GREENWICH PARADOX: A TALE OF URBAN RENEWAL

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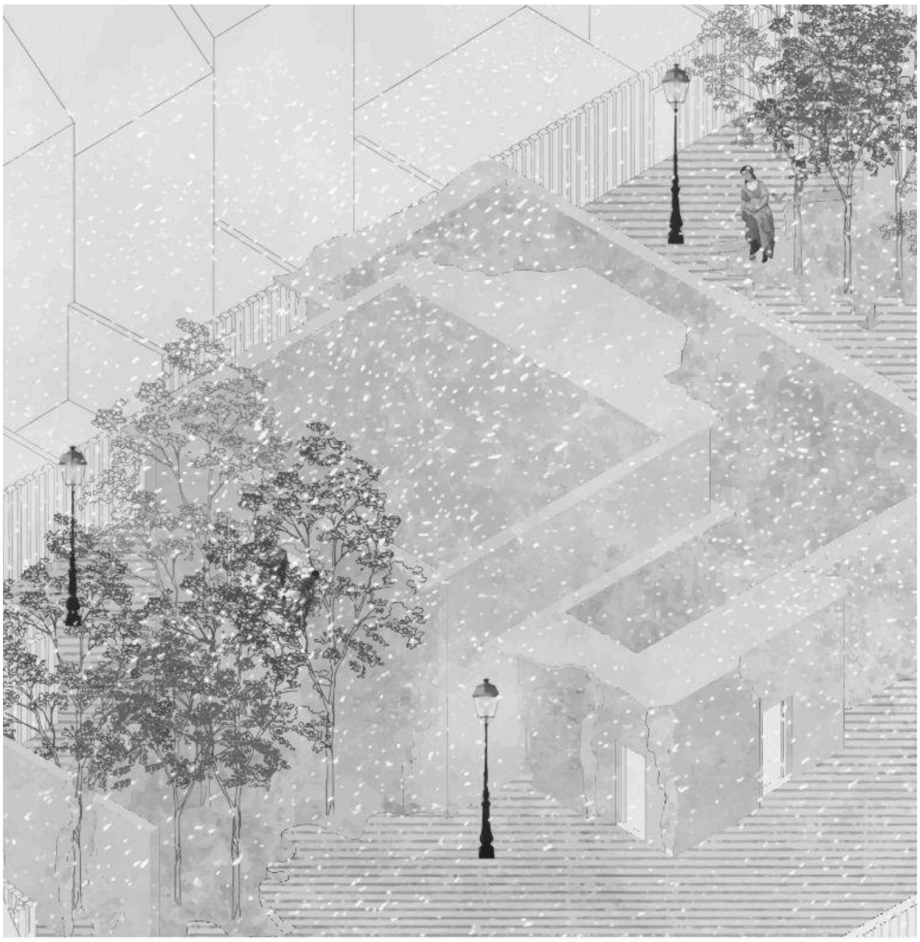
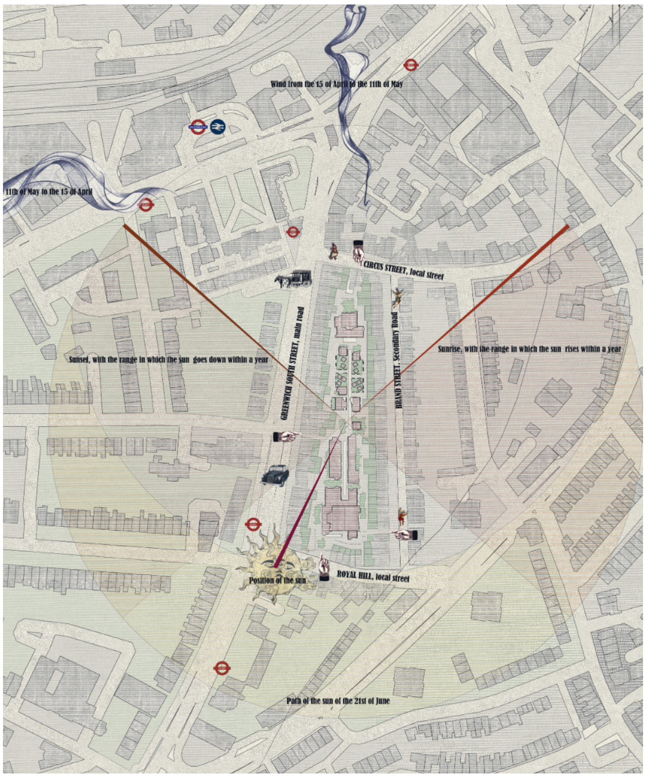
Taller Fin de Master



I. INTRODUCTION:

This story is set in Greenwich, a borough of London, United Kingdom. Greenwich is experiencing an urban paradox, where there is a noticeable discrepancy between the area's perceived quality and the actual satisfaction of its residents, who have been ranked as the most miserable in London, despite Greenwich being generally considered a pleasant area. The proposal aims to foster a sense of community and improve the daily lives of Greenwich's residents by introducing new elements into the urban environment to enhance their sense of belonging and engagement.



