



South Dublin County Council
County Hall Tallaght,
Dublin 24,
D24 YNN5

Date: October 18th, 2019

Re: Application for Permission for Main Drainage for Residential Development at the corner of Belgard Road and Airton Road, Tallaght, Dublin 24.

Our Ref: 18161

Dear Sir/Madam,

Power Scaffolding Supplies Limited intend to apply to An Board Pleanála for permission for a strategic housing development on a 1.19 ha site at the corner of Belgard Road and Airton Road, Tallaght, Dublin 24.

The development will consist of the demolition of the existing industrial buildings on site (4,800 sq m) and the construction of 2 No. blocks comprising 328 No. apartments (93 No. 1 bed, 222 No. 2 bed and 13 No. 3 bed), ancillary residential support facilities and commercial floor space measuring 31,147 sq m gross floor space above a single basement measuring 5,861 sq m.

Block A is part 5 to part 7 No. storey building (13,710 sq m) over basement comprising 149 No. apartments with class 3 office space (222 sq m). Block B is a part 6 to part 9 No. storey over basement block comprising 179 No. apartments, 2 No. double height class 1/2 commercial/retail units (354 sq m), café/restaurant (313 sq m), creche (360 sq m), internal residents amenity area (644 sq m) at ground floor including reception (37.7 sq m), residents lounge (91.3 sq m), private dining area (52.6 sq m), We Work space (45.5 sq m), games room (47.3 sq m) and gym (80 sq m) and communal lounge (220 sq m) at 6th floor level (17,437 sq m).

The development also consists of the provision of a landscaped courtyard; public plaza at the corner of Airton and Belgard Road; pedestrian access from Airton Road to the Technological University campus; balconies; landscaped roof terrace at 6th floor level (7th Storey) of Block B (671 sq m); 184 No. car parking spaces at basement level including 14 No. club car spaces; 727 No. basement and surface bicycle parking spaces; 4 No. motorbike parking spaces; bin storage; boundary treatments; green roofs; hard and soft landscaping; plant; lighting; Vodafone cabin sub-station; ESB sub-stations, switch rooms and generators; and all other associated site works above and below ground.

In relation to the above project, please find the enclosed drawings and calculations detailing the proposed drainage arrangements, a summary of which are outlined below.

Surface Water Sewer:

The hard standing areas (5,226 m²), grassed areas (2,596 m²), green roof (2,216 m²) and the permeable paving areas (1,890 m²) of the proposed developments adds up to approximately 7,033.80 m² for surface water attenuation calculation. The proposed development for a return period of 1 year would yield a runoff of approximately 107.66 l/s. Surface water is to flow by gravity to last manhole S01, which contains a flow control device, limiting the flow of water to 4.129 l/s towards existing manhole Ex. S04, (Refer to drawing 18161_C01). Last manhole S01 will receive surface water from Block A and Block B in following order:

Surface water flow network 1: S02 to S01 to Ex. S04

Surface water flow network 2: S07 to S06 to S05 to S04 to S03 to S01 to Ex. S04

The existing site is currently a brownfield site and predominantly covered with existing warehouse. Storm water attenuation is provided by STORMTECH MC-4500 (Tank 1) and RC Tank (Tank 2) with a total storage capacity of 677.2 m³. Tank 1 is connected to manhole S09, and to last manhole S01 while Tank 2 is connected to manhole S02. Refer to 18161_C01.

In relation to SuDS, and in accordance with GSDS guidelines, it is proposed to provide MC-4500 STORMTECH attenuation chambers for the 1:100yr storm event and a 20% increase in storage volume to allow for climate change, capable of storing 140m³ in volume. Additionally, the proposed attenuation chambers allow for the removal of total suspended solids and provides easy access for inspection and maintenance. To increase the process of percolation, the attenuation chambers are to be surrounded with a permeable geotextile to promote infiltration. The introduction of the proposed attenuation system reduces the volume of rain water leaving the site, thereby reducing the strain on the public sewer in relation to capacity in storm events. Proposed footpaths including the access road around the apartment development will be of a permeable finish.

It is proposed to use an extensive green roofing system on 6th, 7th and 8th floor on Block A & on 8th floor and roof on Block B, making a total of 43% green roof. Green roof will incorporate the use of sedum layers into the design, with the aim of delaying and reducing runoff from the site in times of precipitation. The intention is to provide an additional natural and sustainable form of attenuation within the site that will reduce the total runoff from site by temporarily retaining the runoff within the sedum layers and promoting evaporation.

