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Design And Access Statement

Application to provide power on a temporary basis to the already permitted data centres (LON4&LON5) and to provide a permanent solution to the emerging datacentre campus as part of the Hayes Bridge Retail Park and Heathrow interchange Site

Client	Colt DCS
Project	LONDPSS2 – London Digital Park Bullsbrook Road Substation

Project Number	0556
Originator	NWA
Volume	PL
Level	XX
Type	DAS
Role	A
Number	99000

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Content

1. Introduction

1.1. *Project Overview*

This Design and Access Statement accompanies a full planning application for the redevelopment of part of the Heathrow Interchange Park. The proposal includes the construction and operation of a new substation, together with associated ancillary works. This development is essential for enhancing the local electrical infrastructure and meeting the growing energy demands of the area. The substation forms part of the wider data centre campus development (masterplan), and will serve and support the adjacent data centres, which were previously approved under application reference (**38421/APP/2021/4045**) on a temporary basis, as well as providing a permanent power solution to a number of future data centres (which will be subject to future planning applications).

This document has been prepared in accordance with the *Guidance on Information Requirements and Validation* published by the Department for Communities and Local Government in March 2010.

1.2. *Consultation and Engagement*

This Design and Access Statement should be read in conjunction with the pre-application advice provided on **16 August 2024** and a subsequent workshop held on **14 November 2024**. Multiple meetings with stakeholders have been conducted to present the rationale behind the proposals and outline the design evolution that has informed the parameters of this application.

Hillingdon Borough Council has actively participated in pre-application discussions about the proposed site development. These discussions included input from a dedicated urban design team, which addressed critical aspects of the design. Feedback from these consultations has been thoroughly integrated into the design process and is reflected in the drawings accompanying this application.

The following documents are submitted as part of this application:

- Planning Statement
- Utilities Statement
- Heritage Statement
- Fire Safety Statement
- Landscape Management and Maintenance Statement
- Power Infrastructure Statement
- Arboricultural Method Statement
- Noise Impact Assessment
- Archaeological Assessment
- Transport and Flood Risk Assessment
- Construction Demolition Logistics and Management Plan
- Drainage and Lighting Strategy
- Contamination and Ecology Reports
- Biodiversity Net Gain Assessment

