O'CONNOR · SUTTON · CRONIN
MULTIDISCIPLINARY CONSULTING ENGINEERS

HEAD OFFICE
9 Prussia Street
Dublin
Ireland
D07KT57

T: +353 (0)1 8682000
E: ocsc@ocsc.ie | W: www.ocsc.ie

Dún Laoghaire-Rathdown County Council
Marine Road
Dún Laoghaire
Co.Dublin

18/12/2024

C-KG

Z040

RE: RESPONSE TO LRD OPINION REPORT

Dear Sir/Madam

The following is our response to the opinion report issued by Dún Laoghaire-Rathdown on the Blackglen LRD located on lands at Blackglen Road, Sandyford. These refer only to the items relate to the drainage design and site-specific Flood Risk Management Report. Other opinions will be addressed by the remaining members of the design team.

1.1 ITEM 10.A – GREEN ROOFS

The applicant has indicated a green roof provision of 60%. This is not in line with the current Green Roof Policy. In accordance with Appendix 7.2: Green Roof Policy of the County Development Plan 2022-2028, the applicant should demonstrate which areas of the development will have green roofs, and should demonstrate by calculation, and by representation on a drawing, that the proposed green roof extents are in accordance with the Council's Green Roof Policy such that the minimum coverage requirement is achieved.

RESPONSE

It was noted in the opinion document that earlier green roof provision was indicated at 60%. Green roof area requirements (per Dun Laoghaire-Rathdown County Development Plan 2022-2028, Appendix 7.2) call for 70% coverage where the green roof build up is extensive (min 80mm soil build up), and 50% coverage where an intensive build up will be used (min 200mm soil build up). The proposed buildings to which the DLR CDP regulations apply are listed in the table below, along with their total roof area, green roof requirements, the proposed area

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of green roof coverage, and whether it is proposed to use an intensive or extensive build up. All buildings now meet and exceed the minimum requirements for area of coverage.

Buildings with Greater than 300m^2	Total Area	Green Roof Requirement (Extensive 70%)	Green Roof Requirement (Intensive 50%)	Green Roof Area Provided
A1	586	410	293	Over 1280m^2 provided by placing extensive green roofs on 20 of the individual units (approximating to almost 80%)
A2	1022	715	511	
B1/B2	2035	1425	1018	1060 (intensive)
B3/B4	2059	1441	1030	1065 (intensive)

Table 1: Proposed Green Roof Coverage

The applicant should also provide details of maintenance access to the green roofs and should note that, in the absence of a stairwell type access to the roof, provision should be made for alternative maintenance and access arrangements such as external mobile access that will be centrally managed. A detailed cross section of the proposed build-up of the green roof should be provided, including dimensions. The applicant should demonstrate that the green roof is designed in accordance with BS EN 12056-3:2000, BS 6229:2018 and The SUDS Manual (CIRIA C753).

RESPONSE

We defer to the Architect to respond to this part of the item.

Any runoff coefficients applied to the green roof areas should be in accordance with the tabulated runoff factors detailed in Section 3 of Appendix 7.2: Green Roof Policy.

RESPONSE

Runoff factors used in the modelling of the drainage system were as follows (per DLR CDP requirements – Appendix 7.3, p. 260):

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- For extensive green roof areas, a factor of **0.917** was used (on the 20 individual housing unit with green roofs).
- For intensive green roof areas, a factor of **0.834** was used (on Block B1/B2 and Block B3/B4).

1.2 ITEM 10.B – PROVISION FOR URBAN CREEP

The applicant is requested to provide provision for urban creep, in the areas that may be subject to urban creep (private housing), in line with the requirements of Appendix 7.1 of the County Development Plan.

RESPONSE

As required in the DLR CDP (Appendix 7.2, p. 241), *"All developments must apply a factor of 1.1 to their drainage design and attenuation volumes to accommodate urban creep."* This factor has been applied to the design model and may be seen in the Design Calculations Report read-outs in Appendix D of the Engineering Services Report (see sample below).

