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PLANNING and ENGINEERING Report for sub-division of existing site for the construction of a semi-detached two storey house and all associated site works at 11 Glenfield Drive, Clondalkin, Dublin 22.

May 2021

Introduction & Proposed Development.

The applicant is applying to sub-divide an existing site which is a large side corner garden located at 11 Glenfield Drive, Clondalkin, Dublin 22. The house has been designed to provide a dual-fronted house, addressing Glenfield Drive and Glenfield Close.

Planning History

The site has been subject to a number of refused permissions, namely SD18A/0286, SD17A/0233 and SD16A/0323. With respect we believe that the proposed development before the planning department address's the reasons for refusal for the previously refused applications.

Most notably we would submit that the recent grant of permission for No. 2 Glenfield Drive, across the road to the west of the proposed development has attained permission under planning reference SD20A/0103.

There are a number of successful planning applications within 1 km of the site which all share the same or similar spatial characteristics as the proposed development, and we would respectfully suggest that the planning precedent set by permitted and established similar developments.

Services and Drainage.

The existing unit is connected to the existing foul sewer and surface water sewer on site. The proposed development will connect to the existing public foul sewer and surface water will be discharged to on site BRE Digest 365 soakholes. Full design report is attached.

Both the Foul Sewer, watermain and Surface Water sewers are located outside the site boundary. The planning authority previously requested permission from IW detailing that the proposed development will not impact the existing sewers.



We would suggest that the existing boundary wall, which has a foundation with similar characteristics exists closer to the existing IW infrastructure and a 3m distance is not required irrespective of the IW requirements. From a logical and common-sense perspective, the new foundations cannot impact on the existing sewer when an existing foundation and wall already exist between the proposed development and the existing sewer. The existing sewer being outside the site boundary will be 2 m from the proposed development and the foundation will not have any impact on the sewer.

Parking and Access

The proposal involves the re-design of an existing entrance arrangement. The existing house and the proposed house will have its own vehicular entrance with a 3.5-metre-wide access, which is identical to the permitted arrangement at No. 2 Glenfield Drive.

Visual Impact and Residential Character.

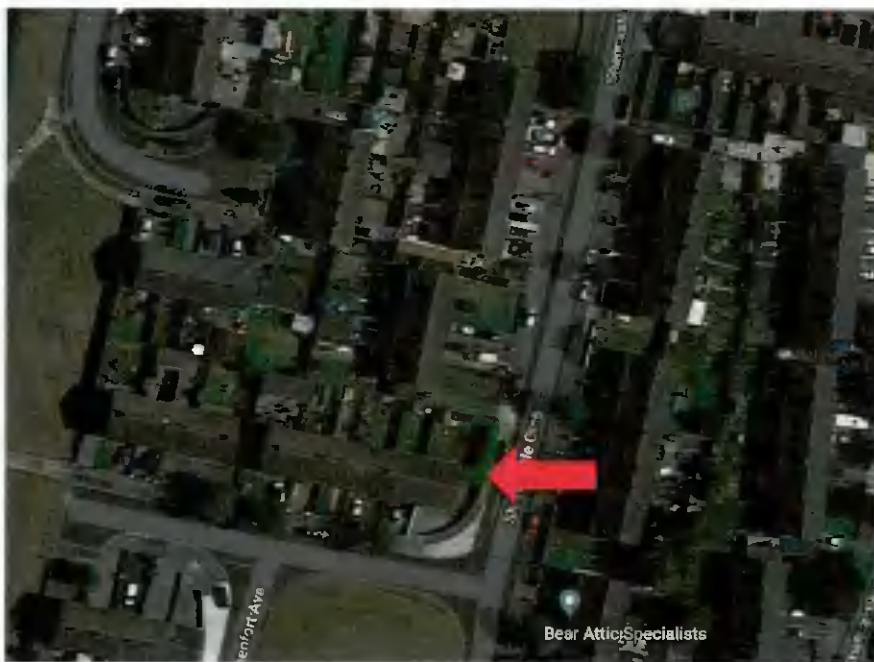
The proposal before the planning department, while breaking the building line, is not inconsistent with the scale and pattern of development in the area. We submit 6 successful examples, where infill development breaks the established building line in the area and due to the architectural treatment proposed, of the dual fronted house, we respectfully submit that the visual impact and residential character of the area is improved.





