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25 February 2022

Clarification of Additional Information for Reg. Ref. SD21A/0186
Development at Plot 100, Profile Park,
Nangor Road, Clondalkin, Dublin 22

Dear Sir/Madam,

We, Brock McClure, Planning & Development Consultants, 63 York Road, Dún Laoghaire, Co. Dublin, have been instructed by the applicant, **Equinix Ireland Limited, Unit 6/7 Kilcarbery Business Park, New Nangor Road, Dublin 22, D22FV12,** to lodge this Clarification of Additional Information to South Dublin County Council.

This response is made within 6 months from the date of the original Request for Additional Information on the 30 August 2021.

We enclose the following documentation herewith for assessment as part of this application:

No	Items	Consultant	No. of Copies	Copy/Original
1.	CFI Cover Letter	Brock McClure	6	Copy
2.	Revised Drainage Drawings and Report	Pinnacle	6	Copy
3.	Revised Site Layout/Masterplan, Constraints Plan and Roof Plan Drawing	RKD	6	Copy
4.	Revised Landscape Plan, Detail Drawing, Arboricultural Impact Plan, Arboricultural Inventory and Impact Assessment Response Letter	Murray and Associates	6	Copy

We note that the clarification of additional information response material was discussed with SDCC Drainage and Parks Departments (SDCC Attendees: Brian Harkin, Ronan Toft and Fionnuala Collins) on 1 February 2022 with Pinnacle Engineers and Murray and Associates Landscape Architects.

A response to the Clarification of Additional Information request is now set out below.

Clarification of Additional Information Response

1.0 Item No. 1

1. The applicant was requested to submit a report showing greenfield run off rates and attenuation calculations for each surface water drainage catchment and to submit proposals to minimise the use of underground attenuation systems on site (concrete tanks are not acceptable), requested to clarify what attenuation volumes are proposed for the development as the volumes referred to in the engineering report do not correlate with the submit surface war drainage plans and to submit a drawing showing the inclusion of more Sustainable Drainage Systems (SuDS) for the development such as swales, filter drains, tree pits, rain gardens and Rainwater harvesting systems (amongst other items). The response to Item 6 was not to the satisfaction of the Planning Authority, the Water Services Department and the Parks and Public Realm Department. The following clarification of further information is therefore requested:

(a) The detail submitted by the applicant has not sufficiently clarified previous request for additional information. Prior to submitting the below requested information, the applicant should consult with South Dublin County Council's Water & Drainage Section. The following should be addressed in revised proposals:

(i) Concrete attenuation tanks are not permitted. The applicant is required to submit a drawing showing the use of alternative means of attenuation through the use of Sustainable Drainage Systems (SuDS). The concrete tank should be omitted from the proposed development.

Applicant Response to Item No. 1a(i):

In response to Item No. 1a(i), the previously proposed concrete tank has been removed from the proposed development. The run-off previously catered for by the concrete tank has now been accommodated within the attenuation pond, which provides for a total volume of circa 756m3. Alternative attenuation solutions now include 2 no. swales to the east and south west of the site.

As such, the design team has carefully re-considered the proposal while maintaining the functional requirements of the alternative means of attenuation.

We refer to Drawings Nos. DB080-PIN-00-ZZ-DR-C-PLAN-1207 Rev. P03 and DB080-PIN-00-ZZ-DR-C-PLAN-1295 Rev. P03, prepared by Pinnacle Engineers for more information.

(ii) The Greenfield run off calculations provided by the applicant are not clear. The applicant is required to submit the following which summarises greenfield run off rate proposals for each catchment.

In response to Item No. 1a(ii), we refer to the greenfield run off rate calculations contained in the accompanying Drawing No. DB080-PIN-00-ZZ-DR-C-PLAN-1295 Rev. P03 and extract below prepared by Pinnacle Engineers.

