



# HydroGround Civils

## Surface Water Drainage Design

Location: Philpots Manor School, West Hoathly,  
West Sussex RH19 4PR

Client: Town & Country Planning Solutions

Project: Proposed car park development

Revision: A

Reference: RH100301

Date: 1 September 2026

Author: CM  
Chartered Civil Engineer  
MEng CEng MICE

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## 1.0 Introduction and Purpose

1.01 HydroGround Civils Ltd (HGC) has been commissioned to undertake the detailed surface water drainage design for the proposed car park at Philpots Manor School, West Hoathly, East Grinstead, RH19 4PR. The works have been undertaken in support of the discharge of Condition 3 associated with planning permission DM/25/2994.

1.02 Condition 3 states:

*“The development hereby permitted shall not commence unless and until details of the proposed surface water drainage and means of disposal have been submitted to and approved in writing by the Local Planning Authority. The car park shall not be brought into use until all the approved drainage works have been carried out in accordance with the approved details”.*

1.03 The reason for the condition is to ensure that the proposal is satisfactorily drained and accords with Policy DP41 of the Mid Sussex District Plan 2014–2031.

1.04 A Surface Water Drainage Strategy was previously prepared by HGC in support of the planning application. The strategy established the principle of managing surface water runoff from the proposed car park through a permeable Grasscrete pavement system, providing temporary subsurface storage followed by infiltration to the underlying ground. The planning-stage assessment was based upon an assumed infiltration rate pending site-specific infiltration testing.

1.05 Site infiltration testing has subsequently been undertaken, and the proposed drainage system has been developed to detailed design. This Statement therefore focuses on the detailed design and hydraulic verification of the proposed surface water drainage system, rather than repeating the site assessment and drainage strategy previously presented.

1.06 This Statement should be read in conjunction with the following supporting information:

- HGC BRE365 Soakage Test Report;
- HGC Drawing RH100301/5010 – Drainage Detailed Design – Surface Water (**Appendix A**); and
- Causeway Flow+ hydraulic calculations, included within **Appendix B** of this Statement.

1.07 The purpose of this Statement and the accompanying information is to provide the detailed surface water drainage and means of disposal required by Condition 3 and to demonstrate that the proposed car park can be satisfactorily drained by infiltration.

## 2.0 Development of the Drainage Strategy

### 2.1 Planning-Stage Drainage Strategy

- 2.1.1 A Surface Water Drainage Strategy was prepared by HGC in support of the planning application. The strategy proposed that surface water runoff from the car park would be managed at source through a permeable Grasscrete pavement system, with temporary storage provided within the underlying granular construction and subsequent disposal by infiltration to the underlying ground. No positive discharge to a surface water sewer or watercourse was proposed.
- 2.1.2 At planning stage, site-specific infiltration testing had not been undertaken. The preliminary hydraulic assessment therefore adopted an assumed infiltration coefficient of  $1.0 \times 10^{-5}$  m/s (0.036 m/hr) and a 500 mm permeable sub-base, with the strategy recommending that BRE365 soakage testing be undertaken to confirm the infiltration characteristics of the underlying ground prior to detailed design.

### 2.2 Detailed Design Development

- 2.2.1 Site infiltration testing was subsequently undertaken by HGC on 27 and 28 August 2026. The testing confirmed that infiltration occurs at the site, although at a lower rate than assumed within the planning-stage strategy. An infiltration coefficient of  $1.48 \times 10^{-6}$  m/s (0.00533 m/hr) has subsequently been adopted for detailed design. The testing methodology, results, limitations and derivation of the adopted infiltration coefficient are presented separately within the HGC BRE365 Soakage Test Report.
- 2.2.2 Following confirmation of the site infiltration characteristics, the permeable pavement system has been developed to detailed design. The proposed construction incorporates a 400 mm deep granular drainage/storage blanket with a design porosity of 30%, providing temporary subsurface storage prior to infiltration through the underlying formation.
- 2.2.3 The detailed hydraulic assessment has conservatively allowed for infiltration through the base of the drainage/storage system only, with no allowance made for infiltration through its sides. The detailed design therefore does not rely upon side infiltration to achieve the required hydraulic performance.
- 2.2.4 The fundamental means of surface water disposal established at planning stage remains unchanged: runoff from the proposed car park is managed within the permeable pavement construction and subsequently discharged to ground by infiltration. The detailed design has, however, replaced the preliminary assumptions used at planning stage with the results of site-specific infiltration testing and detailed hydraulic modelling.