Greenfort Drive.

Successful example of a corner house, which breaks the established building line.





Shancastle Crescent.

Successful example of a corner house, which breaks the established building line.





No. 2 Glenfield Drive – opposite the proposed development. (Not Built Yet)
Successful example of a corner house, which breaks the established building line.



Glenfield Close – opposite the proposed development.
Successful example of a corner house, which breaks the established building line.



Glenfield Avenue– a large corner extension 200 metres to the east of the proposed development which breaks the established building line.



Greenfort Lawns – Successful example of a corner house, which breaks the established building line.



Sub-Division of the Site, Overlooking and Private Amenity Space.

The proposed development sub-divides an existing site, similar to No. 2 Glenfield Drive. The quantum of private open space exceeds the development management standards of SDCC Dev Plan.

The proposed house has been deliberately designed not to overlook adjacent properties, which necessitated a dual fronted house, which passively supervises the public roads. There are no first-floor windows overlooking adjacent properties, therefore residential amenity of adjoining properties has been maintained.

Conclusion.

The proposed development is an example of an appropriate infill corner development which promotes passive surveillance and is consistent with the scale and pattern of development in the area.

It is respectfully submitted that the proposal before the planning department addresses the previous reasons for refusal on site and the recent grant of permission for No. 2 Glenfield Drive allows development to be granted.

Regards,

Cert Tech Eng. BEng. MSc Spatial Planning, Dip. Law, MIEI, MIPI.

Site Name :							
Helen Gerathy							
Summary Site Data:							
Total Site Area :	1		Each Site Area(approx)				
Equivalent Impermeable Site Area :	220	m2	Area of Impermeable roof and hardstanding area				
Allowable Storm Runoff Rate :	2.5	l/s per hA of Total site Area (ref.Dublin City Council Stormwater Management Policy)					
Allowable Site Runoff :	2.5	l/s					
Storm Table 1. Calculation of site runoff characteristics							

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Extreme Rainfall Event "M10-0"				Runoff		Attenuation
Duration	Duration	depth	rate	Total	Excess	Volume
minutes	hrs	mm	mm/hr	l/s	l/s	m ³
5	0.08	7.90	94.80	5.79	3.29	0.99
10	0.17	11.70	70.20	4.29	1.79	1.07
15	0.25	14.00	56.00	3.42	0.92	0.83
30	0.50	18.50	37.00	2.26	-0.24	-0.43
	1	23.80	23.80	1.45	-1.05	-3.76
	2	29.50	14.75	0.90	-1.60	-11.51
	4	37.00	9.25	0.57	-1.93	-27.86
	6	42.00	7.00	0.43	-2.07	-44.76
	10	49.60	4.96	0.30	-2.20	-79.09
	24	65.90	2.75	0.17	-2.33	0.00

Required Attenuation Volume for extreme Storm Event :

1 m³

Storm Table 2alt. Calculation of 10 year attenuation volume requirement - M10 Storm.

