Response to Planning Condition

33 Templeroan Grove, Rathfarnham, Dublin 16

August 2022

BRE Digest 365 Report

INFINITE FOCUS

10 Father McWey St., Edenderry, Co. Offaly
Phone: +353 46 9772510
www.infinitefocus.ie

1.0   INTRODUCTION

This report details the stormwater proposal for the roof /hardstanding area of the porposed new house at 33 Templeroan Grove, Rathfarnham Dublin 16.

It is proposed to apply the Sustainable Urban Drainage principle in the stormwater design and attenuation system. In this regard, soakaway is proposed for the increase in stormwater run-offs (wirh allowance of 20% for climate change) from the rear roof area located at the back garden green area. The soakaway is designed in accordance to BRE Digest 365.

Site Location

STORMWATER SOAKAWAY – DESIGNED TO BRE DIGEST 365

To calculate the design volume of the soakaway for the NEW development (The conservative increase in area of roof and hand standing is < 100m²) is:

Volume equation I - O = S; I is the inflow; O is the outflow and S is storage

I = A x R; Impermeable surface area of development (1 unit) x M10-D min rainfall

I = 100 x .009 = c 1.0m^3

Outflow from soakaway **O**

O = a s50 x f x D; which is

Internal surface area of soakaway pit to 50% storage depth (excluding base area) x soil percolation rate x storm duration. The proposed soakaway is 1.0m wide x 2.0m long x 2.0m deep, therefore

as50 = 2 (2 + 1) x (2.0 ÷ 2) = 6.0 m2

The soil percolation rate conservatively varies from is 1.0 x 10-5 m/s to 1.03 x 10^{-5} m/s from soakage trial within the area, hence we adopt slower rate of **1.0 x 10-5 m/s**