## 3.0 Detailed Surface Water Drainage Design

### 3.1 Drainage Principle

- 3.1.1 The proposed car park will be drained by means of a permeable Grasscrete pavement system, with rainfall falling onto the car park passing vertically through the pavement construction into an underlying granular drainage/storage blanket.
- 3.1.2 The drainage/storage blanket provides temporary subsurface storage during rainfall events. Stored surface water subsequently infiltrates through the base of the system into the underlying natural formation. The system therefore provides both attenuation/storage and disposal of surface water within the footprint of the proposed car park.
- 3.1.3 The proposed system operates entirely by infiltration and does not incorporate a positive discharge to a surface water sewer or watercourse. No piped surface water drainage network, flow-control device or separate soakaway is required as part of the proposed car park drainage system.
- 3.1.4 The drainage system has been designed over a plan area of approximately 1,460 m<sup>2</sup>. Hydraulic performance of the proposed construction is assessed in Section 4.0.

### 3.2 Permeable Pavement Construction

- 3.2.1 The proposed permeable pavement construction has been developed with reference to the Grasscrete manufacturer's typical construction details and comprises the following principal components, from surface level downwards:
- Grasscrete reinforced cellular concrete pavement, with topsoil and grassed pockets;
  - 20 mm coarse, free-draining sand blinding layer;
  - minimum 150 mm Clause 803 Type 1 granular sub-base;
  - permeable geotextile separator;
  - 400 mm single-sized granular drainage/storage blanket, providing a minimum design porosity of 30%;
  - needle-punched permeable geotextile membrane at formation level; and
  - underlying natural formation.
- 3.2.2 The 400 mm granular drainage/storage blanket forms the principal hydraulic storage component of the system. The granular material is to be clean, durable and open-graded to provide both subsurface drainage and the void storage assumed within the hydraulic assessment.
- 3.2.3 The detailed pavement build-up, material requirements and associated specification notes are shown on HGC Drawing RH100301/5010 – Drainage Detailed Design – Surface Water.

### 3.3 Infiltration Arrangement

- 3.3.1 Surface water stored within the granular drainage/storage blanket will be disposed of by infiltration through the underlying formation.
- 3.3.2 A design infiltration coefficient of  $1.48 \times 10^{-6}$  m/s, equivalent to 0.00533 m/hr has been adopted for the detailed hydraulic assessment. This value is derived from the site infiltration testing undertaken on 27–28 August 2026. The testing methodology, observations, results and limitations are presented within the separate HGC BRE365 Soakage Test Report and are therefore not repeated herein.

- 3.3.3 For hydraulic modelling purposes, infiltration has been applied to the base of the storage system only. The side infiltration coefficient has been set to zero. This provides a conservative representation of the proposed system by ensuring that its hydraulic performance does not rely upon infiltration through the sides of the drainage/storage blanket.
- 3.3.4 The formation beneath the pavement is to remain permeable. The detailed design therefore requires the formation to be protected against excessive compaction, smearing and contamination which could materially reduce its infiltration performance.

### **3.4 Water Quality and Groundwater Protection**

- 3.4.1 Groundwater sensitivity and the site's relationship with groundwater Source Protection Zones were considered within the planning-stage Surface Water Drainage Strategy and are not repeated in detail within this Statement.
- 3.4.2 The detailed design retains the principle of shallow, distributed infiltration across the permeable car park footprint, rather than concentrating runoff through a deep soakaway or other point infiltration feature.
- 3.4.3 Runoff will pass through the permeable pavement construction before reaching the underlying formation, allowing treatment to occur within the pavement system.
- 3.4.4 The use of shallow, distributed infiltration through the permeable pavement construction provides treatment close to source and avoids the direct introduction of untreated car park runoff into the ground through a concentrated point infiltration feature.
- 3.4.5 The permeable pavement system is to be maintained to preserve its long-term hydraulic and water-quality performance.

## 4.0 Hydraulic Assessment

### 4.1 Hydraulic Modelling

- 4.1.1 The proposed permeable pavement drainage system has been hydraulically assessed using Causeway Flow+ to confirm that sufficient subsurface storage is provided within the proposed drainage/storage blanket and that stored runoff can subsequently infiltrate into the underlying formation.
- 4.1.2 The model represents the approximately 1,460 m<sup>2</sup> car park as a permeable pavement storage structure. A 400 mm deep granular drainage/storage blanket with a design porosity of 30% has been modelled beneath the car park.
- 4.1.3 The infiltration coefficient adopted within the detailed design is  $1.48 \times 10^{-6}$  m/s (0.00533 m/hr), derived from the site infiltration testing described within the separate HGC BRE365 Soakage Test Report.
- 4.1.4 For the purposes of the hydraulic assessment, infiltration has conservatively been applied to the base of the storage structure only, with the side infiltration coefficient set to zero. A safety factor of 2.0 has also been applied within the model.
- 4.1.5 The principal hydraulic design parameters are summarised in Table 1.

Table 1: Hydraulic Design Parameters

| Parameter                      | Design Value                      |
|--------------------------------|-----------------------------------|
| Car park / infiltration area   | 1,460 m <sup>2</sup>              |
| Drainage/storage blanket depth | 0.400 m                           |
| Design porosity                | 30%                               |
| Base infiltration coefficient  | 0.00533 m/hr                      |
| Side infiltration coefficient  | 0.00000 m/hr                      |
| Safety factor                  | 2.0                               |
| Design event                   | 1 in 100 year +45% climate change |
| Model software                 | Causeway Flow+                    |

- 4.1.6 The full Causeway Flow+ model output is included within **Appendix B**.

