



DEANE TURNER
ASSOCIATES

CONSULTING ENGINEERS

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13/04/2022

Planning Department,
South Dublin Co. Co.
County Hall,
Tallaght,
Dublin 24.

REF: PRR: SD22A/0036 - (a) Demolition of screen wall; (b) construction of a part two-storey, part single storey new dwelling to the side of the existing adjoining dwelling; (c) associated site works, boundary, new pedestrian access and services; (d) new dished pavement for new vehicular access; (e) elevational alterations to existing dwelling at 1 Knocklyon Close, Knocklyon, Dublin 16, D16KR79.

Dear Sir,

We refer to your request for further information dated 5th April 22 and we submit herewith our response as follows to item 5.

Please refer to Drg No. 20/057/001 for details of surface water attenuation in accordance with SUDS.

For the purposes of the SuDS calculations, the breakdown of site areas is as follows:

- Total Area = 158 m²
- Total Roof Area = 35.3m²
- Permeable Paving = 56 m² (considered impermeable for calculation)
- Total Impermeable Area = 91.3m²



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The volume of interception storage required by the GSDS is 5mm over the impermeable site footprint which equates to:

Required Interception Storage = $0.005 \times 91.3 \text{m}^2 = 0.45 \text{m}^3$.

Permeable Paving will be employed to collect the run-off from the car parking area. The carparking area is 56m^2 . It will have a small storage capacity within the 30% voids ratio stone build-up, and will act as additional interception storage as follows:

Permeable Paving: Minimum build-up of 100mm stone below the invert of the collector drain assumed.

Provided Interception Storage = $56 \times 0.1 \times 0.3 = 1.68 \text{m}^3$

Due to the unknown infiltration characteristics of the ground, no direct infiltration has been assumed for the purposes of the calculations. A land drain will be installed on the low side of the permeable paving areas to collect the infiltrating water. This will intercept any water that builds up and prevent over-ground flow running off the site. This flow will be directed to the drainage system.

Design of the build-up for the permeable paving is in accordance with BS 7533-13:2009. This consists of a permeable geotextile at subgrade level, overlain by coarse open graded aggregate of 150mm to 350mm deep, depending on the use of the pavement as trafficked or for pedestrians. Above this there is a laying course of 50mm sand and the permeable surfacing which in this case will be bound gravel. Permeable paving is proposed in the parking spaces only.

The Majority roof surface water is collected and discharged to down pipes which are attenuated using a filter drain planter box. We have carried out calculations in accordance with the Dublin City Council Document (A How to Guide For Rainwater Planters) and we have calculated a planter size as follows.



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- Roof Area 35.3 Msq.
- Intensity 25.4mm
- Max Amount of Water to be retained = $35.3 \times 25.4 / 1000 = 0.89$ mcub (890 litres).
- Allow depth of 800 deep & 2.5 long.
- $0.89 / 0.8 = 1.1$ msq surface area of planter
- Allow 2.5m long = $1.1 / 2.5 = 0.44$ m wide

Planter box size = 2.5mLg x 0.8mDp x 0.44mwide.

In order to cater for extreme storm conditions it is also proposed to over flow stormwater run off from the filter drain planter box to a soak pit in the rear garden. The soak pit will be designed in accordance with BRE Digest 365.

Maintenance.

In regards to maintenance of the SUDs system see Table 1 Below which illustrates a maintenance plan for the Permeable Paving System.

The maintenance of the filter drain planter will consist of the following:

- removing debris
- cleaning and repairing pipes
- maintaining proper drainage.
- Down pipes will also require inspection.

The soakaway should be inspected every 6 months to check for silt build up. A sump manhole is provided prior to entry into the soak pit. This will eliminate silt entering the soak pit. Silt removal should be carried out every 6 months.



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SCHEDULE	ACTION	FREQUENCY
Routine visual inspection	Visually inspect the paving for ponding during heavy rainfall or following heavy rainfall.	Once a year
Remedial maintenance for ponding	Brush / vacuum joints Replace any lost jointing material	As required
Structural Maintenance	Replace damaged blocks Repair any rutting	As required
Maintenance for aesthetics of the joints	Brush / vacuum joints as required Replace any lost jointing material	Recommended once a year
Maintenance for aesthetics of the paving blocks	Brush with soapy water Light pressure wash	As required
Weed control	Treat with weedkiller	As required
Maintenance during the winter months	De-icing salts	As required during winter
WARNING !	Do not replace the jointing grit with kiln dried sand as this will block the joints and prevent infiltration. Do not store materials which may clog up the permeable joints such as soil and mulch on top of the paving.	

Table 1 : Maintenance of Permeable Paving.



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Yours Sincerely,

A handwritten signature in blue ink, appearing to read 'Deane', is written over a horizontal line.

Deane Turner for DTA.