K2 Data Centre Amendment Application, Citywest Business Campus, Dublin 24

21174-RKD-XX-XX-RP-A-0001
Architectural Design Statement

Purpose of issue: Issued For Planning
Revision: P1

19 July 2022

Contents

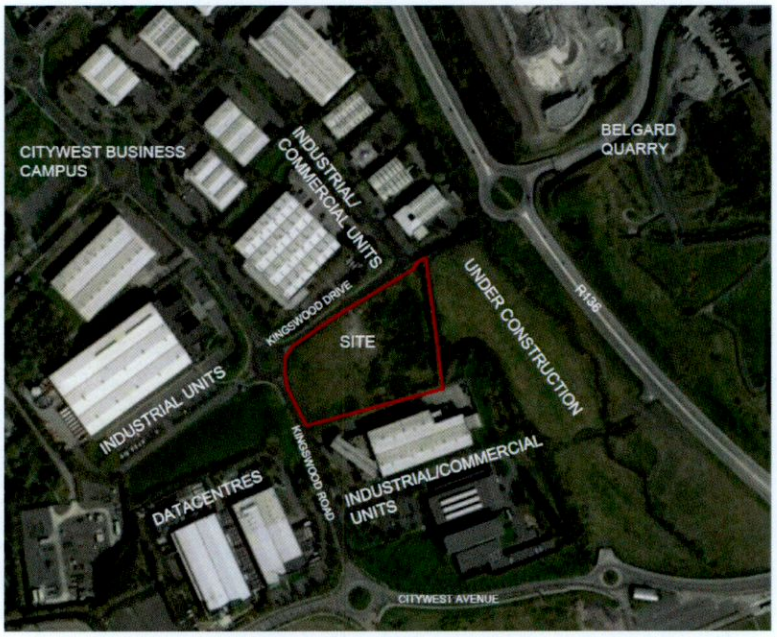
1.0 Introduction

The following report describes the design rationale of the amendments to the previously permitted Data Centre facility in Citywest Business Campus, at the Junction of Kingswood Drive and Kingswood Road in Dublin 24, within the jurisdiction of South Dublin County Council. Permitted Planning Register Reference Number is SD18A/0301. The Planning Grant was issued on 4th February 2019.

The report aims to identify the site and the proposed amendments to the previously permitted design.

The site, is currently a brownfield site, and has been used as a temporary builders' compound. It is adjoined by several industrial and commercial units and datacentres.

Picture 1: Site Context



The site, measuring 1.942ha / 4.8 acres, sits within the business campus which is bound by the Naas Road (N7) to the north, the R136 to the east and Citywest Avenue to the South. Access to the site is via the internal business campus estate road system from the west and north.

The permitted building is a 2 storey datacentre with 2 storey administration spaces and associated plant spaces with a total permitted floor area of 11548.5m^2 as listed below:

Picture 2: Permitted Building Areas

BUILDING 1	
GROUND FLOOR	5,311m²
1st FLOOR	5,311m²
SUB TOTAL BUILDING 1	10,622m²
GENERATORS AREA	639m²
SPRINKLER AREA	
SPRINKLER TANK	123.5m²
SPRINKLER PUMP	88m²
TOTAL SPRINKLER	211.5m²
10kV SUBSTATION	76m²
TOTAL	11,548.5m²

The proposed design intent is to maintain/match the permitted design except where change is necessary to meet K2 operational requirements or to remove an element that is no longer required. A 38KV substation is being proposed as part of the amendment application and is to be located in the space for the potential 110kv substation described in the permitted application.

The proposed changes to previously permitted scheme include.

- The First Floor Data halls have been removed and replaced with screened external roof mounted plant space. Total internal Floor Area reduction of 4091 m^2 for the datacentre building.
- The Internal layouts have been revised to suit K2 operational requirements.
- A canopy will be added over the loading docks on east facade to provide additional protection during loading dock operations.
- Building floor levels have been adjusted, the proposed ground floor level is 106.00m a reduction of 0.62m from permitted level of 106.62m, The permitted parapet level is maintained with the exception of the east Parapet height which has been reduced by 2.02m to match
- The Slot windows in Data Hall façade are to be removed and replaced with feature colour to cladding.
- Generator enclosure will be connected to the main building.
- The Generator flue height will be revised to 119.85m, 0.55m below permitted flue level of 120.40m & number of generators reduced from 8 to 5. .
- The ESB 38kV Sub station (124,5m^2) and customer Substation (47m^2) added to the overall site layout.
- The permitted Sprinkler Tank, pump room and 10kV Substation have been removed.
- Carparking revised to allow for 35 carparking spaces, with future spaces removed.
- Landscaping revised to North-East corner, to accommodate ESB Substation.
- Boundary treatment revised to allow for 2.6m Palisade fence around ESB Substation, in accordance with ESBN requirements.