SITE CATCHMENT AREAS						
CATCHMENT	HATCH	AREA (m²)	% AREA	C VALUE	GREENFIELD RUN OFF RATES L/S (QBAR 2L/S/HA. SAAR 754)	DRAINS TO
CAT 1		1381	5.20%	0.5	0.28	SUDS PERMEABLE GRAVEL 1
CAT 2		553	2.1%	0.8	0.11	SUDS SWALE 1
CAT 3		1126	4.2%	1.0	0.23	SUDS POND
CAT 4		2040	7.6%	0.5	0.41	SUDS PERMEABLE GRAVEL 2
CAT 5		2153	8.0%	0.8	0.43	SUDS POND
CAT 6		1946	7.3%	1.0	0.39	SUDS POND
CAT 7		4363	16.3%	0.6	0.87	SUDS PERMEABLE PAVING
CAT 8		2704	10.1%	1.0	0.54	SUDS POND
CAT 9		1773	6.6%	0.5	0.35	SUDS POND
CAT 10		825	3.1%	0.8	0.17	SUDS SWALE 2
CAT 11		708	2.6%	0.8	0.14	SUDS SWALE 2
LANDSCAPING		7193	26.9%	0.8		LANDSCAPING
TOTAL		26 765	100%		3.9 L/s (QBAR)	

Figure 1 – Catchment Areas and Greenfield Run-Off Rates

(iii) A report which clarifies greenfield run off rate calculations for each surface water catchment. The report must clearly show standard average annual rainfall (SAAR), SOIL and Catchment Area). Greenfield run off rates must be calculated in accordance with the Institute of Hydrology 124 method (IH 124).

In response to Item No. 1a(iii), we refer to the accompanying report prepared by Pinnacle Engineers. The report details the greenfield run-off rate calculations for each surface water catchments associated with the proposed development. We note that 11 catchments are identified in addition to the perimeter landscaping. We can confirm that the rates were calculated in accordance with the IH124 method.

The Standard Average Annual Rainfall (SAAR) equates to 754mm at this location. The soil value is indicated as 0.30 for each of the catchment areas. We refer to Pinnacle's response (Appendix A – Greenfield Run-Off Calculations and Hydraulic Network Calculations and Appendix B – Met Eireann Rainfall Data) for more information.

(iv) A drawing which shows the maximum run off rates for each individual flow control device.

In response to Item No. 1a(iv), we refer to Drawing No. DB080-PIN-00-ZZ-DR-C-PLAN-1207 Rev. P03 prepared by Pinnacle Engineers. In total, there are 5 No. flow control devices and for clarity, these are located at Manhole Ref. No.'s SWMH 3.1, 5.1, 6.2, 13.2, and 14.1. Table 1 below is provided for ease of reference.

Surface Water Manhole	Run-off Rates and Levels		Surface Water Manhole	Run-off Rates and Levels
SWMH3.1	HYDROBREAKSET AT MAX 0.6 l/s CL 74.530 IL 73.010		**SWMH13.2**	HYDROBREAK SET AT MAX 1.9 l/s CL 74.530 IL 73.010
SWMH 5.1	HYDROBREAKSET AT MAX 0.2 l/s CL 75.050 IL 72.900		**SWMH14.1**	HYDROBREAKSET AT MAX 1.0 l/s CL 73.400 IL in 72.800 IL out 72.000
SWMH 6.2	HYDROBREAKSET AT MAX 0.2 l/s CL 74.40 IL 72.670			

Table 1 –Run-Off Rates for each Flow Control Device

(b) There is a significant lack of SuDS features proposed for the development. The Planning Authority, the Water Services Department and the Parks and Public Realm Department have all raised concerns regarding this element. The following is required:

(i) ***The applicant, in their response was requested to provide SUDS throughout the development. The response to the AI request did not significantly address this important issue. The applicant is therefore requested to submit revised proposals showing significantly increased proposals for SuDS features for the development such as green roofs, living walls, swales, channel rills, integrated SuDS bioretention tree pits, bioretention features, rain gardens, rainwater harvesting, above ground attenuation, detention basins, reed bed/wetland etc. and other such SuDS and show what attenuation capacity is provided by such SuDS.***

In response to Item No. 1b(i), several SuDS features have been incorporated into the overall design including:

1. Perimeter landscaping;
2. Bioretention Tree Pits;
3. Flow Control Devices;
4. Interceptors;
5. Permeable Paving;
6. Permeable Gravel Areas;
7. **Green Roofs;**
8. **Rain Water Harvesting (Office Building Area);**
9. **Swale 1;**
10. **Swale 2; and**
11. Attenuation Pond

Features in bold denote additional SuDS features proposed in response to this CFI request.

