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By email
24 May 2022

Senior Planner
South Dublin County Council

Our ref 258354-00

Dear Sir

Digital Netherlands VIII B.V
Planning Ref. No. SD21A/0217

Please find attached our response to the following planning clarifications as requested in your letter dated 22nd April 2022.

Clarification Request 2 i

The submitted information has been reviewed by the Water Services Division of the South Dublin County Council and clarification of the submitted information is required. In particular clarification in relation to the following is requested.

i. How much surface water attenuation in m3 is provided by SuDS features.

ii. It is unclear where treatment train is provided with SuDS or how SuDS are connected to each other.

iii. Where are the flow controls in SuDS.

iv. Where SuDS can provide surface water attenuation examine if hard engineering structures such as gullies and surface water pipes can be reduced or removed.

v. Show on a drawing a cross section of proposed SuDS systems. Examples of SuDS can be viewed in a SuDS Guide obtained on South Dublin County Council Website.

vi. Submit a report and drawing to clarify what areas are draining to proposed pond. Does proposed pond only take surface water from areas within red line boundary or does it also take surface water from DUB 13 and DUB 14.

The applicant is requested that prior to submission of any revised reports and drawings, the applicant should refer to the Sustainable Drainage Explanatory Design and Evaluation Guide 2022

prepared by South Dublin County Council and should contact the Water Services Division to discuss revised submission.

Response to 2 (i)

We confirm that the proposed SuDS attenuation volume provided on site is 2,708.8 m3 and located as detailed on Table 1 below.

Table 1 - Proposed SuDS Features Attenuation Volumes Summary

SuDS Features Attenuation Volumes Summary	Volume (m3)
Green Roof	
DUB 15	37.22
DUB 16	37.62
Green Roof Total	**74.84**
Roadside Swales	
Roadside Swale 1	27.17
Roadside Swale 2	0.52
Roadside Swale 3	0.12
Roadside Swale 4	0.37
Roadside Swale 5	0.03
Roadside Swale 6	26.22
Roadside Swale 7	0.10
Roadside Swales Total	**54.54**
Permeable paving	
Permeable paving Parking bays DUB15	25.16
Permeable paving Parking bays DUB16	73.14
Permeable paving Total	**98.30**
Proprietary Surface Water Treatment System	**2.50**
Petrol Interceptors	
PI1	24.68
PI2	24.68
Full Retention PIs Total	**49.35**
PI3	4.49
By-pass PI Total	**4.49**
Open Attenuation Pond	**2424.7**

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Total volume	**2708.8**

*As outlined in detail on "INXN_DUB1516 Surface Water Report" produced as part of the response to the Request of Further Information, the required attenuation volume for the site has been calculated based on Total Catchment Area of 4.053 hectares, Total Impermeable Area of 3.294 hectares and Total Allowable Discharge from the site of 8.06 litres per second (based on Qbar of 1.99 l/s/ha). The Total Attenuation Volume required for the site is **2498.0 m3**. This is the maximum volume required for a Storm Event of 100-yr return period + 20% of climate change allowance and Duration of 2880 minutes (48-hr).*

*Therefore, comparing the volume provided by the proposed SuDS features of **2708.8 m3** and the volume required for the related development of **2498.0 m3**, all the attenuation can be achieved by the Sustainable Drainage Systems plus the development would have additional storage capacity, thereby be provided of further climate resilience.*

Nevertheless, the storage capacity of the proposed pipes and manholes that comprise part of the Surface Water Network have not been included in the calculation above, which ultimately further strengths the climate resilience of the development.

Please refer to Appendix B on Surface Water Report for details on Qbar calculation, M5-60, r, SAAR, etc. Also, page 30 of same report for calculation on Storage Volume Required.

Response to 2 (ii)

As part of the surface water drainage design for the proposed site we have incorporated the following treatment train as illustrated in the schematic SuDS layout below.

