Henry J Lyons

Architectural Design Statement

17.02.2021

Project:
EDC DUB05 Data Centre

Project Address:
Land at Ballymakaily, Lucan, Co. Dublin

Project Ref. No.
950801

Client:
edgeconnex®

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ARCHITECTURAL DESIGN STATEMENT

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1 INTRODUCTION

An initial phase of development ,at this green field site within the townland of Ballymakaily to the west of the Newcastle Road (R120), Lucan, Co. Dublin, consisted of two ,single storey Data Centres and associated facilities to the south east of the site together with landscaping of the entire perimeter of the site. This initial phase was granted planning permission by SDCC and upheld by An Bord Pleanala. The references for this are SD19A/0042 and ABP- 305948-19.

The subject matter of this proposal is the second phase of development for this site. It is to be located to the west of the site and is within the master plan intent indicated in the planning permission referenced above . The proposed development will consist of two single storey Data Centres with associated office and service areas and three gas powered generation plant buildings. Additional landscaping is proposed.

The purpose of this document is to provide an overview of the context, purpose and design rationale of this development. It should be read in conjunction with the balance of drawings and documents submitted with this Planning Application.

2 BRIEF

The project entails the development of the north western and south western quadrants of the site.The single storey data centre building housing the two data halls, associated plant rooms and support areas including loading bays, stores, offices and welfare facilities are located to the north west and the gas powered generation buildings are located to the south west.
The development will also contain new external plant areas including back-up diesel generators, with associated control rooms, sprinkler water tanks and pump houses A vehicular and pedestrian entrance, roadways and vehicle parking, fencing, landscaping are developed from the original planning permission. Additional storm water attenuation is provided adjacent that already proposed for the initial phase/permission
The site access from the R120 is maintained as established by previous planning permission
The design critical capacity of the facility is 30 MW. The combined gross floor area of all proposed buildings is 12,797 sq. m.

3 SITE CONTEXT

3.1 GENERAL DESCRIPTION OF THE SITE

The overall site extends to over 22.1 ha. It is a green site of tillage and pasture land bounded by the recently realigned Newcastle Road to the east, similar agricultural land to the south and west and the Grand Canal and its associated heritage zone to the north.
The 12th lock, lock bridge and lock keeper's cottage are located to the north-east of the site. Disused and derelict farm buildings are located along the northern site boundary.
Tree rows and hedge rows define site boundaries to north, south and west as well field boundaries within the site.
The site falls from the west to the east by approximately 5m.

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3.2 ARCHAEOLOGY

Archaeological investigations and testing have been carried out by CRDS. Under licence from the Department of Culture,Heritage and the Gaeltacht excavations have been completed. Refer to Chapter 13 of the EIAR for details of the extensive works reported on by CRDS.

3.3 ENVIRONMENT

An Environmental Impact Assessment Report has been prepared by Marston Planning Consultancy. The EIAR takes account of the location and nature of the proposed development and its potential impact upon all aspects of the environment and provides mitigation measures for addressing potential impacts.

4 DEVELOPMENT PROPOSAL

4.1 TOWN PLANNING

Under the current South Dublin County Council Development Plan 2016-2022, the site (as well as surrounding areas to the west, south and east) is zoned as Objective EE: "To provide for enterprise and employment related uses". A buffer corridor adjoining the canal, 80 to 00m in width is zoned RU
The proposed use as a data facility (Light Industry / Science and Technology Based Enterprise) is located within the scope of land zoned EE and the corridor zoned RU is maintained as amenity .

4.2 SITE RESPONSE

The primary objective of the site strategy is to minimise the impact of noise and other emissions, softening transition areas and removing the most impactful plant installations away from sensitive boundaries and towards the core of the site. Similarly, tall and voluminous structures are located away from neighbouring lands and public roadways.
The proposed structures and plant compounds are located on the south west and north west corner of the site, leaving the north east of the lands undisturbed at this stage of development.
The perimeter of the site is treated as a continuous green buffer of interlocking and overlapping planted berms. This landscaping principle is enhanced at the north end of the site where the Grand Canal heritage belt is extended in depth by a minimum of 50m to over 100m to house planting and wetlands including natural storm water attenuation areas. An ecological corridor is introduced from east to west bisecting the site- to the north of the already permitted Data Centre building and north of the propose gas power generation buildings. Green walls are proposed on the north façade of the generators and around the water tank compound of the Data Centre building and on the south face of the gas power generating buildings. In addition a new hedgerow is proposed linking across the centre of the site from east to west that will provide a significant biodiversity gain to the development of the site.