f = 1.0 x 10^{-5} m/s

O = (6.0) x (1.0 x 10^{-5}) x (9 x 60) m^3 = 0.0324 m3

Soakaway Storage Volume, S = I – O = 1.0 - 0.0324= **0.97 m^3 C. 1m3**

S = effective volume of soakaway with 30% free volume

S = 1x 2 x 2 x 0.3 = 1.2 m^3

This design is satisfactory with the soakaway available volume of 1.2m3 compared with required of 1.0m3. This can cater for additional storm event due to global warming (20%) give 1.2m3
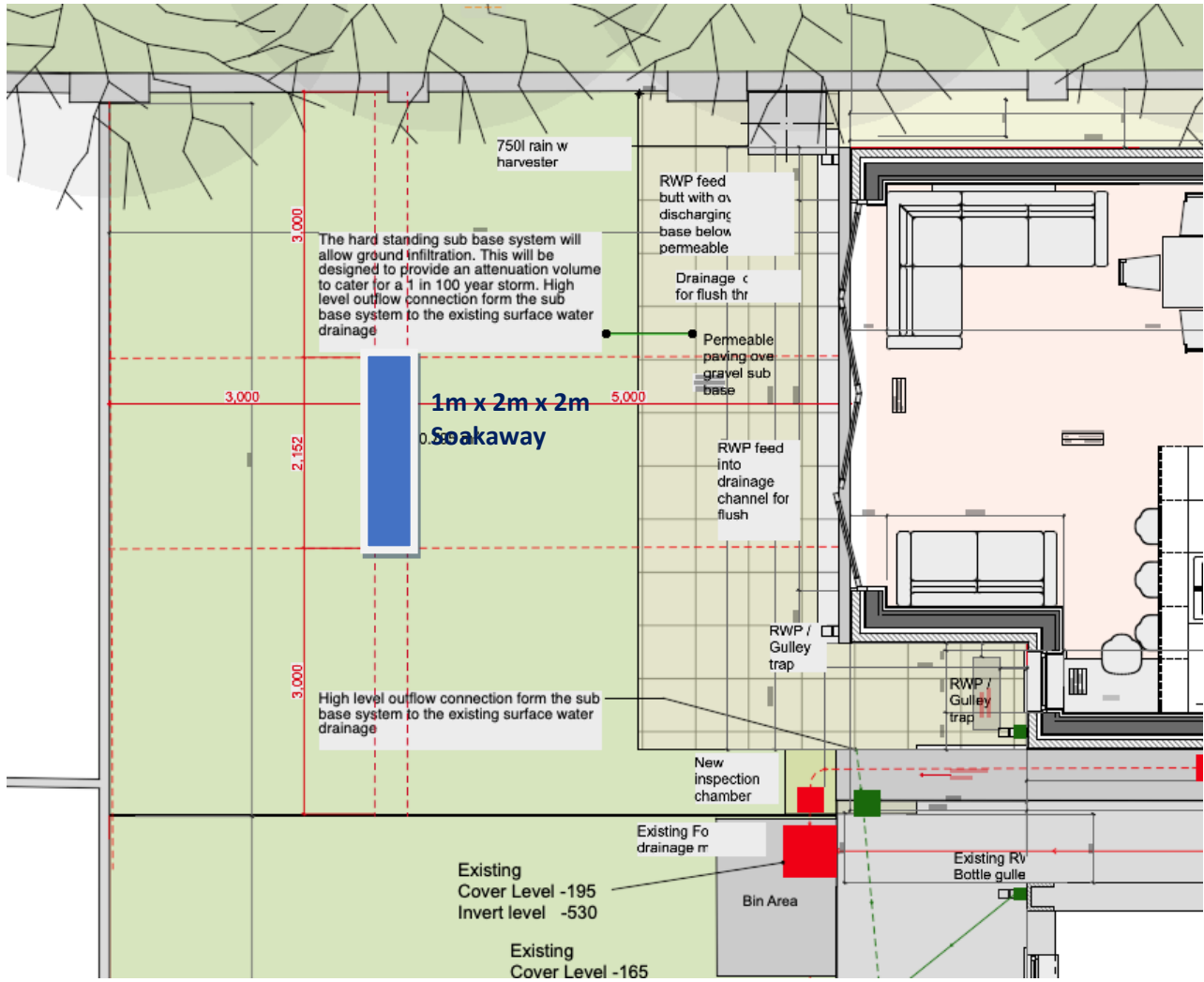

To check the time for half emptying of the storage volume, ts50.

ts50 = (S x 0.5) / (as50 x f) = (1.0 x 0.5) / (6 x 1.0 x 10-5) = 2.3hrs

This design is satisfactory with the soakaway half empty within 3 hours.

Using a the new AquaCell range engineered from reformulated, recycled material, this should provide additional storage capacity > 2.0m³ much more than storage required of 1.2m3 which give adequate allowance for variations in percolation rate.
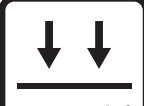
Apply 1.0m x 2.0m with an effective depth of 1.25m - Soakpit / soakaway to be located aprox. min of 5m from any dwelling & 3m from any boundary. Water butts shall be included at the base of all proposed downpipe in compliance with SuDS.

750l rain w harvester

The hard standing sub base system will allow ground infiltration. This will be designed to provide an attenuation volume to cater for a 1 in 100 year storm. High level outflow connection form the sub base system to the existing surface water drainage

RWP feed butt with ov discharging base below permeable

Drainage c for flush thr

1m x 2m x 2m Soakaway

0.5

Permeable paving ove gravel sub base

RWP feed into drainage channel for flush

RWP / Gulley trap

High level outflow connection form the sub base system to the existing surface water drainage