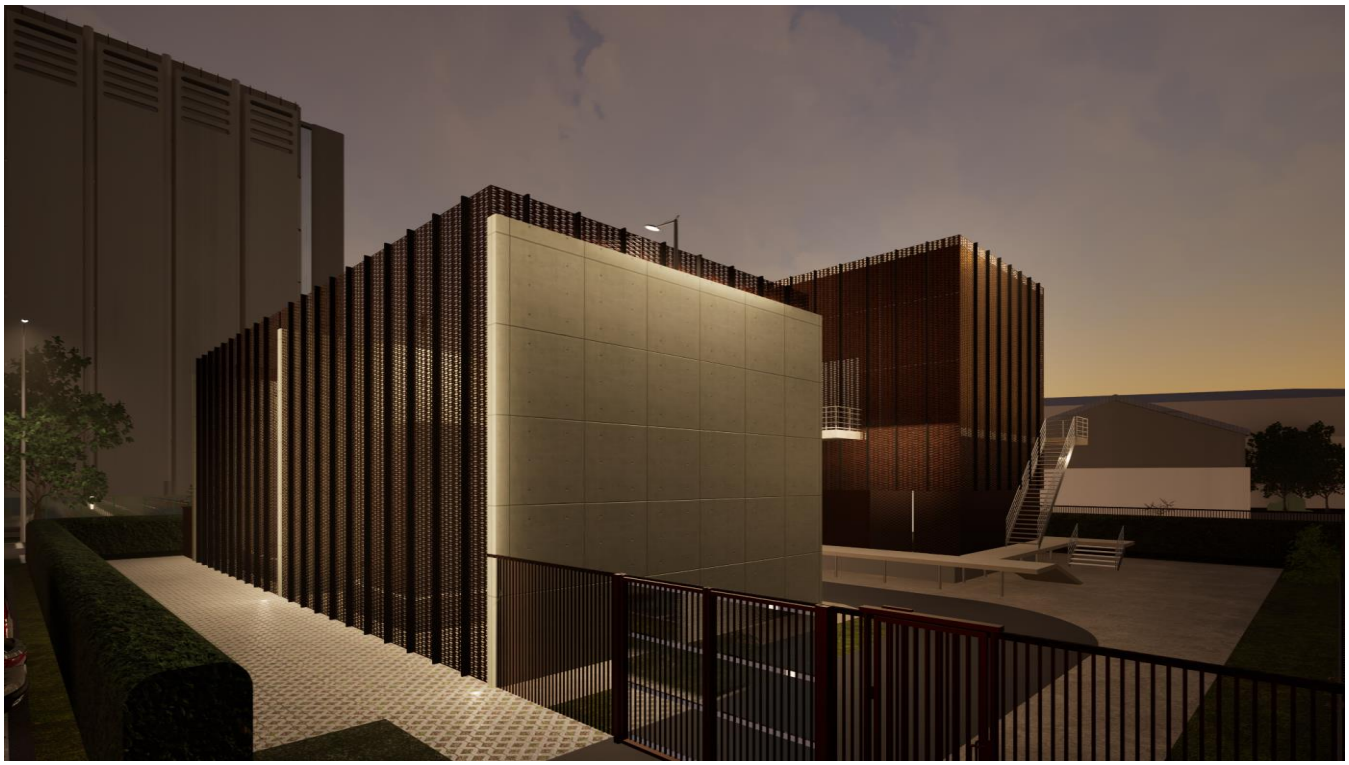


Figure 1 - Render 1 – View from Unit 1

Figure 2 – Render 2- View from main access road

2. Site Context

2.1. *Location*

The site is situated on the Heathrow Interchange Industrial Estate, at the southern edge of Bullsbrook Road in the London Borough of Hillingdon (LBH). It is located west of the Yeading Brook River and in proximity to the Southall Canal. This brownfield site lies approximately 6.1 miles north of Heathrow International Airport.