CAUSEWAY	O'Connor Sutton & Cronin 9 Prussia Street Dublin 7 D07 KT57	File: SW and WW Networks.pf(Network: Storm-Main Kyle Gray 19/11/2024	Page 18 Blackglen Road LRD Z040

Results for 30 year +20% CC +10% A Critical Storm Duration. Lowest mass balance: 98.34%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
30 minute summer	20	22	146.305	0.334	8.8	0.3783	0.0000	SURCHARGED
30 minute summer	21	23	146.299	1.659	19.2	4.7141	0.0000	SURCHARGED

Table 2: Sample from analysis results in Design Calculations Report, showing Urban Creep factor of 10%

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1.3 ITEM 10.C – BREAKDOWN OF STORAGE PROVISION

It is not clear from the report the extent of storage provided on site. The applicant is requested to provide a detailed written breakdown of the storage provision in each of the storage facilities on site (bioretention areas/storage tank etc)

RESPONSE

A tabulated list of storage facilities has been included in the Engineering Services Report in section 3.6, with storage volume provided, depth, invert, minimum cover, etc.

1.4 ITEM 10.D – CROSS SECTIONS OF SUDS FEATURES

The applicant is requested to submit plan and cross sectional drawings for the proposed:

a. Attenuation system
b. Green roofs/podiums (if provided)
c. SuDS measures

RESPONSE

Cross sections of underground attenuation have been provided on drawings C-0521/22. Those of the other SuDS measures are provided on details sheet C-0523/24.

1.5 ITEM 10.E – COLOUR-CODED SUB CATCHMENT PLAN

The applicant has indicated a number of sub catchments, within catchment area 1. The applicant is requested to identify on a colour coded drawing the various sub-catchments and the elements of interception, storage, conveyance and flow control for each.

RESPONSE

This item has now been provided for in drawing C-0505 (Storm Water Catchment Zone Plan).

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1.6 ITEM 10.F – TREE PITS / BIORETENTION AREAS

The applicant is requested to comment on the lack of tree pits or bioretention areas adjacent to the roads within the development.

RESPONSE

Tree pits, bio-retention areas and rain gardens have been provided and are indicated on the Storm Water Drainage Layouts C-0501 & C-0502.

1.7 ITEM 10.G – OPTIONS FOR INTERCEPTION AND DRAINAGE

As standard, the applicant is requested to show the options being proposed for interception and treatment with contributing areas on a drawing together with an accompanying text and tabular submission showing the calculations, to demonstrate that the entire site is in compliance with GDSDS requirements. The applicant should note that over-provision in one location does not compensate for under provision elsewhere.

RESPONSE

This has been provided as Appendix L in the Engineering Services Report.

1.8 ITEM 10.H – LONG SECTIONS OF DRAINAGE SYSTEM

As standard, the applicant is requested to submit long-sections of the surface water drainage system, clearly labelling cover levels, invert levels, pipe gradients and pipe diameters.

RESPONSE

These have been submitted for each of the Storm Water and Wastewater drainage systems (see drawings C-0510, C-0511, C-0512 for the surface water long sections, and drawings C-0515, C-0516 for the wastewater long sections).

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1.9 ITEM 10.I – SECTIONS AND DIMENSIONING OF ATTENUATION STRUCTURES

As standard, the applicant is requested to provide fully dimensioned plans and sections of the attenuation storage system. All relevant inlet and outlet levels, dimensioned clearances between other utilities, and actual depths of cover to the tank shall be provided.

RESPONSE

Plan dimensions have been added to the latest drainage layout drawings (C-0501, C-0502). Sections of the same are provided on drawings C-0521/22.

The applicant shall include confirmation from the chosen manufacturer of the storage system that the specific model chosen, with the depth of cover being provided, has the required load bearing capacity to support the loading that may imposed upon it.

RESPONSE

The table below from the product specification document (attached to Engineering Services Report as Appendix I) gives the maximum cover allowed as 3m. The maximum cover used in the design drawings is 1.7m in one isolated area. Generally, the depth of cover ranges from about 700mm to 1200mm. See drawings C-0521 & C-0522 for cross sections of all attenuation structures with cover dimensions.

SPECIFICATION (SINGLE)

Weight (maximum)	9.17kg
Crush Strength (up to)	400kN/m2
Lateral Strength	80kN/m2
Minimum Cover (green areas)	500mm
(trafficked areas)	650mm
Maximum Cover	3m
Material	Polypropylene
Void Ratio (Internal)	>95%

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1.10 ITEM 10.J – USE OF INFILTRATION ON SUDS MEASURES

If the applicant proposes SuDS measures that incorporate the use of infiltration, the applicant is requested to provide details of each SuDS measure and confirm whether it will be lined/tanked or not.

a. *If lined/tanked systems are to be used, then the applicant will be requested to explain the rationale behind this.*

b. *If unlined systems are to be used then the applicant is requested to demonstrate on a drawing that all infiltration SuDS proposals, including the attenuation system, have a 5m separation distance from building foundations and 3m separation from site boundaries.*

RESPONSE

None of the SuDS features proposed will be lined/tanked in order to allow for even minimal infiltration. Infiltration has only been considered in modelling calculations for the stone soakaway in the southeastern portion of the site, and for the infiltration trenches. There are three instances where underground attenuation structures are less than 5m from buildings. These occur as follows:

- To the south side of Block A1; at a distance of 2.5m from the building (as shown on drawing C-0501).
- To the north of Block B2; at a distance of 3m from the building (as shown on drawing C-0501).
- To the south-west side of Block A2; abutting the building foundation (as shown on drawing C-0501).

