

**TOPOGRAPHICAL & MEASURED BUILDING SURVEYS**

**ABBREVIATIONS & SYMBOLS**

|    |             |    |              |    |            |
|----|-------------|----|--------------|----|------------|
| AN | Arch Height | FL | Fire hydrant | RL | Road Level |
| AN | Arch Height | FL | Fire hydrant | RL | Road Level |
| AN | Arch Height | FL | Fire hydrant | RL | Road Level |
| AN | Arch Height | FL | Fire hydrant | RL | Road Level |
| AN | Arch Height | FL | Fire hydrant | RL | Road Level |
| AN | Arch Height | FL | Fire hydrant | RL | Road Level |
| AN | Arch Height | FL | Fire hydrant | RL | Road Level |
| AN | Arch Height | FL | Fire hydrant | RL | Road Level |
| AN | Arch Height | FL | Fire hydrant | RL | Road Level |
| AN | Arch Height | FL | Fire hydrant | RL | Road Level |

**DRAWING NOTE**

Topographical Surveys  
Trees are drawn to scale showing the average canopy spread. Descriptions and heights should be used as a guide only.

Measured Building Surveys  
Measurements to internal walls are taken to the wall finishes at approx 1m above the floor level and the wall assumed to be vertical.

**General**

The contractor must check and verify all site and building dimensions, levels, utilities and drainage details and connections prior to commencing work. Any errors or discrepancies must be notified to Survey Solutions immediately.

The accuracy of the digital data is the same as the plotting scale implies. All dimensions are in metres unless otherwise stated.

The survey control points are only to be used for topographical surveys at the stated scale. All control must be checked and verified prior to use.

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**SURVEY GRID AND LEVEL DATUM**

The co-ordinate system established for this survey is related to Ordnance Survey (OS) national grid at a single point using GPS Smartnet. Then orientated to Grid North with a scale factor of 1.000.

The level datum established for this survey is related to Ordnance Survey (OS) using GPS Smartnet.

To avoid discrepancies any co-ordinated data used in conjunction with this survey must be derived directly from this control data.

The major contour interval is 1 metre, the minor contour interval is 0.500 metres.

**CONTROL CO-ORDINATES**

| STATION | Easting    | Northing   | LEVEL  | DESCRIPTION |
|---------|------------|------------|--------|-------------|
| MCD1    | 519154.446 | 109022.319 | 12.405 | Pt Nail     |
| MCD2    | 519157.813 | 109026.228 | 11.811 | Pt Nail     |
| MCD3    | 519058.000 | 108909.878 | 14.331 | Pt Nail     |
| MCD4    | 519058.000 | 108909.878 | 14.331 | Pt Nail     |
| MCD5    | 519058.000 | 108909.878 | 14.331 | Pt Nail     |
| MCD6    | 519058.000 | 108909.878 | 14.331 | Pt Nail     |
| MCD7    | 519058.000 | 108909.878 | 14.331 | Pt Nail     |
| MCD8    | 519058.000 | 108909.878 | 14.331 | Pt Nail     |
| MCD9    | 519058.000 | 108909.878 | 14.331 | Pt Nail     |
| MCD10   | 519058.000 | 108909.878 | 14.331 | Pt Nail     |
| MCD11   | 519058.000 | 108909.878 | 14.331 | Pt Nail     |
| MCD12   | 519058.000 | 108909.878 | 14.331 | Pt Nail     |
| MCD13   | 519058.000 | 108909.878 | 14.331 | Pt Nail     |
| MCD14   | 519058.000 | 108909.878 | 14.331 | Pt Nail     |
| MCD15   | 519058.000 | 108909.878 | 14.331 | Pt Nail     |
| MCD16   | 519058.000 | 108909.878 | 14.331 | Pt Nail     |
| MCD17   | 519058.000 | 108909.878 | 14.331 | Pt Nail     |
| MCD18   | 519058.000 | 108909.878 | 14.331 | Pt Nail     |
| MCD19   | 519058.000 | 108909.878 | 14.331 | Pt Nail     |
| MCD20   | 519058.000 | 108909.878 | 14.331 | Pt Nail     |
| MCD21   | 519058.000 | 108909.878 | 14.331 | Pt Nail     |

**SURVEY SOLUTIONS**

Ipswich Coventry Yeovil Norwich Perth Nottingham Brentwood  
Tel: 01473 6255 989 Fax: 01473 6255 970  
www.survey-solutions.co.uk enquiries@survey-solutions.co.uk

LAND SURVEYING BUILDING SURVEYING UNDERGROUND SURVEYING

**PROJECT TITLE**  
CAMBRIDGE ROAD ESTATE,  
KINGSTON UPON THAMES, KT1 3AL.

**DRAWING DETAILS**  
TOPOGRAPHICAL SURVEY  
Sheet 5 of 5

| CLIENT                      | SCALE |
|-----------------------------|-------|
| ARDENT CONSULTING ENGINEERS | 1:200 |

| SURVEYOR | SURVEY DATE | CHECKED BY | APPROVED BY | DWG STATUS |
|----------|-------------|------------|-------------|------------|
| H.F. SO. | 10.07.2017  | AK         | JM          | FINAL      |

| DRAWING NUMBER | REVISION | ISSUE DATE |
|----------------|----------|------------|
| 20085se-05     |          | 11.08.2017 |