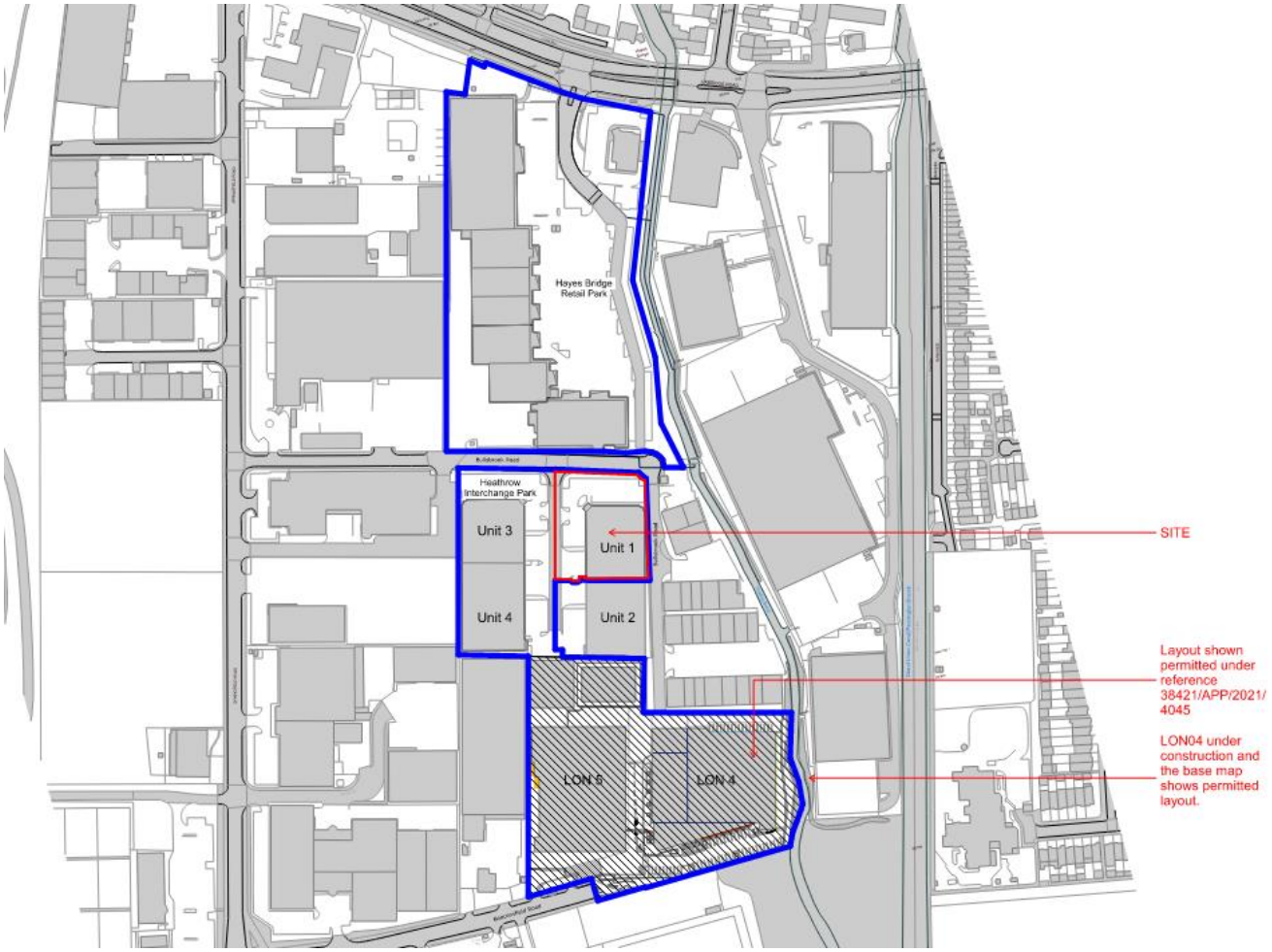


Figure 3 – Location site plan

2.2. *Current use*

The site is currently occupied by a warehouse building, Unit 1, which shares an envelope with Unit 2. These units are utilised by suppliers distributing gift goods (Unit 1: You Group) and telecommunications connectors (Unit 2: Eden Limited). The warehouses include office spaces on both the ground and first floors. Unit 1 also contains product showrooms and a mezzanine level for storage.

Parking areas are located to the north and west of Units 1 and 2, with some brick paving. The yard areas feature concrete hardstanding, and limited landscaping exists along the northern boundary.

Figure 4 – Views towards Unit 1

2.3. *Historic and Environmental Context*

According to **Historic England**, the nearest heritage asset is the **Grade II Listed Church of St George**, located approximately **670 metres northeast** of the site. The site remained undeveloped until the **1960s**, when two narrow buildings and smaller ancillary structures were constructed in the northern area. By **1973**, an additional building, identified as a **'research depot'**, was introduced in the southeast corner. Further alterations during the **1980s and early 1990s** redeveloped the site into its current configuration.

2.4. *Precedents*

Data centre substations have traditionally been associated with large-scale facilities situated in remote areas. However, changing market dynamics have driven the need for data centres to be located closer to end-users, a concept known as edge computing, often located in urban areas. This shift has resulted in substations being integrated into urban contexts.

To inform the design process, several precedents have been reviewed, including award-winning examples:

- **Kings Yard Substation** – Olympic Park, London
- **Kobarid Substation** – Slovenia
- **Länsisalmi Substation**, Olla Architecture – Vanda, Finland
- **Imatra Substation**, Virkkunen Architects – Imatra, Finland
- **Larkin Street Substation**, TEF Design – San Francisco, United States
- **Substation Sellerstraße**, Heide & Von Beckerath Architects – Berlin
- **Lauttasaari Substation**, Virkkunen Architects – Helsinki

In addition, other precedents with a focus on architectural treatment using expanded mesh were reviewed, including:

- **Interior Tower**, Stefan Klement (Klement Architects) – Vahrn, Italy

Figure 5 – Extracted references

Figure 6 - Extracted references

Figure 7 – References to Expanded mesh

3. Compliance with Planning Policies

3.1. *Relevant Policies*

The planning policies relevant to this application are outlined in greater detail within the accompanying **Planning Statement**. The proposed design has been developed with due consideration of **National, Strategic, and Local Planning Policies**, including:

- **National Planning Policies** and the **National Planning Policy Framework (NPPF) (2023)**
- **The London Plan (2021)**
- **The Development Plan for the London Borough of Hillingdon**

The **NPPF** places responsibility on Local Authorities to effectively balance land uses. Unit 1has previously been the subject of a prior notification application for the demolition of the existing building (reference **71554/APP/2024/2490**), has been deemed acceptable, establishing the proposed substation as essential infrastructure within this context. National policy underscores the importance of advanced, high-quality communications infrastructure as critical to fostering a sustainable economy. High-speed broadband and related networks play a vital role in supporting local community facilities and services.

The NPPF also stresses the need for high-quality design, particularly in relation to layout, scale, and form. During the pre-application process, the scheme's urban form and architectural expression were carefully refined to address feedback from Hillingdon Borough Council and ensure compliance with policy requirements.

4. Design Principles and Context

4.1. *Development Objectives*

The control room of the substation is designed as an industrial facility to house technical processing and electrical equipment alongside necessary support functions. The building, which will remain unmanned, is owned and operated by an independent network operator. Given the sensitivity of the housed equipment to environmental conditions, a dedicated enclosure is essential. This structure also accommodates the transformer block, situated in front of the control room.

The building's design prioritises functionality, addressing the spatial requirements for switch rooms and integrated electrical and fire suppression systems. Located within Flood Zone 2, the design incorporates measures to mitigate flood risks. The building will be elevated approximately 1 metre above ground level, with ramp and gantry access to both the ground and upper levels. This elevation also facilitates the inclusion of a cable basement beneath the operational rooms.

To ensure the security and controlled environment required for the sensitive equipment, a 2.4-metre-high weld mesh fence, with gated access points on the western and northern boundaries, will enclose the compound. The perimeter will be softened by landscaping, which screens the fencing from external view and enhances the site's overall aesthetic.

The remaining portion of Unit 1 has been designed to ensure a cohesive architectural appearance with the surrounding context. The design incorporates a gable end to blend seamlessly with the wider site. The enclosing wall will consist of a brick base, with insulated panels forming the middle and upper sections, mirroring the material palette of the existing buildings.