Green Roofs

Following the planning authority's request, 2 no. roof areas have been changed to green roofs with a combined area of 132sqm. These include the roof over the single storey loading dock area and over the separate bin store building. Given that the development is treated as a critical infrastructure, only roofs above non-technical areas, where any potential risk would have small impact on the operations of the facility, could be assigned for green roofs.

Green roofs build-up will be as per recommendations of the SuDS Manual (C753) and will include: Vapour Control Layer over structural deck with fall minimum 1:50 gradient; thermal insulation and coverboard and PVC Membrane. The waterproofing layer will be visually and thermographically tested prior to installation of green roof finish. Drainage matt – Cocomat with geo textile weave - will be loose laid over the waterproofing membrane and the growing medium (loose soil – 45mm thick layer) will be dispersed over it.

Soil substrate will be locally produced mix containing at least 25% recycled green waste. Once the growing medium is levelled, the sedum matting will be rolled out as the finish surface. Vegetation layer to be a pre-cultivated Irish Grade Sedum blanket layer. Blanket species to include: Sedum Acre Aureum, Sedum Album Coral Carpet, Sedum Alum min. Sedum Album Athoum, Sedum Hispanicum, Sedum Summer Glory, Sedum Reflexum, Sedum Weihenstephaner Gold, Sedum Voodoo.

The blanket will be installed on the day of delivery and thoroughly watered. Regular watering will take place as part of the maintenance regime until the blanket layer has become well established. Foot traffic will not be allowed and access for maintenance will be along the perimeter of the roofs from a cherry picker. Approx. 600mm band of gravel around the perimeter of the roof has been designed. Drainage outlets have been located in the perimeter gravel zone. Gravel will consist of minimum 25mm rounded washed pebbles, to prevent entry of the loose gravel into the outlet grating. 2 no. outlets (+ 2 no. overflow outlets) have been accommodated based on calculations as per BS EN 12056-3:2000 for each of green roofs.

The green roof is fully separated from any plant area and there is no chance of contamination of the green roof.

The extensive green roof designed for this project is low maintenance, but it requires a minimum of two maintenance visits a year.

Rainwater Harvesting

Rainwater harvesting will be incorporated into the development to provide recycled grey water for toilet flushing. Rainwater will be captured from the building roof and will be diverted into a below ground collection tank. From the collection tank water will be pumped through particle and UV filters to make it suitably clean for toilet flushing. The filtered rainwater will be stored in a dedicated storage tank and pumped to toilets for use as flushing water.

A mains water top-up facility will be provided to the filtered water storage tank so that in the event there is no rainwater available mains water will be used to top up the system.

In the event that there is excessive rainfall the below ground rainwater collection tank will be provided with an overflow that will discharge into the rainwater drainage system.

Swales 1 and 2

2 no. swales are located to the east and south west of the site near the site boundaries. We refer to Landscape Masterplan (DB080-MA-LS-XX-DR-L-PLNT-1050) and detail sheet for information pertaining to the additional swales and associated planting, green roofs, and structural tree pits. A number of lower quality ash trees will be removed to facilitate the south western swale. We refer to the accompanying revised arboricultural impact drawing and report prepared by Murray and Associates for more information.

The attenuation storage volumes for each of the SuDS features including pond, swales, permeable paving and gravel areas are clearly indicated on Dg. No. DB080-PIN-00-ZZ-DR-C-PLAN-1295 Rev. P03 and summarised in Table 2 below. We note that the SuDS design is based on a 1:100year storm event + 20% climate change.

No.	SuDS Feature	Attenuation Storage Volume (m3)
1.	Bioretention Tree Pits	Circa 4
2.	Permeable Paving	237
3.	Permeable Gravel Areas 1 & 2	93 (30 and 63)
4.	Green Roofs	Circa 4
5.	Rain Water Harvesting (Office Building Area)	Circa 4
6.	Swale 1	30
7.	Swale 2	70
8.	Attenuation Pond	756
Total		1198

Table 2 –Attenuation Storage Volume Rates

We note that the bioretention tree pits, green roofs and rainwater harvesting SuDS features, when full, will overflow and drain into the main attenuation storage elements including permeable paving/gravel areas, swales 1 and 2 and the attenuation pond.

We trust the additional SuDS measures are acceptable and invite a suitably worded condition relating to same.

