

1852GE–TN01 – Land at Manor Farm, East Grafton

Response to LLFA/SuDS team comments

## 1 Introduction

This drainage note has been prepared for the proposed dwelling on land adjacent to Manor Farm, East Grafton, SN8 3DB. (Application Ref: PL/2026/00800).

A flood risk assessment (FRA) prepared by AAH Consultants was provided as part of the application, which summarises the flood risk to the site.

This response is provided in addition to the FRA to demonstrate how the appropriate means of sustainable surface water drainage will be achieved for the development site, to discharge the following comments provided by the LLFA.

*1. No development shall take place until a surface water drainage strategy, complying with Wiltshire Council requirements, NPPF, PPG and the National Standards for SuDS has been submitted to and approved in writing by the Local Planning Authority.*

*In order to discharge the above drainage condition the following additional information must be provided:*

- a) A drainage plan detailing the proposed drainage strategy, including provisions for any access /parking areas.*
- b) The applicant needs to confirm the extent of additional impermeable areas created by the proposed parking spaces and new access and clarify whether these surfaces will be permeable. If they are impermeable, a suitable drainage strategy must be provided to ensure surface water is managed appropriately and does not increase flood risk.*
- c) A plan showing overland exceedance routes that minimise the risk of people and property.*
- d) The applicant shall submit clear arrangements for the ownership and ongoing maintenance of the proposed drainage system (including SuDS features) over the lifetime of the development.*

*2. No development shall take place until ground investigations, including soakaway testing in accordance with BRE365, have been carried out on site, and evidence has been provided to demonstrate that the results of these investigations have been considered in the drainage design which has been submitted to and approved by the local planning authority.*

*In order to discharge the above drainage condition the following additional information must be provided:*

- e) Evidence that soakage tests have been undertaken in accordance with BRE 365 to demonstrate that infiltration is feasible by the provision of calculations that demonstrate that the soakaway has been designed for:*
  - a. 1 in 10yr + cc flows (for individual properties)*
  - b. Half drain time <24hrs*
  - c. Appropriate factor of safety in line with CIRIA C753 (Table 25.2) guidance has been included.*

- f) Evidence that the highest groundwater level (taking into account seasonal variations) has been determined and this is at least 1m below the proposed bottom of the soakaway.
- g) Evidence that soakaways have been sited the appropriate distance from any road in line with CIRIA C574 and Wiltshire Guidance.

## 2 Conditions Response

### 2.1 Surface Water Drainage Strategy

*"No development shall take place until a surface water drainage strategy, complying with Wiltshire Council requirements, NPPF, PPG and the National Standards for SuDS has been submitted to and approved in writing by the Local Planning Authority."*

- a) Refer to the drawing reference 1852GE-D01 within appendix A of this note. Surface water runoff from the proposed dwelling will drain via cellular soakaways within the garden of the property.  
Runoff from the proposed garage will drain to the permeable resin bound gravel driveway, with a sub-base designed to attenuate and soak away all storm events up to and including the 100yr+45% event.
- b) Overland flow arrows, following the existing topography, demonstrate the surface water flow routes in the event of design exceedance or failure. Exceedance flows will travel northeast over soft landscaping toward the property boundary with the A338, where it would be intercepted by the highway drainage network.
- c) The onsite drainage components will remain private and be the maintenance responsibility of the property owners. Regular inspection and maintenance are important for the effective operation of the SuDS systems. The regular maintenance of SuDS should be carried out in line with C753 The SUDS Manual (CIRIA, November 2015) or as per manufacturer's specification. Suggested regimes are as follows:

#### Pipework and Catchpits

It is not envisaged that silt build up within the pipework systems will require rigorous maintenance. Notwithstanding this, a suitable maintenance regime for the systems will comprise of routine inspection (every six months) and silt removal as necessary.

#### Cellular Soakaway

It is not envisaged that silt build up within the cellular crate systems will require a rigorous maintenance regime so long as silt is removed from upstream catch pits and inspection chambers on a regular basis. Camera access can be gained via the two upstream inspection chambers and inlet pipework

2 of 6

to the soakaway. Silt removal can be achieved by jetting the inspection tunnels, where a standard jet head with rear facing nozzles should be used. The head should be fed to the far end of the crate tunnel via the nearest inspection chamber, activated and retracted. As the nozzle is removed, debris will be swept back into the inspection chamber where it can then be removed with the use of a standard gully sucker.

### Permeable Surfacing

Permeable surfaces need to be regularly cleaned of silt and other sediments to preserve the infiltration capability of the surface. Suggested brushing regime would be at the end of winter to collect winter debris, mid-summer to collect dust, vegetation and grass-type deposits and after autumn leaf fall.

## 2.2 Investigation and Calculations

*“No development shall take place until ground investigations, including soakaway testing in accordance with BRE365, have been carried out on site, and evidence has been provided to demonstrate that the results of these investigations have been considered in the drainage design which has been submitted to and approved by the local planning authority.”*

Results from infiltration testing to BRE365 standard are included in appendix B. The lowest recorded value from the six tests across two trial pit locations has been used for all infiltration systems. Refer to the Infodrainage calculations within appendix C, demonstrating all storm events up to and including the 100year event +45% increase for climate change are contained within the SuDS features. Half drain times for all events are under 24 hours.