The Environmental requirements of the Datacentre are managed by the mechanical and electrical plant located adjacent to the proposed building: 5 no. external generators and ancillary plant located on the screened roof area and internal water tank/treatment area.

A 38KV substation is being proposed as part of the amendment application and is to be located in the space for the potential 110kv substation described in the permitted application.

There is no change to the Area previously reserved for a future data centre development.

2.0 Site and Surrounding Area

2.1 Existing Site Location

The site is located within the Citywest Business Campus in Dublin 24.

The site is a brownfield site, measuring 1.942 hectares / 4.8 acres. It is bounded by internal business campus roads to the north and west, Kingswood Drive and Kingswood Road respectively. Existing hedgerows and Trees bound the site to the east separating it from an industrial site currently under construction and a planted berm to the south separating the site from an existing industrial/commercial unit.

The site has been used in the past as a temporary builder's compound and has a section of existing hardstanding enclosed by a post and mesh fence on the central northern area of the site.

There are various commercial, offices and industrial buildings (including another 2 data centres) located across the around the site from the site.

Data Centre use is already established in the area including a 2 to the west of Kingswood Road and the site currently has planning permission for a 2 storey datacentre granted under Permitted Planning Register Reference Number SD18A/0301

The site is located about 2150m east of Baldonnell Casement Aerodrome.

Picture 4: View of existing site from junction of Kingswood Road and Kingswood Drive – direction of view: South

Picture 5: View of existing site from Kingswood Road – direction of view: East

2.2 Site constraints

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

- The site is bounded by existing tress and hedgerows to the east and south of the site. Condition 3(a) of Permitted planning register reference number SD18A/0301 requires the retention of the trees and hedgerows along these boundaries. In line with the permitted scheme it is proposed to maintain the permitted 2m set back of the fence line along these boundaries in order to facilitate their retention.

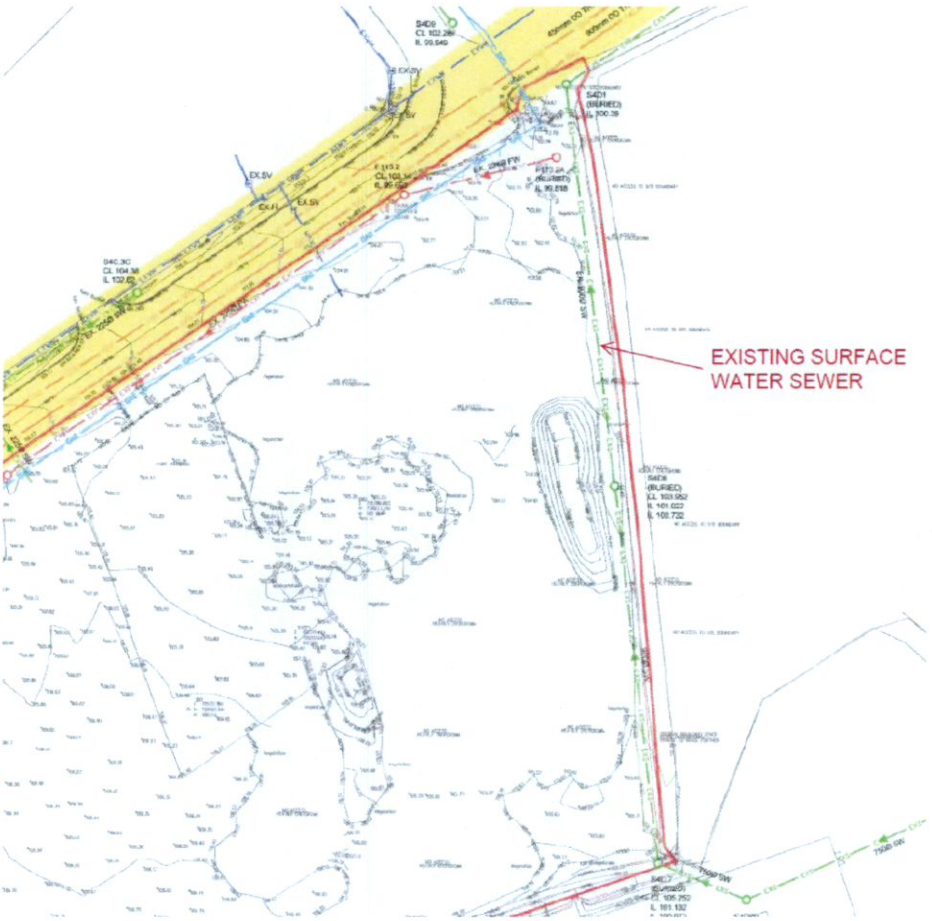
Picture 6: View Along Southern Boundary From Kingswood Road – View Direction East

Picture 7: View Along Eastern Boundary From Within Site – View Direction North.