Surface water in the basement is drained using pumping system (ABS MF 154-804 or similar approved) located between surface water manhole S22 and foul water manhole F05, and passed through a petrol interceptor (Klargestor NSB3 Class 1 or similar approved) before flowing to foul water manhole, F0. Refer to drawing 18161_C02 for details.

We have consulted with Ronan Toft of South Dublin County Council in relation to both foul and surface water drainage strategy of the proposed development as requested by South Dublin County Council. The council is deemed to be satisfied with the proposed scheme. All the list of concerns raised by council and our measures taken after discussion are summarized below:

Surface Water Report from South Dublin County Council:

1) The grassed areas and permeable paving areas on the proposed site have not been factored into the surface water attenuation calculations. Therefore the 1 in 100 year storm surface water attenuation system, currently providing 486m³ of storage, is undersized by approximately 7% (using run off coefficients; 0.15 for grassed areas, 0.6 for permeable

paving areas, 0.8 for Hardstanding/Roof areas, SAAR Value of 821-Tallaght, Soil Factor 0.37 and allowable 20% additional rainfall due to climate change). An additional provision of approximately 7% surface water attenuation is required.

Response: Storm surface water attenuation system has been resized using appropriate run off coefficients as suggested.

2) A revision of surface attenuation capacity as per point 1.1 above shall result in a reduced Qbar run off rate from the site.

Response: A reduced Qbar run off rate of 4.129 l/s has been used as agreed with Ronan Toft (South Dublin County Council).

3) A further detailed breakdown of surface areas and corresponding run off coefficients is to be shown for clarification purposes in the surface water attenuation calculations (e.g. Green roofs, Buildings, Paths, Permeable Paving, Roads etc.)

Response: A detailed breakdown as requested has now been shown.

4) There is confusion as to what rate surface water is discharged from the site. Drawing no. 18161_C01 states that the hydrobrake limits the discharge flow from the site to 5.6l/s however the drainage letter note submitted states that the flow control device limits the flow of water to 9.40l/s towards existing manhole S04. Clarification is required as to what the proposed Hydrobrake is limiting surface water discharge from the site to.

Response: Hydrobrake to limit flow to 4.129 l/s as per point 2 above and as agreed with Ronan Toft (South Dublin County Council).

5) There is confusion as to what soil factor is used in the calculations submitted for QBAR. Clarification is required as to what soil factor is used to calculate QBAR.

Response: SAAR Value of 821mm for Tallaght has been used as suggested.

6) The horizontal angle between existing manhole Ex. S01 and the proposed diverted section of pipe which runs parallel to the northern boundary of the site is too acute. Therefore a revised design is required showing the horizontal angle between existing manhole Ex. S01 and the proposed diverted section of pipe which runs parallel to the northern boundary of the site to be minimum of 90°. This is required in order to reduce the extent of which the surface water must change direction.

Response: Two new surface water manholes S10 & S11 have been introduced to allow change of direction of the surface water.

7) The proposed ESB and Vodafone sub stations are shown to be located directly over the diverted 1050mm surface water sewer. No structure shall be located over 1050mm surface water sewer and at least 5m from the outside diameter of 1050mm surface water sewer. The sub stations shall be relocated such that they are a minimum of 5m from the outside diameter of the 1050mm surface water sewer.

Response: The proposed Vodafone Cabin Substation is a temporary cabin and has no structural foundation. Vodafone substation is to be incorporated into the main substation for the

proposed development as agreed with South Dublin County Council. Proposed ESB substation has now been relocated.

8) *A section of the proposed building at the north of the site is shown to be located directly over a proposed 225mm diameter surface water sewer. No structure shall be located over any surface water sewer that is a public surface water sewer or sewer that has potential to be taken in charge. All structure shall be minimum of 3m from 225mm public surface water sewers or 225mm surface water sewers that have potential to be taken in charge.*

Response: All structure is kept minimum a 3m from 225mm public surface water sewers or 225mm surface water sewers that have potential to be taken in charge. Minimum wayleave of 3m will be maintained from centreline of public sewer to any structure.