RWP / Gulley trap

New inspection chamber

Existing Fo drainage m

Existing RW Bottle gulle

Existing
Cover Level -195
Invert level   -530

Bin Area

Existing
Cover Level -165

3,000

3,000

2,152

3,000

5,000

AquaCell

Re-engineered to rain supreme for years to come

The new AquaCell range engineered from reformulated, recycled material.
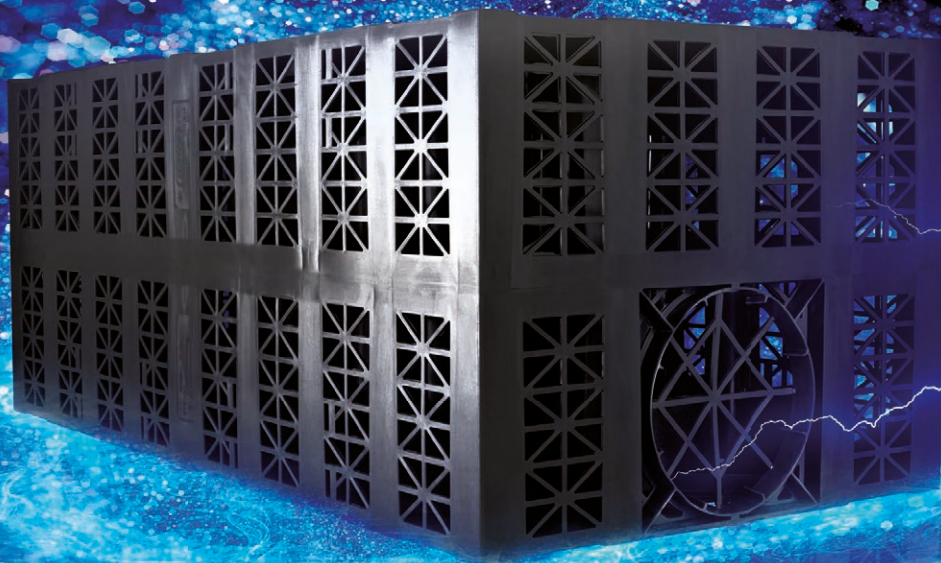
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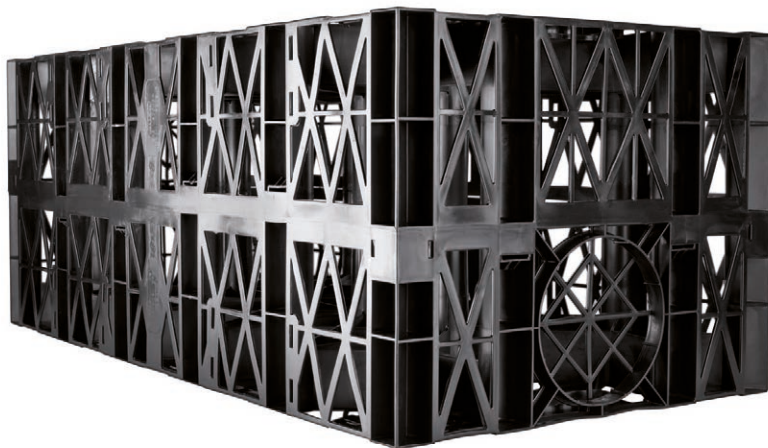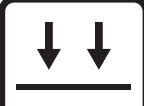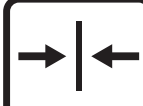
AquaCell
ECO