A FOS of 3 has been used, in accordance with CIRIA C753 guidance.

| TABLE 25.2 Suggested factors of safety, F, for use in hydraulic design of infiltration systems (designed using Bettess (1996). Note: not relevant for BRE method) |                            |                                                                                   |                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Size of area to be drained                                                                                                                                        | Consequences of failure    |                                                                                   |                                                                                  |
|                                                                                                                                                                   | No damage or inconvenience | Minor damage to external areas or inconvenience (eg surface water on car parking) | Damage to buildings or structures, or major inconvenience (eg flooding of roads) |
| < 100 m <sup>2</sup>                                                                                                                                              | 1.5                        | 2                                                                                 | 10                                                                               |
| 100–1000 m <sup>2</sup>                                                                                                                                           | 1.5                        | 3                                                                                 | 10                                                                               |
| > 1000 m <sup>2</sup>                                                                                                                                             | 1.5                        | 5                                                                                 | 10                                                                               |

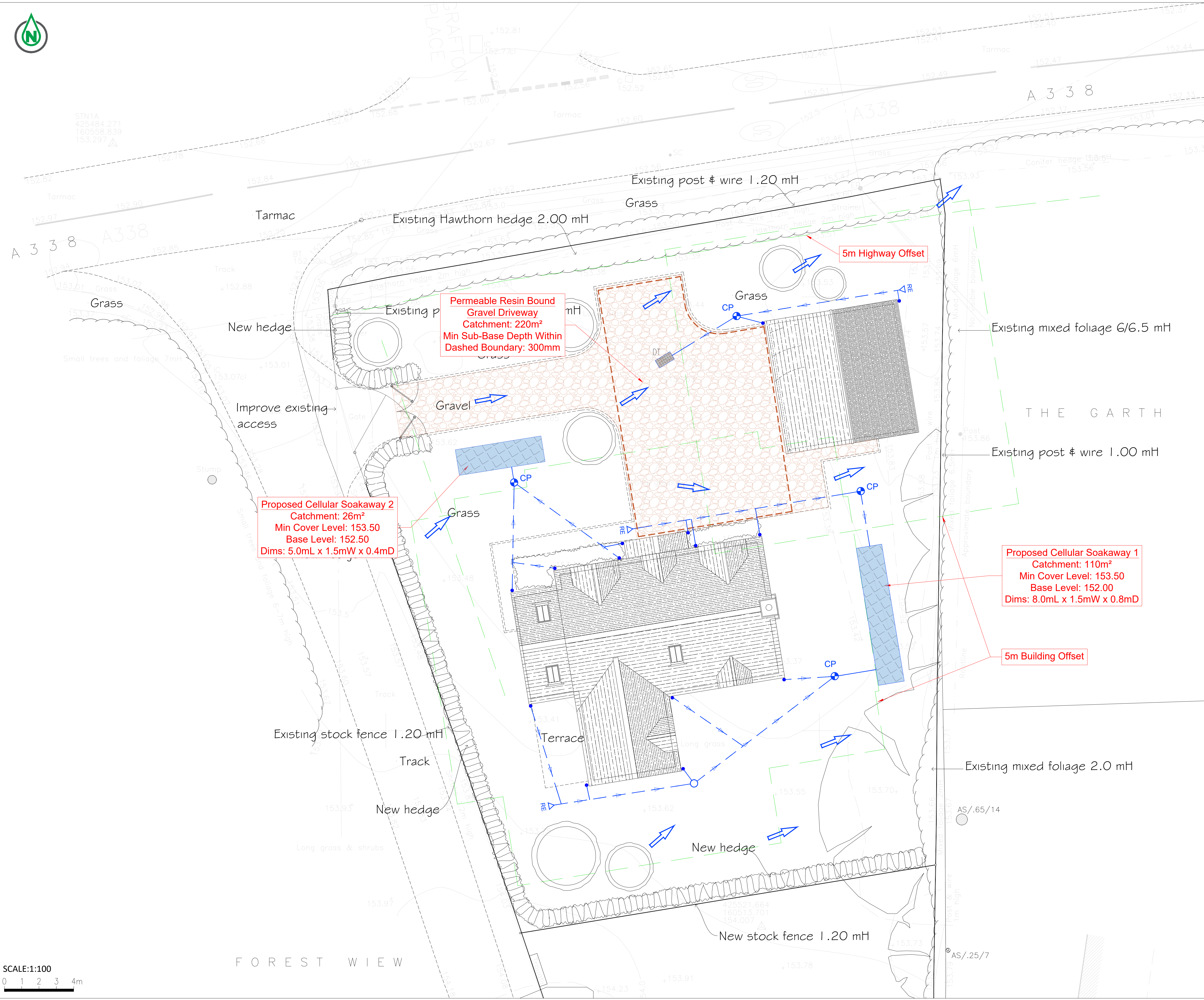
Refer to the drainage plan drawing ref 1852GE-D01 within appendix A, indicating the proposed soakaway offset from the highway and dwelling.

# APPENDIX A

## Drawings By Giraffe Engineering

Drawing ref. 1852-D01

Surface Water  
Drainage Strategy



1. Dimensions on this drawing shall not be scaled.
2. All dimensions to be checked on site.
3. All differences between this documentation and conditions on site must be immediately reported to engineer.
4. All temporary works are to be designed and carried out by appointed contractor.

Drawings to be read in conjunction with design statement and specifications.

Health and safety risks associated with the design proposals are highlighted using this symbol, and documented in the Designer's Risk Register.