An urban greening approach has been implemented to unify the campus, including the introduction of trees, hedging in front of the fencing, and low-maintenance meadow grass across the site. While a green roof was considered during the design phase, it was excluded due to its high fire risk and the substation's minimal maintenance requirements.

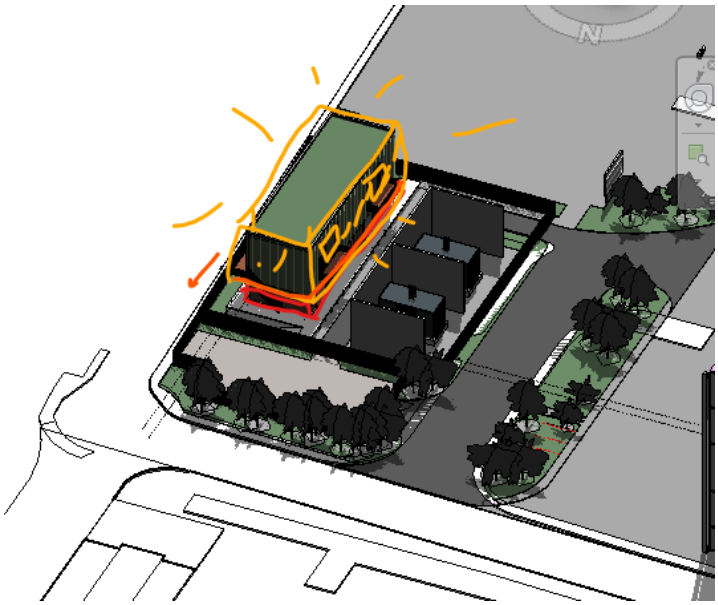


Figure 8 – Design Development

5. Site Layout

5.1. *Access and Maintenance*

The site layout has been thoughtfully designed to align with local policies and design principles while meeting the functional requirements of the substation.

The control room building is positioned at the rear of the site, with the transformer housing located to the west, away from the main thoroughfare and Bullsbrook Road to the north. The transformer has been strategically placed and designed to minimise the risk of blast or fire to neighbouring buildings, including Unit 1, with a defined blast radius. The layout accommodates the anticipated movements of vehicles visiting the facility, including those required for plant replacement.

A 3.5-metre access road has been incorporated to serve the facility, ensuring ease of access for maintenance operations within the control rooms. Equipment will be transported to the external platforms of the control room's upper deck and lowered to ground level using suitable crane or lifting infrastructure.

To the north and west, the existing car park has been retained, benefiting from natural screening provided by existing shrubs, trees, and greenery surrounding the facility. West of the transformers, a grasscrete surface has been installed behind a row of hedging to facilitate plant maintenance. Access doors at the rear of the transformers provide personnel access as needed.