(ii) ***The applicant is required to submit Engineering drawings showing the inclusion of more SuDS for the development as outlined in Item b)i. The drawing should show how the SuDS features are incorporated with the surface water drainage network on the site. A cross sectional detail is required of all proposed SuDS features.***

In response to Item No. 1b(ii), we refer Drawing No: DB080-PIN-00-ZZ-DR-C-PLAN-1207 Rev. P03 and Figure 2 below, which indicates the overall site reticulation network and the connections of the pipe network draining into the respective attenuation storage features.

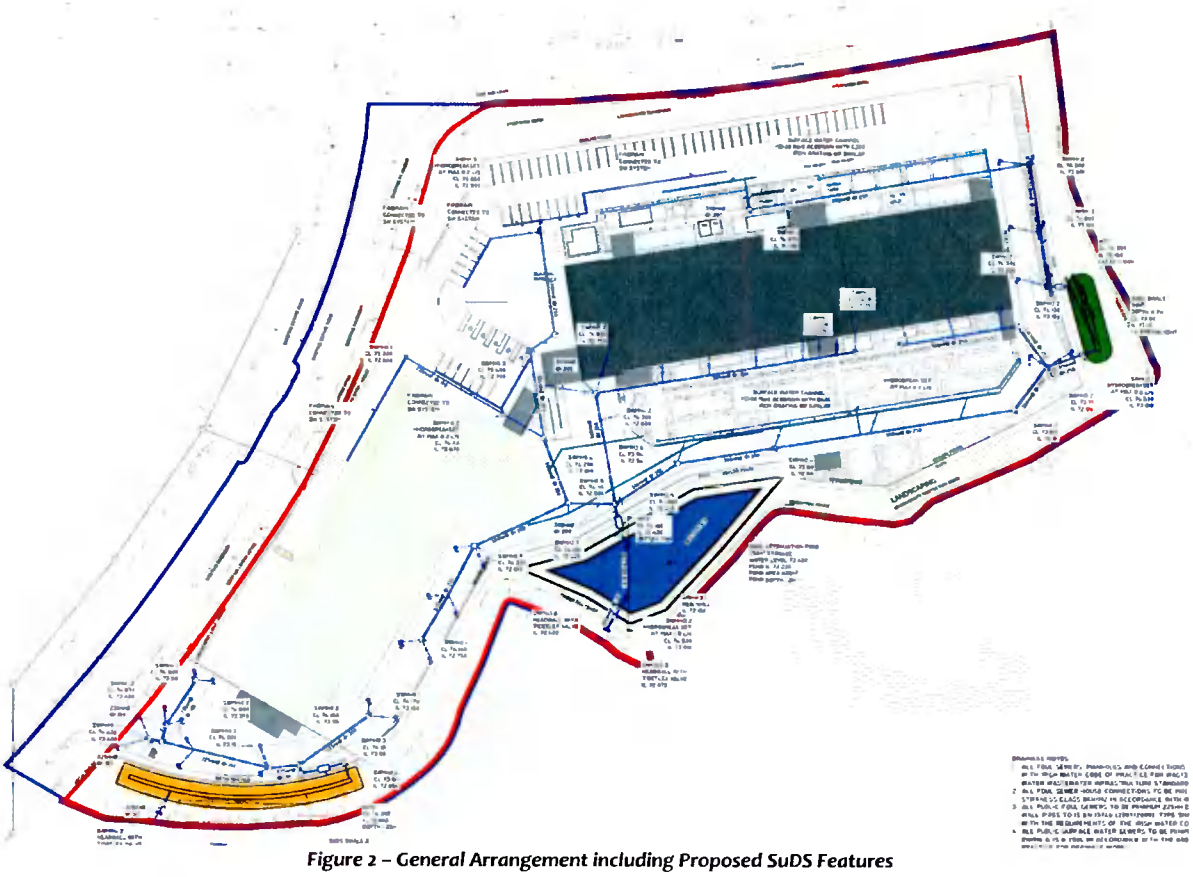

Figure 2 – General Arrangement including Proposed SuDS Features

In addition, cross sections of the attenuation pond and swales have been incorporated on Drawing Nos: DB080-PIN-00-ZZ-DR-C-PLAN-1295 Rev. P03 & 1296 Rev. P03. We refer to Figures 3 and 4 below for more information.

