

## SOURCES OF DATA

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| RKD Architects Ltd. | Land Survey Services Ltd. |
| Google              | Brock McClure             |
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## Executive Summary

This report was prepared for South Dublin County Council in connection with the planning application for a data centre development and addresses the existing and proposed civil infrastructure, for the proposed development, located in Profile Park, Grange Castle Business Park, Lucan, Co. Dublin.

Equinix (Ireland) Ltd. intend to apply for permission for development at this site of c.2.65ha on lands known as Plot 100, Profile Park, Nangor Road, Clondalkin, Dublin 22 (the site is bounded to the east and south by Grange Castle Golf Club, to the north by Nangor Road (R134) and to the west by an estate road known as Falcon Avenue). The development will consist of the following:

- Construction of a 3 storey (part 4 storey) data centre known as "DB8" to include data halls, electrical/plant rooms, offices, lobbies, ancillary staff areas including break rooms and toilets, stores, stair/lift cores throughout and photovoltaic panels at roof level. The total gross floor area excluding hot air plenums and external staircase is c.9,601sqm. The overall height of the data centre ranges from c.16m to c.20m to roof level and c.20m to c.24m including roof top plant, flues and lift overrun;
- Provision of 5 no. external generators , 8 no. fuel tanks and ancillary plant contained within a plant yard to the north of DB8;
- Provision of a water tank plant room, air cooled chillers and ancillary plant contained within a chiller plant yard to the south of DB8;
- Provision of a sprinkler pump room (c.23sqm), 2 no. sprinkler tanks (c.12m high each), heat recovery plant room (c.17sqm), ESB substation (c.44sqm), waste/bin stores (c.52sqm). Total floor area of ancillary structures and plant (c.303sqm);
- Provision of a delivery yard and loading bays, 64 no. car parking spaces, 5 no. motorcycle spaces, bicycle shelter serving 14 no. spaces, smoke shelter, internal access roads and footpaths, vehicular and pedestrian access to the west from Falcon Avenue and closure of existing vehicular entrances from Falcon Avenue;
- All associated site development works, services provision, drainage works including attenuation, landscape and boundary treatment works including berming, hedgerow protection areas and security fencing;
- No buildings are proposed above the existing ESB wayleave and SDCC watermain wayleave to the west and north of the site;
- The area to the south west of the site is reserved for a future data centre, subject of a separate application to South Dublin County Council;
- This application is accompanied by a Natura Impact Statement.

The report should be read in conjunction with our engineering planning drawings, and deals with existing foul, surface water and water mains present within the surrounding area, and the proposals for the site with regards to these services.

The report also discusses the ground conditions present on the site, the current proposals for achieving the development plateau and sustainability measures incorporated with the development.

The following engineering drawings have been prepared for the proposed development:-

|                                    |  |
|------------------------------------|--|
| DB080-PIN-00-ZZ-DR-C-PLAN-1202-P02 | Proposed Site Levels & Contours                    |
| DB080-PIN-00-ZZ-DR-C-PLAN-1205-P02 | Site Drainage                                      |
| DB080-PIN-00-ZZ-DR-C-PLAN-1210-P02 | External Works Plan                                |
| DB080-PIN-00-ZZ-DR-C-ZZZZ-3207-P02 | Proposed Drainage Long Section (Foul) Sh 1/3       |
| DB080-PIN-00-ZZ-DR-C-ZZZZ-3208-P02 | Proposed Drainage Long Section (Foul) Sh 2/3       |
| DB080-PIN-00-ZZ-DR-C-ZZZZ-3209-P02 | Proposed Drainage Long Section (Foul) Sh 3/3       |
| DB080-PIN-00-ZZ-DR-C-ZZZZ-3210-P02 | Proposed Drainage Long Section (Surface)<br>Sh 1/2 |
| DB080-PIN-00-ZZ-DR-C-ZZZZ-3211-P02 | Proposed Drainage Long Section (Surface)<br>Sh 2/2 |

## 1 Introduction

The applicant proposes to construct 3 storey (part 4 storey) data centre and associated office areas, which will be accessed off Falcon Avenue to the west.. The purpose of this report is to address the civil infrastructural aspects of the proposed data centre development, located in Profile Park, Grange Castle Business Park, Lucan, Co. Dublin.

The total subject site area extends to circa 6.55 acres (2.65 ha) and is currently a greenfield site. The site is bounded to the north by the New Nangor Road, to the west by Falcon Avenue and to the east and south by Grange Castle Golf Club.