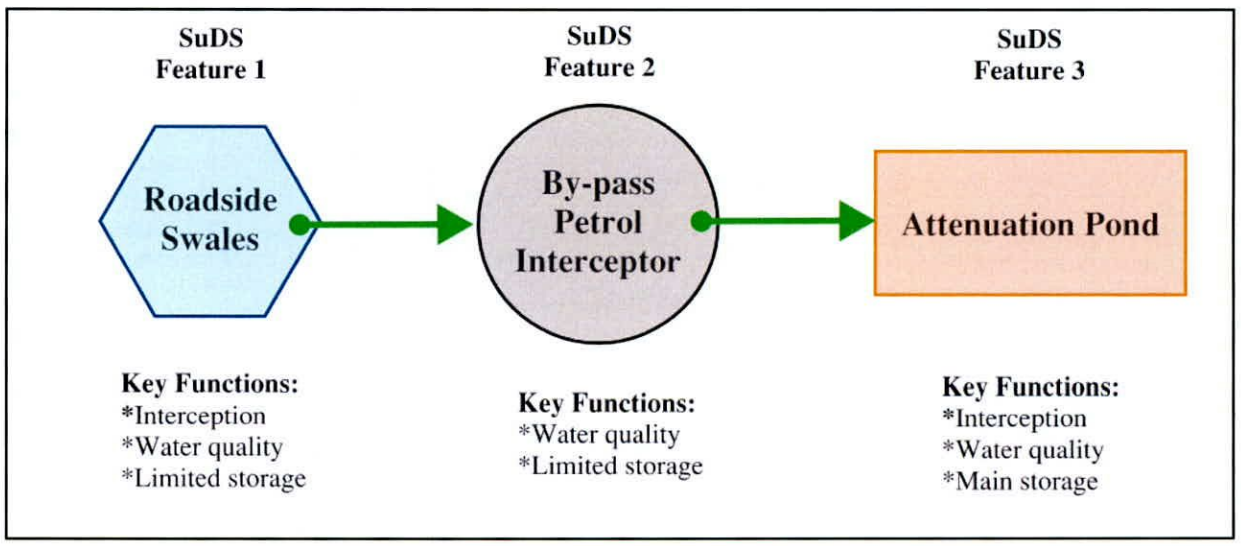

Figure 1 - Roadside Swale Treatment Train

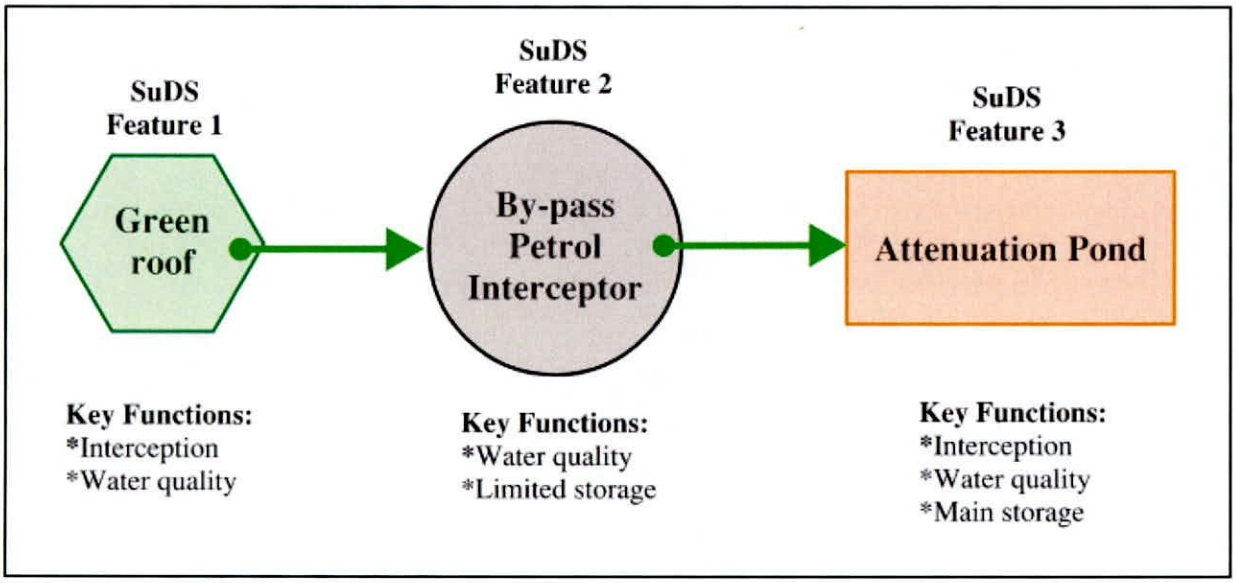

Figure 2 - Greenroof Treatment Train

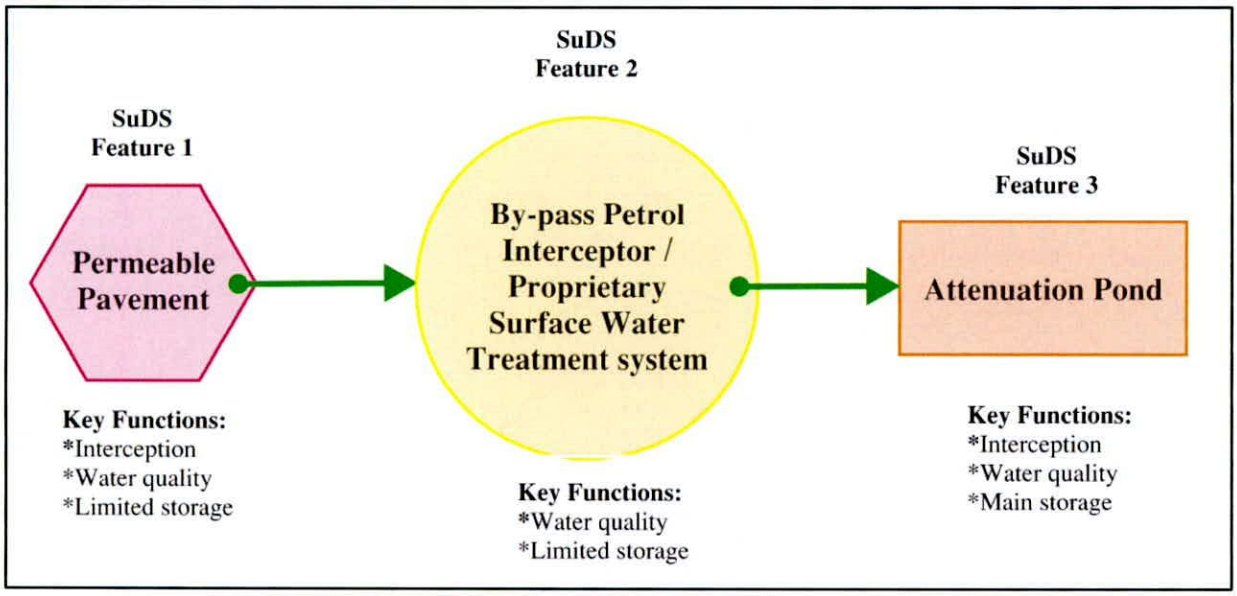

Figure 3 - Permeable Pavement Treatment Train

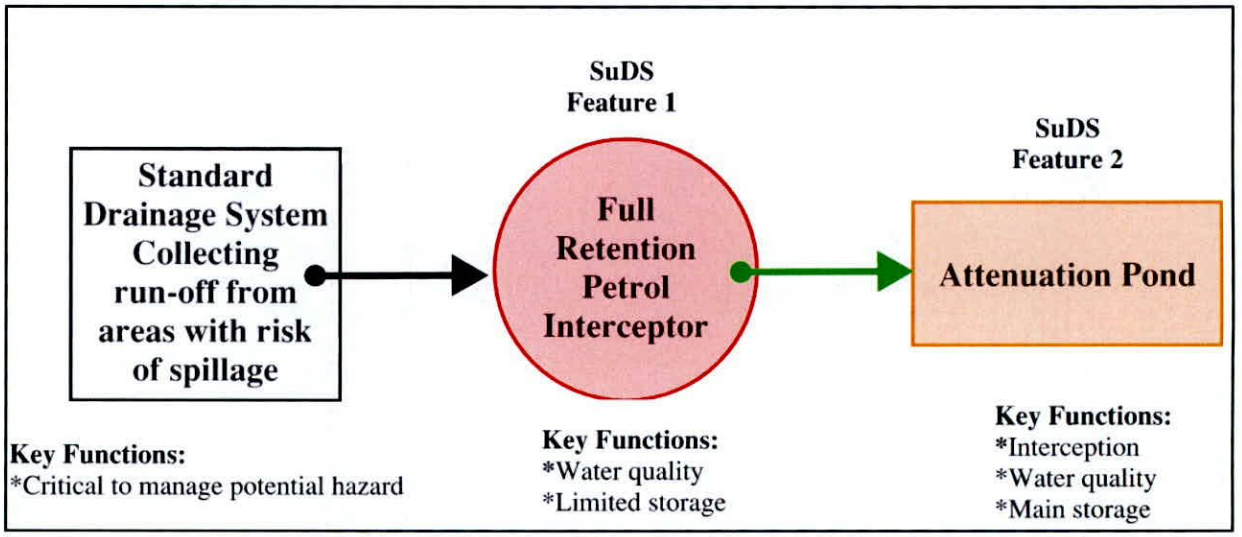

Figure 4 - Standard Drainage System Treatment Train

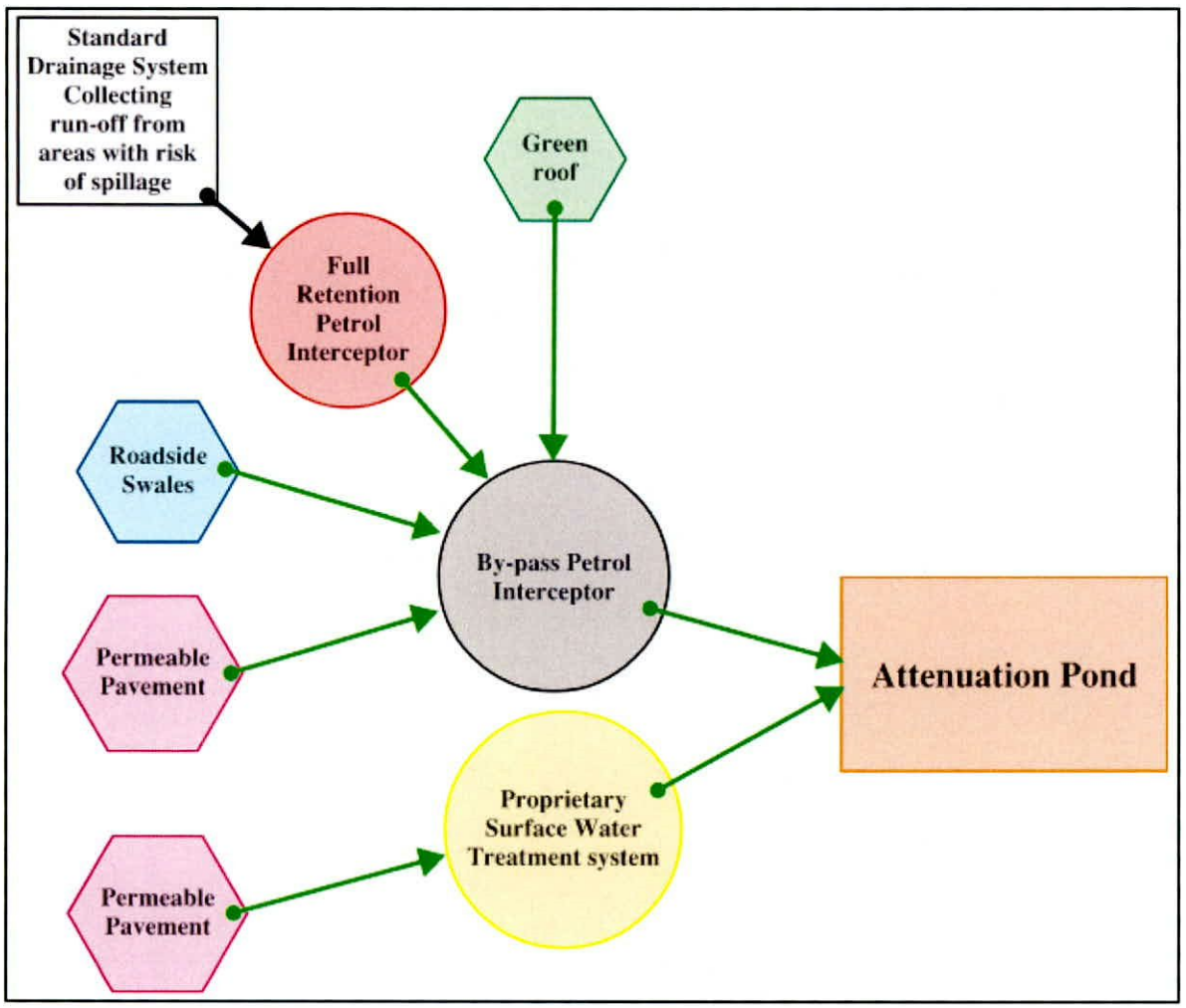

Figure 5 - Overall Treatment Train

Response to 2 (iii)

The strategy of the proposed surface water system is to have one overall flow control device located immediately downstream of the attenuation pond. Other types of flow controls will be limited to the head of water available at given rainfall event/duration within each drainage feature and its hydraulic capacity and levels. The objective is to limit the number of potential blockages and consequently potential system failures that could represent significant damages to the critical infrastructure proposed throughout the site on this type of developments, which essentially relies on the perfect functioning of the numerous proposed services.

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Response to 2 (iv)