## Appendix H – Storage Volume Calculations

Quick Storage Estimate

Micro Drainage

Variables

|                       |                   |                                   |         |
|-----------------------|-------------------|-----------------------------------|---------|
| FSR Rainfall          |                   | Cv (Summer)                       | 0.750   |
| Return Period (years) | 100               | Cv (Winter)                       | 0.840   |
| Region                | England and Wales | Impervious Area (ha)              | 1.272   |
| Map                   | M5-60 (mm)        | Maximum Allowable Discharge (l/s) | 6.0     |
|                       | Ratio R           | Infiltration Coefficient (m/hr)   | 0.00000 |
|                       |                   | Safety Factor                     | 2.0     |
|                       |                   | Climate Change (%)                | 40      |

Analyse OK Cancel Help

Enter Area between 0.000 and 999.999

Quick Storage Estimate

Micro Drainage

Results

**Global Variables require approximate storage of between 821 m<sup>3</sup> and 1099 m<sup>3</sup>.**

**These values are estimates only and should not be used for design purposes.**

Analyse OK Cancel Help

Enter Area between 0.000 and 999.999

Quick Storage Estimate

Micro Drainage

**Variables**

FSR Rainfall

Return Period (years) 100

Region England and Wales

Map M5-60 (mm) 20.000

Ratio R 0.405

Cv (Summer) 0.750

Cv (Winter) 0.840

Impemeable Area (ha) 0.878

Maximum Allowable Discharge (l/s) 4.0

Infiltration Coefficient (m/hr) 0.00000

Safety Factor 2.0

Climate Change (%) 40

Analyse OK Cancel Help

Enter Maximum Allowable Discharge between 0.0 and 999999.0

Quick Storage Estimate

Micro Drainage

**Results**

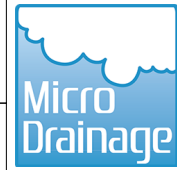
**Global Variables require approximate storage of between 571 m<sup>3</sup> and 765 m<sup>3</sup>.**

**These values are estimates only and should not be used for design purposes.**

Analyse OK Cancel Help

Enter Maximum Allowable Discharge between 0.0 and 999999.0

154 High Street Sevenoaks  
Kent  
TN13 1XE



Date 12/01/2021 15:19

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File

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XP Solutions

Source Control 2017.1.2

ICP SUDS Mean Annual Flood

Input

|                       |       |               |          |
|-----------------------|-------|---------------|----------|
| Return Period (years) | 100   | Soil          | 0.300    |
| Area (ha)             | 8.620 | Urban         | 0.750    |
| SAAR (mm)             | 600   | Region Number | Region 6 |

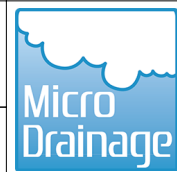
**Results 1/s**

QBAR Rural 13.1  
QBAR Urban 48.8

Q100 years 97.7

Q1 year 41.4  
Q30 years 84.7  
Q100 years 97.7

154 High Street Sevenoaks  
Kent  
TN13 1XE



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ICP SUDS Mean Annual Flood

Input

|                       |       |               |          |
|-----------------------|-------|---------------|----------|
| Return Period (years) | 100   | Soil          | 0.300    |
| Area (ha)             | 2.210 | Urban         | 0.750    |
| SAAR (mm)             | 600   | Region Number | Region 6 |

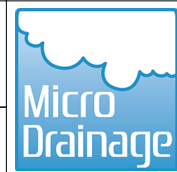
**Results 1/s**

QBAR Rural 3.4  
QBAR Urban 12.5

Q100 years 25.1

Q1 year 10.6  
Q30 years 21.7  
Q100 years 25.1

154 High Street Sevenoaks  
Kent  
TN13 1XE



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ICP SUDS Mean Annual Flood

Input

|                       |       |               |          |
|-----------------------|-------|---------------|----------|
| Return Period (years) | 100   | Soil          | 0.300    |
| Area (ha)             | 8.620 | Urban         | 0.000    |
| SAAR (mm)             | 600   | Region Number | Region 6 |

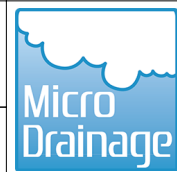
**Results 1/s**

QBAR Rural 13.1  
QBAR Urban 13.1

Q100 years 41.8

Q1 year 11.1  
Q30 years 29.7  
Q100 years 41.8

154 High Street Sevenoaks  
Kent  
TN13 1XE



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Source Control 2017.1.2

ICP SUDS Mean Annual Flood

Input

|                       |       |               |          |
|-----------------------|-------|---------------|----------|
| Return Period (years) | 100   | Soil          | 0.300    |
| Area (ha)             | 2.210 | Urban         | 0.000    |
| SAAR (mm)             | 600   | Region Number | Region 6 |

**Results 1/s**

|            |     |
|------------|-----|
| QBAR Rural | 3.4 |
| QBAR Urban | 3.4 |

Q100 years 10.7

|            |      |
|------------|------|
| Q1 year    | 2.9  |
| Q30 years  | 7.6  |
| Q100 years | 10.7 |