There are no known public sewer drainage pipes or watermains, presently located on the subject site.

This report has been prepared to outline the existing and proposed drainage, pollution control measures and water main infrastructure, in order to support the proposed development application.

The location of the site is indicated on the map extract below - Figure 1.



**FIGURE 1 - Site Location (Source Google Maps)**

## **2 Existing Drainage & Watermain Services**

### **2.1 Existing Foul Drainage Networks**

South Dublin County Council record drawings have identified 3 No. 150mm / 225mm Ø spur connections, located adjacent to the western boundary of the property & Profile Park. These spur connections were left out to facilitate development of these lands. These spur connections are joined into the reticulation network for Profile Park.

The existing foul sewer reticulation network has adequate capacity to cater for the proposed effluent discharge from the subject site and there are no known issues noted with the sewer reticulation network.

### **2.2 Existing Surface Water Drainage Networks**

The topographical survey as carried out has identified a dry open ditch which forms the southern boundary of the site adjacent to Grange Castle Golf Club. This ditch network runs in an westerly direction. This ditch network is then drained via a tributary into the Camac River.

The aforementioned open ditch network has been identified as having capacity to accommodate the proposed discharge from the subject site.

### **2.3 Existing Water Main Network**

South Dublin County Council record drawings have identified an existing 6" (160mm) Ø main located along the western boundary of the property, within Falcon Avenue adjacent to the subject site. 2No. 160mm Ø capped connections with sluice valves, have been left off the aforementioned water main, in order to facilitate development of these lands.

There is also an existing 700mm Ø trunk water main running parallel to the New Nangor Road adjacent to the northern boundary of the subject site.

From discussions with the South Dublin County Council, it is understood that there is adequate capacity within the existing watermain network to supply the proposed development.

### **3 Proposed Site Drainage & Water Supply**

#### **3.1 Proposed Foul Water Drainage**

It is proposed to discharge foul water from the proposed development, via a 225mm Ø gravity foul sewer outfall, laid from a discharge manhole at the end of a 100mm Ø pumped main and discharge into the existing 225mm Ø spur connection laid across Falcon Avenue, which is connected to the existing foul sewer network laid along the western edge of Falcon Avenue.

The office building contains 6 No. WC's, with a predicted maximum number of daily staff being in the region of circa 65 people, over a 24hr period. Based on Irish Water's Code of Practice of 150ltr/hd/day, the peak wastewater flow will not be in excess of circa 0.66l/s.

The proposed network connects into the EX MH FW11, with an invert level of 71.82m, prior to the ultimate outfall discharging into the Profile Park reticulation network, - refer Drawing No. DB080-PIN-00-ZZ-DR-C-PLAN-1205-P02.

All on-site foul sewers have been designed to be a minimum 225mm Ø diameter pipes, with gradients designed to achieve self-cleansing velocities.

#### **3.2 Proposed Surface Water Drainage**

Storm water from the proposed development has been designed in accordance with the GDSDS and ensures that Best Management Practice has been incorporated into the design.

It should be noted that the subject site currently comprises a greenfield site and the proposed surface water measures are aimed at improving the general surface water management of the site, by introducing interceptors, attenuation measures and by restricting the ultimate discharge, etc.

Storm water from the roof areas of the proposed building units, will be directed via rain water pipes into an on-site reticulation system. The outflow from this system will be connected into the surface water drainage network collecting run-off from the road areas and will be ultimately discharged into a stormwater storage pond / below ground Stormtech tanks (or similar approved) - refer Drawing No. DB080-PIN-00-ZZ-DR-C-PLAN-1205-P02.

Based on the contributing area for this current application, i.e. circa 22,400m<sup>2</sup> (2.24Ha), the total attenuation volume required has been calculated as being circa 1,204m<sup>3</sup>, which will be provided for as mentioned above, in a storage pond and below ground storage tanks (3No.) - Refer Appendix B for Surface Water Calculations.

The following volumes have been provided for within the storage elements:-

- Tank 1 provides a storage volume of 105m<sup>3</sup>
- Tank 2 provides a storage volume of 128m<sup>3</sup>
- Tank 3 provides a storage volume of 123m<sup>3</sup>
- The attenuation pond comprises a storage volume of circa 848<sup>3</sup>

It should be noted that both Tanks 1 & 2 discharge into the attenuation pond which has an outfall into the open ditch network. Tank 3 discharges independently into the ditch, thus providing a total of 2 No. outfalls into the ditch network.