### 4.2 Hydraulic Results

- 4.2.1 The critical event for the 1 in 100 year plus 45% climate change assessment was identified as the 600-minute winter storm.
- 4.2.2 The principal results from the critical storm simulation are summarised in Table 2.

Table 2: Critical Storm Results

| Parameter                     | Model Result                           |
|-------------------------------|----------------------------------------|
| Critical storm duration       | 600 minutes – winter                   |
| Peak time                     | 585 minutes                            |
| Maximum storage depth         | 0.334 m                                |
| Available storage depth       | 0.400 m                                |
| Remaining storage depth       | 0.066 m                                |
| Maximum stored volume         | 95.71 m <sup>3</sup>                   |
| Flood volume                  | 0.000 m <sup>3</sup>                   |
| Maximum infiltration outflow  | 1.1 l/s                                |
| Infiltration discharge volume | 43.4 m <sup>3</sup>                    |
| T50                           | 878 minutes (approximately 14.6 hours) |

4.2.3 The model predicts a maximum storage depth of approximately 0.334 m within the 400 mm drainage/storage blanket during the critical design event. Approximately 66 mm of the available storage depth therefore remains unused at peak storage, and no flooding is predicted from the system.

4.2.4 The modelling therefore demonstrates that the proposed 400 mm drainage/storage blanket provides sufficient hydraulic storage to accommodate the 1 in 100 year rainfall event including a 45% allowance for climate change, using the site-derived infiltration coefficient and without relying upon side infiltration.

### 4.3 Drain-Down Performance

4.3.1 The Causeway Flow+ model predicts a time to half-empty (T50) of 878 minutes, equivalent to approximately 14.6 hours, following the critical design event.

4.3.2 The proposed drainage/storage system therefore falls to half of its maximum stored volume within 24 hours, demonstrating that sufficient drain-down occurs between significant rainfall events and that storage capacity can be restored through infiltration into the underlying formation.

4.3.3 The predicted drain-down performance is achieved using the conservative model assumptions described above, including a zero side-infiltration coefficient and the application of a safety factor of 2.0.

### 4.4 Hydraulic Design Summary

4.4.1 The detailed hydraulic assessment demonstrates that the proposed infiltration system:

- accommodates the 1 in 100 year rainfall event including 45% climate change without flooding;
- provides approximately 66 mm of unused storage depth at the peak of the critical storm;
- achieves a T50 of approximately 14.6 hours;
- operates using infiltration through the formation beneath the car park only; and
- does not require a positive discharge to a surface water sewer or watercourse.

4.4.2 On this basis, the proposed 400 mm granular drainage/storage blanket provides sufficient storage and infiltration capacity for the proposed car park.

## 5.0 Exceedance and Residual Flood Risk

### 5.1 Design Event Performance

- 5.1.1 As demonstrated by the hydraulic assessment presented in Section 4.0, the proposed permeable pavement system has sufficient capacity to accommodate the 1 in 100 year rainfall event including a 45% allowance for climate change without flooding.
- 5.1.2 During the critical 600-minute winter storm, the maximum modelled storage depth is approximately 0.334 m, compared with the available drainage/storage blanket depth of 0.400 m. The detailed design therefore retains approximately 66 mm of unused storage depth at the peak of the critical event.
- 5.1.3 No surface flooding is predicted during the design event.

### 5.2 Exceedance Events

- 5.2.1 Surface water exceedance may occur during rainfall events greater than the design standard, or in the event of a temporary reduction in the infiltration performance of the permeable pavement system.
- 5.2.2 As the proposed drainage system comprises distributed storage and infiltration beneath the car park, exceedance would occur only once the available subsurface storage capacity had been exceeded. Water would then emerge at pavement level and be temporarily accommodated as shallow surface water within and around the car park.
- 5.2.3 The proposed car park represents a relatively low-vulnerability use and does not contain buildings or other vulnerable development within the drainage area. The surrounding site is predominantly open and grassed, providing opportunity for exceedance runoff to disperse over adjacent permeable areas.
- 5.2.4 The detailed design does not incorporate a piped connection to a sewer or watercourse and therefore does not transfer exceedance flows to the downstream drainage network.
- 5.2.5 In an exceedance event, any surface water emerging from the permeable pavement should be allowed to disperse across the surrounding open areas without increasing flood risk to buildings, neighbouring land or property.

### 5.3 Residual Flood Risk

- 5.3.1 The residual surface water flood risk associated with the proposed drainage system is considered low.
- 5.3.2 This conclusion is based upon:
- no flooding being predicted during the 1 in 100 year plus 45% climate change design event;
  - residual storage capacity remaining within the system during the critical storm;
  - the proposed use being a car park rather than vulnerable built development;
  - the availability of surrounding open and grassed land for safe exceedance; and
  - the absence of a positive surface water connection capable of transferring exceedance flows downstream.
- 5.3.3 The proposed drainage arrangement is therefore considered to provide an appropriate approach to the management of both design-event runoff and residual exceedance.