However, as the buildings foundations will themselves be founded over the shallow underlying rock, it is judged that they pose no risk to the buildings' stability (noted in section 3.2.4.8 of the Engineering Services Report). In no case is a SuDS feature proposed located within 3m of the site boundary.

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1.11 ITEM 10.K – DRAINAGE NETWORK FOR PROPOSED BASEMENT

The applicant has not provided any information in relation to the drainage network for the proposed basement. The applicant is requested to provide a drawing detailing the basement drainage arrangements, noting that all basement drainage should discharge to foul sewer and not the surface water sewer.

RESPONSE

We will defer to the Architects for internal drainage design. A primary wastewater network has been provided in proximity to all buildings for the outflow of foul sewers and internal floor drains. Connection locations are indicative only.

1.12 ITEM 10.L – CO-ORDINATION WITH OTHER DISCIPLINES

As standard, the applicant shall ensure that other disciplines' drawings and designs are compatible and co-ordinated with engineering design and drawings.

RESPONSE

These are currently being reviewed. The storm water drainage, wastewater drainage and watermain design have all been co-ordinated and no clash has been detected.

1.13 ITEM 10.M – NO BYPASS DOORS ON FLOW CONTROL DEVICE

As standard, the applicant is requested to ensure that the flow control device provided does not have a bypass door.

RESPONSE

Descriptions on the final outfalling flow controls on the drainage layout have been amended to include a note that the flow control must be without a bypass door.

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1.14 ITEM 10.N – SPECIFIC FLOW CONTROL DEVICE INFORMATION

As standard, the applicant is required to provide specific flow control device information including the model and make number, orifice size and flow control hydraulic characteristics graph.

RESPONSE

A table outlining the suggested model, model number, design flow, orifice size, etc. for the primary outfalling flow controls has been added to the Engineering Services Report (Sec. 3.4.2.10). More detailed specifications, design drawings and flow characteristics graphs have been added to appendix K in the same report.

1.15 ITEM 10.O – STORM WATER AUDIT

As standard, a Stormwater Audit will be required for this application. In accordance with the Stormwater Audit policy, the audit shall be forwarded to DLRCC prior to lodgement of the planning application. All recommendations shall be complied with, unless agreed in writing otherwise with DLRCC.

RESPONSE

A Storm Water Audit has been completed by JBA Consulting

1.16 ITEM 10.A (SSFRA) – EXCEEDANCE FLOW

The applicant is requested to comment on the proposed surface water drainage system in the event of blockage or partial blockage of the system, commenting on any surcharging or flood risk that may be identified. The applicant is requested to submit a drawing identifying and showing details of safe overland flow routes both within and without the site. The overland flow route plan should identify drop kerbs or ramps requested for channelling the flow, should

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9 Prussia Street
Dublin
Ireland
D07KT57
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address low point areas in the site and should detail how properties, both within the development and on adjacent lands, will be protected in the event of excessive overland flows.

RESPONSE

Drawing C-0508 (Exceedance Flow Plan) has now been provided as part of the civils drawing package. In addition an explanatory section (4.3.3) has been added to the Site Specific Flood Risk Assessment, and the above drawing added to the same as Appendix G.

1.17 ITEM 10.B (SSFRA) – CROSS SECTION AT FLOOD EXTENTS

The applicant is required to show by cross-sections that the topography remains unaltered across the full extent of the flood extents. These cross-sections should also confirm that the required freeboard is provided.

RESPONSE

A Cross Section has been provided as Appendix F in the Site-Specific Flood Risk Assessment.

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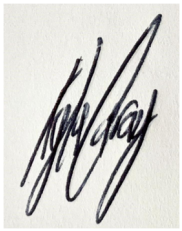
Should you require further clarification on any of the above items, please let me know.

Kind Regards,



Kyle Gray

For O'Connor, Sutton, Cronin.

OCSC

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Ireland
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