Compared to a standard drainage system comprised mostly of standard kerbs, gullies and pipes, the proposed surface water strategy for the development has achieved a substantial level of reduction of hard engineering components. Some of the reductions are listed below:

- *Standard gullies and related pipework that will not be present throughout the majority of the proposed development (limited to areas with potential fuel spillage).*
- *Reduction on volume of concrete through the use of flat kerbs next to the roadside swales compared to standard kerbs.*
- *Increase on time of concentration for water travelling through drainage system by using roadside swales, which ultimately leads into reduction on surface water drains diameter in general when compared to standard systems with water quickly getting to the main drain.*

Furthermore, the proposed solution represents a substantial improvement of water quality when compared to standard drainage systems.

Response to 2 (v)

As requested, supporting drawings (IE-DUBZZ-STE1-EO-ARP-DR-C-0138 and IE-DUBZZ-STE1-EO-ARP-DR-C-0139 - Proposed SuDS Features Details) is submitted accompanying this letter, with the intent of addressing related comment.

Response to 2 (vi)

The proposed attenuation pond caters only for areas comprised within the proposed red boundary and which will not be catered by existing drainage system in the campus. No run-off from existing development will be discharging into the proposed attenuation pond.

As requested, supporting drawing (IE-DUBZZ-STE1-EO-ARP-DR-C-0140 Proposed Attenuation Pond Catchment Area) and report (INXN DUB15/16 Proposed Attenuation Catchment Area Report) are submitted accompanying this letter, with the intent of addressing related comment.

Note regarding Full Retention Petrol Interceptors

During meeting with South Dublin County Council, represented by Brian Harkin, observation has been made regarding the Local Authority Intent of replacing Petrol Interceptors by more natural water treatment solutions where possible. For the proposed development, Full Retention Petrol Interceptors have been proposed on key areas next to the generator yards, where refuelling operation will take place. The use of such system allows for oil/hydrocarbon removal with efficiency rates of up to 80% for oil and total suspended solids, whilst fitted with alarm, carbon monitors and automatic lockdown valves which can be monitored and controlled by the Building Management System (BMS), allowing for real time operation, and thereby minimizing the risk of contamination downstream by any potential accidental fuel spillage on those areas. Furthermore, the full retention interceptor allows for a quick emergency management of the hazardous material

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should required due to any potential accidental spillage, concentrating the maintenance point at the petrol interceptor rather than a more complex cleaning up operation for a series of SuDS features downstream, for example.

We can also confirm we have met with Brian Harkin of the South Dublin County Council on the 23rd of May of 2022, when discussed and agreed in principle the above responses.

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

Yours faithfully

for

Ove Arup & Partners Ireland Ltd t/a Arup

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