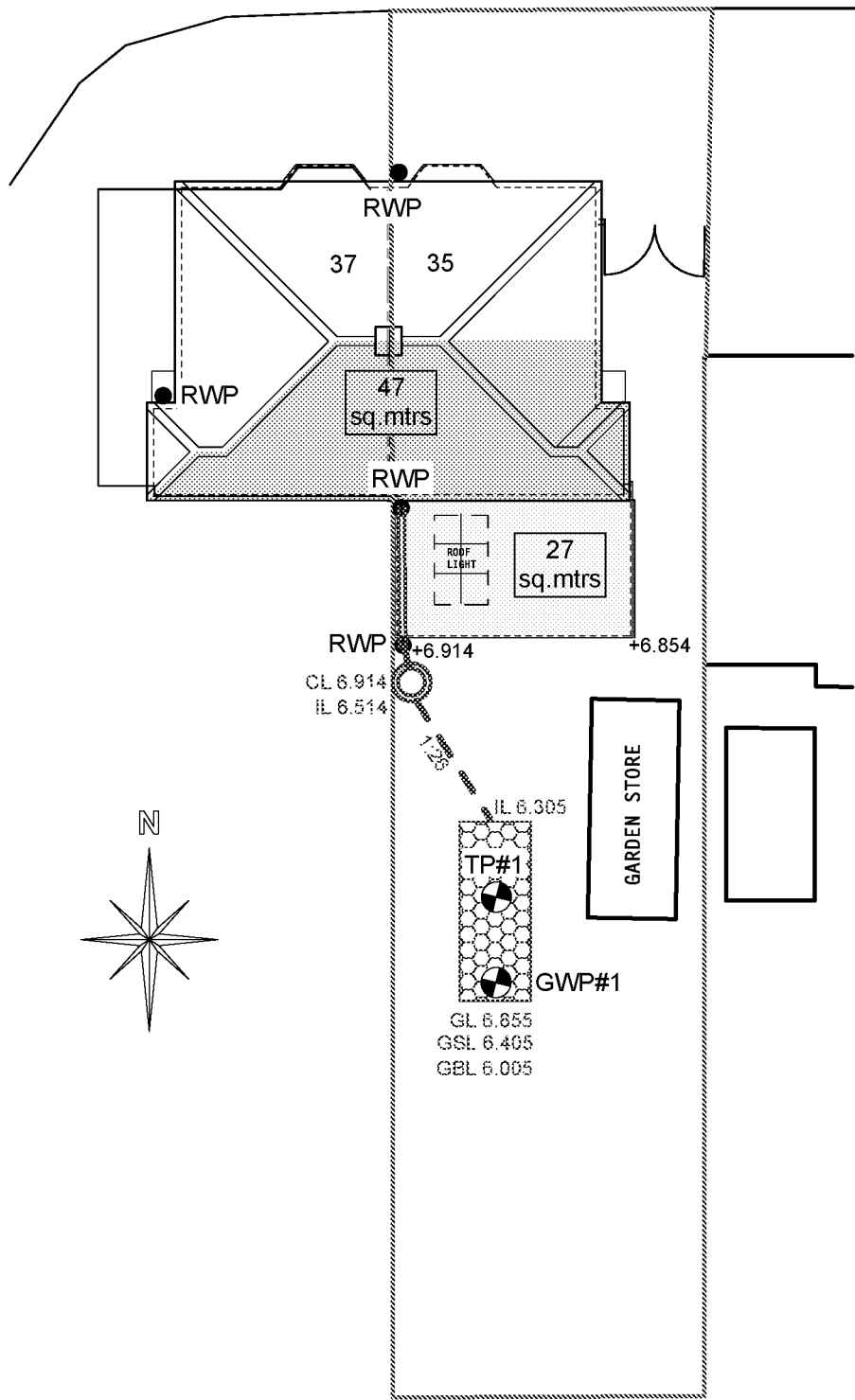
Client **Mr & Mrs J. Fallick**

| Drawing<br>Title | Constructional Details |
|------------------|------------------------|
|------------------|------------------------|

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|       |          |                     |    |
|-------|----------|---------------------|----|
| Scale | As Shown | Drawing<br>Original | A3 |
|-------|----------|---------------------|----|

Drawing Number **MGS -- Y/35/21 -- rev03**



Detailed Drainage Layout Scale 1:200

NOTE

This drawing had been produced for discharge of planning conditions only. All levels and details to be checked for Building Regulations approval and construction purposes.