- Assumed RWP Positions
  - Proposed Private Surface Water Drain, Inspection Chamber & Invert Level
  - Proposed Rodding Eye
  - Proposed Surface Water Catchpit Chamber
  - Proposed Permeable Paving Distribution Tank
  - Permeable Surfacing
  - Flood Flow Route  
(Over 1:100yr+45% storm event)
  - 5m offset line from buildings and highway

SCALE:1:100



0 1 2 3 4m

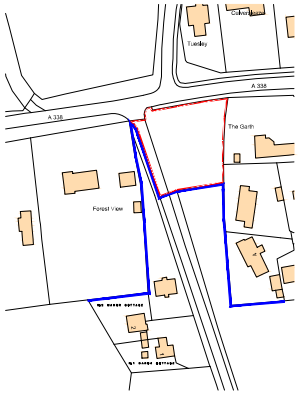
F O R E S T     W I E W

DRAFT - FOR COMMENT

|                                                                                       |              |                                                                                                                                 |             |          |
|---------------------------------------------------------------------------------------|--------------|---------------------------------------------------------------------------------------------------------------------------------|-------------|----------|
| / Draft issue                                                                         |              | 05.05.26                                                                                                                        |             | AD       |
| Rev.                                                                                  | Description  | Date                                                                                                                            | Author      |          |
|  |              | WWW.GIRAFFEENGINEERING.COM<br>INFO@GIRAFFEENGINEERING.COM<br>01249 704524<br><br>5 UNION ROAD, CHIPPENHAM<br>WILTSHIRE SN15 1JW |             |          |
| PROJECT NAME                                                                          |              | PROJECT No.                                                                                                                     |             |          |
| Land at East Grafton                                                                  |              | 1852GE                                                                                                                          |             |          |
| DRAWING NAME                                                                          |              |                                                                                                                                 |             |          |
| SW Drainage Strategy                                                                  |              |                                                                                                                                 |             |          |
| DRAWN BY                                                                              | CHECKED BY   | APPROVED BY                                                                                                                     | DRAWING No. | REVISION |
| AD                                                                                    | CP           | RP                                                                                                                              |             |          |
| SCALE                                                                                 | DATE CREATED |                                                                                                                                 | D01         | -        |
| 1:100@A1                                                                              | 05.05.26     |                                                                                                                                 |             |          |

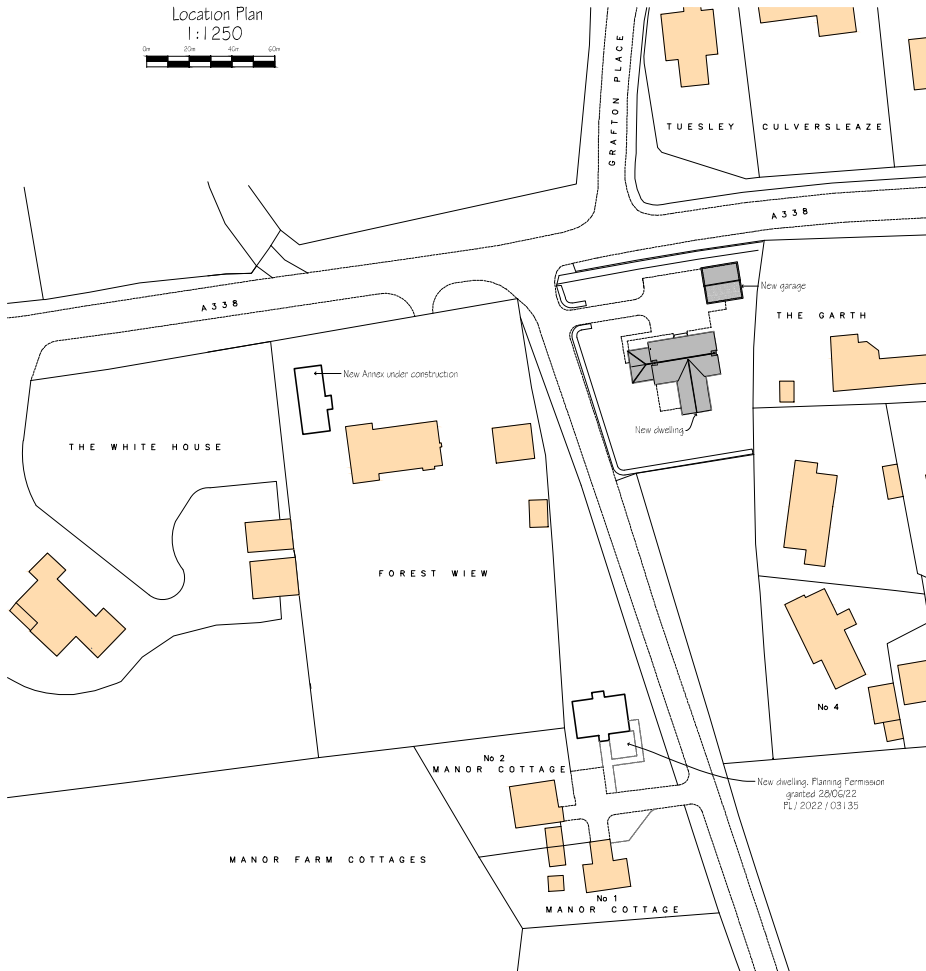
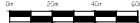
# APPENDIX B