- A footpath is under construction, at the time of application, along the west site boundary, this footpath aligns with the footpath of the permitted site plan and location is being retained for the proposed amendment application. Modifications will be required to the footpath at site vehicular entrance.

- There is an existing surface water main running north to site along the eastern boundary of the site. The waterman is private and is in the ownership of the Davy Hickey Properties, citywest. The Proposed substation and associated buildings have been set back from the watermain by a minimum of 3.2m to avoid lateral pressure being imposed on existing drains.

Picture 8: Existing Surface Water Main



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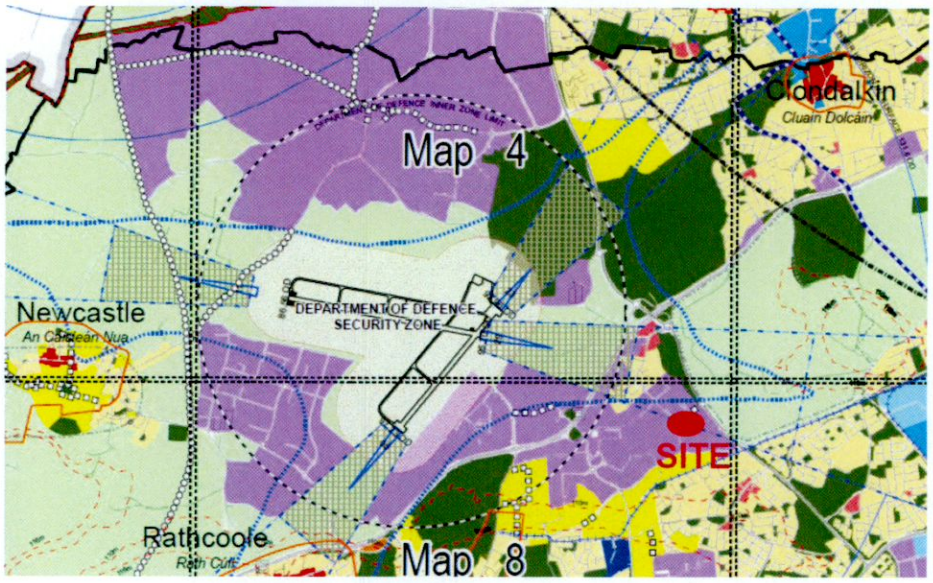
- The site is located within the approach slope of the Baldonnell Casement Aerodrome flight path. The permitted application indicated a 19m clearance from the top of generator Flues to the 1:50 rise up zone of the flight path. The proposed amendments will increase the clearance to 20.1m, refer to drawing 21174-RKD-ZZ-ZZ-DR-A-1002



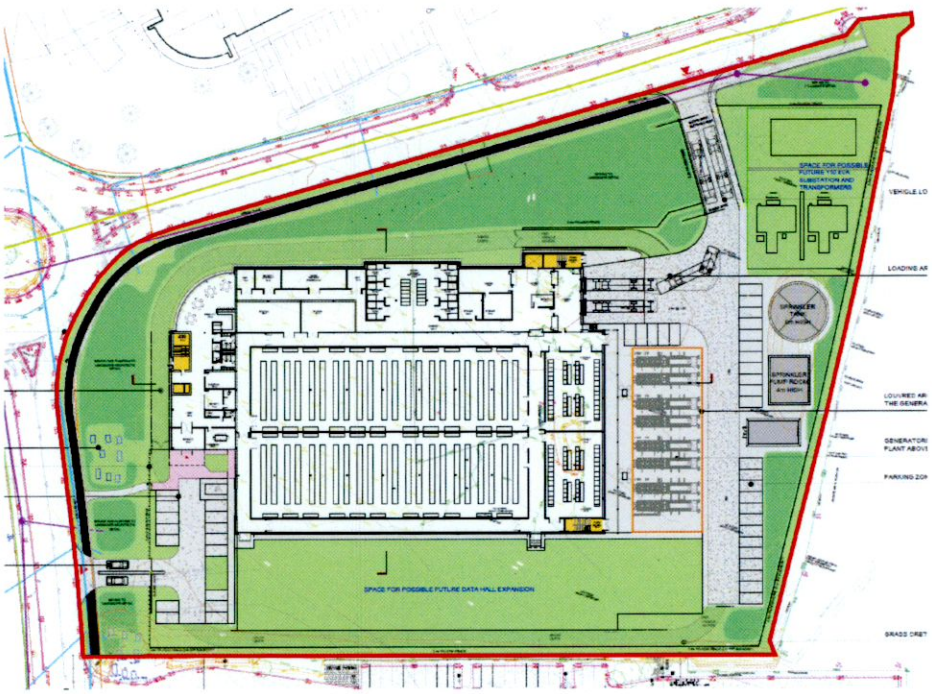
Picture 9: Extract from SDCC Development Plan index map with Defence Inner Zone and aerodrome approach paths clearly marked. Site location marked in red by authors of this report.

