**Modified Rational Method – 40% CC allowance**

**Input parameters (Volume 3 of the Wallingford Procedure)**

| | |
|---|---|
| M5-60 minute rainfall depth | 20 |
| Ratio of M5-60 to M5 2 day | 0.40 |
| Average Annual Rainfall | 700 |
| Winter Rain Acceptance Potential (WRAP) | 0.30 |
| Urban Catchment Wetness Index (UCWI) | 70 |

**Time of Concentration**

Time of entry (3mins) + Time of flow (2mins) = Time of concentration (5 mins)

**Rainfall estimation**

(calculated to convert the M5-60 minute rainfall to 5-minute duration rainfall)

| **Return Period** | **Rainfall Intensity** |
|---|---|
| 1 in 1 year | 65.03 |
| 1 in 2 year | 82.86 |
| 1 in 30 year | 149.64 |
| 1 in 100 year | 187.75 |

The flow rate as given by the Modified Rational Method is:

**$Q = 2.78 \times C_v \times C_r \times$ rainfall intensity x impermeable area**

$C_v$ is the volumetric runoff coefficient = Pr / PIMP (percentage runoff / percentage impermeable areas) = 0.47

$C_r$ is the routing coefficient = 1.3

Impermeable area = 0.015ha

Based on the above, the flow rates from impermeable areas at the existing site are shown to be:

| **Return Period** | **Flow Rate (l/s)** |
|---|---|
| 1 in 1 year | **1.69** |
| 1 in 2 year | **2.15** |
| 1 in 30 year | **3.89** |
| 1 in 100 year | **4.88** |
| 1 in 100 year plus 40% | **6.83** |