## BRE365 Infiltration Test Results

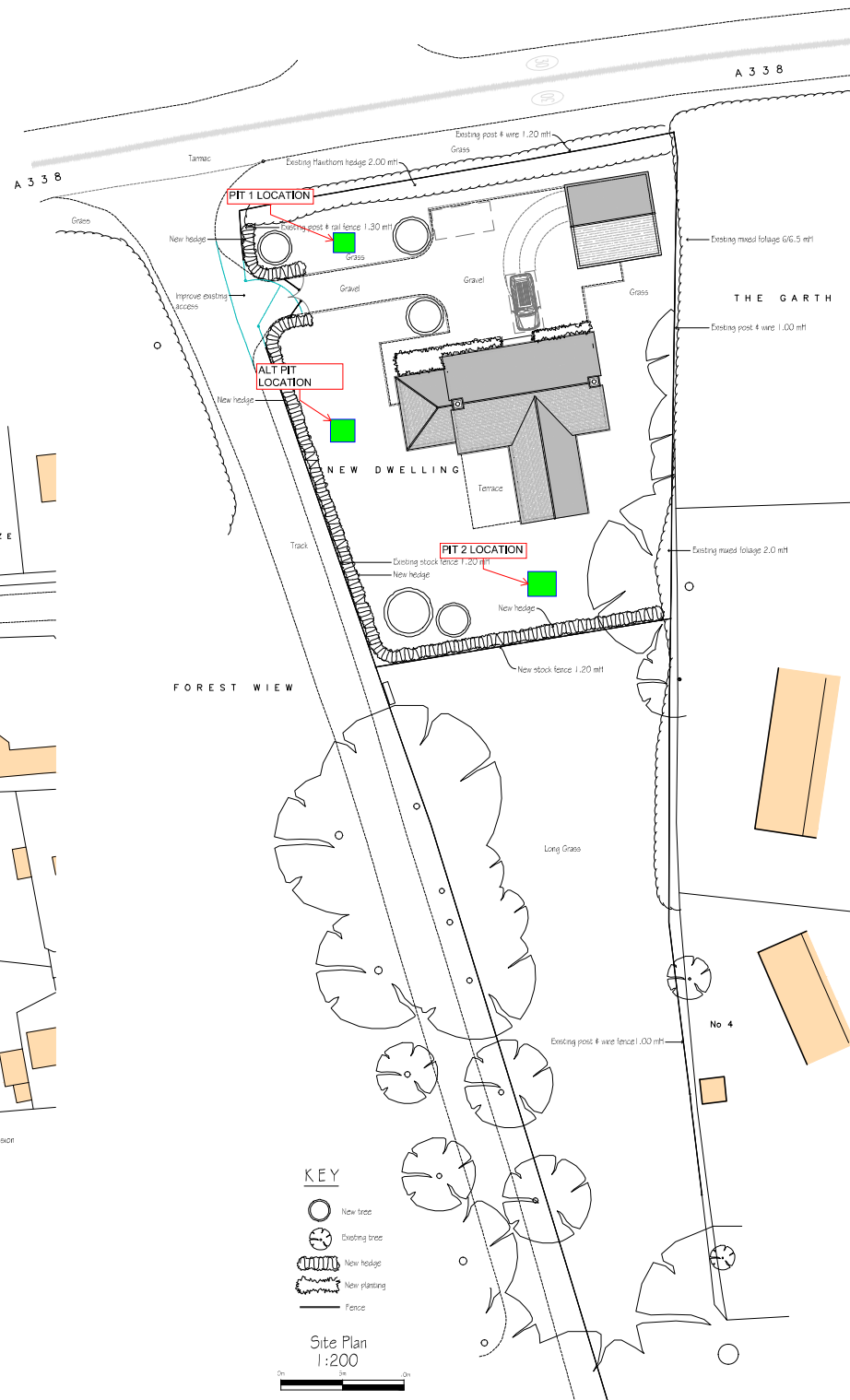


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Location Plan  
1:1250



Block Plan  
1:500



#### KEY



Site Plan  
1:200



|           |                                      |              |
|-----------|--------------------------------------|--------------|
| B         | Design scheme updated (MIF 07/09/23) | 12/09/23     |
| A         | Design scheme updated (MIF 10/09/23) | 15/09/23     |
| revisions |                                      | initial date |

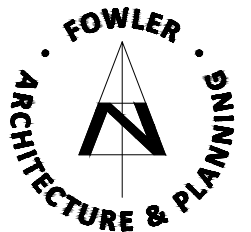
Contractors, Sub Contractors and Suppliers are to check all relevant dimensions and levels of site and buildings before commencing any shop drawings or building work.  
This drawing is copyright and may not be reproduced in any part of form without the written consent of Fowler Architecture and Planning

project:  
LAND IN EAST GRAFTON

## Location, Block and Site Plan

scale 1:1250, 1:500 @A1 - drawn by July'23  
1:200 @A1

230301-01 B  
drawing no rev



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# PIT ① - ROAD

2/6/24

3/6/24

4/6/24

| Test 1      |                    | Test 2    |                    | Test 3    |                    |
|-------------|--------------------|-----------|--------------------|-----------|--------------------|
| Time        | Depth to water (m) | Time      | Depth to water (m) | Time      | Depth to water (m) |
| 0 minutes   | 50 cm              | 0 minutes | 35                 | 0 minutes | 43                 |
| 1           | 52                 | 1         | 40                 | 1         | 46                 |
| 2           | 59                 | 2         | 42                 | 2         | 50                 |
| 3           | 63                 | 3         | 43                 | 3         | 52                 |
| 4           | 64                 | 4         | 46                 | 4         | 58                 |
| 5           | 71                 | 5         | 48                 | 5         | 63                 |
| 7           | 73                 | 7         | 50                 | 7         | 68                 |
| 10          | 75                 | 10        | 52                 | 10        | 71                 |
| 15          | 78                 | 15        | 53                 | 15        | 74                 |
| 20          | 79                 | 20        | 61                 | 20        | 78                 |
| 30          | 80                 | 30        | 66                 | 30        | 81                 |
| 45          | 82                 | 45        | 70                 | 45        | 83                 |
| 1 hr. 60    | 90                 | 60        | 73                 | 60        | 87                 |
| 1.5 hr. 90  | 96                 | 90        | 76                 | 90        | 94                 |
| 2.0 hr. 120 | 102                | 120       | 96                 | 120       | 99                 |
| 2.5 hr. 150 | 110                | 150       | 104                | 150       | 107                |
| 3 hours     |                    | 3 hours   |                    | 3 hours   | 112                |
| 4           | 125                | 4         |                    | 4         | 118                |
| 5           | 130                | 5         | 120                | 5         |                    |
| 6           | Empty              | 6         | 130                | 6         | 127                |
| 8           |                    | 8         | Empty              | 8         | Empty              |
| 10          |                    | 10        |                    | 10        |                    |
| 12          |                    | 12        |                    | 12        |                    |
| 24          |                    | 24        |                    | 24        |                    |