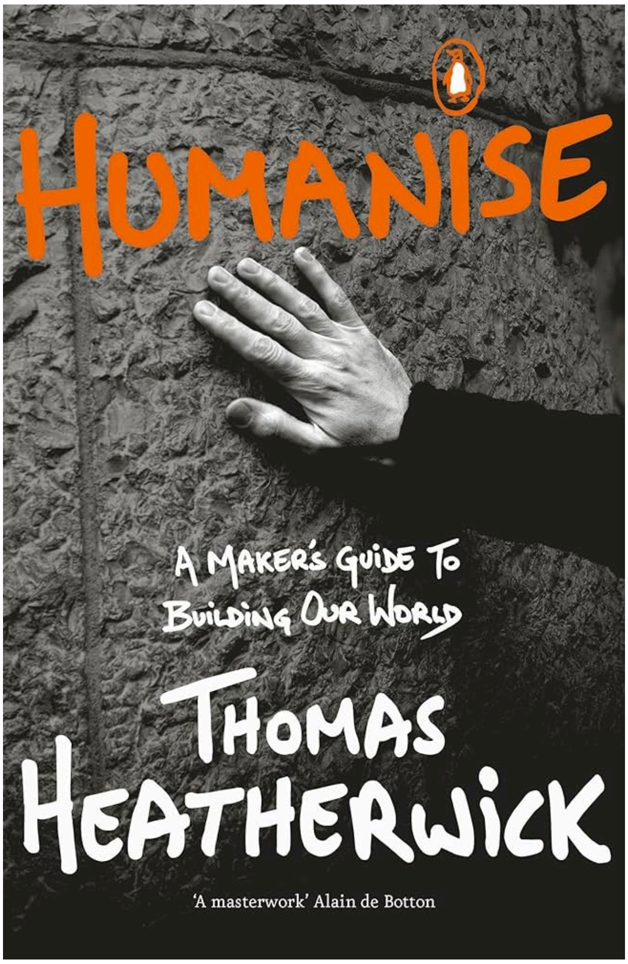
At its core, the project proposes transforming underutilized residential backyards into a dynamic communal space, a central courtyard designed as a shared gathering hub. By revitalizing these spaces, the project addresses the community’s desire for accessible, engaging public areas that foster social cohesion and well-being. This urban scale project focuses on transforming a specific block in Greenwich, currently consisting of houses with private backyards, to include both private backyards and a communal courtyard.

Operating across territorial and urban scales, the project aims to rejuvenate Greenwich's social fabric. Territorially, it seeks to establish a sustainable community hub that enhances local identity and connectivity. Urbanistically, the intervention aims to enliven the neighborhood through thoughtful design interventions that imbue a sense of place and community pride.

Commissioned by a consortium of artists committed to enhancing urban life, the project primarily serves residents of the local urban block. It also invites visitors keen to experience the communal ambiance and artistic vitality.

II. BACKGROUND:

CRITICAL ANALYSIS



Aligning with the project's aims, infusing emotions into architecture was the primary goal, following Thomas Heatherwick's manifesto on humanizing architecture (see Project Expertise). Heatherwick has walked around the world categorizing buildings as human or non-human, developing a set of characteristics that imbue architecture with emotion versus those that make buildings dull. In our contemporary society, we face numerous societal issues, from increasing antisocial behaviors to rising health concerns, which might stem from the decline of positive and emotionally engaging urban environments. This shift in urban landscapes and architectural designs can be traced back to the pivotal transition in art during the 20th century, profoundly influencing architectural ideologies and practices.