3.0 Proposed Site Plan

The permitted site layout positions the Datacentre centrally on the site with the generator compound and loading bays to the east of the datacentre, water storage tank, pump house and 10kv substation are positioned adjacent to the eastern boundary. Car and pedestrian access is via the site entrances located in the South-West corner of the site off Kingswood Road. HGV access is provided on the North-East Corner providing direct access to the loading Bay, this access also allows for car access to the car parking provided on the east of the site.

A 2.4m high Paladin fence is provided along the South and east boundaries and partially along the north and east boundaries to meet the building façade allowing for a secure loading bay area and building entrance. The existing hedgerows and tress are maintained along the east and south boundaries. Landscaped berms, varying in height up to circa 5m high, are permitted along the West and North helping the building nestle into the site and providing a high level of screening to the HGV and Plant areas to the east of the site.

29 carparking spaces and a further 16 were noted as future parking and the permitted plan highlighted space for possible future data hall expansion and future 110kv substation and transformers.



Picture 10: Permitted Site Layout – Refer to drawing 21174-RKD-ZZ-ZZ-DR-A-2004_Permitted Site Plan

The proposed site plan layout largely maintains the layout of the permitted scheme with proposed amendments as noted below:

- Generator enclosure will be connected to the main building increasing the internal footprint of the generator yard, from 639m^2 to 879m^2, allowing for an increased level of maintenance access.
- The ESB 38kV Sub station (124,5m^2) and customer Substation (47m^2) added to the overall site layout.

a. It is proposed to locate this in the area provided for the 110kv substation and the area permitted for the Sprinkler Tank, pump room and 10kV Substation which are proposed to be removed from the scheme.
b. A separate entrance is proposed for the substation to provide ESBN with unrestricted access to the site in line with ESBN requirements.

- Carparking revised to allow for 35 carparking spaces in line with permitted traffic impact report, with future spaces removed, 2 accessible parking bays will be provided in accordance with TGD part M requirements.
- Landscaping revised to North-East corner, to accommodate ESB Substation and associated entrance.
- Boundary treatment revised to allow for 2.6m Palisade fence around ESB Substation, in accordance with ESBN requirements.

4.0 Landscaping

The permitted landscape scheme was designed to be in keeping with overall campus landscape concept. The concept consists of mounding of a scale comparative to the building with a natural dip and slope form, the mounds are planted with woodland planting to provide screening to the building.

It is proposed to largely maintain the landscaping design from the permitted scheme. Amendments are proposed to the North west corner to accommodate the proposed ESBN substation entrance and to provide screening to the substation in keeping with the permitted concept.

A swale is proposed to the southeast corner between the fence and carparking, this provides a landscape feature which is incorporated into the Sustainable Urban Drainage System (SuDS) design for the scheme, refer to the Engineering Services Report Drainage and Water Services for further detail.

Please refer to Landscape Architects Design Report for detailed description of landscaping proposal and amendments.

Picture 11: Example of mound and woodland planting in Citywest Campus – Source Google Maps.

Picture 12: Example of mound and woodland planting in Citywest Campus – Source Google Maps.