ECO is manufactured from specially reformulated, recycled material and has been designed for shallow, non-trafficked, landscaped applications.
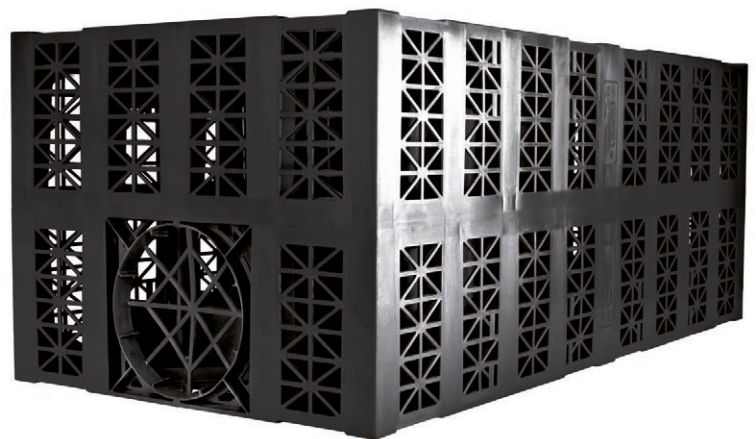
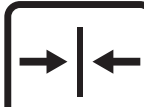|	
↓ ↓ ↓ **21 tonnes/m²**	→ | ← **5 tonnes/m²**
☑ 🌿 ☒ 🚗 ☒ 🚛 **LOADING**	**MAX INVERT DEPTH 2.7m** **NON-LOADED**

AquaCell
CORE-R
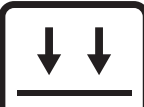
CORE-R has been designed for use in deep applications, subject to both regular and heavy traffic loadings, such as cars and HGV's.

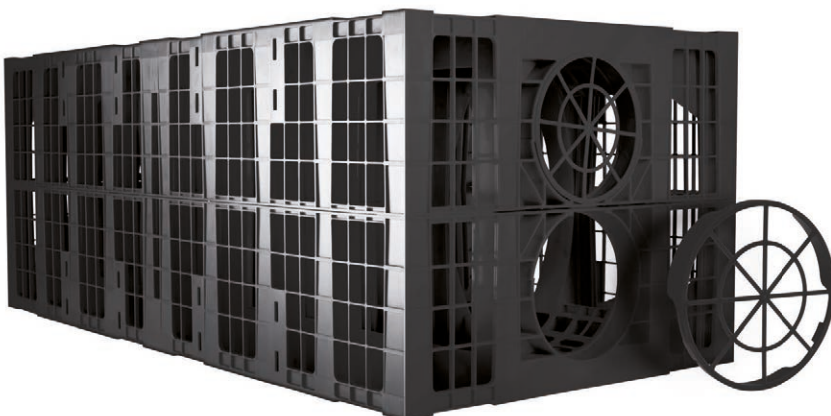|	
↓ ↓ ↓ **67 tonnes/m²**	→ | ← **12 tonnes/m²**
☑ 🌿 ☑ 🚗 ☑ 🚛 **LOADING**	**MAX INVERT DEPTH 6.2m** **LOADING ≤ 44 tonnes**

AquaCell
PLUS-R

PLUS-R has been designed primarily for use in applications where inspection is required, and is suitable for use in all applications from landscaped areas to heavily trafficked areas.

↓ ↓ ↓ **70 tonnes/m²**	→ | ← **15 tonnes/m²**	**MAX INVERT DEPTH 7.3m** **LOADING ≤ 44 tonnes**

