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Downey Associates

By e-mail

Our Ref: 2020/21

Your ref:

Date: Monday, 06 March 2023

**RE: Lands adjacent and to the rear of Muldowneys Pub, Rathcoole, Co. Dublin  
Additional Information SD22A/0096**

Dear Donna,

I refer to the above and in particular **items 14 and 15** that relate, inter alia, to the Sustainable Drainage System. I would respond as follows.

A Sustainable Drainage System was indicated on the Site Development Works drawings and associated report submitted with the planning application. The system included collection of surface water discharge from all hard surfaces, silt traps in the form of road gullies, off line attenuation storage, a hydrobrake and a petrol interceptor, with the outlet connected to an existing off site surface water drain in the public domain.

The shape of the site, the topography and the position of existing available services does not lend itself to SUDS features such as swales or rills. The open space to the northern leg of the site falls in a northerly direction with a gradient of c.1 in 30 with no available services in the adjacent public lane.

From information noted on planning file reference SD20A 0119, an application made relating to the school to the immediate west of this site included a site investigation report on that file notes the following. The prevailing sub-strata is made ground and an infiltration test failed. These conditions do not lend themselves to SUDS features such as permeable paving. As made ground is less compact than natural soils, they have a higher permeability and hence present a risk to ground water contamination from inadequately treated surface water runoff. Further, surface water runoff through permeable paving presents a risk of fines washing of the made ground and this can result in deformation and settlement of the paving structure. Hence, permeable paving was not considered in the attenuation storage calculations.

The attenuation storage calculations were reviewed and checked. The design operating volume of the attenuation storage is 472.3m<sup>3</sup>, **not 411m<sup>3</sup>** as stated in the request for Additional Information. Again, due to site shape etc, the 472.3m<sup>3</sup> volume caters for the 1 in 100 year event. SUDS features such as some open spaces and tree pits would be of some benefit, but have not been taken into consideration (due to prevailing ground conditions). This results in a robust design of the attenuation system.

The position of the petrol interceptor has been revised upstream of the hydrobrake and entry point of the off line attenuation.

The Architectural Layout of the site has altered and as a result the areas of open spaces and hardstanding have altered. Irrespective of the above, this alters the surface water runoff volume and the attenuation as follows:

Location	Plan Area m <sup>2</sup>	Permeability	Effective Area m <sup>2</sup>
Existing Roofs	402*	0%	775
New Roofs	775	0%	402
Parking Areas	392	10%	352.8
Footpaths	665	10%	598.5
Roads	1060	10%	954
Soft Landscaping	1786	90%	178.6
<b>Total</b>	<b>5060</b>		<b>3260.8</b>

\*50% of the existing roof area is considered to discharge to the new system

These revised areas alter the required attenuation volume, below is the table for the 100 year event:

Duration	Rainfall (mm)	Rainfall x 1.1 climate change factor	Hardstand area (m <sup>2</sup> )	Peak Discharge (m <sup>3</sup> )	Limiting Discharge (m <sup>3</sup> ) at 0.125 m <sup>3</sup> /min	Attenuation Volume (m <sup>3</sup> )
15	32.6	35.9	3260.8	116.9	1.9	115.1
30	41	45.1		147.1	3.8	143.3
60	51.5	56.7		184.7	7.5	177.2
120	64.7	71.2		232.1	15.0	217.1
240	81.2	89.3		291.3	30.0	261.3
360	92.8	102.1		332.9	45.0	287.9
720	116.6	128.3		418.2	90.0	328.2
1440	146.5	161.2		525.5	180.0	345.5
2880	159.5	175.5		572.1	360.0	212.1

Limiting Discharge m<sup>3</sup>/min

=

0.125

Maximum volume for 100 year event m<sup>3</sup> =

345.5

Over flow volume m<sup>3</sup> =

135.6

The pluvial volume is for 5mm rainfall on the effective area is  $3260.8 \times 0.005 = 16.3\text{m}^3$ .

This results in an overall attenuation volume of  $16.3 + 345.5 = 361.8\text{m}^3$ . The attenuation volume on the revised drawings has been revised to reflect this.

Note: although concrete block paving units have been specified in the parking spaces by the Landscape Architect, these are located directly over the attenuation storage areas and are not considered beneficial to the above calculations.

The above should be read in conjunction with the following drawings:

- FI – 101 Foul Sewer and Storm Drain Layout
- FI – 102 Watermain Layout
- FI – 105 Proposed Storm Drain Sections

If you require any further information, please do not hesitate to contact me.

Yours Sincerely



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Alan Guildea  
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c.c Paul McDonnell

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