

# **Equinix DB8 Data Centre, Profile Business Park, Dublin 22**

DB080-RKD-XX-XX-RP-A-XXXX-8001  
Architectural Design Statement

Purpose of issue: S4 – Issued for planning  
Revision: P01

**24 June 2021**

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## 1.0

### Introduction

The following report describes the design rationale of the new Equinix Data Centre facility to be constructed in Profile Business Park, Dublin 22, within the jurisdiction of South Dublin County Council. The report aims to identify and analyse the site, provide key concepts that drive the building programme and design, and outline any other critical items associated with the development.

The site, which is currently a greenfield site, is located at the entrance to a business park on the west outskirts of Dublin. While noted as greenfield, it has been used as a temporary builders' compound since the park inception and no permanent structure has ever existed - refer to Picture 9 and 10.

This area is currently a popular location for data centres, due to the zoning and services availability. The use of the site for a data centre facility has been discussed in a pre-planning meeting with the local authorities.

The site, measuring 2.649ha / 6.545 acres, sits adjacent to Nangor Road. Access to the site is via an internal business park estate road system from the west. The site is bounded on the east and south by an old hedgerow and dry ditch, which separates the site from the golf course.

Proposed building will be part 3 / part 4 storey Data Centre known as "DB8" and will 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 will be circa 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.

The IT capacity will be max.7.56 MW. Environmental requirements are managed by the mechanical and electrical plant located adjacent to the proposed building: 5 no. external generators, 8 no. fuel tanks and ancillary plant contained within a plant yard to the north, a water tank plant room, air cooled chillers and ancillary plant contained within a chiller plant yard to the south, and

There will also be 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 measures circa 303sqm.

The development will also provide 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, as well as all associated site development works, services provision, drainage works including attenuation, landscape and boundary treatment works including berming, hedgerow protection areas and security fencing.

## 2.0 Background

### 2.1 About Equinix

Equinix is a global industry leading company in digital business management, specialising in interconnection using data centres. Equinix currently have data storage facilities located in Europe, North and South America and across Asia-Pacific. They currently have four existing data centres in Ireland, including one in South Dublin County referred to as DB2, across the road. Further 3 no. data centres are currently under construction in Fingal County. Equinix have had a presence in Ireland since 2000, between the current brand and companies Equinix acquired as they grew their presence in Ireland.

Equinix data centres serve not only as a data storage amenity, but as a hub for offices, customer consultation and general day-to-day business management. Their facilities vary in size and function, with the ability for some areas to expand as required. A typical facility is primarily used to house and store information for both individuals and businesses alike, adheres to strict security protocols, and maintains a steady environment for the computer servers and network technology. The proposed building in this report will be utilised as a data centre with supporting office spaces and associated facilities for a range of companies.

Picture 1: Example of an interior of Equinix Data Centre



## 3.0 Site and Surrounding Area

### 3.1 Existing Site Location

The site is located within the Profile Business Park in Dublin 22.

The site is a greenfield site, measuring 2.649 hectares / 6.545 acres of irregular, quasi-triangular shape. It is bounded by Nangor Road to the north, Falcon Road (internal business park estate road) to the west, an old hedgerow, and a ditch to east and south, which separates the site from Grange Castle Golf Course.

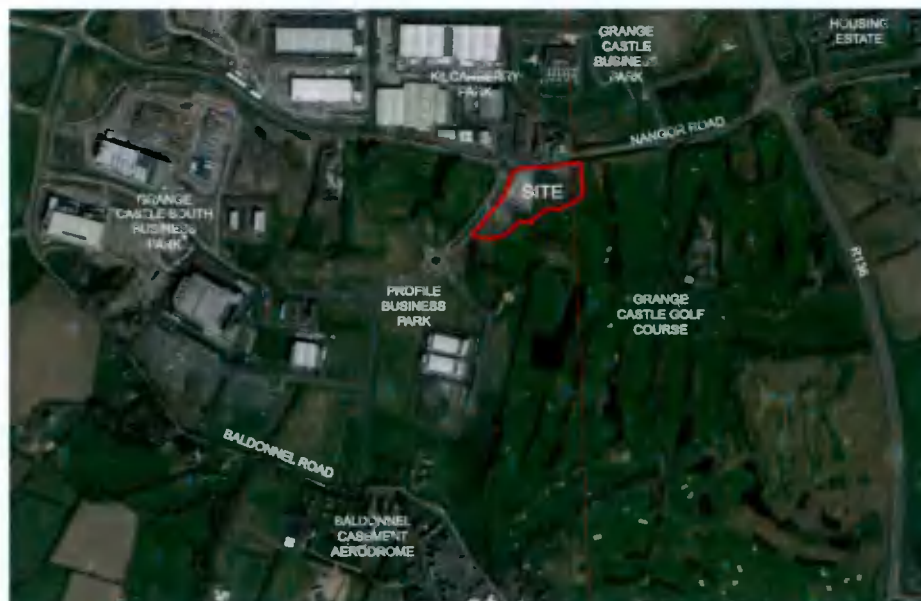
The site has been used in the past for agricultural use. It has been recently used by ESB as site compound during their works in the area. There was also stockpiling of fill from adjacent sites stored on the site, which has recently been cleared.

There are various commercial, offices and industrial buildings (including another data centre by Equinix) located across the road from the site, including a petrol station (Circle K). Whilst the uses in the vicinity of the site are predominantly commercial and industrial, there is also a small residential dormer bungalow block located approx. 70m north of the site (beside the petrol station) and small residential housing estate 600m to the east from site.

Data centre use is already well established in the area including a few of them within the Profile Park but also in the Grange Castle Business Park further to the north and in the Grange Castle South to the west of the site.

Site is located about 800m north from Baldonnell Casement Aerodrome.

Picture 2: Aerial view of site surrounds (Source: Google Maps)



Picture 3: Aerial view of site surrounds with locations of other data centres (Source: Google Maps)



Picture 4: Aerial view of site surrounds immediate surrounds (Source: Google Maps)



Picture 5: View of existing site –  
direction of view west



Picture 6: View of existing site –  
direction of view north-west



Picture 7: View of existing site –  
direction of view east-south





## 3.2 Site constraints

There are numerous site constraints which have been precisely analysed and had impact on the proposal.

- The site is bounded by an old townland boundary between Ballybane and Kilcarberry on west and south, which is nowadays represented by an old hedgerow and mostly dry ditch. The hedgerow is seen as sensitive element from the heritage as well as from an ecology point of view, therefore it will be preserved by an 8m set back and creation of a biodiversity zone along the boundary. 8m distance is measured from the top edge of the existing ditch. This set back was a requirement written in the original Profile Park planning application that we are obliged to honour.

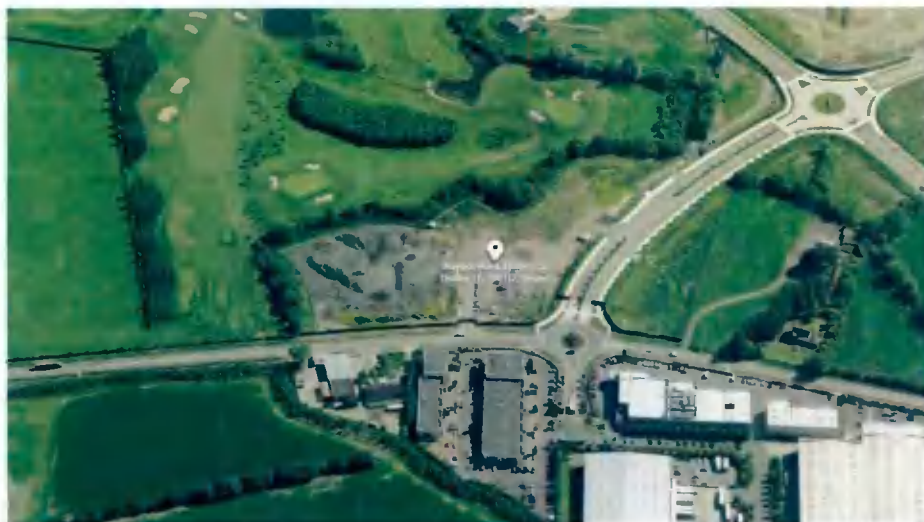
Picture 8: Historic 6-inch map with clear representation of townland boundaries



Picture 9: Aerial picture of site taken before Profile Business Park was built (between 2001 and 2006) – hedgerow clearly visible



**Picture 10:** Aerial picture of site taken just after the Profile Business Park has been completed (after 2006) – hedgerow clearly visible



- The existing ditch, which is filled occasionally with water draining from the adjacent golf course, is not classified as a watercourse, therefore 10m set back is not required in this instance.
- Baldonnel Stream adjoins the site at its south-west corner. 10m set back from this watercourse has been observed.