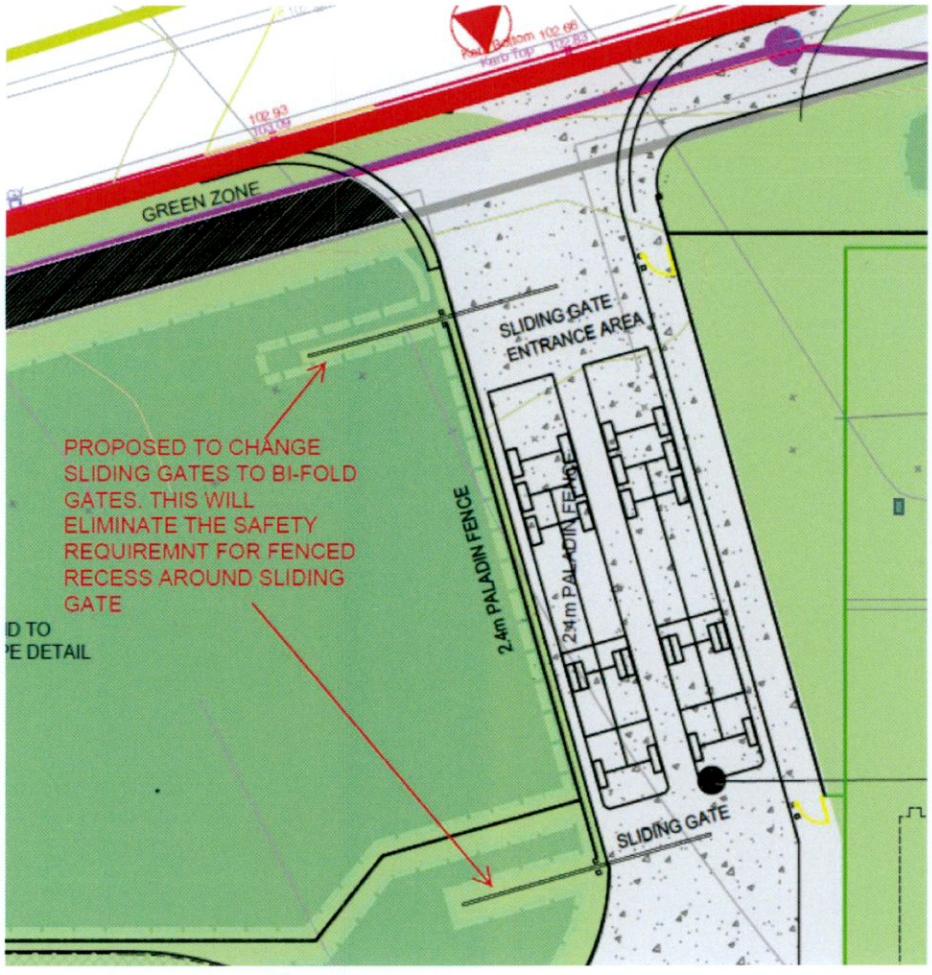
5.0 Vehicular Site Access

There are 2 vehicular entrances in the permitted scheme. Car and pedestrian access are via the southwest entrance, off Kingswood Road, providing access to the main building entrance and carpark. HGV and alternative car access is via the entrance to the northeast corner, off Kingswood Drive, providing access to the loading bay, and car parking. Both entrances can be utilised for fire tender access and a fire tender access route is provided around the perimeter of the site/building along the carpark and hardstanding areas and a grasscrete roadway.

The proposed amendment application will maintain the entrances in the permitted locations and the access strategy described above. An additional entrance is proposed to the 38kv Substation providing direct maintenance access as required by ESBN substation standards. The customer side of the substation is accessed from within the site via the permitted HGV entrance.

The permitted HGV entrance has been revised to allow for by bi-fold gates and central islands on which it is proposed to mount intercom units and card readers. This will allow for remote operation of the gates from the building reception. The change from Sliding gates to bi-fold will reduce the impact of fencing on this boundary as the fenced recess required for safe operation for the sliding gates will no longer be required.

Picture 13: Permitted HGV entrance



6.0 Parking Provision

Overall 35 car spaces are being proposed for the development.

The Permitted site plan indicated 29 carparking spaces with a further 16 noted as future parking. The permitted Traffic Impact Report proposed 35 car parking space based on requirements outlined in Table 11.23 Maximum Parking Rates (Non Residential) of south Dublin County Councils Development Plan 2016-2022.

The proposed amendments do not increase the floor area of the permitted scheme therefore the 35 carparking spaces will provide an adequate level of parking within the development ensuring no adverse impact on the surrounding area due to potential overspill at peak times of demand in keeping with the permitted traffic statement.

Out of the 35 car spaces 5%, that is 2 no., will be accessible car spaces to meet the requirements of TGD Part M.

In addition to the car spaces there is also provision for 4 no. bicycles spaces, in the vicinity of the building entrance, this exceeds the requirement of 3 number bicycle spaces in the permitted traffic statement which meets the requirements of Table 11.22 Minimum Bicyle Parking Rate of South Dublin County Council Development Plan 2016-2022.

Picture 14: Extract from Permitted Traffic Statement - Car Parking Provision

Parking Standards		
Land Use	**Standards**	
	Zone 1	*Zone 2*
Office	*1 per 100 sq m*	*1 per 200 sq m*
Data Hall	*No Standard*	*No Standard*

Table 2 Car Parking Standards

Car Parking Provision		
Land Use	**Standards**	**Provided**
Office	*7*	*30*
Data Hall	-	*5*
Total	**35**	**35**

Table 3 Cycle Parking Provision

7.0 Layout and Design

7.1 Layout

The Permitted Datacentre building is made up of 2 parts. The Data Halls and the Administration Areas. The Datahall area of the building is approximately 82 m long x 45 m wide housing 4 no Data Halls over 2 storeys, Power Support Rooms, and associated plant spaces.

The Administration Areas are located to the front of the datahalls, west and north, over 2 storeys. This area provides office accommodation for permanent and visiting staff and associated self-catering break room facilities.