Figure 3 – SuDS Detail/Section

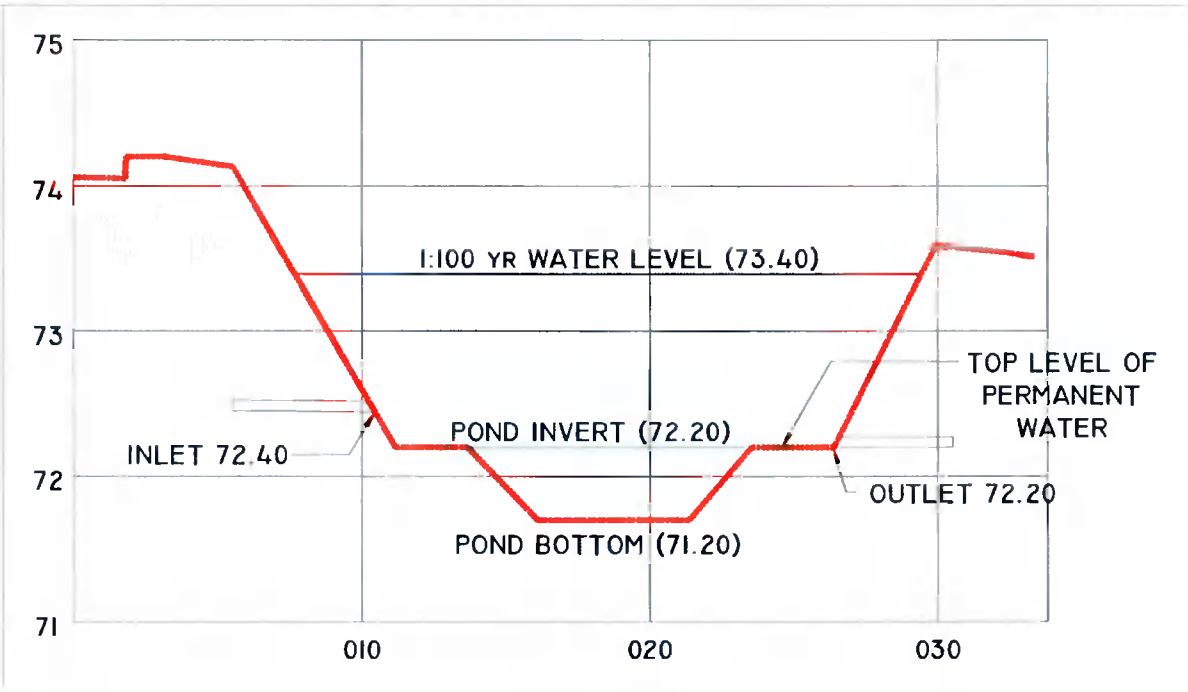

Figure 4 –Pond Section

(iii) ***Underground tanks remain beneath landscaped areas, these are generally not acceptable. These areas could be used for above ground attenuation and/or conveyance - the tanks render these areas sterile for tree planting. SDCC do not approve of using underground tanks as part of SuDS schemes where the full potential for the natural drainage features has not been explored. The applicant is requested to seek alternative solutions to minimise underground tanks and provide for significant SUDS across the entire site and is requested to clearly demonstrate, in revised proposals, the full potential for the natural drainage features explored across the site. *Note: The applicant should note that SuDS is an interdisciplinary issue their drainage engineers need to address and is not simply a landscaping requirement as indicated by the report by Pinnacle Engineers in the response to the AI request. SUDS should be an integrated multi-disciplinary approach which locally addresses water quality, water quantity, and provides for amenity and biodiversity enhancement which meets the objectives of South Dublin County Council Development Plan 2016-2022.***

In response to Item No. 1b(iii), all underground storage tanks have been removed in their entirety and are replaced by surface swales at two locations. We refer to Drawing No. DB080-PIN-00-ZZ-DR-C-PLAN-1207 Rev. P03 and DB080-PIN-00-ZZ-DR-C-PLAN-1295 Rev. P03, prepared by Pinnacle Engineers for more information.

We can confirm that the revised SuDS proposal has been designed as part of a multi-disciplinary team. We refer to the response prepared by Murray and Associates which examines the rationale for the chosen design having regard to the benefits of surface attenuation in the form of ponds and swales enhancing biodiversity and water quality on site.

The swales will be planted with native wetland planting in addition to previously submitted above ground attenuation pond. See enclosed Landscape detail sheet 3/3 (DB080-MA-LS-XX-DR-L-PLNT-7052) for marginal planting details.