**Picture 11:** Picture of the existing ditch along south site boundary



**Picture 12:** Picture of the existing ditch just before connecting with Baldonnel stream, before entering culvert below Falcon Avenue. View direction east



**Picture 13:** Picture of the existing culvert located south- west of the site – point where existing ditch connects with the Baldonnel Stream  
View direction west

Number 1 – existing ditch here filled with water draining from the gold course

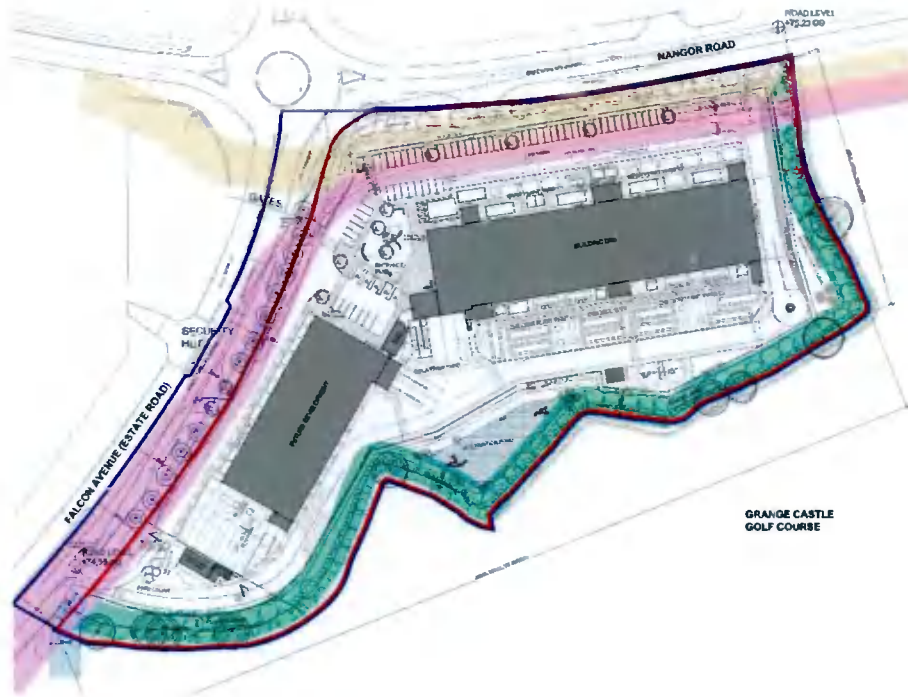
Number 2 – Baldonnel Stream



- There is public watermain crossing the site along its north boundary (along the Old Nangor Road). This service requires set back of 7.5m either side of the watermain. Proposed building is set back minimum 21m away from this underground service. The only elements located within the wayleave are car parking spaces, security fence and smoking shelter (which is a lightweight structure).
- 220kV electrical cables cross the site across its north and west boundary. They require a set back of at least 4m away from the underground cable. The building is located at least 12.7m away from the cables.

Picture 14: Mastepplan with all wayleaves marked

- orange – watermain
- pink – ESB
- green – 8m set back from top of the dry ditch
- light blue – 10m set back from Baldonnell Stream



- The site is located within the Department of Defence Inner Zone Limit due its proximity to Baldonnell Casement Aerodrome. The height limit of the development is 20m. Features like flues on top of the building higher than 20m have been permitted in this area, however they need to be agreed on a case by case basis. The site is not located within a flight path.

Picture 15: Extract from SDCC Development Plan index map with Defence Inner Zone and aerodrome approach paths clearly marked. Site location marked in red by authors of this report



## 4.0 Concept Ideas

### 4.1 Site Strategy - Masterplan

In the long term the client intends to realise two buildings on the site. The larger building, which is subject to this planning application will be located in the east part of site, parallel to the Nangor Road, with external plant yards north and south of the building.

The future development - which will be subject to a separate planning application - being approximately half of the size of the currently proposed building will be located in the west part of the site, parallel to the Falcon Avenue (internal estate road). Plant for the future development will be located south-west of the future building. Space reserved for the future development will be occupied by a temporary meadow in the current proposal.

The two buildings will share a common delivery yard, but each will have their own 2 no. loading docks. Waste compound located to the south, but in between of the two buildings will also be a shared facility.

Access and parking strategy has been developed to suit both buildings. Vehicular access point to site is located off Falcon Avenue in the south-west corner of the site. Private car and HGV traffic is being segregated in the forecourt area. Private cars follow the internal access road along north-west site boundary to the car parking spaces located between the two buildings and north of currently proposed building. HGV's enter via a dedicated gate and follow the route located to the back of the site, behind the buildings, to the delivery yard. Further details of access strategy have been described in Chapter 7.0 of this report.

All access routes as well as the entire landscape proposal for the entire masterplan will be provided along with the currently proposed building.

Picture 16: Site masterplan



## 5.0

## Proposed Site Plan

The vehicular site entrance is located in the south-west corner of the site. It utilises an existing entrance off Falcon Avenue which will have to be widened to facilitate HGV turning radii.

Picture 17: View of Falcon Avenue looking north, with existing entrance to site to be retained as vehicular entrance (with modifications) in foreground (site visible on the right hand side of this image)



The vehicles then arrive at a 'forecourt' area which is located outside of the secure site area to prevent the cars queuing on the estate road and facilitate separation of the private and commercial vehicles. Private cars will enter the site via a dedicated automatic gate located closer to the north-west boundary line. HGV will enter the site via a dedicated gate located closer to the south boundary. The forecourt area will also enable HGV to reverse and leave the site in case they are not allowed to access (so called 'HGV rejection area' marked on the site plan).

The forecourt area will also be location of a single storey Electrical Substation or approximately 43.77sqm GFA and adjacent Heat Recovery Plant Room of approx. 17.3sqm GFA. Heat Recovery Plant Room will be a point of connection for any future recipient of a waste heat generated by the facility.

The internal access road will form a loop with separation of private cars and HGVs for safety reasons. Front of the site (along Falcon Avenue and Nangor Road) will be reserved for private cars with exception of HGVs accessing this part of site for emergency and plant replacement events only. The rear of the site will be excluded from private car traffic by provision of a mini roundabout in the south-east corner of site.

Pedestrians and cyclists will be using a separate access point to the site, located close to the north-west corner of the site, off Falcon Avenue, very close to the Profile Park main entrance gate. The access gate will include a mantrap for security. Both turnstile and a gate for cyclists will be provided. Pedestrians and cyclists will have a short route to access the building entrance and bicycle shelter located in vicinity of the entrance.

Please refer to Chapter 7.0 for more detailed description.

Picture 18: Proposed site plan  
(scope subject to this planning  
application)



The existing site levels differ by approx. 2m between the levels along the north boundary (75.5 O.D) and levels along the existing dry ditch along the south boundary (73.24-73.5 O.D.). The existing site entrance is located in between of these levels at approx. 74.6 O.D. This led to a decision to provide a split level on site: the street-side of the site, in front of the building will be designed to be uniform with the Old Nangor Road level (approx. 75.20 O.D.) and the back of the site will be lower to suit the existing levels along the top of the ditch (approx. 74.30-73.20 O.D.). This assists with the following:

- Avoidance of impact of new site levels on the biodiversity zone and existing plants along the existing ditch
- Design of the loading dock based on the level difference of 1.2m between inside and outside.