4.3 DESIGN APPROACH

The proposed data centre building is formed by two distinctive volumes. The principal larger block contains data halls and their associated electrical rooms. The smaller service block comprises ancillary plant and support areas, loading bays, storage, office and staff welfare facilities.
Access to roof level for service and maintenance access is via external stair cores which also provide emergency escape routes.
External plant installations adjacent to the building include sprinkler water tanks with their associated pump houses

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and a screened back-up generator farm to the rear of the building.

The gas power generating buildings to the south west are set back from the site boundary and landscaped berm within the site.
The arrangement of buildings and structures is intended to break-up and soften the visual impact of the development.
The Data Hall parapet is 12.720m above ground floor level. The power generation buildings are 13.005m above ground floor floor with the highest point being escape stairwells from roof where the parapet rises to 14.130m above ground floor.. These parapet levels includes screening of roof plant, as elevated viewpoints such as the Grand Canal banks are taken into account. Generator compounds at ground level are also fully screened with green walls included facing the Grand Canal zone. Generator flues rise to 25m in height.
The site is located to the west of an existing business park with recent built developments of similar nature. The design, colour and texture of all external elements are selected to minimise impact on the site and to complement the existing nearby industrial buildings. The appearance of the new buildings subject of this application will be in-keeping with the prevalent industrial landscape but with a softened interface with green surroundings and the newly landscaped areas.
The external facade finish to all buildings will comprise proprietary composite (insulated) cladding panels onto a support framing/structure. Their external metal face will be colour-coated. The design of sensitive elevations features an undulating pattern of different green hues in vertical bands, creating an interface with background greenery, breaking the scale of the building faces and reducing the apparent bulk of the blocks.
Glazing to office and welfare rooms will be a coated aluminium proprietary system.

4.4 SUSTAINABILITY

This development underlines a commitment by EdgeConneX to the Grange Castle cluster and ensures continuity of occupancy and operations. The proposal to develop the site will enhance the land use under the current Development Plan, consolidate the area's transport demand and contribute to the overall sustainability of the site.
Waste management for both construction and post occupation will actively manage the generation, recycling and disposal of waste material. Proposals are contained within Chapter 14 of the EIAR.
All habitable rooms are to be constructed to Building Regulations energy performance levels. The building will meet Building Regulations and South Dublin County Council's Development Plan requirements with regard to energy demand and performance, related to the habitable parts of the building only.
Roof surfaces are finished with white cap sheets with a high solar reflectance index, or SRI to minimise heat absorption.
Low/zero carbon technologies such as, low energy lighting, sensor lighting controls, variable speed pumps etc., are proposed to be included in the detailed design.
The location of the facility in Ireland allows for the use of free-cooling media without the need for excessive mechanical cooling. To take advantage of this, the air handling equipment will be fitted with airside economisers to utilise this outdoor air to cool the space. Additional cooling to this is by evaporative means with water recycling utilised.
Airside heat recovery systems with air-to-air heat pumps shall be installed in the office areas in the building. These systems are to accommodate the fresh air and heating/cooling requirements for the space.
Energy efficient Electrically Commutated (EC) Fans and motors shall be utilized where possible and variable speed drives (VSD's) will be utilized when EC Fans not viable. Premium Efficiency motors will be specified on all equipment.
All other data centre engineering services installations proposed have been considered in detail from an energy perspective.
More detailed information on service installations, prepared by Ethos is contained within the application package.

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Storm water management for the site including capacity for future development has been assessed and designed for by Pinnacle Engineering and included within the planning application documents.