(iv) The applicant is requested to demonstrate, in revised proposals, how the design has made use of the soft landscape to manage surface water and demonstrate how SuDS features have been integrated into the landscape proposal and provide details on how they work.

In response to Item No. 1b(iv), we refer to Murray and Associates response and note that bioretention tree pits, green roof elements, swales/ponds are part of the overall landscape strategy for the site. These features contribute to the overall amenity and greening of the site that benefit all future users and visitors to the development. These features provide a dual benefit by managing and reducing surface water discharge in a sustainable manner.

We refer to the enclosed Landscape detail sheet 3/3 Drawing no. DB080-MA-LS-XX-DR-L-PLNT-7052 for Structural tree pit detail and landscape masterplan Drawing No. DB080-MA-LS-XX-DR-L-PLNT-1050 for the relationship between above ground attenuation to associated planting.

The response letter prepared by Murray and Associated details the proposed plant mix for swales 1 and 2. The mix includes oxygenating, floating and marginal plants reflective of wetland wild flora.

(c) The southern landscaped/SUDS area located along the southern boundary of the site should demonstrate that 10m buffer (minimum) from the top of the northern edge of the stream is provided for its entire length in compliance with Objective G3-2 of the South Dublin County Development Plan 2016-2022. Note: All amendments to the overall proposed development should demonstrate compliance with policies and objectives as laid out in Chapters 7 and 8 of the County Development Plan. It should be clearly demonstrated that natural SuDS have been explored sufficiently and incorporated within the site (this may require the area stated for future development to be used to provide the required SuDS.)

In response to Item No. 1c, we refer to the pre-planning meeting with Tracy McGibbon and Sarah Watson 15 June 2021 and note the 8m biodiversity strip was considered acceptable, as the area is a dry ditch and not considered a stream or watercourse.

The biodiversity plan submitted previously by RKD Architects shows that the biodiversity strip to the south of the site varies in width and exceeds 8-10m in places. We refer to the response letter prepared by Murray and Associates for more information.

All surface water drainage requirements associated with the proposed development are facilitated within the site, as demonstrated in the accompanying plans and particulars submitted with this application.

We conclude the proposal complies with all SuDS related objectives outlined in the Existing and Draft Development Plan, as follows:

SDCC Policies pertaining to Green Infrastructure and Sustainable Urban Drainage

SDCC Development Plan 2016-2022	*Draft SDCC Development Plan 2022-2028*
G5 Objective 1: *To promote and support the development of Sustainable Urban Drainage Systems (SUDS) at a local, district and county level and to maximise the amenity and biodiversity value of these systems.*	***IE3 Objective 2:*** *To maintain and enhance existing surface water drainage systems in the County and to require Sustainable urban Drainage Systems (SuDS) in new development in accordance with objectives set out in section 4.3.2 of this Plan including, where feasible, integrated constructed wetlands, at a local, district and County level, to control surface water outfall and protect water quality.*

	GI4 Objective 6: *To maintain and enhance existing surface water drainage systems in the County and promote and facilitate the development of Sustainable Urban Drainage Systems (SUDS), including integrated constructed wetlands, at a local, district and County level, to control surface water outfall and protect water quality.*
G5 Objective 2: *To promote the provision of Green Roofs and/or Living Walls in developments where expansive roofs are proposed such as industrial, retail and civic developments.*	***GI5 Objective 7:*** *Require the provision of green roofs and green walls, providing benefits for biodiversity and as an integrated part of Sustainable Drainage Systems (SuDS) and Green Infrastructure, in apartment, commercial, leisure and educational buildings, wherever possible and develop an evidence base for specific green roof requirements as part of the Council's ongoing SuDs strategy development.*
G6 Objective 1: *To protect and enhance existing ecological features including tree stands, woodlands, hedgerows and watercourses in all new developments as an essential part of the design process.*	***GI2 Objective 2:*** *To protect and enhance the biodiversity and ecological value of the existing GI network by protecting where feasible (and mitigating where removal is unavoidable) existing ecological features including tree stands, woodlands, hedgerows and watercourses in all new developments as an essential part of the design and construction process.*
G6 Objective 3: *To require multifunctional open space provision within all new developments that includes provision for ecology and sustainable water management.*	***GI4 Objective 3:*** *To require multifunctional open space provision within new developments to include provision for ecology and sustainable water management.*
IE1 Objective 9: *To liaise with the relevant stakeholders, to ensure the implementation of BS8515-2009 rain & grey water harvesting, subject to class of use (SI 600 2001) and the economic viability for the end user.*	-
IE1 Objective 10: *To promote water conservation and best practice water conservation practices in all developments, including rainwater harvesting, grey water recycling and supporting the implementation of BS8515: 2009 Rainwater harvesting systems – Code of practice.*	***IE2 Objective 7:*** *To promote water conservation and best practice water conservation in all developments, including rainwater harvesting, grey water recycling and supporting the implementation of BS8515:2009 Rainwater harvesting systems – Code of practice.*
IE2 Objective 5: *To limit surface water run-off from new developments through the use of Sustainable Urban Drainage Systems (SUDS) and avoid the use of underground attenuation and storage tanks.*	***GI4 Objective 1:*** *To limit surface water run-off from new developments through the use of Sustainable Urban Drainage Systems (SuDS) using surface water and nature- based solutions and ensure that SuDS is integrated into all new development in the County and designed in accordance with South Dublin County Council's Sustainable Drainage Systems (SuDS) Explanatory, Design and Evaluation Guide.*