The internal floor level of the proposed building will be 75.50 O.D.

Proposed data centre building has a regular rectangular shape and has been located parallel to the Nangor Road. The building itself consists of a 4-storey office block facing to the west and 3-storey data centre extending to the east. It also has a single storey part to the west which is housing loading bays. The main building also features 3 no. external staircases to the south and 3 no. hot air plenums to the north. Please refer to next chapter for detail description of the proposed building.

Office block, where the main entrance to the facility is located, overlooks the 'entrance plaza', which includes car parking area and a landscaped break out space. This area will be shared in the future with another building located on this site. The pedestrians and cyclist arrive at this area after passing through the Pedestrians and Cyclists gate and mantrap.

Bicycle shelter is located just to the left of the building entrance.

This 'entrance plaza' is separated visually from the deliveries yard located to the south by a solid concrete wall. The deliveries area is accessible from the plaza via secure gates and stairs leading down to the lower site level at the rear of site.

The entrance plaza is connected via a crossing point to further car parking spaces located along the north boundary. Smoking shelter is in proximity of this crossing just beside the parking spaces.

Pedestrian traffic across site is separated between visitors' access zones for which raised pavements have been provided, and staff/maintenance only access routes marked with walkways painted on the internal roads.

Picture 19: Extract from Proposed site plan – entrance plaza



Directly adjacent to the building to the south and west there are 2 no. plant yards. Generator yard with diesel fuel storage tanks and electrical plant rooms is located to the north of the building. It is accessible from the 'entrance plaza' as well as from the pedestrians' walkways along the north and west internal road.

The yard will house:

- 4 no. external containerised emergency generators (running only in case of failure of power from the grid), connected to the hot air plenums,
- maintenance generator (used only when maintenance is being carried out on any of other generators)
- 8 no. diesel storage tanks with all associated infrastructure (fuelling points, pumps, pipes etc)
- 2 no. urea (ad-blue) storage tanks
- 4 no. containerised electrical rooms located in 2 clusters.
- 2 no. containerised switch rooms located side by side
- Container housing all plant for office block
- Paved walkways providing access to plant



The generator yard is screened by 6.15m tall wall, constructed of composite panels in light grey colour. The colour has been selected in order not to draw attention and to provide a neutral background to all landscape present to front of site. The part of the generator yard that is adjacent to the office block will have lower enclosure height of 3.8m as the equipment located behind does not require a higher screening.

Chillers plant yard will be located directly at the building along its south façade. It is accessible from the pedestrians' walkways from east, south and west.

The yard will house:

- 9no. chillers each with a buffer vessel
- 4 no. make up air units
- 4 no. containerised mechanical plant rooms
- 1 no. containerised water tank plant room
- All associated infrastructure at high level
- Paved walkways providing access to plant

The chillers yard will be screened by 3.5m tall wall constructed of acoustic panels to contain the noise emissions from the chillers.

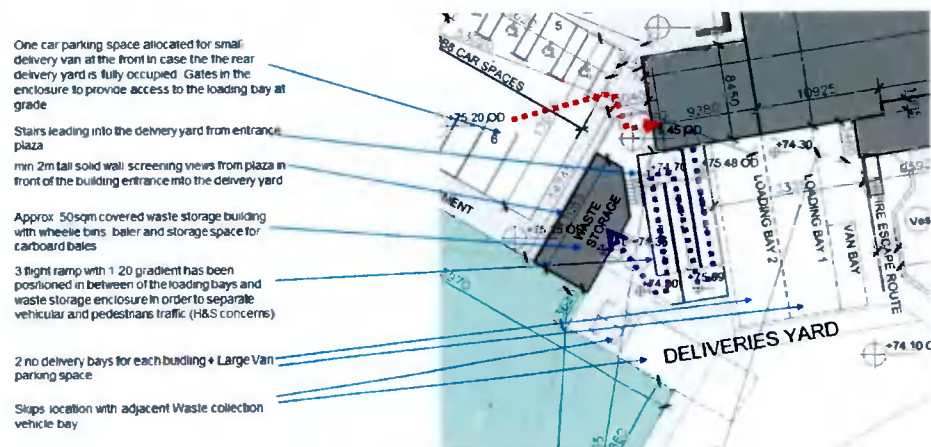
On the other side of the south internal access road there are 2 no. fire water storage tanks, each 11m tall, and pump house of 22.8sqm GFA.

The deliveries yard with the waste compound are located to the south-west of the proposed building, within the lower-level rear site area.

It consists of:

- 2 no. HGV loading bays
- 1 no. Van parking space
- 3-flight ramp to address the level difference during van deliveries and waste removal from the building
- Single-storey, enclosed and covered waste compound of approx. 51.5sqm GFA.
- External skips location
- External stairs for access to higher site level (entrance plaza).

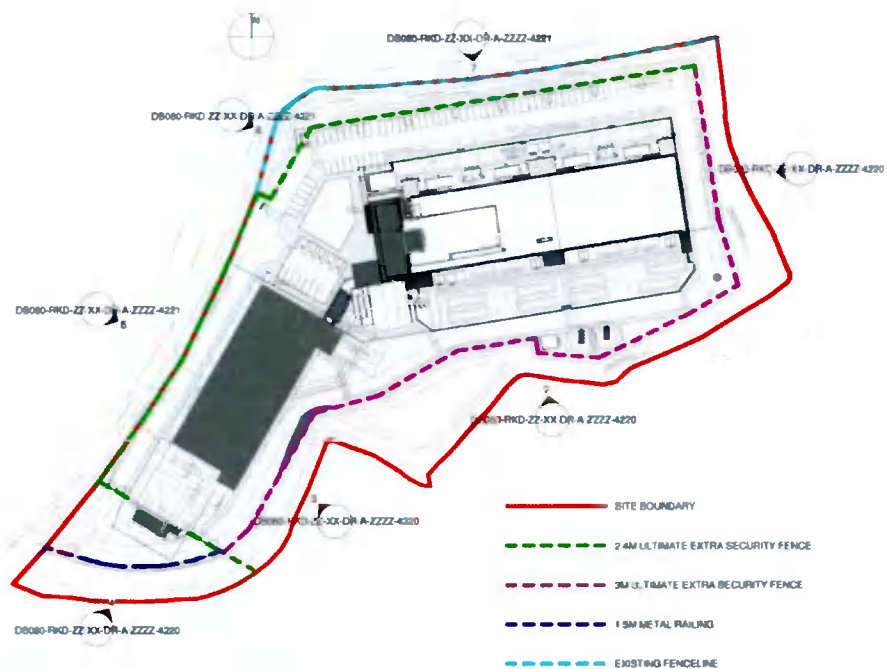
Picture 19: Extract from Site plan – Deliveries yard



The site is surrounded by a high quality security/anti-climb mesh fence of minimum 2.4m height, in black colour. The security fence follows the site boundary along the Falcon Avenue but it is set back from the other site boundaries for a few reasons:

- Along the north boundary at Nangor Road and around the north-west site corner there is an existing fence, which is present around the entire Profile Park area. This section of the fence is to be retained in full for visual consistency.
- Security fence is set back from the biodiversity zone to keep it sterile from any plants growing into it and creating a climbing aid, and in order to be able to fully monitor and inspect the conditions of the fence. 1m wide gravel path will follow the fence on its outer side for facilitate such inspections.
- The security fence has also been set back from the biodiversity strip to facilitate the inspections of the existing dry ditch without the need to enter the secure site area.