PIT ② BACK/EAST OF PLOT

2/6/24

3/6/24

4/6/24

| Test 1    |                    | Test 2    |                    | Test 3    |                    |
|-----------|--------------------|-----------|--------------------|-----------|--------------------|
| Time      | Depth to water (m) | Time      | Depth to water (m) | Time      | Depth to water (m) |
| 0 minutes | 100                | 0 minutes | 81                 | 0 minutes | 90                 |
| 1         | 105                | 1         | 93                 | 1         | 97                 |
| 2         | 112                | 2         | 97                 | 2         | 103                |
| 3         | 118                | 3         | 103                | 3         | 109                |
| 4         | 125                | 4         | 108                | 4         | 112                |
| 5         | 132                | 5         | 114                | 5         | 114                |
| 7         | 134                | 7         | 120                | 7         | 119                |
| 10        | 135                | 10        | 125                | 10        | 123                |
| 15        | 141                | 15        | 135                | 15        | 131                |
| 20        | 150                | 20        | 146                | 20        | 141                |
| 30        | 168                | 30        | 160                | 30        | 157                |
| 45        | 170                | 45        | 163                | 45        | 161                |
| 60        | Empty              | 60        | 167                | 60        | 163                |
| 90        |                    | 90        | 169                | 90        | 166                |
| 120       |                    | 120       | Empty              | 120       | Empty              |
| 150       |                    | 150       |                    | 150       |                    |
| 3 hours   |                    | 3 hours   |                    | 3 hours   |                    |
| 4         |                    | 4         |                    | 4         |                    |
| 5         |                    | 5         |                    | 5         |                    |
| 6         |                    | 6         |                    | 6         |                    |
| 8         |                    | 8         |                    | 8         |                    |
| 10        |                    | 10        |                    | 10        |                    |
| 12        |                    | 12        |                    | 12        |                    |
| 24        |                    | 24        |                    | 24        |                    |

**Site: East Grafton TP1**  
**Test Number 1**

**SOIL INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365**

**Soil infiltration rate ( $f$ )** =  $V_{p75-25}/a_{p50} \times t_{p75-25}$

where

$V_{p75-25}$  = the effective storage volume of water in the trial pit between 75% and 25% effective depth

$a_{p50}$  = the internal surface area of the trial pit up to 50% effective depth and including base area

$t_{p75-25}$  = the time for the water level to fall from 75% to 25% effective depth

**Soakaway Pit Dimensions**

|        |       |
|--------|-------|
| Length | 1.6 m |
| Width  | 0.7 m |
| Depth  | 1.5 m |

**Depth to Water Level**

|          |        |
|----------|--------|
| 75% full | 0.75 m |
| 50% full | 1 m    |
| 25% full | 1.25 m |

**Depth to Water Level**

|               |     |
|---------------|-----|
| Start of test | 0.5 |
| End of test   | 1.5 |

**Time to empty**

|           |         |
|-----------|---------|
| $t_{p25}$ | 10 min  |
| $t_{p50}$ | 120 min |
| $t_{p75}$ | 240 min |

**Effective Storage Volume and Area**

$V_{p75-25}$  0.56

$a_{p50}$  3.42

|                                                        |
|--------------------------------------------------------|
| <b>Soil Infiltration R</b> 1.187E-05 m/s<br>0.043 m/hr |
|--------------------------------------------------------|

**Site: East Grafton TP1**  
**Test Number 2**

**SOIL INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365**

**Soil infiltration rate ( $f$ )** =  $V_{p75-25}/a_{p50} \times t_{p75-25}$

where

$V_{p75-25}$  = the effective storage volume of water in the trial pit between 75% and 25% effective depth

$a_{p50}$  = the internal surface area of the trial pit up to 50% effective depth and including base area

$t_{p75-25}$  = the time for the water level to fall from 75% to 25% effective depth

**Soakaway Pit Dimensions**

|        |       |
|--------|-------|
| Length | 1.6 m |
| Width  | 0.7 m |
| Depth  | 1.5 m |

**Depth to Water Level**

|          |         |
|----------|---------|
| 75% full | 0.638 m |
| 50% full | 0.926 m |
| 25% full | 1.214 m |

**Depth to Water Level**

|               |      |
|---------------|------|
| Start of test | 0.35 |
| End of test   | 1.5  |

**Time to empty**

|           |         |
|-----------|---------|
| $t_{p25}$ | 20 min  |
| $t_{p50}$ | 120 min |
| $t_{p75}$ | 300 min |

**Effective Storage Volume and Area**

$V_{p75-25}$       0.645

$a_{p50}$           3.76

|                                                               |
|---------------------------------------------------------------|
| <b>Soil Infiltration R</b> 1.021E-05 m/s<br><b>0.037 m/hr</b> |
|---------------------------------------------------------------|