Le Corbusier, dubbed 'the god of boring' by Heatherwick, epitomizes this transformation along with architectural pioneers like Mies Van der Rohe and Walter Gropius, who heralded the dawn of the modernist movement. Heatherwick's extensive exploration into what renders buildings 'boring' highlights several key characteristics: stark simplicity, excessive shininess, monotonous facades, and flatness. Citing various research studies, Heatherwick underscores the detrimental impact of such 'boring' architecture on human emotional well-being, elucidating their role in fostering negative emotions and adversely affecting mental health.

Conversely, Heatherwick posits that emotionally evocative buildings possess a delicate equilibrium of complexity and repetition. Beyond mere visual appeal, factors such as the harmonious amalgamation of vibrant colors, innovative material combinations, a distinct sense of place, the human touch in architectural detailing, and form—whether clean, straight lines or fluid, curvilinear designs—significantly contribute to the emotive resonance of architectural spaces.

In Heatherwick's book, HUMANISE, he mentioned that "Backyards, front yards, broad front steps and streets are all places that encourage humans to look, linger and chat. In places where humans look, linger and chat, there is more likely to be a sense of community. When we live in low-rise housing, or along well designed terraced streets, we're primed to gradually make acquaintances. These acquaintances might begin as the briefest nods of acknowledgement as we encounter each other in backyards and front yards, and on front steps, pavements and streets. These nods can turn into smiles. Which can turn into recognition. Which can turn into small talk. Which can turn into bigger talk. Which can turn into friendships and life-enhancing relationships that help make our lives more meaningful". If small spaces like backyards and front steps can have such a significant impact, imagine the potential of creating an even larger communal space at the doorsteps of our houses. By thoughtfully designing this space to foster deeper connections and stronger bonds, we can significantly enhance community interaction and well-being. This expanded communal area would serve as a vibrant hub for residents to gather, socialize, and engage in meaningful activities. It could facilitate a wide range of interactions, from casual conversations to organized community events, promoting a sense of belonging and unity. By providing a shared space that encourages frequent and diverse interactions, we can transform the social fabric of the neighborhood, making it more cohesive and supportive. This larger communal space would not only enhance the aesthetic appeal of the area but also create a dynamic environment where relationships can flourish, ultimately contributing to a more connected and resilient community.

CASE STUDIES AND CONSTRUCTION ASPECTS

Green Corner Building, Archdaily

168 Upper Street Building, Dezeen

Anne Holtrop's Green Corner building and 168 Upper Street by Groupwork + Amin Taha (see Technology Expertise) are excellent examples of unique architecture that can be achieved using concrete. The Green Corner's facade elements, which also serve as the supporting structure, feature a monolithic look that gives the impression of naturally cut stone. This effect is achieved through on-site sand casting, which reduces economic impact while enriching the construction process.

Groupwork + Amin Taha's 168 Upper Street features a façade that seamlessly blends past and present. Using polystyrene molds, they created a 3D model by scanning the old, lost facade of a building that once existed on-site but was destroyed by a bomb. The result is a modern interpretation that acknowledges its historical roots without aiming for an exact replica. Mistakes were encouraged in the process to emphasize that this is a new building with the story of an old one. The façade also acts as the supporting structure and is self-sufficient, featuring a sandwich panel of concrete on both sides with insulation in the middle.

In both cases, these concrete structures are the result of a rich creative process, giving concrete a new feel and effect. These examples demonstrate that concrete is no longer just a material for creating boring buildings; it can also produce aesthetically pleasing and complex results.

CULTURAL ASPECTS

Historically, courtyards have held significant importance within urban landscapes across various cultures. Examples such as the Roman Domus, the Chinese siheyuan, the Moroccan riad, and the traditional houses in Cairo (see Urbanism Expertise) illustrate how courtyards have fostered strong bonds, whether within immediate or extended families, or among neighbors. Despite their scale being smaller and house-centric, these courtyards exemplify their environmental and social roles, which can be extrapolated and applied on a larger scale.

Imagine treating every house on a block as a single room in a larger house, where all the neighbors are akin to members of one extended family. This concept emphasizes community and collective belonging, similar to how historical courtyards functioned. By expanding this idea to encompass entire blocks or neighborhoods, urban planners can create environments that encourage interaction, cooperation, and a shared sense of identity. Just as courtyards historically nurtured familial and social connections, scaling up this model can enhance the fabric of urban life, promoting community resilience and well-being.

III. DESCRIPTION:

PROJECT OBJECTIVES

The core mission of the project is to redefine the urban living experience in Greenwich, London, through the revitalization of a specific urban block. This initiative aims to cultivate a robust sense of community and well-being among its diverse residents. Central to this transformation is the creation of a communal space that seamlessly integrates art and cultural elements into daily life, fostering deeper social interactions and emotional engagement among neighbors.