E3 Objective 1: *To ensure that medium to large scale residential and commercial developments are designed to take account of the impacts of climate change, including the installation of rainwater harvesting systems and that energy efficiency and renewable energy measures are incorporated in accordance with national building regulations, policy and guidelines*	***GI5 Objective 1:*** *Protect and enhance the rich biodiversity and ecosystems in accordance with the ecosystem services approach to development enabling mitigation of climate change impacts, by absorbing excess flood water, providing a buffer against extreme weather events, absorbing carbon emissions and filtering pollution.*
G3 Objective 2: *To maintain a biodiversity protection zone of not less than 10 metres from the top of the bank of all watercourses in the County, with the full extent of the protection zone to be determined on a case by case basis by the Planning Authority, based on site specific characteristics and sensitivities. Strategic Green Routes and Trails identified in the South Dublin Tourism Strategy, 2015; the Greater Dublin Area Strategic Cycle Network; and other government plans or programmes will be open for consideration within the biodiversity protection zone, subject to appropriate safeguards and assessments, as these routes increase the accessibility of the Green Infrastructure network.*	***GI3 Objective 3:*** *To promote and protect native riparian vegetation along all watercourses and ensure that a minimum 10m vegetated riparian buffer from the top of the riverbank is maintained/reinstated along all watercourses within any development site.*
	GI4 Objective 2: *To incorporate a SuDS management train during the design stage whereby surface water is managed locally in small sub-catchments rather than being conveyed to and managed in large systems further down the catchment.*

3 – Green Infrastructure and SuDS Policies (Existing and Draft Plan)

(d) Having regard to the above, the Planning Authority have concerns in relation to the intensity of the development on the site and the potential for sustainable surface water attenuation of the indicated additional future development on the site. This future area may need to be used to accommodate appropriate SUDS measures.

In response to Item No. 1d, we note that the SuDS requirements for the subject application are comprehensively addressed as part of this planning application. The area indicated as additional future development will be planted as a meadow area. We refer to the landscape drawings accompanying this response for more information.

Any future development and subsequent planning applications will address all SuDS requirements under separate consent.

7.0 Conclusion

The Applicant has made every attempt to address all items raised as part of the Clarification of Further Information request and we trust that the Planning Authority will duly consider this submission in full in their assessment of the revised scheme. Several enhanced SuDS measures have been incorporated and the response includes the following information:

- Removal of underground attenuation tanks;
- Provision of enhanced SuDS measures including details;
- Clarification of greenfield run off rate calculations for each surface water catchment;
- Clarification of maximum rates for each individual flow control device;
- Demonstration of compliance with the existing and Draft County Development Plans;
- Provision of a generous biodiversity strip along the dry ditch to the south of the site; and
- Integration of surface water drainage requirements with landscape and visual amenity considerations.

Overall, the subject proposal delivers a high quality development on this commercially zoned site located at the entrance to Profile Park.

It is our considered opinion that the proposal now submitted addresses all concerns raised by the Planning Authority and we are of the view that any potential issues that may arise following consideration of this submission can be appropriately addressed by condition.

All considered, we trust that the Planning Authority will look favourably on the proposed development and grant permission for the proposal as appropriate.