## 6.0 Maintenance

### 6.1 Maintenance Requirements

- 6.1.1 The long-term hydraulic and water-quality performance of the proposed drainage system is dependent upon maintaining the permeability of the Grasscrete surface and the underlying pavement construction.
- 6.1.2 The permeable pavement should therefore be inspected and maintained throughout the lifetime of the development. Particular attention should be given to preventing the accumulation of sediment, debris and vegetation that could restrict infiltration through the Grasscrete surface.
- 6.1.3 Maintenance should be undertaken in accordance with the requirements shown on HGC Drawing RH100301/5010 – Drainage Detailed Design – Surface Water, together with the recommendations of the Grasscrete manufacturer.

### 6.2 Maintenance Schedule

- 6.2.1 The principal maintenance activities are summarised in Table 3.

Table 3: Maintenance schedule

| Maintenance Activity                                                                                         | Recommended Frequency                                       |
|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| Inspect the Grasscrete surface for sediment accumulation, blockage, damage and areas of reduced permeability | At least annually and following significant rainfall events |
| Remove litter, leaves, sediment and other debris from the pavement surface                                   | As required                                                 |
| Maintain grassed areas, including mowing and appropriate vegetation management                               | Regularly during the growing season, as required            |
| Inspect for localised rutting, settlement, cracking or damage to the Grasscrete units                        | Annually                                                    |
| Repair damaged or locally settled areas to maintain the integrity and permeability of the pavement           | As required following inspection                            |
| Investigate areas exhibiting persistent ponding or reduced infiltration                                      | As required                                                 |
| Undertake remedial cleaning or rehabilitation where surface permeability has materially reduced              | As required                                                 |

- 6.2.2 Maintenance should be undertaken by the site owner/operator or their appointed maintenance contractor for the lifetime of the development.
- 6.2.3 Where inspection identifies persistent ponding or a material reduction in infiltration performance, the cause should be investigated and appropriate remedial measures undertaken. This may include removal of accumulated sediment, restoration of the surface or localised reconstruction of the permeable pavement where necessary.
- 6.2.4 Records of inspections, maintenance activities and any remedial works should be retained by the site operator.

## 7.0 Conclusion

- 7.01 HydroGround Civils Ltd has undertaken the detailed surface water drainage design for the proposed car park at Philpots Manor School in support of the discharge of Condition 3 of planning permission DM/25/2994.
- 7.02 The detailed design develops the infiltration-based drainage strategy established at planning stage and incorporates the results of site-specific infiltration testing undertaken on 27 and 28 August 2026.
- 7.03 Surface water runoff from the approximately 1,460 m<sup>2</sup> car park will be managed at source through the proposed permeable Grasscrete pavement construction. Runoff will pass through the pavement into a 400 mm deep granular drainage/storage blanket, providing temporary subsurface storage before infiltration through the underlying formation. No positive discharge to a surface water sewer or watercourse is proposed.
- 7.04 A design infiltration coefficient of  $1.48 \times 10^{-6}$  m/s (0.00533 m/hr) has been adopted based upon the site infiltration testing. The detailed hydraulic assessment has conservatively allowed for infiltration through the base of the system only and incorporates a safety factor of 2.0.
- 7.05 Causeway Flow+ modelling demonstrates that the proposed system can accommodate the 1 in 100 year rainfall event including a 45% allowance for climate change without flooding. The critical 600-minute winter storm produces a maximum storage depth of approximately 0.334 m within the available 0.400 m drainage/storage blanket, leaving approximately 66 mm of unused storage depth. The modelled T50 is approximately 14.6 hours, demonstrating satisfactory recovery of storage capacity following the critical event.
- 7.06 The proposed drainage system also provides a shallow and distributed means of infiltration beneath the car park, with appropriate maintenance required to preserve the long-term permeability and performance of the system.
- 7.07 On the basis of the site infiltration testing, detailed drainage design and hydraulic assessment presented within this Statement and the accompanying supporting information, the proposed surface water drainage arrangement is considered to provide a satisfactory means of drainage and disposal of surface water from the proposed car park.
- 7.08 The information submitted is therefore considered sufficient to address the surface water drainage requirements of Condition 3 of planning permission DM/25/2994.



## Appendix A

### Drainage Detailed Design – Surface Water



Formation shall not be trafficked or compacted following excavation. Any smeared or compacted formation shall be scarified immediately prior to installation of the geotextile and drainage blanket.

### MAINTENANCE

Regular vehicular use will trim the grass level down flush to the upper level of the concrete. In a typical car park application, the access routes may show a greater level of grass wear. It is advisable therefore to apply a routine maintenance programme, particularly to the access locations.