Part L of the Building Regulations will be observed in respect of the works proposed. Dispensation will be sought in respect of certain plant areas that are not habitable spaces.

4.5 UNIVERSAL DESIGN AND ACCESSIBILITY

It is a project objective to promote accessibility for all. Buildings will be easily identifiable, distinguishable from its surroundings, consistent in design, easily accessible and safe to use.
An Accessibility Statement will be prepared as part of the building design and will be included in the application to South Dublin County Council for a Disability Access Certificate (DAC).
Part M of the Building Regulations will be observed in respect of the works proposed. Dispensation from Sections 1.1 (part) and 1.3 will be sought in respect of certain plant areas.

4.6 ACCESS AND PARKING PROVISION

The main vehicular and pedestrian site entrance will be located centrally off the Newcastle Road (R120) as established by previously established planning permission. Adequate room is provided within the site boundary for traffic awaiting clearance to access the facility.
An internal ring road will facilitate operational and fire tender access to all sides of the building complex.
A dedicated 2-bay loading facility with a 1no. level access loading bay is provided with access on the south side of the administration part of the building.
Car parking provision is 39 spaces to cater for staff and visitors, including 4 EV and 2 disabled parking spaces together with separate motorcycle and bicycle parking will be provided as indicated on drawings.
The Data Centre will be occupied on a 24 hour basis with reduced staffing at night.

4.7 FIRE SAFETY

Part B of the Building Regulations will be observed in respect of the works proposed.
The development will be carried out in compliance with a Fire Safety Certificate which is being applied for.

4.8 BUILDING SERVICES

The engineering, fabrication, construction, installation, inspection, testing and commissioning of building services installations shall be carried out in accordance with current Irish and European regulations, codes, standards and any relevant manufacturers' instructions and guidelines.
Refer to Engineering Report by Ethos Engineering.

4.9 DESIGN REFERENCES, STANDARDS AND GUIDELINES

The development has been designed in accordance with the Planning and Development Acts 2000 (as amended), the Planning and Development Regulations 2001 to 2020, South Dublin County Council Development Plan 2016-2022 and shall fully comply with the detail contained in permissions, approvals or consents issued by the Planning Authority.

The design shall fully comply with the Building Regulations 1997-2019, the Building Control Acts 1990-2014, and the Building Control Regulations 1997-2018, Irish/British and European Standards and Codes of Practice.

Notwithstanding full compliance with Building Regulations and local codes, the International Building Code (IBC) 2018 shall serve as a reference for minimum building standards in alignment with the Client's global policy.

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The design shall fully comply with the Safety, Health and Welfare at Work Act 2005 and with the Safety, Health and Welfare at Work (General Application) Regulations 2007 as amended, the Safety, Health and Welfare at Work (Construction) Regulations 2013, and in particular with the General Principles of Prevention.

References:

The Planning and Development Act 2000, Revised, Updated to 15 January 2021 may be accessed through the following link:
https://revisedacts.lawreform.ie/eli/2000/act/30/front/revised/en/html

The Planning and Development Regulations 2001 – 2020 (Unofficial Consolidation) Updated to 16 September 2020 may be accessed through the gov.ie website through the following link:
https://www.gov.ie/en/publication/c0ac2-planning-legislation-primary-legislation/]

The Building Control Act 1990, Revised, Updated to 3 April 2020 may be accessed through the following link:
https://revisedacts.lawreform.ie/eli/1990/act/3/front/revised/en/html

The Building Control Regulations 1997, Revised, Updated to 3 April 2020 may be accessed through the following link: https://revisedacts.lawreform.ie/eli/1997/act/496/front/revised/en/html

The Safety, Health and Welfare at Work (General Application) Regulations 2007, Revised, Updated to 30 April 2018 may be accessed through the following link:
https://revisedacts.lawreform.ie/eli/2007/si/299/revised/en/pdf

The Safety, Health and Welfare at Work (Construction) Regulations 2013 may be accessed through the following link:
https://www.hsa.ie/eng/Legislation/New_Legislation/SI_291_2013.pdf