Surface Water Drainage Design Notes

As detailed from the British Geological Survey, the Superficial Geological ground conditions here indicates River Terrace Deposits of sand, silt and clay over Bedrock of the Lewes Nodular Chalk Formation usw. The bedrock was not encountered in either the Groundwater Monitoring BoreHole or the Percolation Test Trial Pit.

In mid January 2021 a BoreHole was augered, at the approximate position of the proposed soakaway, to a depth of 1690mm (5.165 AOD) below ground level and groundwater was encountered at 1660mm below ground level, rising to 1330mm below ground level, within approximately 30 minutes. Groundwater was monitored on a weekly basis from mid January 2021 to end February 2021. During the monitoring period, the highest level of groundwater of 1085mm below ground level ie 5.770 AOD was recorded on 31st January 2021, and the second highest level of groundwater of 1196mm below ground level ie 5.659 AOD was recorded on 8th February 2021. This informs the use of infiltration to a typical depth of 850mm below ground level whilst still maintaining a freeboard of over 200mm.

In mid February a BRE365 trial pit of size 1100mm long by 450mm wide and to a depth of 850mm below ground level, was excavated.

The drainage design is based on percolation tests carried out in mid February 2021 to BRE365 principles within this trial pit. The Soil Infiltration Rates obtained are detailed in the table below. Testing produced a range of Infiltration Rates and a minimum soil infiltration rate of 2.367 E-05 metres / second was obtained to which a Factor of Safety of 2 has been applied, where the consequence of failure is "no damage / minor inconvenience".

As a result of investigations it transpires that the existing rear (south) roof area of #37 is combined with the rear roof of #35. It is unclear where this combined flow drains to. Possibly, however, it does drain to a soakaway in the rear garden of #35 but its location has not been established, though it is considered that the proposed new extension will probably compromise it. For this reason the existing rear roofs of #37 and #35 and part of the side roof of #35, will drain into the proposed new soakaway as well as the proposed new single storey flat roof extension. The existing rear Rainwater Down Pipe will be piped across the roof of the proposed rear extension to discharge into the guttering draining the proposed extension flat roof area.

A 400mm deep rectangular geocellular soakaway has been designed, 5.00 metres long x 2.00 metres wide, with a cover of 450mm, which will be suitable to drain the proposed new extension roof area of 27 square metres plus the combined existing roof areas of 47 square metres, totalling a full Roof Area of 74 square metres, without flooding above ground level on a 1 in 100 year rainfall return event plus 40% climate change addition. The soakaway should be sited a minimum of 5 metres from any habitable building to avoid any saturation of the ground and settlement affecting the building structure.

KEY

- Proposed 60mm square PVC rainwater guttering pipe running across the flat roof and discharging into the flat roof guttering.
- Proposed surface water drainage. 100mm diameter PVC pipe. Minimum fall of 1:100
- GWP Groundwater Monitoring Test Point.
- TP Soil Infiltration Testing BRE365 Trial Pit.
- Proposed silt trap inspection chamber Polypipe Ridgistorm Basic or similar approved.
- Proposed Geocellular Soakaway. 5.00 metres long x 2.00 metres wide giving a footprint of 10 square metres of 400mm deep geocells.

- GL # ### Ground level at detailed items
- CL # ### Cover level of surface water chambers
- IL # ### Invert level of surface water drains
- GSL # ### Soffit (top) level of Geocell structure
- GBL # ### Base level of Geocell structure

+ 5.999 All levels are to AOD unless otherwise stated

Winter Soil Infiltration Testing Results

TP#1 BRE365 Trial Pit  
1100mm long x 450mm wide x 850mm deep

February 10th 2021 -- 4.402 E-05 m/s  
February 12th 2021 -- 3.632 E-05 m/s  
February 13th 2021 -- 2.367 E-05 m/s

The Minimum Rate used in the calculations from the three tests within the Trial Pit TP#1 was 2.367 E-05 metres / second.

A Factor of Safety of 2.0 was used in the calculations for the design.

Mate GeoTechnic Services

| Rev. | Description | Drn. | Date     |
|------|-------------|------|----------|
| 02   | Final       | RC   | 04-04-21 |
| 02   | Updated     | RC   | 18-03-21 |
| 01   | Original    | RC   | 07-03-21 |

Project  
Proposed  
Single Storey Rear Extension  
#35 Park Drive  
Yapton  
BN18 0JF

Client Mr & Mrs J. Fallick  
Drawing Title Surface Water Drainage

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Scale As Shown Drawing Original A3

Drawing Number MGS -- Y/35/21 -- rev03