A simple maintenance programme can be described as –

1. Routinely cut areas subjected to infrequent use to even out growth levels
2. Apply liquid based fertilisers as follows – Spring : nitrogen based formula  
Autumn : phosphate based formula

Powder or granule based fertilisers should be avoided due to potential for wind drift and build up on the concrete ribs which can result in scorching of the grass.

3. Regular trafficking may result in the soil levels falling slightly in the pockets. It is advisable to top up levels which are a potential trip hazard. Over filling should be avoided however as should compaction of the pocket fill which can injure grass growth.
4. After the construction of the pavement layer and if the surface is not to be used immediately, there is benefit to be gained from placing a fine layer of topsoil over the surface of the concrete. This will enable soil levels to be naturally replenished after settlement as well as providing a barrier against solar gain over the newly cast concrete.

### PROPOSED CAR PARK DRAINAGE – DETAILED DESIGN (SuDS)

- Surface water managed by infiltration through the permeable pavement construction, with temporary storage provided within the 400 mm granular drainage/storage blanket and infiltration through the underlying formation.
- No discharge to surface water sewer or watercourse.
- Infiltration provided by formation (base) only.
- Permeable surface finish with granular drainage/storage blanket.
- SuDS designed for 1 in 100 year storm event including +45% climate change.
- Refer to Causeway Flow+ model output for full results.

#### DESIGN PARAMETERS (Flow+ Model)

|                                               |                                           |
|-----------------------------------------------|-------------------------------------------|
| Infiltration rate used (formation, base only) | = 1.48 x 10-6 m/s (0.00533 m/hr)          |
| Porosity (drainage blanket)                   | = 30%                                     |
| Storage structure                             | = Granular drainage/storage blanket.      |
| Drainage/storage blanket thickness            | = 400mm                                   |
| Plan area (car park footprint)                | = 1460 m2                                 |
| Base infiltration coefficient                 | = 0.00533 m/hr                            |
| Side infiltration coefficient                 | = 0.00000 m/hr                            |
| Safety factor applied                         | = 2.0                                     |
| Critical storm event                          | = 1 in 100 year + 45% CC (600 min winter) |
| Maximum storage depth                         | = 0.334 m                                 |
| Half empty time, T50                          | = 878 minutes (14.6 hours)                |

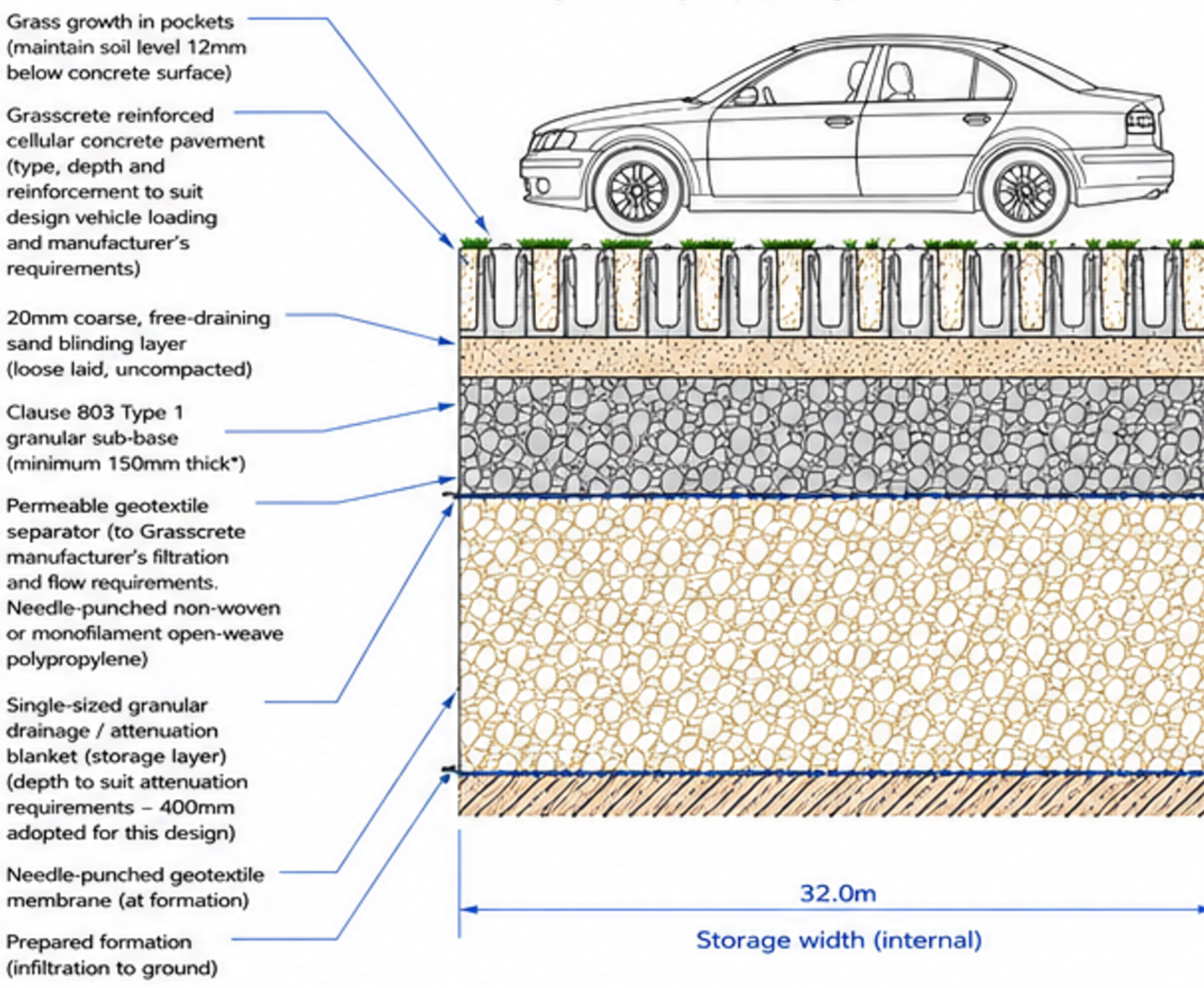
Design infiltration rate derived from site infiltration testing undertaken 27–28 August 2026. Refer to HGC BRE365 Soakage Test Record