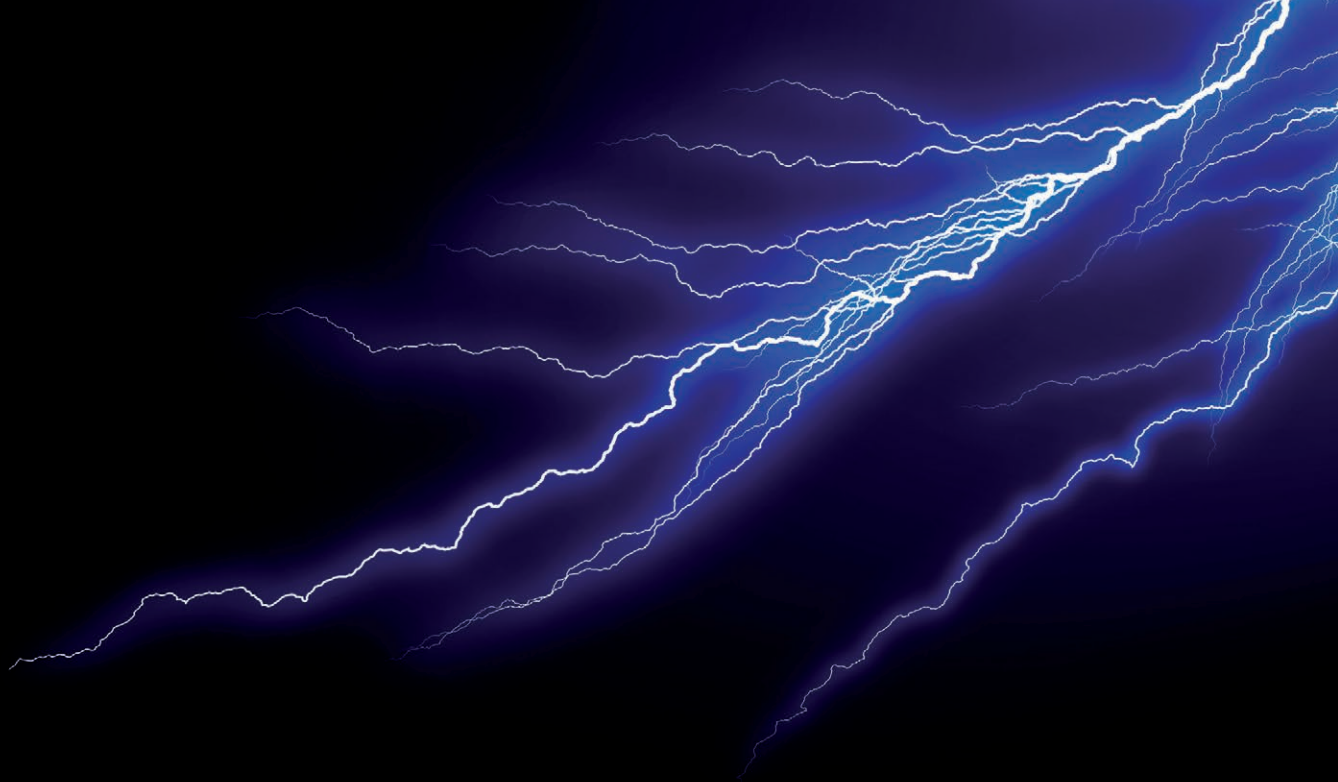|	
☑ 🌿 ☑ 🚗 ☑ 🚛 **LOADING**	▶ 🎥 **CCTV INSPECTION**

Storming ahead – from roof to river

From infilltration and attenuation units to advanced siphonic rainwater systems, vortex valves and drainage solutions, Wavin leads the way in stormwater management.
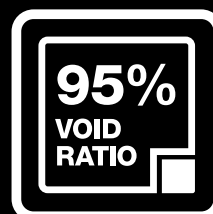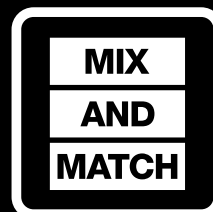
The best in stormwater solutions made better still

AquaCell systems are the tried, tested and fully BBA approved answer to the effective management of excessive rainfall, whether through attenuation or infiltration solutions.

Now refined to offer three crate variants, the entire range is engineered from reformulated, recycled material for outstanding sustainable performance in every application.

As concern grows over the effects of climate change and the challenges of increasing urbanisation, AquaCell continues to rain supreme as the cost-effective, proven and versatile stormwater solution.

REFORMULATED RECYCLED MATERIAL

BBA BRITISH BOARD OF AGRÉMENT
CERTIFICATE No 03/4018
APPROVED

MIX AND MATCH

ATTENUATION & INFILTRATION

L 1.0m
W 0.5m
H 0.4m

HOLDS 190 litres

95% VOID RATIO

EASY TO HANDLE

BRICK BONDING

Discover more online at:
aquacell.wavin.co.uk