By addressing common social disconnects observed in this urban setting, the project aims to establish a warm and inviting environment where residents can regularly connect, interact, and forge meaningful relationships. Furthermore, it endeavors to enrich the neighborhood's cultural landscape, instilling a sense of pride and belonging within the community. Through these efforts, the project seeks to elevate the quality of life in Greenwich while nurturing a vibrant and cohesive community that celebrates its diversity and collective spirit.

TARGET AUDIENCE AND USER PROFILE

The project is intricately crafted for the residents of the targeted urban block in Greenwich, embracing a rich tapestry of individuals and families. This community spans professionals, families, and individuals from diverse cultural backgrounds, all seeking a dynamic and inclusive environment. Beyond catering to the everyday needs of these residents, the project aims to foster a sense of belonging and unity among them, encouraging interactions and shared experiences.

Moreover, the project extends its embrace to visitors who are drawn to cultural and recreational offerings within an urban setting. By integrating cultural amenities and spaces for communal activities, the project not only enhances the quality of life for residents but also elevates the neighborhood's stature as a vibrant cultural destination. This dual focus on community engagement and cultural enrichment underscores the project's commitment to nurturing a thriving urban ecosystem where residents and visitors alike can flourish.

NEEDS ADDRESSED BY ARCHITECTURE

The architecture of the project responds directly to several pressing needs identified within the Greenwich community. Foremost among these needs is the establishment of accessible and welcoming communal spaces that actively promote social interaction and community engagement. Through the integration of art and cultural activities into the urban environment, the project endeavors to enhance the daily lives of residents by offering spaces for relaxation, creative expression, and connection with nature.

In addition to fostering a vibrant social atmosphere, the project prioritizes sustainability and environmental awareness in its design and operations. By implementing sustainable practices and utilizing eco-friendly materials, the architecture not only supports the well-being of current residents but also contributes positively to the neighborhood's overall livability and appeal.

SCALE AND ORGANIZATION

The project is situated within an urban context, specifically within an existing urban block bounded by Greenwich South Street and Brand Street in London. This area is characterized by a blend of Victorian and Georgian architecture, some of which holds historical significance as listed buildings within a conservation area.

The approach consists of repurposing portions of each private backyard to create a shared courtyard accessible to all residents. Each household would contribute approximately $40m^2$ of their private area to collectively gain $4383.7m^2$ of communal space. This transformation not only expands usable space but also introduces immersive experiences, new non-residential uses, aesthetic enhancements, scenic views, and an integrated ecosystem.

Importantly, all residents have individual access to the courtyard. The courtyard is strategically designed with distinct zones for artistic expression and relaxation, ensuring that users in different areas can enjoy their activities without disturbance. Access to the courtyard is facilitated through four entrances, each connected to surrounding streets. The primary entrance from Royal Hill Street provides direct access to the busiest area of the courtyard. Access from Brand Street is via a secluded alleyway, offering a more private entry into the same section. Greenwich South Street provides access to the central area of the courtyard, giving residents the choice between a serene environment or vibrant social interaction. The fourth entrance, accessible through a residence on Circus Street, offers the most intimate and discreet access point, enhancing the homely experience for users.

This thoughtful design not only revitalizes the urban block by fostering community engagement and enhancing the quality of life for residents but also respects the historical context and architectural heritage of the surrounding area. It represents a balanced integration of modern communal needs with the preservation of historical character, aiming to create a harmonious and enriched living environment in Greenwich.

THE PROGRAM

The program of the project is carefully curated to cater to the diverse needs and desires of the residents within the urban block in Greenwich. Each element of the program is designed with specific intentions to enhance community interaction, promote relaxation, and provide cultural enrichment.

1. Performance Space 191m2: Located prominently at the main entrance from Royal Hill Street, the performance space stands tall at 6.8 meters. It serves as a focal point for artistic expression, hosting a variety of performances that engage and entertain residents and visitors alike. The space is equipped with facilities including dressing rooms and a small private lounge, ensuring comfort and convenience for performers.

2. Exhibition Space 250m2: Following the performance space, the exhibition area is designed as a journey of discovery. Divided into multiple rooms and modules, it invites visitors to explore and interact with curated displays. Situated strategically near Greenwich South Street, the exhibition space also includes reception facilities to welcome and guide visitors through its artistic offerings.