Additional Transformer Rooms and a Loading Facility are located to the side of the Data Halls in a block of approximately 76 m long x 15 m wide over two floors.

8 Generators are located within a screened enclosure to the east of the datacentre with flues grouped into 2 stacks on a supporting tubular framed structure.

The Total area of the permitted datacentre and associated buildings is:

- Ground Floor: 5,311 m^2
- First Floor: 5,311 m^2
- Energy Buildings: 639 m^2
- Ancillary Buildings: 288 m^2
- **Total Building Area: 11,549 m^2**

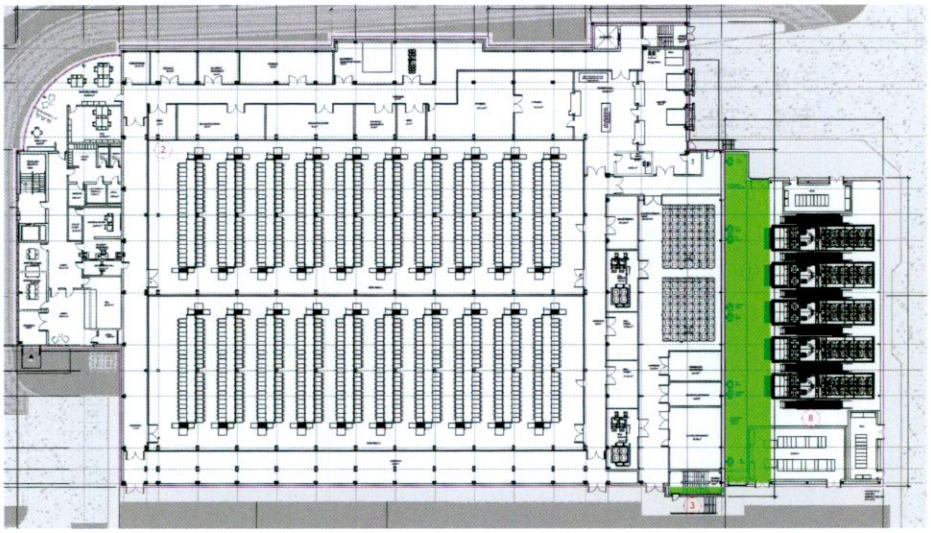
The intent of proposed amendment application is to maintain the footprint and the principles of the permitted building layout in so far as is feasible whilst providing for the operational requirements of K2 Datacentres.

Most of the permitted building footprint is maintained except for 2 areas. The stair to the Southwest corner has been moved south and now protrudes from the south façade (15m^2 additional floor area over 2 storeys) and the generator enclosure is extended west to connect to the main building façade (240m2 additional area to the generator yard). The stair adjustment is proposed to facilitate the internal water treatment plant area and the generator yard change to accommodate a change in generator type and size and to improve maintenance access around the generator enclosure.

Picture 15: Proposed Ground Floor Plan.

Additional Areas Highlighted in Green

Magenta outline denotes permitted building footprint.



Picture 16: Proposed First Floor Plan.

Additional Areas Highlighted in Green

Proposed External Roof Top Plant Area Highlighted in orange.

Magenta outline denotes permitted building footprint.

In order to facilitate the K2 Datacentres design strategy and operational requirements it is proposed to reduce the number of data halls from 4 to 2 removing the First Floor data halls to be replaced with an external roof mounted plant space (Total internal Floor Area reduction of 4091 m^2). The 2 Storey Building Façade is to be maintained and will act as a screen to the roof top plant and maintain the visual appearance of the permitted building design.

Revised internal layouts are proposed to suit K2 operational requirements including:

- Removal of internal electrical plant rooms to be replaced with roof top mounted electrical power pods.
- Provision of internal water treatment plant spaces.
- Revised Office, WC and Break room layouts.
- A canopy will be added over the loading docks on east facade to provide additional protection during loading dock operations.

External plant and ancillary building proposed amendments include:

- Number of Generators reduced from 8 to 5 including a flue height reduction to 119.85m, 0.55m below permitted flue level of 120.40m

- Removal of the Sprinkler Tank pump room. The water treatment and sprinkler systems are now proposed internally within the building.
- Removal of 10kV Substation. ESBN 38kV Sub station (124,5m2) and customer Substation (47m2) are proposed to be added to the overall site layout in the space noted for future 110kv substation. refer to Substation Section of this Document for further detail.

The Total area of the proposed datacentre and associated buildings after amendments is:

- Ground Floor: 5,305 m^2
- First Floor: 1,226 m^2
- Energy Buildings: 879 m^2
- ESB Substation: 124 m^2
- Substation Control Building: 47 m^2
- **Total Building Area: 7582 m^2**

7.2 Building height

The permitted Building design was "*guided by the objective to minimise the visual impact of the new building. The Data Centre is a simple volume with all the plant housed internally or fully screened with a minimum of features which would reflect the scale of the building. The Data Centre steps down to the office area which faces the more important and visible aspect of the site*" (From Architectural Design Statement by JSA Architects permitted under Planning Register Reference Number SD18A/0301)

The form and scale of the permitted design is similar to neighbouring buildings and in keeping with the overall campus layout and design.