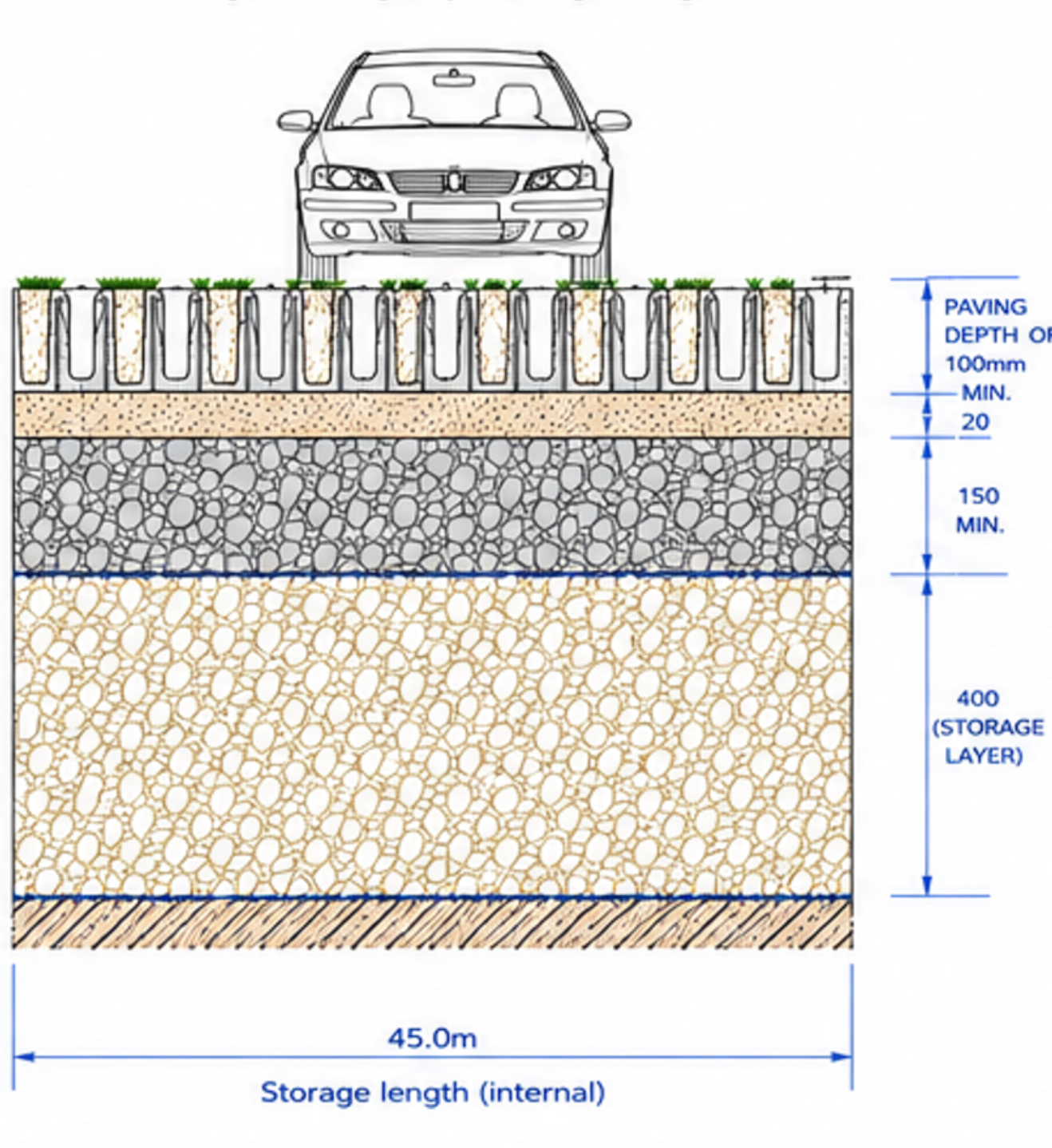
### MATERIAL SPECIFICATION

- Grasscrete reinforced cellular concrete pavement: Type, depth and reinforcement to suit design vehicle loading and Grasscrete manufacturer's requirements.
- Sand blinding: 20mm thick, coarse, free-draining sand. Loose laid and uncompacted.
- Sub-base (Type 1): Clause 803 Type 1 granular material. Minimum 150mm thick.
- Geotextile separator (between Type 1 and drainage blanket): Permeable geotextile to Grasscrete manufacturer's filtration and flow requirements. Needle-punched non-woven or monofilament open-weave polypropylene.
- Drainage / storage blanket: Single-sized granular material for storage and drainage. 400mm thickness adopted for this design.
- Geotextile membrane (at formation): Needle-punched non-woven polypropylene.
- Topsoil in pockets: Screened or rotovated topsoil. Maintain maximum 12mm below concrete surface.
- Grass seed mix: Grasscrete Mix No. 1 or approved equivalent suitable for vehicular parking (35g/m²).

#### SECTION A-A (Typical) Through Parking Bay (Storage Width)



#### SECTION B-B (Typical) Through Parking Bay (Storage Length)



### GENERAL NOTES

1. This drawing is to be read in conjunction with all relevant architects, engineers drawings & specifications.
2. The contractor is to be responsible for all dimensions & for the correct setting out of the works on site.
3. Do not scale from this drawing.

|     |    |             |                                                 |
|-----|----|-------------|-------------------------------------------------|
| P02 | CM | 29 Aug 2026 | For Planning Condition 3 Discharge              |
| P01 | CM | 28 Oct 2025 | Preliminary below ground surface water drainage |
| REV | BY | DATE        | Revision Notes                                  |

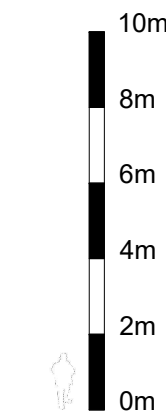
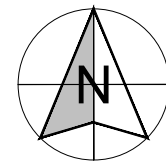
PROJECT NAME  
Philpots Manor School  
West Hoathly  
West Sussex  
RH19 4PR

PROJECT DESCRIPTION  
Drainage Strategy  
Surface Water

|          |              |    |          |             |
|----------|--------------|----|----------|-------------|
| Revision | Prepared     | CM | Approved | CM          |
| Original | Approved     | CM | Date     | 28 Oct 2025 |
| STATUS   | For Planning |    |          |             |

Scale: 1:200 [A1]  
Dwg No: RH100301/5010

REVISION  
P02



SCALE 1:200



## Appendix B

### Causeway Flow+ hydraulic calculations





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East Sussex

File: RH100301 - Grasscrete Ca  
Network: Storm Network  
CM  
29/08/2026

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Philpots Manor School  
Grasscrete Car Park  
1 in 100 year + 45%CC

### Simulation Settings

|                      |                   |                            |          |