Picture 20: Masterplan with types of fencing marked



Picture 21: Reference image of a security fence



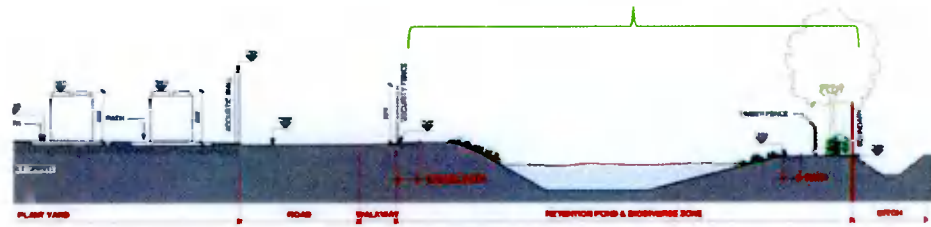
Security fence along south and east boundary has been raised to 3m above floor in order to provide increased protection against golf balls flying over the boundary from the gold course (mesh gaps approx. 25mm).

Landscaped biodiversity zone along the south and west boundary will be accessible to the staff via gravel path. The top edge of the existing ditch will be protected by a timber rail fence.

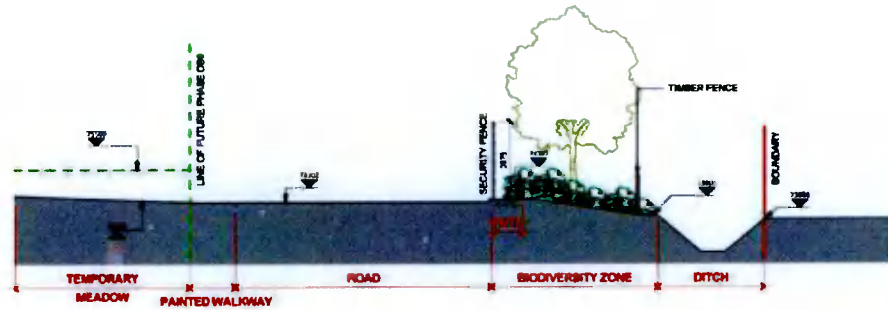
Attenuation strategy for the site is described in civil engineer's *Engineering Planning Report*. One of the attenuation features will be a pond located in the

south of the site. It will be landscaped along the edges and will have a path around it to facilitate staff work. **BIODIVERSITY ZONE (AT THIS POINT INCREASED BEYOND 8M)**

**Picture 22:** Section through rear of site (south boundary): Security fence with gravel path attenuation pond within the biodiversity zone



**Picture 23:** Section through rear of site (south boundary) behind future development



**Picture 24:** Section through east of site (east boundary)



## 6.0

## Landscaping

This description covers the main points of the landscape proposal from an architectural point of view. Please refer to Landscape Architects Design Report for detailed description.

Undoubtedly the main natural feature of the site is the existing hedgerow along the dry ditch enclosing the site along south and east boundary. This feature, due to its ecological and heritage values will be protected and preserved by 8m 'biodiversity strip' (measured from top edge of the dry ditch).

Picture 25: Trees survey indicating existing trees, tree groups (blue hatch) and hedge (pink line) along the site boundaries



Due to the layout of the site and access road the biodiversity strip has been slightly narrowed down at one point to the rear of the future development location. This results in narrowing down of the biodiversity protection strip to 6m and loss of approx. 103sqm of biodiversity area. This loss is however compensated by increase of the biodiversity zone elsewhere by total of 1498 sqm (this includes the attenuation pond), which is an increase of about 33.5% in comparison with existing biodiversity area within the 8m strip.

The existing trees along the Falcon Avenue are an original feature of the Profile Park landscape masterplan and will be retained.

The outer north strip of the site, outside of the security fence will be provided with a low ground berm to increase the site security and will be planted with trees.

All landscaped areas outside of the security fence will be accessible to the staff and visitors via a secure gate and gravel path.

The main new feature of the site will be a landscaped break out area outside of the proposed building entrance.

The landscape proposal aims to:

- Reinforce the biodiversity strip, existing habitat for the local species and visual screening along the south and west boundary (ditch) by introducing continuous row of new trees (Birch, Oak, Bird Cherry, Field Maple), 'thorny' hedge planting (Blackthorn, Holly and Hawthorn) and bee friendly and hare resistant native wildflower mix like Lambs ear and heather,
- Introduce and attractive visual screening to the north boundary along Old Nangor Road by introducing a raised berm and trees (Field Maple)
- Retain existing hedgerow and trees along the south and west boundary.
- Provide visually attractive planting to attenuation pond edges (Black alder and goat willow) together with path and benches along the pond
- Provide visually attractive ornamental planting to edge of the road within the forecourt area: lavender, rosemary, heather.
- Provide visually attractive setting for the building entrance and landscaped break out area for staff and visitors in the 'entrance plaza' including decorative trees and shrubs (Cherry Blossom, Japanese Maple, Magnolia and Crab Apple) , screening from vehicular routes in form of raised planters and benches.
- Provide visual screening along the Falcon Avenue to include continuous hedge.
- Provide an access route into the landscaped and biodiversity zones outside of the security fence (self-binding gravel)
- Provision of log piles / hibernaculum in the pond for amphibians as an ecological enhancement measure.
- Break up ('soften up')the continuous row of car paring space with green islands with trees every 10 spaces.
- Provide greening treatments throughout the site: in car parking area, in forecourt area, in the Entrance Plaza

Picture 26: Landscape masterplan



## 7.0 Transport and Access

The vehicular site entrance is located in the south-west corner of the site. It utilises an existing entrance off Falcon Avenue which will have to be widened to facilitate HGV turning radii.

The vehicles then arrive at a 'forecourt' area which is located outside of the secure site area to prevent the cars queuing on the estate road and facilitate separation of the private and commercial vehicles. Private cars will enter the site via a dedicated automatic gate located closer to the north-west boundary line. HGV will enter the site via a dedicated gate located closer to the south boundary. The forecourt area will also enable HGV to reverse and leave the site in case they are not allowed to access (so called 'HGV rejection area' marked on the site plan).

The vehicular automated entrance gates will be monitored and controlled from the building reception.

### 7.1 Vehicular Site Access

The internal access road will form a loop with separation of private cars and HGVs for safety reasons. Front of the site will be reserved for private cars with exception of HGVs accessing this part of site for plant replacement events and oil tanker accessing the fuelling point. Dedicated Lay-by have been provided for it in order not to block the passage. It will be only in these limited instances when the HGVs will exit via the private cars entrance.

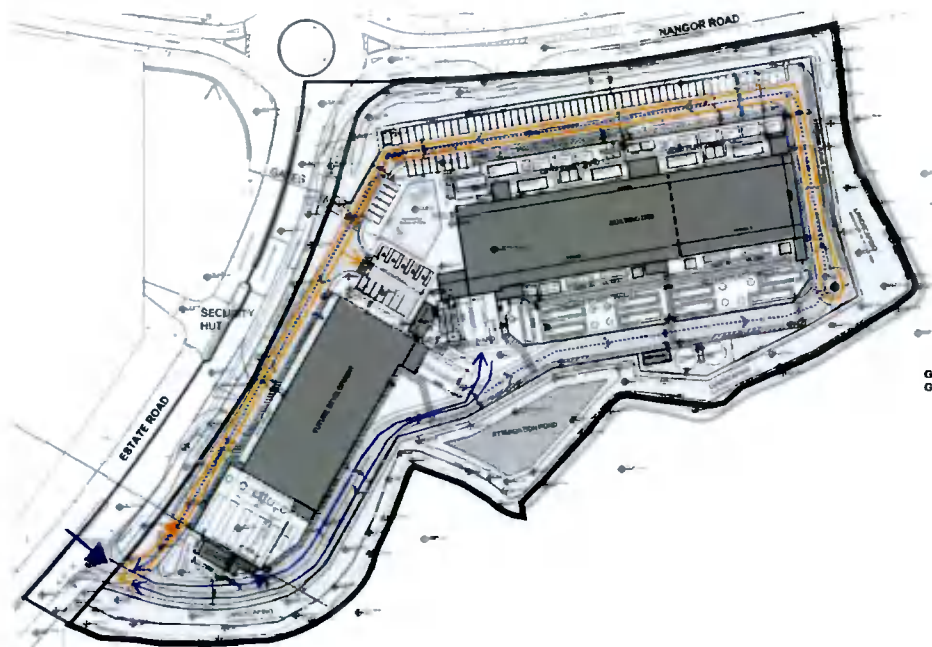
The rear of the site will be excluded from private car traffic by provision of a mini-roundabout in the south-east corner of site, where the cars can turn around and follow the route to exit by their dedicated gate.