Storm water from all car park areas and access roads / delivery areas will be drained as follows:-

- A series of on-site gullies and channels draining into a separate system of below ground gravity storm water sewers
- Porous asphalt

Prior to discharging into the proposed pond, the storm water from the car park and access roads, which is drained via the methods as described above, will be directed through an appropriately sized Conder Separator (or similar approved) petrol interceptor - refer Appendix A for Interceptor Details.

Site investigations have been carried out and the results have shown that the existing sub-soil would provide inadequate soil infiltration rates and thus it is not practical to install a soakaway system. The storm water drainage within the entire development has been designed to accommodate a 1:2 year storm frequency. The pond, attenuation tanks and porous asphalt areas have been designed to accommodate a 1:100 year storm event + 20% climate change.

The outflow from the proposed development, will be restricted by way of a Hydrobrake facility, which will limit the total discharge to 4.4l/s, which is the calculated QBAR greenfield run-off rate - refer Appendix B for Surface Water Calculations.

The surface water discharge for this application will incorporate the road areas, parking, service yard area and the roof water from the proposed data halls, which then ultimately feeds into the existing network as previously mentioned. Refer Appendix C, Dwg. No. DB080-PIN-00-ZZ-DR-C-PLAN-1210-P02, for a drawing indicating the various surface areas of this application; all areas are hardstanding of various types, with the respective coefficients detailed below:-

- Access Road – Tarmac (2,504m<sup>2</sup>) / c = 0.80
- Data Hall Roof Area (5,414m<sup>2</sup>) / c = 1.00
- Yard Slab Area – Concrete (2,032m<sup>2</sup>) / c = 0.80
- Open Space / Landscaping (5,214m<sup>2</sup>) / c = 0.30
- Porous Asphalt & Parking Areas (5,989m<sup>2</sup>) / c = 0.60



- Concrete Footpath (1,953m<sup>2</sup>) / c = 0.8
- Standard Road Tarmac (1,103m<sup>2</sup>) / c = 0.8
- Gravel (2,291m<sup>2</sup>) / c = 0.5

### 3.3 Proposed Water Mains

It is intended to serve the proposed development via connection off the 150mm Ø network, as located in Falcon Avenue - Refer Drawing No. DB080-PIN-00-ZZ-DR-C-PLAN-1202-P02.

Hydrants will be installed in accordance with the Requirements of the Building Regulations and in accordance with the recommendations contained in the Technical Guidance Documents, Section B – Fire Safety, dated 2006, and these are detailed on our engineering drawings.

Water demand for the development has been based on Irish Water's criteria, i.e. 150 litres/hd/day = 9,750 litres/hd/day (based on 65 PE) = 0.113 litres/second.

Avg. Demand = 0.113 l/s x 1.25 = 0.141 litres/second

Peak Demand = 0.141 l/s x 5 = 0.705 litres/second

Water meters, sluice valves and hydrants, in line with Irish Water requirements and specifications, will be installed at the connections onto the aforementioned existing water mains, as required. A Pre-Connection Enquiry application has been submitted to Irish Water in respect of the water supply and we are still awaiting a response to same.

### 3.4 Standard Drainage Details

All standard drainage details including manhole details, pipe bedding, channels, hydrants etc. have been included within the planning pack. Details of the types and construction methods will be agreed with the local authority prior to construction.

Drains generally will consist of PVC (to IS 123) or concrete spigot and socket pipes to (IS 6).

Drains shall be laid to comply with the Requirements of the Building Regulations 1997 and in accordance with the recommendations contained in the Technical Guidance Documents, Section H.

Strict separation of surface water and foul sewerage will be imposed on the development. Drains will be laid out to minimise the risk of inadvertent connections of sinks, dishwashers etc. to the surface water system.

In order to minimise the risk of floating contamination of the surface water system, road gullies will be precast trapped gullies to BS5911:Part2:1982.

Concrete bed and surround to the pipe runs will be used where the cover to the pipes is less than 900mm, where the pipes are sufficiently close to the building, or where the pipe runs are below the ground floor slab.

All works are to be carried out in accordance with Irish Water's Code of Practice for Water Infrastructure, dated July 2020 : Document IW-CDS-5020-03 and any subsequent revisions thereof.