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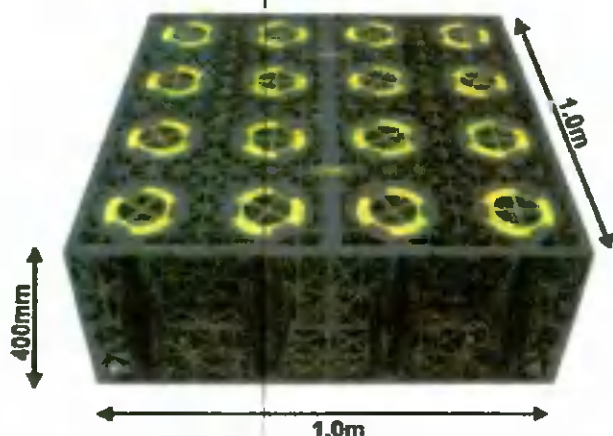
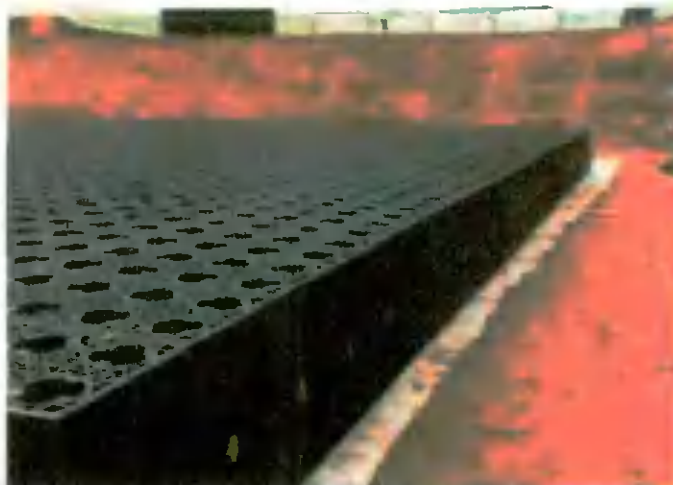
The StormMaster range of storage tank provides an economic versatile storage system for general use. Used as a soakaway the rainwater collected through pipes from the roof and/or road can be slowly infiltrated into the soil. By infiltrating relatively clean water into the soil, the sewage system is relieved and drying out of the subsurface can be prevented. The water used for this is taken from roofs and "clean" paved roads. Infiltration and attenuation of rainwater is part of sustainable construction as advocated by all local authorities.

The Product

The StormMaster system is an extremely strong 100% recycled plastic water permeable crate with a 95.8% void ratio, allowing rainwater run off to be temporarily stored and then released gradually, either into the soil as a soakaway or attenuated for transfer to the sewer system after a rainfall event. The box has a high strength so is suitable for most applications and is easy to expand in all directions to create any size of structure.

The Advantages of the StormMaster:

- Large format - just 2.5 units/m³
- Lightweight - 17kg per unit
- Choice of diameters for incoming/outgoing connections
- Good Bearing Capacity, sufficient for pedestrian & traffic use
- Large Storage Capacity (400 litres) with 95.6% voids
- Economic and fast to install
- Applicable for both high and low groundwater situations



The Principle

For soakaways, these underground storage units are wrapped in a non woven, needle punched geotextile to allow water discharge to the sub-surface to re-charge groundwater. For attenuation systems, a sealed geomembrane is wrapped around the tank to create a watertight seal and a protection fleece is then wrapped around to protect the geomembrane. The StormMaster has a high bearing capacity and can easily be expanded in all directions.

The construction of the storage void is achieved by the use of the StormMaster, a geocellular high-quality synthetic rectangular box with dimensions 1.0m x 1.0m x 0.4m (L x W x H) with a storage capacity of 400 litres (95.8% void ratio). The standard loading capacity of 400 kN/m² is sufficient for most situations, whether pedestrian or trafficked.

N.B. For HGV applications please contact our tech services.

Why use StormMaster?

- Prevents extreme peak flows to main drainage and water purification systems.
- Rainwater is "cleaned" by geotextile surround.
- Decreases inconvenience of flooding during heavy rain falls.
- Promotes the balance in the groundwater position.
- Decreases environment problems caused by development.

Applications

StormMaster is ideal for the bulk storage of stormwater in both attenuation and infiltration schemes. Buried with 0.5m of cover for non vehicular or 0.75m for vehicular use, standard connection (100 & 150mm are built in & any diameter can be accommodated. Ideal in amenity areas and even under car parks and roadways, the StormMaster is able to take traffic loading.