**Site: East Grafton TP1**  
**Test Number 3**

**SOIL INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365**

**Soil infiltration rate ( $f$ )** =  $V_{p75-25}/a_{p50} \times t_{p75-25}$

where

$V_{p75-25}$  = the effective storage volume of water in the trial pit between 75% and 25% effective depth

$a_{p50}$  = the internal surface area of the trial pit up to 50% effective depth and including base area

$t_{p75-25}$  = the time for the water level to fall from 75% to 25% effective depth

**Soakaway Pit Dimensions**

|        |       |
|--------|-------|
| Length | 1.6 m |
| Width  | 0.7 m |
| Depth  | 1.5 m |

**Depth to Water Level**

|          |         |
|----------|---------|
| 75% full | 0.698 m |
| 50% full | 0.966 m |
| 25% full | 1.234 m |

**Depth to Water Level**

|               |      |
|---------------|------|
| Start of test | 0.43 |
| End of test   | 1.5  |

**Time to empty**

|           |         |
|-----------|---------|
| $t_{p25}$ | 10 min  |
| $t_{p50}$ | 120 min |
| $t_{p75}$ | 360 min |

**Effective Storage Volume and Area**

$V_{p75-25}$       0.6

$a_{p50}$          3.576

|                                                               |
|---------------------------------------------------------------|
| <b>Soil Infiltration R</b> 7.993E-06 m/s<br><b>0.029 m/hr</b> |
|---------------------------------------------------------------|

**Site: East Grafton TP2**  
**Test Number 1**

**SOIL INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365**

**Soil infiltration rate ( $f$ )** =  $V_{p75-25}/a_{p50} \times t_{p75-25}$

where

$V_{p75-25}$  = the effective storage volume of water in the trial pit between 75% and 25% effective depth

$a_{p50}$  = the internal surface area of the trial pit up to 50% effective depth and including base area

$t_{p75-25}$  = the time for the water level to fall from 75% to 25% effective depth

**Soakaway Pit Dimensions**

|        |       |
|--------|-------|
| Length | 1.6 m |
| Width  | 0.7 m |
| Depth  | 1.7 m |

**Depth to Water Level**

|          |         |
|----------|---------|
| 75% full | 1.175 m |
| 50% full | 1.35 m  |
| 25% full | 1.525 m |

**Depth to Water Level**

|               |     |
|---------------|-----|
| Start of test | 1   |
| End of test   | 1.7 |

**Time to empty**

|           |        |
|-----------|--------|
| $t_{p25}$ | 3 min  |
| $t_{p50}$ | 10 min |
| $t_{p75}$ | 20 min |

**Effective Storage Volume and Area**

$V_{p75-25}$  0.392

$a_{p50}$  2.73

|                                                               |
|---------------------------------------------------------------|
| <b>Soil Infiltration R 1.408E-04 m/s</b><br><b>0.507 m/hr</b> |
|---------------------------------------------------------------|

**Site: East Grafton TP2**  
**Test Number 2**

**SOIL INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365**

**Soil infiltration rate ( $f$ )** =  $V_{p75-25}/a_{p50} \times t_{p75-25}$

where

$V_{p75-25}$  = the effective storage volume of water in the trial pit between 75% and 25% effective depth

$a_{p50}$  = the internal surface area of the trial pit up to 50% effective depth and including base area

$t_{p75-25}$  = the time for the water level to fall from 75% to 25% effective depth

**Soakaway Pit Dimensions**

|        |       |
|--------|-------|
| Length | 1.6 m |
| Width  | 0.7 m |
| Depth  | 1.7 m |

**Depth to Water Level**

|          |         |
|----------|---------|
| 75% full | 1.03 m  |
| 50% full | 1.252 m |
| 25% full | 1.474 m |

**Depth to Water Level**

|               |      |
|---------------|------|
| Start of test | 0.81 |
| End of test   | 1.7  |

**Time to empty**

|           |        |
|-----------|--------|
| $t_{p25}$ | 3 min  |
| $t_{p50}$ | 10 min |
| $t_{p75}$ | 25 min |

**Effective Storage Volume and Area**

$V_{p75-25}$  0.497

$a_{p50}$  3.181

|                                                               |
|---------------------------------------------------------------|
| <b>Soil Infiltration R 1.184E-04 m/s</b><br><b>0.426 m/hr</b> |
|---------------------------------------------------------------|

**Site: East Grafton TP2**  
**Test Number 3**

**SOIL INFILTRATION RATE IN ACCORDANCE WITH BRE DIGEST 365**

**Soil infiltration rate ( $f$ )** =  $V_{p75-25}/a_{p50} \times t_{p75-25}$

where

$V_{p75-25}$  = the effective storage volume of water in the trial pit between 75% and 25% effective depth

$a_{p50}$  = the internal surface area of the trial pit up to 50% effective depth and including base area

$t_{p75-25}$  = the time for the water level to fall from 75% to 25% effective depth

**Soakaway Pit Dimensions**

|        |       |
|--------|-------|
| Length | 1.6 m |
| Width  | 0.7 m |
| Depth  | 1.7 m |

**Depth to Water Level**

|          |       |
|----------|-------|
| 75% full | 1.1 m |
| 50% full | 1.3 m |
| 25% full | 1.5 m |

**Depth to Water Level**

|               |      |
|---------------|------|
| Start of test | 0.81 |
| End of test   | 1.7  |

**Time to empty**

|           |        |
|-----------|--------|
| $t_{p25}$ | 3 min  |
| $t_{p50}$ | 15 min |
| $t_{p75}$ | 30 min |