3. Lounge and Tea Room 74m2: Positioned to overlook a serene garden plaza accessible from Greenwich South Street, the lounge and tea room serve as central socializing hubs. These spaces are designed to encourage casual interactions among residents, offering a relaxed setting where they can unwind and engage in conversations over tea and refreshments.

4. Reading Area 38m2: Nestled within a tranquil garden setting, the reading area provides a peaceful retreat for residents seeking solitude and intellectual engagement. The space features 3.3-meter high reading capsules surrounded by lush greenery, offering views of the serene surroundings while ensuring privacy and tranquility.

5. Bath 195m2: Elevated 1.5 meters above the courtyard, the Roman bath provides a unique experience combining relaxation with scenic views of flower gardens and trees. This space marks the culmination of the courtyard journey, offering residents a place to unwind and rejuvenate with the therapeutic benefits of water and natural elements.

COMPOSITIONAL STRATEGIES

All integrated spaces within the courtyard maintain a height limit of 6.8m to ensure ample natural light and to avoid obstructing views. Only two spaces, located at either end of the courtyard, reach this height, marking the entrances and exits of the block. The block itself is thoughtfully divided into semi-private and public areas.

Water features strategically placed throughout the courtyard act as guiding elements within the block. The central axis of the block is designed to be the more public area, fostering community interaction and social activities. In contrast, the spaces between the backyard fences and the introduced modules create a semi-private and intimate ambiance. There are no physical barriers separating these two zones; instead, visitors are guided naturally through the use of landscaping and designated uses.

The fences surrounding the backyards are semi-transparent, enhancing openness and allowing residents glimpses into the courtyard activities. This design choice promotes a sense of connection and community among residents while ensuring privacy is maintained in the semi-private areas.
Furthermore, the courtyard is intentionally divided into distinct zones to cater to different community needs and activities. The south side is designated as a vibrant and social hub, featuring spaces for performances and art exhibitions. These areas are designed to foster creativity and community engagement, encouraging residents and visitors alike to participate in cultural events.

In contrast, the north side of the courtyard is dedicated solely to relaxation and quietude. Here, residents can enjoy tranquil spaces such as the bath and reading areas, creating an atmosphere conducive to reflection and rejuvenation. The tea and lounge room serves as a central gathering point between these two zones, offering a versatile space where residents can gather for casual interactions or quiet moments of solitude.

This thoughtful zoning ensures that the courtyard accommodates a variety of activities and preferences, enhancing the overall quality of life for residents while promoting a vibrant community atmosphere in Greenwich.
The design of the courtyard includes roofs that serve a dual purpose of directing user flow and providing shelter. Cantilevered roofs strategically placed throughout the space offer protection from London's frequent rain showers and occasional sunlight in static areas. This design ensures that residents and visitors can enjoy outdoor activities comfortably regardless of the weather conditions.

Conversely, the main thoroughfare and high-traffic areas of the courtyard deliberately lack shelter. This intentional design choice encourages visitors to continue their journey towards more static parts of the courtyard, such as the relaxation zones located deeper within the block. By guiding users through uncovered pathways, the design promotes exploration and engagement with different elements of the community space, enhancing the overall experience and fostering a dynamic interaction between residents and the environment.

The project offers a rich multisensory experience designed to engage both visitors and residents on multiple sensory levels, creating a holistic and immersive environment.

Visually, the courtyard design incorporates diverse textures and natural elements such as lush greenery and concrete elements inspired by natural stone. These features blend harmoniously with the urban surroundings while enhancing the space's aesthetic appeal.

Auditorily, the soundscape is meticulously curated with elements like the gentle flow of water features, rustling leaves, birdsong, and ambient social sounds. These natural sounds create a peaceful atmosphere, offering moments of relaxation and contemplation amid the urban environment.

Tactile engagement is encouraged through the choice of materials. The concrete elements, crafted with sand from the River Thames, not only contribute to the monolithic aesthetic but also invite touch and exploration.

Aromatically, the space is infused with fragrant flora and culinary aromas from the communal kitchen and tea room. These scents stimulate the olfactory senses, enriching the sensory experience with natural essences.

Lastly, the taste experience is integrated into communal activities centered around the kitchen and tea room, where residents and visitors can engage in culinary delights and social interactions.

By combining these sensory elements in its design, the project aims to provide functional spaces that also enrich the daily lives of its users. It promotes well-being, community interaction, and a profound sense of belonging within the vibrant urban fabric of Greenwich.