Rear access roads have been designed partially as two direction and partially as single direction – traffic will be managed via signage and lights. Refer to traffic engineer report for details.

The area of the delivery yard has been designed to facilitate the vehicles to turn back and exit via the dedicated gate.

Picture 27: Site masterplan with traffic routes marked up

- Continuous blue line – access to Deliveries yard for HGV
- Dotted blue line – access for fire tender oil tanker and HGV vehicle for maintenance only
- Continuous orange line – private car access



## 7.2

### Parking spaces

Parking spaces have been provided within the 'entrance plaza' – mainly disabled car spaces and spaces with electrical charging points – and to the front of the proposed building.

Reason for provision of the car parking to the front is that that area of site requires sterilizing due to underground services wayleaves and building had to be set back.

The site will provide 64 car spaces for currently proposed building. Space for further 25 spaces for the future development has been reserved on site but won't be provided at this stage (temporary landscape area marked on Proposed Site plan)

Out of 64 car spaces 5 no. will be disabled car spaces and 9no. will be for electrical car spaces with charging points. One space has been allocated for a small commercial van to park near the site entrance.

In addition to the car spaces there is also provision for 5 no. motorbike parking spaces and 14 no. bicycles spaces, in vicinity of the building entrance.

## 7.3

### Pedestrians and Cyclists Site Access

Pedestrians and cyclists will be using a separate access point to the site, located close to the north-west corner of the site, off Falcon Avenue, very close to the Profile Park main entrance gate. The access gate will include a mantrap for security. Both turnstile and a gate for cyclists will be provided. Pedestrians and cyclists will have a short route to access the building entrance and bicycle shelter located in vicinity of the entrance.

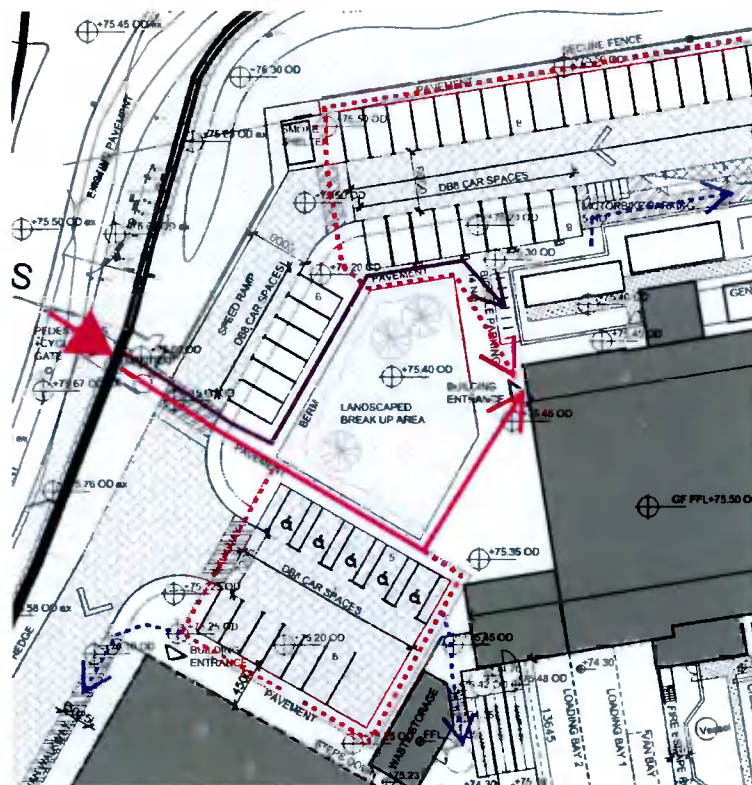
Pedestrian traffic across site is separated between visitors' access zones for which raised pavements have been provided, and staff/maintenance only

access routes marked with walkways of min. 1.8m width painted on the internal roads. Appropriate signage will be provided throughout.

Visitors access routes crossings through internal roads will be highlighted using a raised ramp on the road.

Picture 28: Site masterplan with pedestrians routes marked up

- Continuous purple line – cyclists access route
- Continuous pink line – staff and visitors pedestrians access route
- Dotted pink line – pedestrians access route from car parking spaces
- Dotted light purple line – maintenance staff only access routes



## 7.4

### Security strategy

The site access points are limited to 2 no. secure vehicular gates and 1 no pedestrian access gate.

There is a secondary gate beside the HGV gate to be used for staff to gain access from the secure site area into the 'forecourt' area.

Biodiversity zone, although outside of the secure fence line, will also have controlled access. There will be 2 no. access points into the biodiversity zone: main access from the pedestrian gate mantrap, and secondary access beside the HGV gate.

The data halls are proposed to be accessible 24 hours a day for maintenance and service vehicles. The office building will be accessible also 24hrs however the standard working hours will be 8am-6pm.



## 8.0 Design and Layout

Proposed building is partially 4 and partially 3-storey high structure on a regular rectangular plan, orientated on the east-west axis. External dimensions are approximately 110m x 28m. Loading dock area protrudes from the main volume of the building on the ground floor towards west as a single storey structure. 3 no. external staircases are attached to the building on the south side. 3 no. hot air plenums are attached to the building on the north elevation.

The building consists of 2 main parts: office block and a data centre. Offices comprise approx. 1598sqm which is 16% of the overall GFA (9600sqm). Data centre facility will provide services to numerous customers, who will have an opportunity, along with renting of the data services, also to rent an office space, so that their personnel can be permanently on site. This is an important characteristic of this facility and impacts the design in many aspects, mainly the office block layout design and size and number of car parking spaces.

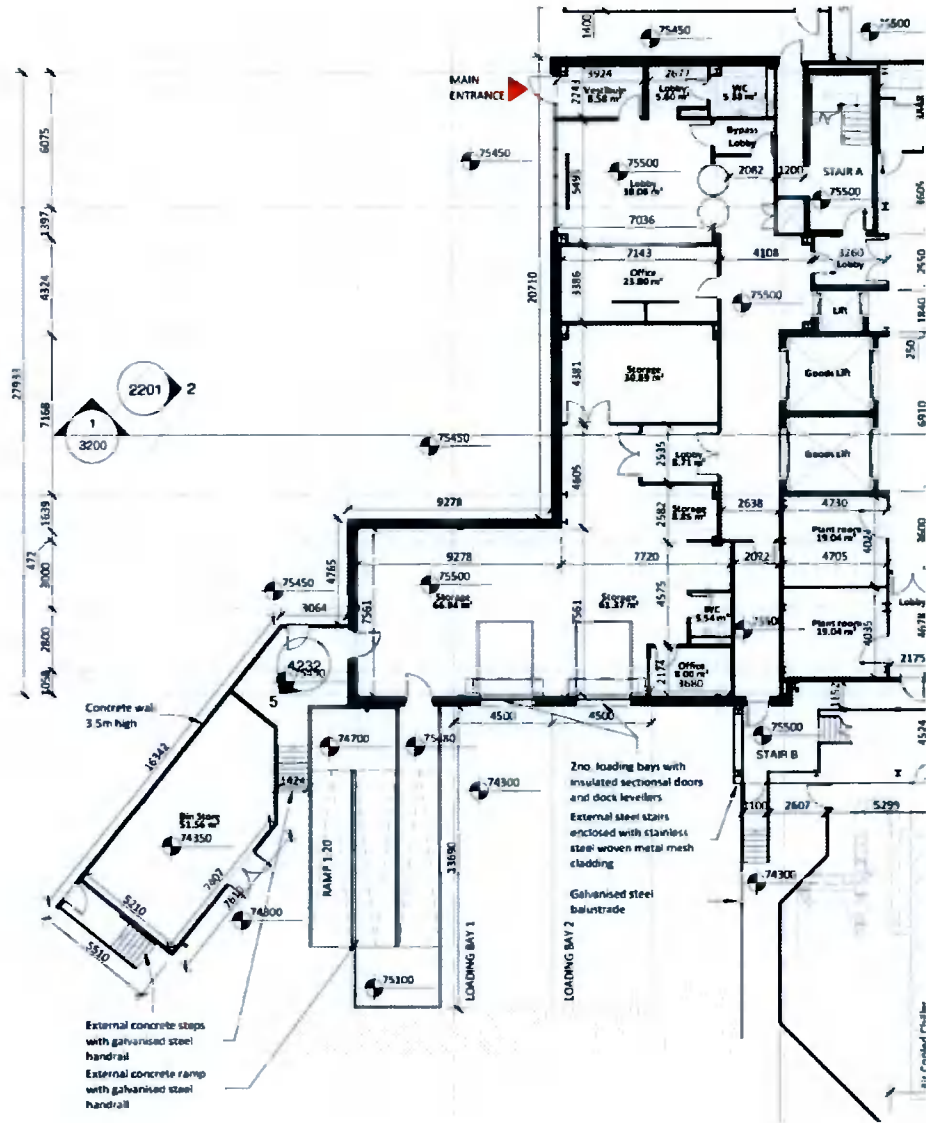
The facility will be occupied by approximately 65 people at any one time:

- 14 permanent personnel of the data centre (operations team)
- 45 visitors / customers
- 4-6 contractors working on site

West end of the building is occupied by a 4-storey tall office block (also referred to as Front-of-House). The office block is approx. 10m wide. It provides the following services:

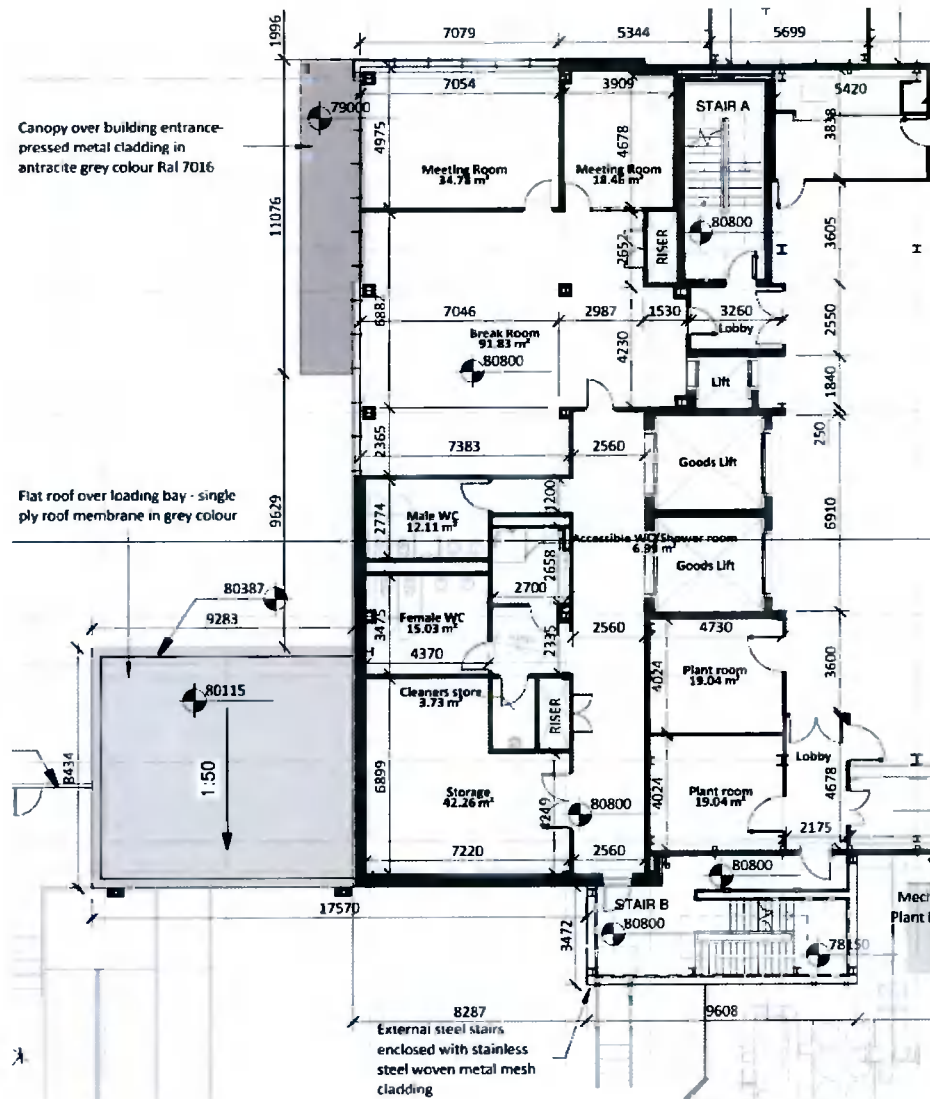
- Building entrance leading to the entrance lobby with security reception desk and disabled toilet, 2 no. passages and a mantrap lobby providing access to the secure side of the building.
- Shipping and Receiving area on the ground floor which includes 2 no. loading docks with roller shutters and levelling plates, unloading area, office with a toilet, and storage area. This area is directly linked with the external delivery yard and waste compound – refer to description further below.
- All corridors on ground floor and upper floor which will be used for transport of goods are 2.5-2.7m wide.
- 1<sup>st</sup> floor is the area intended mainly for customers and includes lounge/break out area, with 2 no. conference rooms, and toilets block with disabled shower and a janitors closet.
- Ancillary storage area is also located on the ground floor.
- 2<sup>nd</sup> floor is dedicated fully to the clients operations team, looking after day to day functioning of the data centre. The accommodation includes: open plan office, 2 no. cellular offices, break out space with kitchenette, and workshop area.
- 3<sup>rd</sup> floor is dedicated to the customers. Open plan space can be broken up into smaller offices with access directly off the corridor

Picture 29: Extract from the Ground floor plan showing the office block with entrance zone and loading bays



Picture 30:

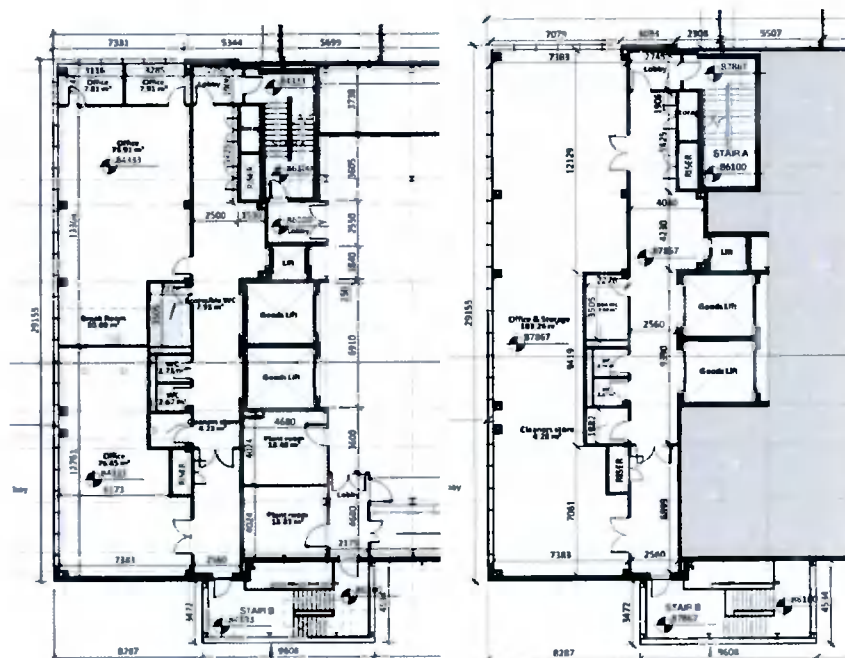
Extract from the First floor plan showing the office block with customers facilities