**Effective Storage Volume and Area**

$V_{p75-25}$  0.448

$a_{p50}$  2.96

|                                                               |
|---------------------------------------------------------------|
| <b>Soil Infiltration R 9.343E-05 m/s</b><br><b>0.336 m/hr</b> |
|---------------------------------------------------------------|

# APPENDIX C

## Infodrainage Calculations

|                                                        |                      |             |              |                                                                                     |
|--------------------------------------------------------|----------------------|-------------|--------------|-------------------------------------------------------------------------------------|
| Project:<br>Land at East Grafton                       | Date:<br>05/05/2026  |             |              |  |
|                                                        | Designed by:<br>AD   | Checked by: | Approved By: |                                                                                     |
| Report Details:<br>Type: Inflows<br>Storm Phase: Phase | Design:<br>SW Design |             |              |                                                                                     |
|                                                        |                      |             |              |                                                                                     |



### Rear House Catchment

Type : Catchment Area

|           |       |
|-----------|-------|
| Area (ha) | 0.011 |
|-----------|-------|

### Dynamic Sizing

| Runoff Method                | Time of Concentration |
|------------------------------|-----------------------|
| Summer Volumetric Runoff     | 0.750                 |
| Winter Volumetric Runoff     | 0.840                 |
| Time of Concentration (mins) | 5                     |
| Percentage Impervious (%)    | 100                   |



### Garage Catchment

Type : Catchment Area

|           |       |
|-----------|-------|
| Area (ha) | 0.006 |
|-----------|-------|

### Dynamic Sizing

| Runoff Method                | Time of Concentration |
|------------------------------|-----------------------|
| Summer Volumetric Runoff     | 0.750                 |
| Winter Volumetric Runoff     | 0.840                 |
| Time of Concentration (mins) | 5                     |
| Percentage Impervious (%)    | 100                   |

|                                                        |                      |             |              |                                                                                     |
|--------------------------------------------------------|----------------------|-------------|--------------|-------------------------------------------------------------------------------------|
| Project:<br>Land at East Grafton                       | Date:<br>05/05/2026  |             |              |  |
|                                                        | Designed by:<br>AD   | Checked by: | Approved By: |                                                                                     |
| Report Details:<br>Type: Inflows<br>Storm Phase: Phase | Design:<br>SW Design |             |              |                                                                                     |



Drive Catchment

Type : Catchment Area

|           |       |
|-----------|-------|
| Area (ha) | 0.016 |
|-----------|-------|

Dynamic Sizing

| Runoff Method                | Time of Concentration |
|------------------------------|-----------------------|
| Summer Volumetric Runoff     | 0.750                 |
| Winter Volumetric Runoff     | 0.840                 |
| Time of Concentration (mins) | 5                     |
| Percentage Impervious (%)    | 100                   |



Front House Catchment

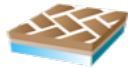
Type : Catchment Area

|           |       |
|-----------|-------|
| Area (ha) | 0.003 |
|-----------|-------|

Dynamic Sizing

| Runoff Method                | Time of Concentration |
|------------------------------|-----------------------|
| Summer Volumetric Runoff     | 0.750                 |
| Winter Volumetric Runoff     | 0.840                 |
| Time of Concentration (mins) | 5                     |
| Percentage Impervious (%)    | 100                   |

|                                                                    |                      |             |              |                                                                                     |
|--------------------------------------------------------------------|----------------------|-------------|--------------|-------------------------------------------------------------------------------------|
| Project:<br>Land at East Grafton                                   | Date:<br>05/05/2026  |             |              |  |
|                                                                    | Designed by:<br>AD   | Checked by: | Approved By: |                                                                                     |
| Report Details:<br>Type: Stormwater Controls<br>Storm Phase: Phase | Design:<br>SW Design |             |              |                                                                                     |



## Porous Paving

Type : Porous Paving

### Dimensions

|                             |         |
|-----------------------------|---------|
| Exceedance Level (m)        | 153.500 |
| Depth (m)                   | 0.350   |
| Base Level (m)              | 153.150 |
| Paving Layer Depth (mm)     | 50      |
| Membrane Percolation (m/hr) | 1000.0  |
| Porosity (%)                | 30      |
| Length (m)                  | 13.000  |
| Long. Slope (1:X)           | 1000.00 |
| Width (m)                   | 10.000  |
| Total Volume (m³)           | 11.700  |

### Inlets

#### Inlet 1

|                    |                 |
|--------------------|-----------------|
| Inlet Type         | Lateral Inflow  |
| Incoming Item(s)   | Drive Catchment |
| Bypass Destination | (None)          |
| Capacity Type      | No Restriction  |

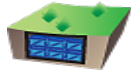
#### Inlet 2

|                    |                  |
|--------------------|------------------|
| Inlet Type         | Point Inflow     |
| Incoming Item(s)   | Garage Catchment |
| Bypass Destination | (None)           |
| Capacity Type      | No Restriction   |

### Advanced

|                               |        |
|-------------------------------|--------|
| Base Infiltration Rate (m/hr) | 0.029  |
| Side Infiltration Rate (m/hr) | 0.029  |
| Safety Factor                 | 3.0    |
| Conductivity (m/hr)           | 1000.0 |

|                                                                    |                      |             |              |                                                                                     |
|--------------------------------------------------------------------|----------------------|-------------|--------------|-------------------------------------------------------------------------------------|
| Project:<br>Land at East Grafton                                   | Date:<br>05/05/2026  |             |              |  |
|                                                                    | Designed by:<br>AD   | Checked by: | Approved By: |                                                                                     |
| Report Details:<br>Type: Stormwater Controls<br>Storm Phase: Phase | Design:<br>SW Design |             |              |                                                                                     |