|----------------------|-------------------|----------------------------|----------|
| Rainfall Methodology | FSR               | Analysis Speed             | Detailed |
| Rainfall Events      | Singular          | Skip Steady State          | x        |
| FSR Region           | England and Wales | Drain Down Time (mins)     | 240      |
| M5-60 (mm)           | 20.000            | Additional Storage (m³/ha) | 0.0      |
| Ratio-R              | 0.400             | Starting Level (m)         |          |
| Summer CV            | 0.750             | Check Discharge Rate(s)    | x        |
| Winter CV            | 0.840             | Check Discharge Volume     | x        |

### Storm Durations

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

| Return Period<br>(years) | Climate Change<br>(CC %) | Additional Area<br>(A %) | Additional Flow<br>(Q %) |
|--------------------------|--------------------------|--------------------------|--------------------------|
| 1                        | 0                        | 0                        | 0                        |
| 30                       | 0                        | 0                        | 0                        |
| 30                       | 40                       | 0                        | 0                        |
| 100                      | 0                        | 0                        | 0                        |
| 100                      | 45                       | 0                        | 0                        |

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Hailsham  
East SussexFile: RH100301 - Grasscrete Ca  
Network: Storm Network  
CM  
29/08/2026Page 2  
Philpots Manor School  
Grasscrete Car Park  
1 in 100 year + 45%CC**Design Settings**

|                                      |                   |
|--------------------------------------|-------------------|
| Rainfall Methodology                 | FSR               |
| Return Period (years)                | 1                 |
| Additional Flow (%)                  | 0                 |
| FSR Region                           | England and Wales |
| M5-60 (mm)                           | 20.000            |
| Ratio-R                              | 0.400             |
| CV                                   | 0.750             |
| Time of Entry (mins)                 | 5.00              |
| Maximum Time of Concentration (mins) | 30.00             |
| Maximum Rainfall (mm/hr)             | 50.0              |
| Minimum Velocity (m/s)               | 1.00              |
| Connection Type                      | Level Soffits     |
| Minimum Backdrop Height (m)          | 0.200             |
| Preferred Cover Depth (m)            | 1.200             |
| Include Intermediate Ground          | ✓                 |
| Enforce best practice design rules   | ✓                 |