Picture 31 and 32:

Extract from the Second floor plan showing the office block with staff facilities

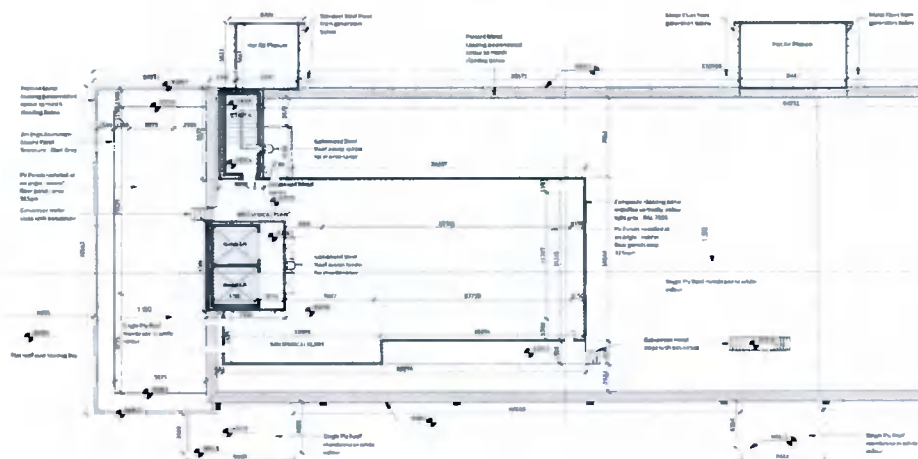
Right: Extract from the third floor plan showing the office block with customers offices



Data centre is separated from the Front of House by an internal staircase (main general access stairs for the building) and lift cores (1 no. passenger lift and 2 no. goods lifts). Lifts are double sided to provide easy access for goods delivery. Internal stairs and both goods lifts extend to the roof level. They lead onto a steel gantry elevated over the sloping at 1:50 fall roof surface and extending over approx. 1/3<sup>rd</sup> of the data centre roof. The gantry is occupied by AHU units and chillers for office block and internal plant rooms, by majority of 200sqm of photo-voltaic panels and by a structure for GSM masts (along the south edge of the roof). Gantry is surrounded by a solid 2m tall enclosing wall to contain the noise from the equipment as well as to visually screen the roof equipment. The rest of the roof is accessible for maintenance of the pipes travelling across the roof. Galvanized steel stepover is provided where necessary to cross over the services. Secondary means of escape from the roof is provided by the most eastern external stairs which extend to this level. Data centre roof is surrounded by a min.1.1m tall parapet. Front of house roof is at a slightly lower level, accessible via steel stepover. This part of the roof is occupied by a portion of a PV panels. Due to the roof parapet being very low, this roof area is screened by continuous louvre panels, which improve the appearance of that side of the building

Lifts and staircase roofs are accessible via steel ladders with platforms. Fall arrest system will be provide on these small roofs, as parapets are low, in order to keep the overall building height as low as possible.

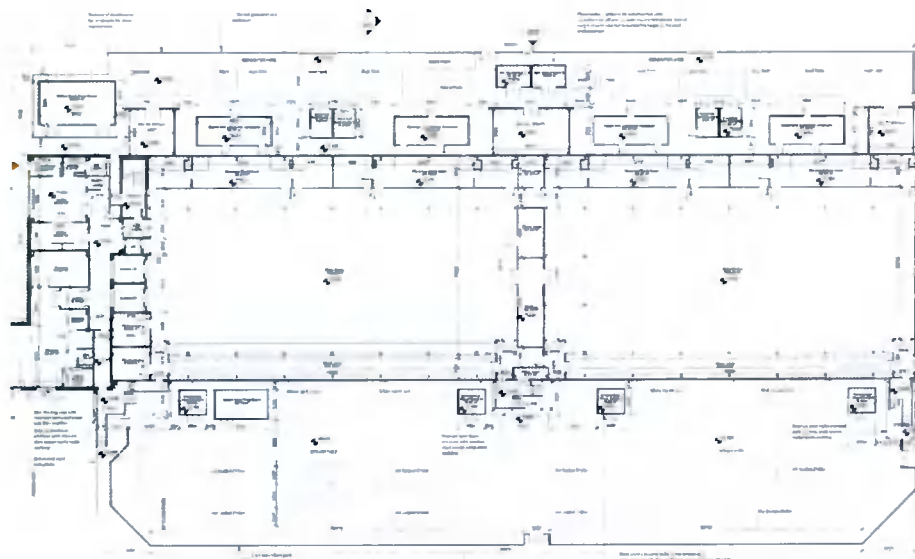
Picture 33: Roof plan (fragment)



Data centre block, which is 3 storeys high, houses 2 no. open plan server rooms on each floor and plant rooms along its long sides. 2 no. data halls are separated by plant and storage rooms. Each server hall will eventually be subdivided into smaller areas using metal cages, to enclose servers belonging / being rented by individual customers. 2<sup>nd</sup> floor houses 4 no. internal generators and air plenums, which are separated from the rest of the floor by fire rated acoustic walls. Generator rooms are vented to the outside via louvred panels in the façade to provide air intake and exhaust. Exhaust air is exited via louvred panels into the hot air plenums – tall structure which literally act as chimneys, discharging the hot air above roof level and in this way avoiding short circuiting of the hot air into air-intake louvres.

There are 3 no. fire escape staircase on the south façade which are external. They also facilitate access to the rear chillers yard.

Picture 34: Ground floor plan showing the data halls and associated plant yards at ground level



## 8.1 Building height

We have reviewed the requirements of the development plan and in addition have reviewed the most recent applications made in Profile Park. We believe the scheme presented falls within the parameters set out in the development.

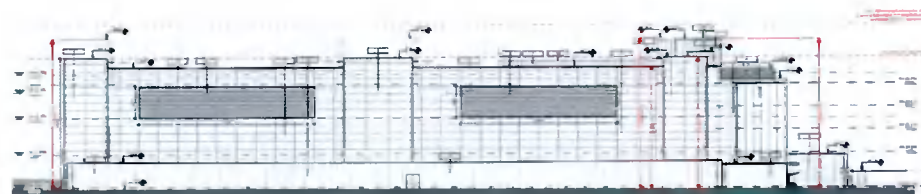
Building height is approx. 18.9m when measuring from the level of Nangor Road (75.11-75.45 O.D). This is below the limit of 20m as prescribed in the South Dublin County Council Development Plan.

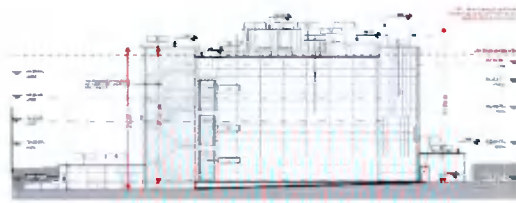
However, there are certain elements of the building that exceed this limit and these are:

- hot air plenum structures at the north building façade (3 no) -20.23m above road level and ground level in front of the building
- Staircase at the south façade – 20.31m above road level / 21.27m above the ground level to the rear of the building
- Top of lift overrun 23.02m above ground level
- Generator flues (overall 8 no. flues) 23.2m above ground level

None of the above structures exceeds 25m above ground which has been accepted in the recently approved planning application for UBC data centre in the South Grange castle Business Park (about 900m to the west of the proposed development).

Picture 35 and 36: North and east elevation with highest elements dimensioned





## 8.2

### Elevations' Design and Materials

Due to prominent location of the development and known planning authority expectations of a high-quality architecture, based on assessment of recently granted planning application within Profile Park and direct feed-back at Pre-planning consultation, a considerable effort was put to develop an attractive façade approach. Front facades proved to be a greater challenge as external stairs are natural features on the rear elevation. Design requirement for 'hot air plenums' on the front facades assisted in resolving the massing issue.