**Soakaway 1**

Type : Cellular Storage

### Dimensions

|                       |         |
|-----------------------|---------|
| Exceedance Level (m)  | 153.500 |
| Depth (m)             | 0.800   |
| Base Level (m)        | 152.000 |
| Number of Crates Long | 8       |
| Number of Crates Wide | 3       |
| Number of Crates High | 2       |
| Porosity (%)          | 95      |
| Crate Length (m)      | 1       |
| Crate Width (m)       | 0.5     |
| Crate Height (m)      | 0.4     |
| Total Volume (m³)     | 9.820   |

### Inlets

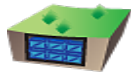
#### Inlet

|                    |                      |
|--------------------|----------------------|
| Inlet Type         | Point Inflow         |
| Incoming Item(s)   | Rear House Catchment |
| Bypass Destination | (None)               |
| Capacity Type      | No Restriction       |

### Advanced

|                               |       |
|-------------------------------|-------|
| Base Infiltration Rate (m/hr) | 0.029 |
| Side Infiltration Rate (m/hr) | 0.029 |
| Safety Factor                 | 3.0   |

|                                                                    |                      |             |              |                                                                                     |
|--------------------------------------------------------------------|----------------------|-------------|--------------|-------------------------------------------------------------------------------------|
| Project:<br>Land at East Grafton                                   | Date:<br>05/05/2026  |             |              |  |
|                                                                    | Designed by:<br>AD   | Checked by: | Approved By: |                                                                                     |
| Report Details:<br>Type: Stormwater Controls<br>Storm Phase: Phase | Design:<br>SW Design |             |              |                                                                                     |



**Soakaway 2**

Type : Cellular Storage

### Dimensions

|                       |         |
|-----------------------|---------|
| Exceedance Level (m)  | 153.500 |
| Depth (m)             | 0.400   |
| Base Level (m)        | 152.000 |
| Number of Crates Long | 5       |
| Number of Crates Wide | 3       |
| Number of Crates High | 1       |
| Porosity (%)          | 95      |
| Crate Length (m)      | 1       |
| Crate Width (m)       | 0.5     |
| Crate Height (m)      | 0.4     |
| Total Volume (m³)     | 3.950   |

### Inlets

#### Inlet

|                    |                       |
|--------------------|-----------------------|
| Inlet Type         | Point Inflow          |
| Incoming Item(s)   | Front House Catchment |
| Bypass Destination | (None)                |
| Capacity Type      | No Restriction        |

### Advanced

|                               |       |
|-------------------------------|-------|
| Base Infiltration Rate (m/hr) | 0.029 |
| Side Infiltration Rate (m/hr) | 0.029 |
| Safety Factor                 | 3.0   |

|                                                                            |                      |             |              |                                                                                     |
|----------------------------------------------------------------------------|----------------------|-------------|--------------|-------------------------------------------------------------------------------------|
| Project:<br>Land at East Grafton                                           | Date:<br>05/05/2026  |             |              |  |
|                                                                            | Designed by:<br>AD   | Checked by: | Approved By: |                                                                                     |
| Report Details:<br>Type: Stormwater Controls Summary<br>Storm Phase: Phase | Design:<br>SW Design |             |              |                                                                                     |
|                                                                            |                      |             |              |                                                                                     |



Critical Storm Per Item: Rank By: Max. Avg. Depth

| Stormwater Control | Storm Event                             | Max. US Level (m) | Max. DS Level (m) | Max. US Depth (m) | Max. DS Depth (m) | Max. Inflow (L/s) | Max. Resident Volume (m³) | Max. Flooded Volume (m³) | Total Lost Volume (m³) | Max. Outflow (L/s) | Total Discharge Volume (m³) | Half Drain Down Time (mins) | Percentage Available (%) |
|--------------------|-----------------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|---------------------------|--------------------------|------------------------|--------------------|-----------------------------|-----------------------------|--------------------------|
| Porous Paving      | FSR: 100 years: +45 %: 180 mins: Winter | 153.440           | 153.436           | 0.277             | 0.286             | 3.4               | 10.970                    | 0.000                    | 7.915                  | 0.0                | 0.000                       | 263                         | 6.237                    |
| Soakaway 1         | FSR: 100 years: +45 %: 720 mins: Winter | 152.719           | 152.719           | 0.719             | 0.719             | 0.6               | 8.198                     | 0.000                    | 4.893                  | 0.0                | 0.000                       | 1193                        | 16.514                   |
| Soakaway 2         | FSR: 100 years: +45 %: 480 mins: Winter | 152.316           | 152.316           | 0.316             | 0.316             | 0.3               | 2.250                     | 0.000                    | 1.564                  | 0.0                | 0.000                       | 696                         | 43.045                   |

|                                  |                                                                            |             |              |                                                                                     |
|----------------------------------|----------------------------------------------------------------------------|-------------|--------------|-------------------------------------------------------------------------------------|
| Project:<br>Land at East Grafton | Date:<br>05/05/2026                                                        |             |              |  |
|                                  | Designed by:<br>AD                                                         | Checked by: | Approved By: |                                                                                     |
|                                  | Report Details:<br>Type: Stormwater Controls Summary<br>Storm Phase: Phase |             |              |                                                                                     |
| Design:<br>SW Design             |                                                                            |             |              |                                                                                     |

| Status |
|--------|
| OK     |
| OK     |
| OK     |