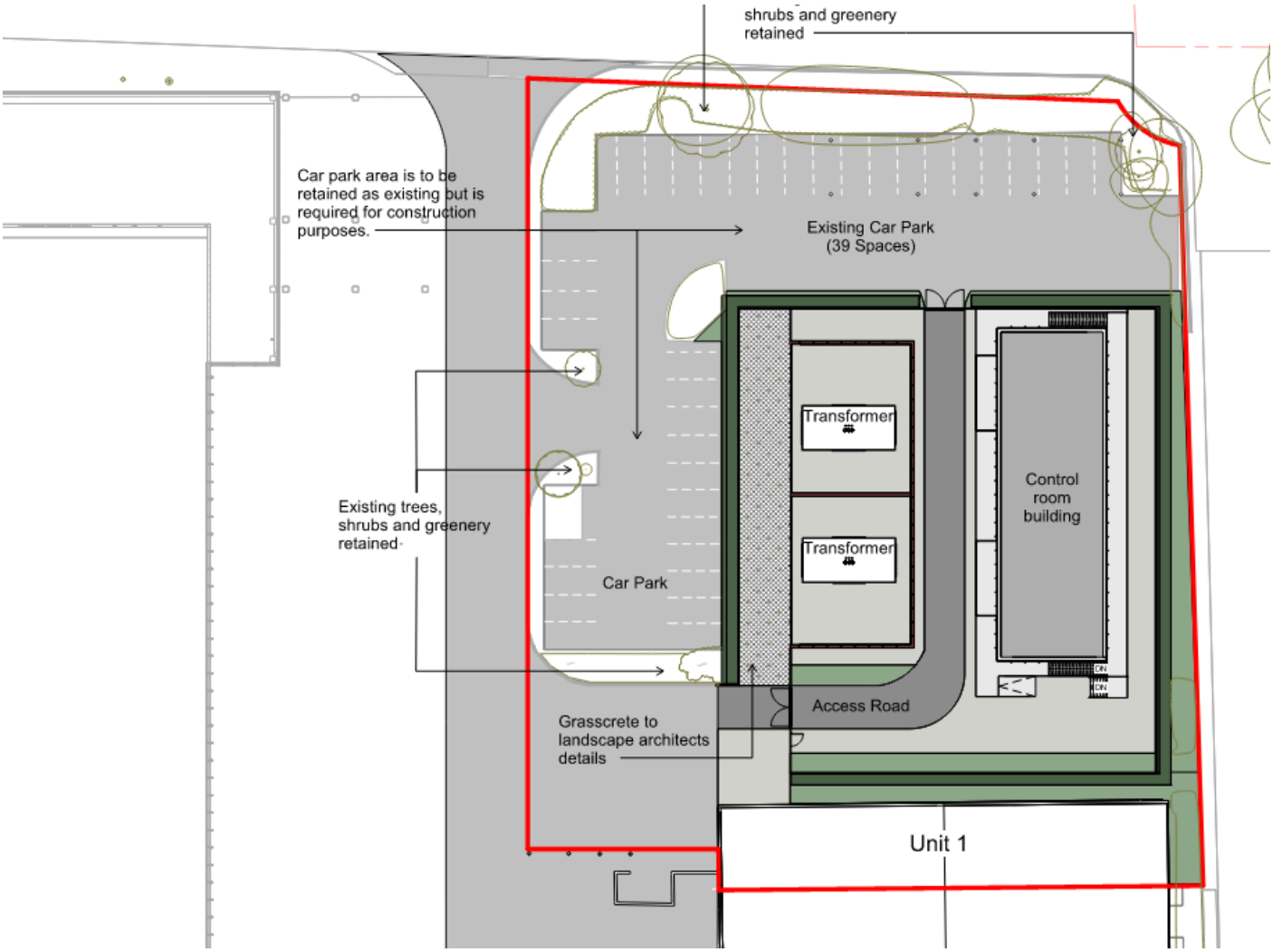


Figure 9 – Proposed Site plan

6. Building Design

6.1. *Appearance and Materials*

Drawing on insights from the precedents explored, the building has been designed with a simple urban form, featuring a solid base and a translucent or illuminated upper level. This approach has been influenced by examples such as the Länsisalmi Substation by Olla Architecture in Vantaa, Finland, and the Imatra Substation by Virkkunen Architects in Imatra, Finland. The design integrates a geometric form with an emphasis on massing and a solid façade complemented by a mesh front, taking inspiration from the Lauttasaari Substation by Virkkunen Architects in Helsinki.

Given the presence of other transformer blocks across the masterplan and a proposed fuel store, the design seeks to establish a cohesive typology, tying into the masterplan while giving the building a distinctive identity. The illuminated upper level has been reimagined to create a lantern-like effect, producing a soft glow that respects the sensitivity of Yeading Brook, located to the northeast of the site.

Materials have been carefully selected to suit the industrial nature of the building, with a focus on fire performance, low maintenance, and efficient construction. Locally utilised architectural languages, such as shuttered concrete with a

visual finish and anodised or polyester powder-coated expanded mesh, have been incorporated to link the design to the site's emerging context. This approach draws on the aesthetic of nearby developments, such as the new data centres on Beaconsfield Road, which feature mesh cladding, and aligns with the masterplan's grey palette and concrete textures.

The design development has incorporated verticality within the ethos of the masterplan. Geometric principles have been applied to align with the discreet nature of the site. The mesh cladding is articulated with 1200mm centres, demarcated by vertical fins to accentuate the building's architectural features.

The elevational treatment of the control room and transformer compound is driven by functional requirements, such as housing switch rooms and a cable basement within the electrical plant rooms. Areas requiring high ventilation are designed with open mesh cladding, while fully enclosed sections maintain a controlled internal environment. The mesh cladding not only enhances the building's infrastructural character but also provides ample ventilation for the equipment.

The building will be constructed using a lightweight steel frame clad with composite insulated panels capable of achieving the required fire rating, with the mesh installed over this, complemented by a base of traditional blue brickwork. This approach facilitates rapid construction, allowing significant early progress and enabling the building to be brought into use quickly. To achieve visual integration, the weldmesh fencing on the western side will be streamlined to match the colour of the transformer building's mesh cladding. This consistent colour scheme ensures alignment with the western elevation, the only area of fencing visible to the public.

At ground level, landscaping will soften the industrial appearance, enhance urban greening, and improve the public realm. The landscape design will act as a transitional buffer between the substation and its surroundings, providing visual screening from public streetscapes and contributing to local biodiversity.

Figure 10 – Design development and Visual iterations

7. Landscaping and Visual Impact

7.1. *Landscape Proposals*

The landscape proposals consider the scale and massing of the proposed development, as well as its current and future context and operational requirements. The design includes new planting to provide visual screening for the built structures and boundary fences at a human scale, while promoting urban greening and enhancing biodiversity.