Note on Site Levels: Following a review of the site survey levels It was noted that there was a discrepancy between the site survey levels in the permitted scheme and those surveyed for this amendment application. The proposed levels are 380mm lower than those in the permitted scheme. All levels indicted on the proposed and permitted drawings and included within reports have been adjusted to reflect this discrepancy.

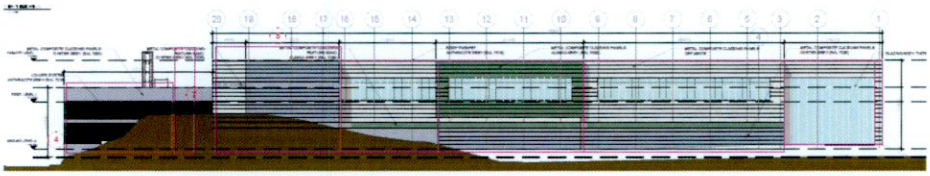
The Permitted Building had a ground floor finished floor level of 106.62m and a structural slab level of 105.62m allowing for a raised access floor zone of 1m. The Building parapet level stepped down from east to west from 120.62m to 118.62m giving a building height of 12 to 14m above finished floor level. The mound and woodland landscaping help to nestle the building into the surrounding landscape.

The permitted generator flues matched the building in height.

To suit the K2 design strategy it is proposed to the remove the raised access floor and reduce the finished floor level to 106.00m with the parapet level at a similar height to the lower permitted level at 118.60m. The higher parapet level is to be removed this will provide a building height of 12.6m above finished floor level . The Generator flue height will be revised to 119.85m, 0.55m below permitted flue level of 120.60m

Picture 17: Proposed North Elevation

Magenta outline denotes permitted building outline



These amendments allow for internal datahall heights to suit K2 Datahall design and provide screening to the roof top plant whilst maintaining the effective height and parapet level of the permitted building.

7.3 Elevations' Design and Materials

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

The permitted Data Centre is clad with horizontally fixed, composite micro rib and / or fully flat metal cladding panels with mineral wool core. The varying Dark Grey to Off White colour scheme breaks up the façade and includes horizontal feature colour bands to accentuate the horizontal form of the building. The Slot windows in permitted Data Hall façade are proposed to be removed and replaced with feature colour to cladding.

Generator yard enclosure (to the east of the building) will be constructed of Horizontal Louvre Bands with a bottom, middle and top band of composite metal panels to match the main building cladding.

The office block facades are visually differentiated from the Data Centre part of the overall building. Curtain walling extends across the north and west façade with a feature double height curved section at the Northwest corner.

The pallet of colours will generally create a dark to lighter effect from ground floor up. The colours will be a pallet of grey and off white in pvdf, prisma colourcoat or equal which will include Antracite (RAL 7016 — dark grey), Alaska Grey (RAL 7000), Oyster (RAL 7035) and off white. Cappings, pressings, junctions, window cills etc., will be in matching colours. The glazing will be body tinted grey.

The proposed amendment application will maintain the design principles and the permitted colour scheme to the building facades will be largely maintained, it is proposed to introduce Slate Grey (RAL7012) into the colour scheme and Hamlet (RAL9002) as the off white colour. The Green colour to permitted elevations and CGI images is proposed to be Jade/Korean Mint (RAL 150 50 20)

The Break up of the façade colour bands will be, from bottom to top, Slate Grey (RAL 7012), Jade /Korean Mint (RAL 150 50 20) Feature Band, Oyster (RAL 7035), Hamlet (RAL 9002) Feature Band and Oyster (Ral 7035). Feature Panel areas will be in Jade/Korean Mint (RAL 150 50 20). Generator Screen Louvres and curtain walling spandrels will be colour coated Antracite (RAL 7016).

Picture 18: RAL Colour Pallete

Picture 19: Composite cladding textures: flat and, satin line (also called micro ribbed)..

7.4 Visualisations

Please refer to the separate booklet.

8.0 Substation.

8.1 Layout

The proposed Substation includes a 38kv single storey substation building (124.5m^2) on the ESBN side of the substation. This site will be accessed via a proposed entrance from Kingswood Drive to the north and will be bound by a 2.6m high palisade fence as required by ESBN design standards.

The customer side of the substation includes a single storey containerised control building (47m^2) and 2 no. transformer bays and a 15m high lightning monopole. The Site will be accessed from within the datacentre site. This side of the substation is bound by a 2.4m high Paladin fence to match the datacentre boundary fencing.