In general terms the separation of building function into data centre has been translated in the façade design by use of different material and colour.

Colour palette is limited to dark and light grey complimented by small red accents, which help avoiding such large building looking monotonous.

Data centre is clad with horizontally fixed, composite flat metal panels with mineral wool core, powder coated to a dark grey colour (RAL 017 Anthracite). The uniform look of the cladding is decorated using metal fins, installed at 2.5m distances and 150mm depth. Colour of the fins matches the cladding colour, which adds texture to the large surfaces of the wall cladding. Hot air plenums which protrude approx. 1.3m above the data centre parapet level have the front wall clad with cladding matching the data centre walls, and extended slightly (approx. 500mm) either side beyond the faces of the side plenum walls. Side plenums' walls are clad in flat composite cladding in light grey colour (RAL 7035). Side walls of plenums also feature fins. However, whereas the main data centre walls' fins are regularly spaced and continuous from approx. 3m above ground to the capping level, the fins on the sides of plenums are arranged at random pattern and in 2-storeys (roughly lining up with 1<sup>st</sup> and 2<sup>nd</sup> data centre floor slabs). Colour of these fins matches the light grey colour of the cladding, with one randomly selected fin in red (close to RAL 3009). Thanks to greater amount of detail on the plenums in relation to the main data centre façade, the attention is drawn by the plenums and massing of the building is broken up. The plenums will be capped using metal mesh panels, to prevent birds settling inside of the stacks.

Picture 37: View of a proposed building from north-east



Picture 38:

Top left: Mood image of dark grey composite cladding

Top right: Grey RAL colours for composite cladding and selected red for fins on plenums

Bottom left: reference image of fin profile



Oyster (RAL 7035)



Anthracite (RAL 7016)



Oxide Red (RAL 3009)

External stairs on the south façade are clad with stainless steel woven mesh cladding. Their steel support structure and stringers will be painted red, to add interest to the rear façade.

Lifts and staircase protruding above the roof level will be clad in vertically installed composite flat metal panels, in light grey colour.

The office block facades are visually differentiated from the data centre part of the overall building. Office block features a 2.5 to 4-storey tall curtain wall which extends across north and west façade. Glazing mullions feature fins similar to fins used on the data centre elevations. Solid sections of the front of house facades are clad with fibre-cement cladding panels, with vertical grooved texture. Panels are in mid-grey colour ('granite'). Curtain wall framing will be in selected grey colour to match the cladding.

Building entrance is the focal point of the office block facades and has been accentuated by a metal clad canopy – anthracite grey with red underside – and an area of smooth fibre-cement panels to the right hand side of the entrance, in

anthracite grey colour. The panelling will be customized with a diagonal random pattern, to be confirmed at detail design stage.

Loading dock single storey structure, protruding from building to the east will be finished in the same type of cladding as the office block, but in anthracite grey colour.

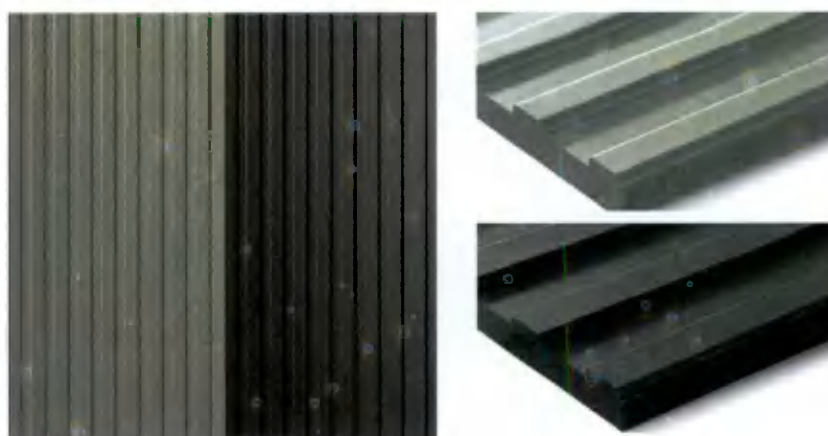
Picture 39: View of the proposed development from north-west



Picture 40: Entrance detail view



Picture 41: Reference image of fibre-cement cladding panels with grooved texture colours Granite and Anthracite



During design, certain references have been made to a 'sister' data centre in Helsinki (dark grey cladding to main data centre volume, feature protruding elements from the façade breaking up the massing) and another Equinix data centre in north Dublin (fins on the elevation) to achieve a consistency across various facilities.



Generators yard enclosure (to the north of the building) will be constructed of composite metal panels with microribbed texture, installed vertically, in light grey colour, reaching up to max. 6.15m above ground level, in order to screen the highest elements within the yard. Section of the enclosure along the office block will be capped at 3.5m height in order not to screen and detract from feature curtain wall element.

Chillers' yard (to the south of the building) will be enclosed with acoustic panels, in light grey colour, to an overall height of 3.5m above ground. Limited height of the enclosure is associated with ensuring proper airflow around the chillers.

Picture 42: Composite cladding textures: flat for the proposed building, satin line (also called micro ribbed) for the generators enclosure.



The design of ancillary structures like Pump House, Substation or Waste Store is in keeping with the main data centre building, ie. use of flat composite panels in dark grey colour (RAL 7016).

### 8.3

### Visualisations

Visual Impact Assessment report is currently being prepared as a separate document to be submitted for this planning application.

9.0

Schedule of Areas

Refer to document DB080-RKD-ZZ-XXX-SA-A-XXXX-6002:

Buildings gross floor areas				
		Area m <sup>2</sup>	Total m <sup>2</sup>	
			Comments	
D&S Building total	Ground	3107.07		Ground floor office block, incl. loading bay, and Data centre
	First	3038.41		First floor office block and data centre
	Second	3038.41		Second floor office block and data centre (note that these two areas are on split levels)
	Third	351.93		Third floor office block area incl. Stair A and Lifts
	Roof level	64.97		Stair A and Goods lifts extending to roof level
	Total		9600.79	
[REDACTED]	Ground	2071.11		
	First	2071.11		
	Second	2071.11		
	Total	6213.33		
[REDACTED] (Part of House)	Ground	1471.07		incl. Stair A and Lifts
	First	1471.07		incl. Stair A and Lifts
	Second	1471.07		incl. Stair A and Lifts
	Third	1471.07		incl. Stair A and Lifts
	Total	5884.28		incl. Stair A and Lifts extending to roof level
External areas (Not air plenums and external staircases)	Ground R			Area of plenums on ground floor
	Staircases	118.76		
	Ground fl			incl. Stair B, C and D
	Stairs	97.51		incl. Stair B, C and D
	First	97.51		incl. Stair B, C and D
	Second	97.51		incl. Stair B, C and D
	Third	66.31		Only Stair B and D continuing to roof level
Roof level	75.0		Only Stair D continuing to roof level	
	Total		500.2	
Waste bins store	Ground		51.56	
Water Pump Room	Ground		27.89	
Electrical substation	Ground		43.77	
Heat recovery plant room	Ground		17.4	
Front of House Plant room (Container)	Ground		49.27	
Electrical Plantroom 1A (Container)	Ground		9.14	
Electrical Plantroom 1B (Container)	Ground		9.14	
Electrical Plantroom 2A (Container)	Ground		9.14	
Electrical Plantroom 2B (Container)	Ground		9.14	
MV Switch room A (Container)	Ground		10.48	
MV Switch room B (Container)	Ground		10.48	
Water tank plantroom (Container)	Ground		22.75	
Mechanical Plant room A (Container)	Ground		9.59	
Mechanical Plant room B (Container)	Ground		9.59	
Mechanical Plant room C (Container)	Ground		9.59	
Mechanical Plant room D (Container)	Ground		9.59	
<b>Total Building Area</b>			<b>9904.21</b>	