The new landscape proposals are primarily confined to the footprint of the existing Unit 1 building, which is to be demolished (in part) as part of the proposed development. The remaining areas of the Site falling within the application are to be retained as existing.

A new mixed-species, native hedge is proposed along the north, east, and south sides of the substation compound security fence. To the east, a wildflower grassland area is planned between the hedge and the existing carriageway. To the south, low-growing shrub planting is proposed between the hedge and the retained section of Unit 1.

Within the substation compound, areas of low-maintenance, low-growing shrubs and wildflower grassland are proposed to enhance site greening.

To the west of the substation compound, a new native hedge will be planted behind the existing parking area, with a section of grasscrete, seeded with a species-rich lawn mix, placed between the hedge and the transformer enclosures. This will enhance site greening while also permitting future maintenance access to the transformers from the west.

Post implementation the landscape will be maintained as part of the operator's site wide maintenance strategy.

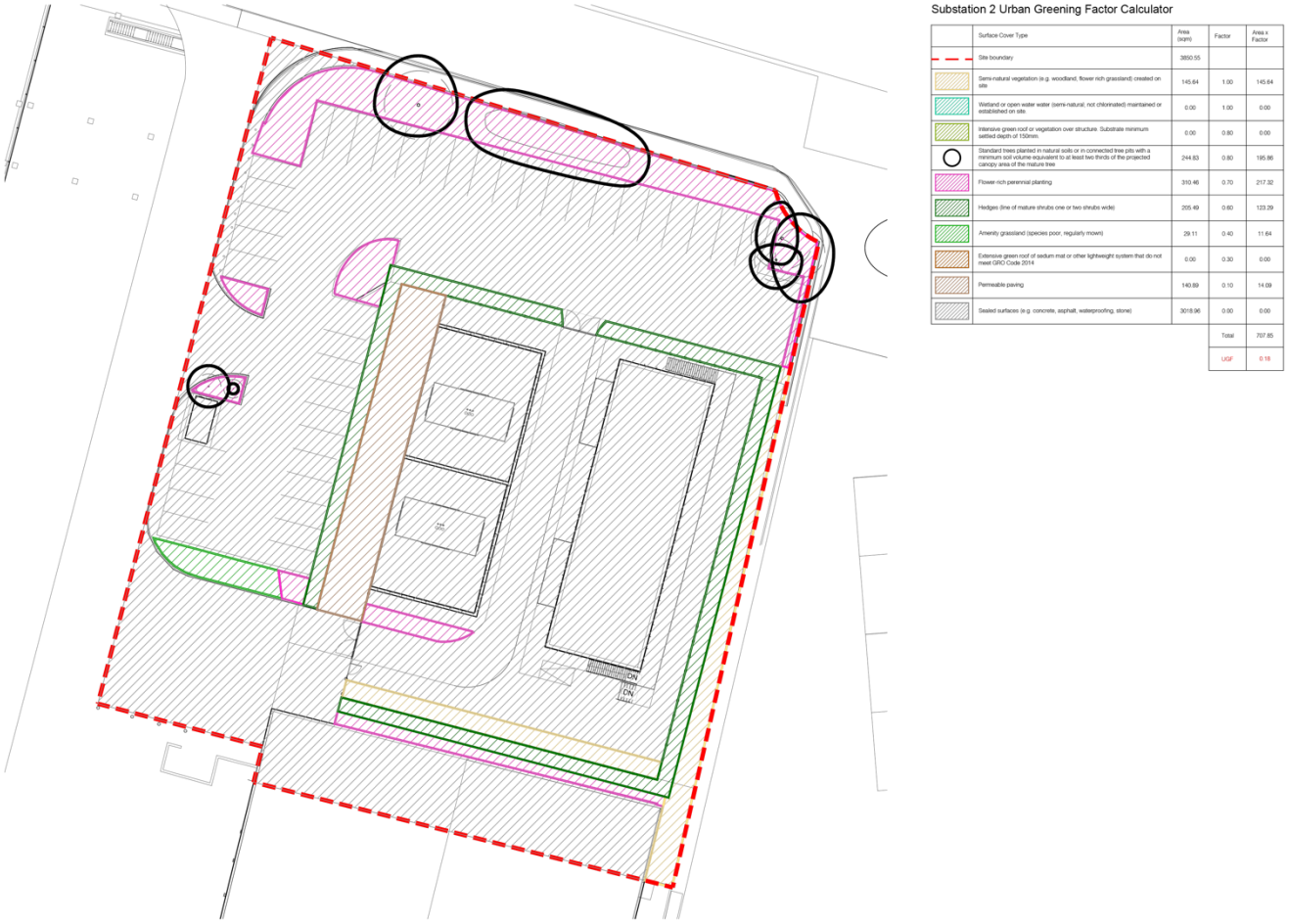
LONDPSS2-MWL-SS-ZZ-DR-LD-10200 Substation 2 Landscape Masterplan (NTS)