Product Data

NOMINAL SIZE	1.0m (L) x 1.0m (W) x 0.4m (H)
COVERAGE RATE	2.5 units / m ³
CAPACITY	400 litres (383 litres actual)
UNIT WEIGHT	17 kg per unit
VOID RATIO	95.8%
COMPRESIVE STRENGTH (CIRIA 680)	Min 400 kN/m ² Vertical Min 90 kN/m ² Lateral
MAXIMUM DEPTH (Depends on strength)	3.5 m to base of units (29° Shear) 4.6 m to base of units (36° Shear)

Design

Following detailed assessment of the required volume of stormwater to be stored (see CIRIA C680/737 & BRE 365 for soakaway assessment).

The total number of StormMaster units can be calculated using 2.5/m³ (1,000 litres). Decide on the best configuration for the characteristics of the site in question and create the "box" accordingly using the length and width dimensions.

StormMaster is suitable for landscaped and car park areas as well as heavier duty use. As a guide units require approx 0.5m of cover in landscaped areas and 0.75m cover in vehicular areas with a 75mm sharp sand base.

For full design & installation details see separate literature

Design Procedure:

1. Decide system application: Determine whether its porous paving & whether its attenuation of infiltration
2. Decide on the location and quantity of storage systems: Locate the best site position to minimise excavation and pipe runs (normally at low point in site)
3. Decide the surfacing above the storage structure. Parking or leisure area etc. (this will decide the loading on the units).
4. Calculate required capacity: This is based on storm intensity, duration, porosity of soil, EA restrictions etc.
5. Calculate quantity of StormMaster units (2.5 per m³)
6. Based on the layer depth of StormMaster of 400mm calculate the dimensions of the tank to suit local site conditions.
7. Decide on silt trap positions and inflow locations. Water entering any storage device is best passed through a silt trap prior to storage. For infiltration systems this can be the geotextile barrier
8. Decide on outflow locations (if required—attenuation systems): This would normally be at the base of the unit for attenuation systems and should be of a size required to suit the outflow requirements
9. Select StormMaster liner: If a permeable infiltration system is required choose a single layer a suitable non-woven needle punched geotextile. If an attenuated system is required a Geomembrane would envelope the units with a protective fleece around it.
10. Decide position of maintenance access. Although systems of this type require virtually no maintenance, it is advisable to provide for visual inspection to all types of system
11. For attenuated systems decide on position of vent: This can be a simple 100mm dia pipe per 5,000m² of drained area.

Features & components of StormMaster:

Our StormMaster system comes as two types of crates:
A full crate ready assembled with sides, knockouts etc. This is supplied for smaller projects to enable simple installation. For larger projects, this crate forms the outer ring of any structure to enable inspection/maintenance routes to be created and both incoming & outgoing connections to be made.



An inner crate is also supplied for larger projects that is supplied without sides to allow unfettered access to water entering the system which forms the inner volume within the full crate perimeter.



Systems are supplied with unit to unit yellow connectors (4 per unit) and layer to layer red connectors (2 per unit) that also act as unit to unit connectors where required.



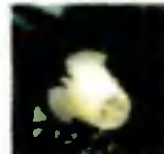
A yellow closer unit is supplied to cap the top layer of crates prior to covering with geotextile and/or geomembrane to create a flat top surface (16 per unit) for the top layer only.



StormMaster units are designed to include purpose designed inspection & maintenance routes within every unit running in both directions. Because of this routes can be created running the width or length of the structure at virtually any position to aid use.



Where possible units are supplied on purpose designed plastic feet that are retained within the cones of the StormMaster units after use rather than a pallet to ensure the minimum of waste on site & avoid large numbers of pallets to be disposed of.