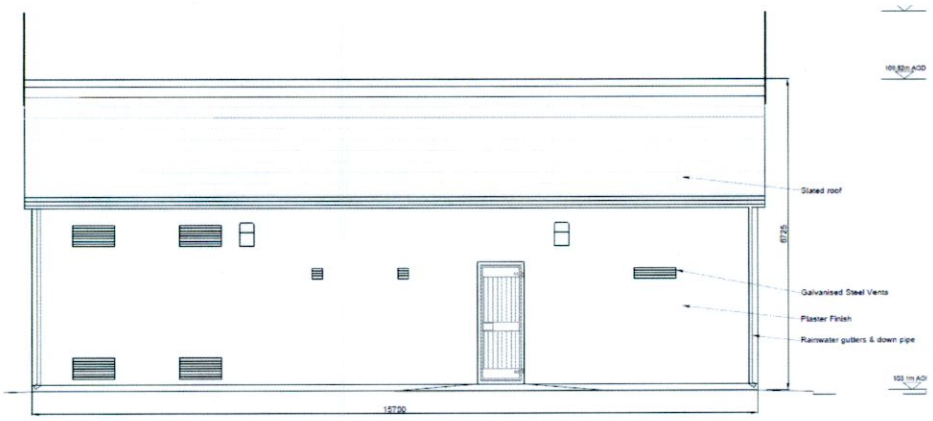
8.2 Siting

The proposed location on site for the substation is within the space allocated for a future 110kv substation indicated on the permitted site plan and this location is being maintained having regard to the following:

- The specific requirements of ESBN in relation to size of the compound and substations and requirement for dedicated access to the substation.
- The lack of available space in the immediate curtilage of the permitted/proposed building.
- The requirement to retain the vacant area to the immediate south of the permitted/proposed building for future expansion of the facility and the limitation of providing dedicated access to this area due to its proximity to campus roads.

8.3 Design

The proposed substation design is based on the requirements of ESBN design standards. The building is a simple rectangular form with a Slated Pitched Roof and blockwork walls with an external plaster/render finish.



Picture 20: **Proposed** ESBN Substation Elevation

This design is similar to an existing substation in the vicinity of the campus located on Citywest Village Avenue.

Picture 21: Location of Existing Substation – Source Google Maps

Picture 22: View of existing substation from Citywest Village Avenue – Source Google Maps

9.0 Schedule of Areas and Parking Provision

K2D6 Building Gross Floor Areas - 23/06/2022

		Proposed Area m^2	Proposed Totals m^2	Permitted Area m^2	Permitted Totals m^2	Comments
Main Building	Ground	5305		5311		Proposed Area Includes Data Hall & MMR of 2,541m2 K2 Admin Area of 201m2 Water
	First	1226		5311		
	Total		6531		10622	
Generator Yard	Ground		879		639	Proposed area Includes 3 no. MV buildings (91m2, 33m2 & 33m2 each).
Total Building Area			**7410**		**11261**	

K2D6 Site Areas

	Proposed Area m^2	Proposed Area acre	Proposed Totals hectare	Permitted Area m^2	Permitted Area acre	Permitted Totals hectare	Comments
Site (Redline Boundary Area)	19424	4.800	1.942	19424	4.800	1.942	
Landscape Area	6,845	1.691	0.685	8,068	1.994	0.807	Landscape areas (Excludes Roads, Fire Tender Route, Footpaths,Carparking, Electrical cable route). Permitted includes space for possible future 110kV Sub station & Transformers (1412m2), where proposed ESB Compund area is located.
ESB 38kV Sub station Compound Area	125	0.031	0.013				Not applicable to permitted
ESB Containerised Control Building	47	0.012	0.005				Not applicable to permitted
10kV Sub station Compound Area				76	0.019	0.008	Not applicable to proposed
Sprinkler Tank				124	0.031	0.012	Not applicable to proposed
Sprinkler Pump				88	0.022	0.009	Not applicable to proposed

6 Car Parking Provision

		Proposed Spaces No.	Proposed Totals No.	Permitted Spaces No.	Permitted Totals No.	Comments
	Accessible Parking	2		1		
	Electric Vehicle Parking	4		4		
	Standard Parking	29		24		Permitted allowance for future no. 16 car parking spaces.
	Total		35		29	
Total Car Parking Spaces			**35**		**29**	Permitted 45 spaces when including future allowance .

Bicycle Parking Provision

		Proposed Spaces No.	Proposed Totals No.	Permitted Spaces No.	Permitted Totals No.	Comments
	Bicycle Parking	4		3		Proposed No. 1 Bicycle Rack Containing x4 bikes.
Total Bicycle Spaces			**4**		**3**	