Figure 11 - LONDPSS2-MWL-SS-ZZ-DR-LD-10200 Substation 2 Landscape Masterplan (NTS)

7.2. *Urban Greening Factor (UGF)*

The Urban Greening Factor (UGF) assessment presented aligns with the Mayor of London's Urban Greening Factor 2021 guidance. According to London Plan Policy G5, a UGF score of 0.4 is recommended for predominantly residential developments and 0.3 for predominantly commercial developments. While the proposed substation use does not fall within these categories, the landscape design incorporates urban greening elements as part of the overall development.

The landscape proposals enhance greening and biodiversity, with key elements contributing to the UGF including the planting of native hedges, species-rich perennial shrubs, and wildflower grasslands. To further support biodiversity, the planting plan includes native species and selections based on the 'RHS Plants for Pollinators' guidance.



Substation 2 Urban Greening Factor Calculator

	Surface Cover Type	Area (sqm)	Factor	Area x Factor
	Site boundary	3850.55		
	Semi-natural vegetation (e.g. woodland, flower rich grassland) created on site	145.64	1.00	145.64
	Wetland or open water water (semi-natural; not chlorinated) maintained or established on site	0.00	1.00	0.00
	Intensive green roof or vegetation over structure. Substrate minimum settled depth of 150mm	0.00	0.80	0.00
	Standard trees planted in natural soils or in connected tree pits with a minimum soil volume equivalent to at least two thirds of the projected canopy area of the mature tree	244.83	0.80	195.86
	Flower-rich perennial planting	310.46	0.70	217.32
	Hedges (line of mature shrubs one or two shrubs wide)	205.49	0.60	123.29
	Amenity grassland (species poor, regularly mown)	29.11	0.40	11.64
	Extensive green roof of sedum mat or other lightweight system that do not meet GRO Code 2014	0.00	0.30	0.00
	Permeable paving	140.89	0.10	14.09
	Sealed surfaces (e.g. concrete, asphalt, waterproofing, stone)	3018.96	0.00	0.00
			Total	707.85
			UGF	0.18

Figure 12 - LONDPSS2-MWL-SS-ZZ-DR-LD-10201 Substation 2 Urban Greening Factor (NTS)

8. Safety and Security

8.1. *Critical Infrastructure*

Due to the critical nature of the infrastructure, the development will adhere to 'Secure by Design' principles. Although a security guard will not be present, the substation compound has been designed as a secure environment through close collaboration with independent operators, insurers, and end-users. A 2.4m perimeter fence with gated access points will be installed to control and deter unauthorised entry.

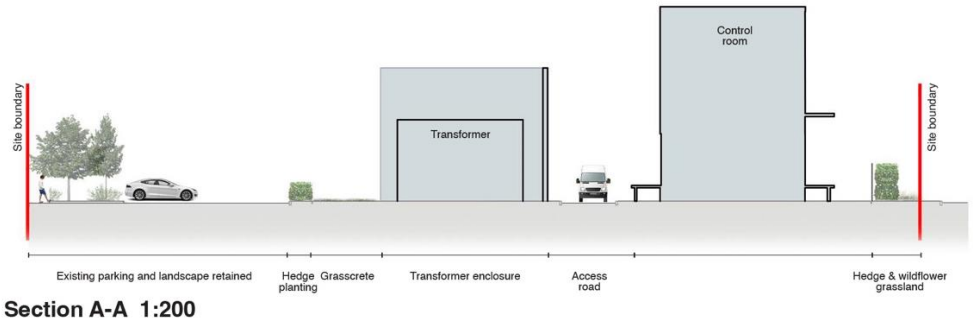
The planting strategy strikes a careful balance between screening the development and ensuring safety through passive surveillance. This is achieved by incorporating low-level shrubs that maintain visibility around the site. Hedges, where included, will be planted directly adjacent to fence lines and set back from circulation routes to avoid creating hidden areas.

Lighting and CCTV surveillance will be integrated into the design to enhance safety and security. Given the site's location in London, a region identified as having a heightened risk for certain activities, a thorough risk analysis has been conducted, and the design reflects passive protective measures. The overarching aim of the security design is to ensure a safe environment for the entire site.

To meet end-user requirements and align with insurance and market demands, an appropriate range of boundary treatments will be implemented to ensure the site's security. These measures will include:

- Defensive and well-maintained landscaping
- Selecting materials and products that have suitable security ratings
- Minimum 2.4m high fencing finished in polyester powder coated to match the expanded mesh on the west
- Creating passive monitoring by situating occupied areas of the building facing areas of the public realm
- Passive perimeter protection in the form of hedging plants.
- Full CCTV around the building
- Pedestrian access gate type entrances at the main gate for staff and visitors.
- Lighting design to ensure that areas are suitably lit
- A clear delineation has been established due to the fencing of what constitutes the public vs private area

The security strategy acts as a single golden thread connecting all of the security measures and it is therefore important that the treatment is consistent for the site.