**Nodes**

| Name    | Area<br>(ha) | Cover<br>Level<br>(m) | Easting<br>(m) | Northing<br>(m) | Depth<br>(m) | Invert<br>Level<br>(m) |
|---------|--------------|-----------------------|----------------|-----------------|--------------|------------------------|
| Carpark | 0.146        | 150.000               | 535396.000     | 132103.000      | 0.560        | 149.440                |

**Node Carpark Carpark Storage Structure**

|                             |         |               |        |
|-----------------------------|---------|---------------|--------|
| Base Inf Coefficient (m/hr) | 0.00533 | Width (m)     | 32.000 |
| Side Inf Coefficient (m/hr) | 0.00000 | Length (m)    | 45.000 |
| Safety Factor               | 2.0     | Slope (1:X)   | 200.0  |
| Porosity                    | 0.30    | Depth (m)     | 0.400  |
| Invert Level (m)            | 149.440 | Inf Depth (m) |        |
| Time to half empty (mins)   | 878     |               |        |

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East SussexFile: RH100301 - Grasscrete Ca  
Network: Storm Network  
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Philpots Manor School  
Grasscrete Car Park  
1 in 100 year + 45%CC**Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%**

| <b>Node Event</b> | <b>US<br/>Node</b> | <b>Peak<br/>(mins)</b> | <b>Level<br/>(m)</b> | <b>Depth<br/>(m)</b> | <b>Inflow<br/>(l/s)</b> | <b>Node<br/>Vol (m³)</b> | <b>Flood<br/>(m³)</b> | <b>Status</b> |
|-------------------|--------------------|------------------------|----------------------|----------------------|-------------------------|--------------------------|-----------------------|---------------|
| 360 minute winter | Carpark            | 280                    | 149.578              | 0.138                | 3.1                     | 18.3915                  | 0.0000                | OK            |

| <b>Link Event<br/>(Upstream Depth)</b> | <b>US<br/>Node</b> | <b>Link</b>  | <b>Outflow<br/>(l/s)</b> | <b>Discharge<br/>Vol (m³)</b> |
|----------------------------------------|--------------------|--------------|--------------------------|-------------------------------|
| 360 minute winter                      | Carpark            | Infiltration | 0.7                      | 17.3                          |

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1 in 100 year + 45%CC**Results for 30 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 |
|-------------------|------------|----------------|--------------|--------------|-----------------|------------------|---------------|--------|
| 360 minute winter | Carpark    | 344            | 149.657      | 0.217        | 6.9             | 45.0185          | 0.0000        | OK     |

| Link Event<br>(Upstream Depth) | US<br>Node | Link         | Outflow<br>(l/s) | Discharge<br>Vol (m³) |
|--------------------------------|------------|--------------|------------------|-----------------------|
| 360 minute winter              | Carpark    | Infiltration | 1.0              | 27.8                  |



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**Results for 30 year +40% 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 |
|-------------------|------------|----------------|--------------|--------------|-----------------|------------------|---------------|--------|
| 480 minute winter | Carpark    | 456            | 149.708      | 0.268        | 7.7             | 67.2127          | 0.0000        | OK     |

| Link Event<br>(Upstream Depth) | US<br>Node | Link         | Outflow<br>(l/s) | Discharge<br>Vol (m³) |
|--------------------------------|------------|--------------|------------------|-----------------------|
| 480 minute winter              | Carpark    | Infiltration | 1.1              | 36.7                  |



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**Results for 100 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 |
|-------------------|------------|----------------|--------------|--------------|-----------------|------------------|---------------|--------|
| 360 minute winter | Carpark    | 352            | 149.694      | 0.254        | 9.0             | 61.1490          | 0.0000        | OK     |

| Link Event<br>(Upstream Depth) | US<br>Node | Link         | Outflow<br>(l/s) | Discharge<br>Vol (m³) |
|--------------------------------|------------|--------------|------------------|-----------------------|
| 360 minute winter              | Carpark    | Infiltration | 1.1              | 30.9                  |



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**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 |
|-------------------|------------|----------------|--------------|--------------|-----------------|------------------|---------------|--------|
| 600 minute winter | Carpark    | 585            | 149.774      | 0.334        | 8.6             | 95.7147          | 0.0000        | OK     |

| Link Event<br>(Upstream Depth) | US<br>Node | Link         | Outflow<br>(l/s) | Discharge<br>Vol (m³) |
|--------------------------------|------------|--------------|------------------|-----------------------|
| 600 minute winter              | Carpark    | Infiltration | 1.1              | 43.4                  |