9) *Surface water attenuation Tank 1 is located too close to the existing 1050mm diameter surface water sewer running to the east of the proposed tank. The design shall be revised to ensure that all proposed surface water attenuation tanks are located a minimum clear distance of 3m from proposed and/or existing structures.*

Response: Attenuation Tank 1 is located at a minimum clear distance of 3m from existing 1050mm diameter surface water sewer.

10) *Surface water attenuation Tank 2 is located too close to the existing cellular mast immediately south of the proposed development. The design shall be revised to ensure that all proposed surface water attenuation tanks are located a minimum clear distance of 3m from proposed and/or existing structures.*

Response: Attenuation Tank 2 has been moved to different location and kept a minimum clear distance of 3m from proposed and/or existing structures.

Note:

- *The developer shall ensure that there is complete separation of the foul and surface water drainage systems within the site, both in respect of installation and use.*
- *All new precast surface water manholes shall have a minimum thickness surround of 150mm Concrete Class B.*
- *All works for this development shall comply with the requirements of the Greater Dublin Regional Code of Practice for Drainage Works.*

Response: Foul water and surface water drainage systems is kept completely separate as required by South Dublin County Council. All surface water manholes are to be Class B.

Foul Sewer:

It is proposed to provide a 150mm diameter foul sewer pipe to serve the development. The foul water from the development is to fall by gravity to the last foul water manhole FW01, and to the existing foul water manhole Ex. F03 located on Airton Road, (Refer to drawing 18161_C01).

Foul water pipe sizing is derived from wastewater loadings of 150 l/person/day for apartment residents. The proposed development consists of 328 no. of apartments, which generates a dry weather flow (DWF) of 1.69 l/s with a 6DWF of 10.15 l/s, suggesting that a 150mm Ø pipe at a gradient of 1:150 (capacity of 13.50 l/s) is sufficient for the development.

Foul water is to flow by gravity to last manhole F01 before flowing to existing manhole Ex. F03. Last manhole F01 will receive foul water from Block A and Block B in following order:

Block A foul water flow network: F04 to F03 to F02 to F01 to Ex. F03

Block B foul water flow network: F08 to F07 to F06 to F05 to F01 to Ex. F03

Where foul water drainage is to be taken in charge, the design & details are in compliance with Irish water's standard details and code of practice for water and/or wastewater infrastructure proposals. A full design submission has been issued to Irish Water. We await a statement of design acceptance.

Watermain:

It is proposed to connect a 100mm diameter watermain pipe from the development to the existing watermain on Airton Road. Refer to drawing 18161_C01 for details.

Where watermain is to be taken in charge, the design & details are in compliance with Irish water's standard details and code of practice for water and/or wastewater infrastructure proposals. A full design submission has been issued to Irish Water. We await a statement of design acceptance. A full design submission has been issued to Irish Water. We await a statement of design acceptance.

Flood Risk:

As per the Flood Risk Assessment, the site is currently located in a flood zone type C and therefore has a low probability of experiencing a flood event. It is therefore our opinion that the risk of flooding at this site and the risk of flooding due to the development of this site in flood events is minimal.

We trust that this is in order, but should you have any queries on the foregoing, please do not hesitate to contact the undersigned.

Yours sincerely,



Mr. Chandra Ghale B.Sc. (Hons), MSc., M.I.E.I.
Engineer
For Lohan & Donnelly Consulting Engineers

18th October 2019

Encl.

Drainage Layout	[Dwg No. 18161-C01]
Basement Drainage Layout	[Dwg No. 18161-C02]
Swept Path Analysis & Visibility	[Dwg No. 18161-C03]
Drainage Sections & Details (1 of 1)	[Dwg No. 18161-C04]
Drainage Longitudinal Sections Surface Water (1 of 2)	[Dwg No. 18161-C05]
Drainage Longitudinal Sections Surface Water (2 of 2)	[Dwg No. 18161-C06]
Drainage Longitudinal Sections Foul Water (1 of 2)	[Dwg No. 18161-C07]
Drainage Longitudinal Sections Foul Water (2 of 2)	[Dwg No. 18161-C08]
Swept Path Analysis (Fire Tender)	[Dwg No. 18161-C09]
Flood Risk Assessment	
Design Calculations Surface Water (1 of 2)	
Design Calculations Surface Water (2 of 2)	
Design Calculations Surface Water (QBAR)	
Design Calculations Foul Water	
Confirmation of Feasibility Letter (Irish Water)	
DMURS Compliance Statement	