

**Project:** Dwelling Extension  
**Location:** 68 Marian Crescent, Rathfarnham, Dublin 16.

Total Area of Site                    485 m2

| Area Data:                       | Area  | Impermeability [%]        | Effective Area [m2] |
|----------------------------------|-------|---------------------------|---------------------|
| Impermeable area (Increase only) | 40 m2 | <b>New Roof Area</b> 100% | 40 m2               |
| Partial permeable area           | 0 m2  | rear patio 100%           | 0 m2                |
| Other: Landscaped, green roof    | 0 m2  | 0%                        | 0 m2                |
|                                  | 40 m2 |                           |                     |
| Eff. Area drained to Soakway     |       |                           | 40 m2               |

Return Period Rainfall Depths [Ref. Met Eireann]  
 Location: Casement Aerodrome Dublin  
 10 year Return Period - 60 minute duration                    20.9 mm

**Design Rainfall [R10-60min]:**  
**10 year storm - 60 min duration:**  
 Inflow to Soakway [A x R10-60]:                    0.84 m<sup>3</sup>    Inflow

Proposed Soakway - Dimensions:                    **SOAKWAY SERVING increase in Roof Area**  
 Length:                    2.5 m  
 Breadth:                    2.5 m  
 Depth:                    0.45 m

|                              |                        |   |
|------------------------------|------------------------|---|
| Total Volume of Soakway      | 2.8125 m <sup>3</sup>  |   |
| Net Volume of Soakway        | 0.84375 m <sup>3</sup> | Free volume %                    30%              |
|                              |                        | [95% for 'Aquacells', 30% for stone]              |
| Volume of Wet Well           | 0.000 m <sup>3</sup>   | 0 m                    internal diameter of rings |
| Net Vol. of S/way & Wet Well | 0.844 m <sup>3</sup>   |   |

Outflow from Soakway during storm (O)                     $O = A_{s50} \times f \times D$   
 A<sub>s50</sub>=                    2.81 m2                    Internal surface area of soakway to 50% effective depth  
 f=                    1.24E-06 m/s                    Calculated Infiltration Rate  
 D=                    21600 secs                    Duration of storm

Outflow =                    0.08 m<sup>3</sup>

Inflow - Outflow = Storage Required                    [I-O=S]                    0.76 m<sup>3</sup>    **Storage Required**

Adequate free volume of soakway greater than inflow

| Time | Rainfall (m) | Inflow (m3) | Outflow (m3) | Req'd Storage (m3) |
|------|--------------|-------------|--------------|--------------------|
| 5    | 0.0064       | 0.256       | 0.001        | 0.255              |
| 10   | 0.0092       | 0.368       | 0.002        | 0.366              |
| 15   | 0.0116       | 0.464       | 0.003        | 0.461              |
| 30   | 0.0158       | 0.632       | 0.006        | 0.626              |
| 60   | 0.0209       | 0.836       | 0.013        | 0.823              |
| 120  | 0.0270       | 1.080       | 0.025        | 1.055              |
| 240  | 0.0360       | 1.440       | 0.050        | 1.390              |
| 360  | 0.0440       | 1.760       | 0.075        | 1.685              |

max case see above