Product manufactured in the EU

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Pre-installation notes:

For attenuation systems: Position the inflow and outflow connections level with the base of the StormMaster structure
For infiltration systems: Position the inflow connection at the top of the StormMaster structure.

Installation instructions:

1. Excavate to the required length, width and depth and level the base. Ensure area is enough to allow plant access around sides to compact the backfill material (500mm minimum). Ensure base is smooth and level with no sharp protrusions. Cut back slopes to a safe angle or adequately support and allow safe access for site personnel.
2. Inspect the base for soft spots and if any are present, excavate and replace with compacted granular fill material
3. Lay 75mm of compacted sharp sand or a rounded granular stone bedding layer to the base of the excavation and level off. Lay the geotextile protection fleece (non woven, needle punched), ensuring a minimum 150mm overlap. This is required for both attenuation and infiltration structures
4. Lay the geomembrane (if attenuation) over the geotextile and sand bedding layer and up the sides of the excavation. Examine the geomembrane for damage and test all welds if apparent.
5. Install the StormMaster units (1.0m x 1.0m x 0.4m) within the void in accordance with the installation instructions supplied. Arrange the units so that the outlet positions are in correct alignment with the inlet and outlet pipes. In multi layer installations use the shear connectors provided to secure the units against accidental displacement around the edges of the structure.
6. Complete the geotextile and/or geomembrane encapsulation to the sides and top of the installation, ensuring 150mm minimum overlap for the protection fleece. Geomembrane should be welded with double seams and inspected for damage, testing the welds as required.
7. Make drainage connections using proprietary adaptors. Ensure that the pre-formed socket positions are located correctly to receive the pipe-work. Alternatively for infiltration systems use flange adaptors and attach them to the StormMaster units with self tapping screws. For attenuated systems, it is recommended that all connections and air vent installations are installed using sealed drainage connections into a preformed socket with proprietary seals.
8. Backfill the installation sides with Type 1 or 2 sub base, compacting in 150mm layers, in accordance with Specification for Highway Works.
9. Place a 75mm sharp sand protection layer if required over the top of units and continue to backfill over units as follows.

For trafficked areas (car parks etc):

Type 1 or 2 sub base material compacted in 150mm layers in accordance with the Specification for Highway Works. Compaction equipment on top of the system not to exceed 2,300kg per metre width.

For landscaped and non-trafficked areas:

Selected "as dug" material with a unit size no more than 75mm compacted to 90% maximum dry density. Compaction equipment on top of the system not to exceed 2,300kg per metre width.



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BRE SOAKHOLE DESIGN

An on-site stormwater disposal system is required at 11 Glenfield Drive, Clondalkin, Dublin 22 to accommodate the stormwater run-off for a new house. Testing has been carried out at the proposed soakaway location and a suitable soakaway system designed. Soakaway testing and design was carried out in accordance with BRE Digest 365.

No groundwater or bedrock was encountered during the excavation. The trial pit was excavated during a period of dry weather.

Testing was carried out in accordance with BRE Digest 365. The pit was saturated, then refilled with water. The drop-in water level was recorded at regular intervals throughout the test.

From the test results, an f-value was calculated. This is the volume of water dispersed through unit area of soil per unit time.

In this case $f = 4.3 \times 10^{-6}$ m/s

A soakaway is designed to accommodate the immediate run-off from a hardstand area and the roof of the house following a period of rainfall and provide soakage into the surrounding soil, at such a rate, that sufficient storage is made available to accommodate the run-off from the next period of rainfall.

The soakaway has been designed to accommodate the stormwater run-off from 100 square meters of roof area and 100 sq.m hardstanding area for each house. A figure of 220 sq.m has been used for each house which includes a 20% climate change factor.

Based on a 100-year return period. 13 cubic metres volume is required for each house and site. (Calculations were also undertaken for M10, 10- and 30-year storm events for completeness)

Attenuation of 4 cubic metres using the Storm-master storage tank system from O'Reilly Oakstown consisting of an array of crates.