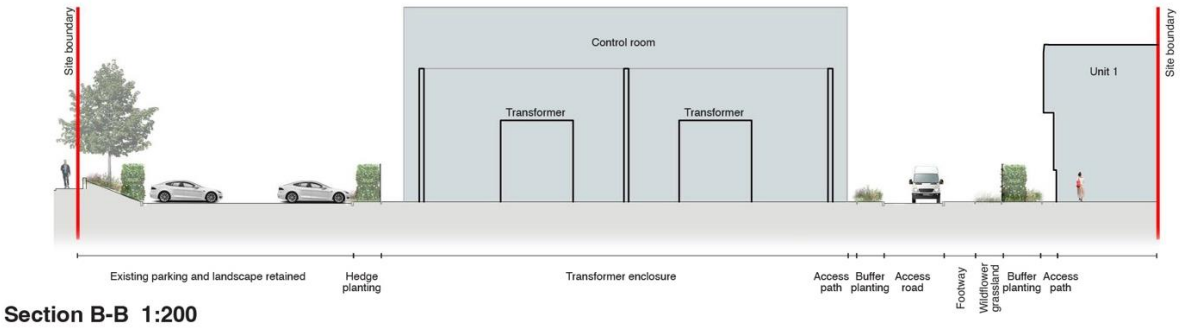


Figure 13 - LONDPSS2-MWL-SS-ZZ-DR-LD-10400 Substation 2 Landscape Sections (NTS)

9. Access and Transportation

9.1. *Vehicular Access and Movement*

The proposal retains the existing single point of access to the site from Bullsbrook Road. It is anticipated that vehicle movements to the site will decrease following the redevelopment, reflecting the operational nature of a substation compared to typical warehouses or distribution centres.

Operational parking will be provided on the retained car park to the west of the site for maintenance and technical staff who need to transport specialist equipment and tools, as the use of public transport or cycling may not be practical for these purposes. The substation entrances have been designed to accommodate the standard size of HGVs required for maintenance, plant replacement, and other operational activities.

A 3.5m-wide access road is proposed to serve the substation compound, allowing entry from the west of the site and exit through the northern car park. Additionally, ample space has been allocated to the west of the transformer compound to facilitate maintenance or plant replacement if required.

10. Environmental Considerations

10.1. *Sustainability*

The National Planning Policy Framework (NPPF) promotes opportunities to enhance the public realm. As part of the proposal, low-level hedges and native plant species will be introduced around the site. Ground cover planting will soften the visual impact of the development and serve as an integral component of the Sustainable Drainage Systems (SuDS) strategy. Grasscrete has also been incorporated, providing additional SuDS benefits while contributing to the sustainable design approach.

Within both the public realm and the site boundary, planting with suitable species will create a tranquil oasis amidst the otherwise busy industrial environment. Existing street trees will continue to provide shade at pedestrian level, enhancing the sense of well-being. The proposed planting will include native species, carefully sculpted to discourage littering and misuse of the space.

Detailed landscaping designs and plans will be developed by the Landscape Architect.

During the design process, the inclusion of a green roof was carefully considered. However, this option was ultimately excluded due to concerns over its suitability for a critical infrastructure building. Risks included the potential for roof particles to be drawn into vent intakes, reducing efficiency and lifespan of the equipment, as well as the possibility of fire hazards if the roof is not properly maintained. Additionally, the requirement to shed water from the roof quickly to meet the building's operational needs further influenced this decision.

Instead, a robust, low-maintenance roofing system will be installed to ensure long-term durability. The roofing material will feature a light-coloured finish to minimise solar heating and reflectivity, aligning with the site's proximity to the airport. This solution provides a practical and efficient alternative, meeting the operational and safety requirements of the facility.

11. Conclusion

11.1. *Summary*

The proposed scheme submitted with this planning application has been developed through a structured process of analysis and engagement with key stakeholders, consultants, the Local Planning Authority, and in response to prevailing market conditions. The resulting design integrates seamlessly into the local and emerging context, presenting a landmark building that serves as a typology and precedent for future infrastructural developments of this nature on the site.

The scheme establishes a strong sense of place, optimises the site's potential, and harmonises with the character of the local context. These outcomes have been achieved through high-quality architecture, the use of premium building materials and finishes, and thoughtfully designed landscaping.

The design has been meticulously developed to meet the requirements for design, access, and functionality, reflecting the building's infrastructural purpose. Throughout the process, the scheme has been guided by adherence to National, London, and Local Planning policies, including the Hillingdon Council Local Plan.

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