The project incorporates three distinct roof designs, each serving a specific purpose while contributing to the overall aesthetic and functional goals of the intervention.

Firstly, the water roof elements are strategically designed to capture rainwater, which is guided through controlled streams to enhance the sensory experience and natural ambiance of the courtyard. This feature not only adds visual interest but also serves as a sustainable water management system, ensuring efficient use of natural resources.

Secondly, the green roofs are integrated into the project to promote biodiversity, improve air quality, and provide thermal insulation. These vegetated roofs not only contribute to the ecological balance of the urban environment but also offer serene views and a tranquil atmosphere for users of the communal spaces below.

Thirdly, the concrete finish roofs extend the monolithic design approach seen throughout the project. Beyond aesthetics, they provide durability and weather resistance, ensuring long-term performance and minimal maintenance. Together, these roof designs offer pleasant views for the residents

FORMAL STRATEGIES

Inspired by projects like Anne Holtrop's Green Corner Building, the project embraces a monolithic design ethos. This approach involves utilizing concrete elements that emulate naturally cut stones, enriching the structure's adaptation to the surrounding environment. While these elements intentionally contrast with the surroundings, their monolithic appearance creates an illusion of longstanding integration, imparting a sense of timeless presence.

By echoing the local architectural vernacular, the design strives to achieve a harmonious synthesis between the new intervention and the historical context of Greenwich. This intentional homage to local aesthetics aims to foster a seamless cohesion between past and present, ensuring the project becomes a natural extension of its architectural heritage while asserting its contemporary relevance.

MATERIAL STRATEGIES

The selection of materials for the project is guided by both sustainability and aesthetic considerations. Concrete sourced from the River Thames is chosen deliberately, aligning with projects that prioritize local materials for their environmental benefits and contextual appropriateness. This choice not only ensures durability but also underscores the project's commitment to integrating seamlessly with the historic fabric of Greenwich.

In addition to concrete, the project incorporates green roofs and water features, further enhancing its environmental sustainability. Green roofs promote biodiversity by providing habitats for local flora and fauna, while also improving insulation and reducing energy consumption. The inclusion of water features helps manage rainwater runoff effectively, mitigating urban flooding and enhancing the ecological balance of the site.

By conscientiously selecting materials and incorporating sustainable design elements like green roofs and water features, the project not only enhances its aesthetic appeal but also contributes positively to the local environment. This approach reflects a holistic commitment to sustainability, ensuring that the development in Greenwich harmoniously integrates with its historical context while promoting environmental stewardship.

ENVIRONMENTAL ASPECTS, CLIMATE, ENERGY, AND INSTALLATIONS

The project places a strong emphasis on energy efficiency and environmental sustainability through the utilization of geothermal energy, which fulfills nearly 70% of its energy requirements. Two discreetly located heat pumps near the Royal Hill entrance play a pivotal role in providing heating and cooling for the air handling units (AHUs) within the performance space and bath, as well as for the water heater that supports the radiant floor heating system.

Given the scale, occupancy, and spatial layout of the project, only the performance space and bath necessitate ventilation and heating/cooling via air systems. The remainder of the areas benefit from energy-efficient radiant floor heating. The pipes are strategically embedded beneath soft surfaces along the courtyard's central axis. This placement ensures accessibility and minimal visual impact, contributing to a comfortable environment throughout the project while significantly reducing energy consumption.

I. **Ventilation duct calculation for PERFORMANCE SPACE** according to CIBSE Guide B, BS EN 13779:2007, and BS EN 12599:2012

Project Details:

- **Structure Type:** Load-bearing wall
- **Usage:** Performance space
- **Dimensions:** 14 m wide x 14 m long x 5.5 m high
- **Number of Storeys:** 1 (ground floor)
- **Roof Usage:** Maintenance only

a. Ventilation Requirements

1. Ventilation Rate Calculation

- **Volume of Space:**

$$Volume = 14m \times 14m \times 5.5 = 1078\, m^3$$

- **Air Changes per Hour (ACH):** 6 (average value for performance spaces)
- **Required Ventilation Rate**

$$Ventilation\ Rate = Volume \times CH = 1078 \times 6 = 6468\, m^3/hr$$

$$Ventilation\ Rate = \frac{6468\, m^3/hr}{3600s/hr} \approx 1.8\, m^3/s$$

2. Duct Sizing

- **Duct Velocity:**

7 m/s (average for performance spaces)

- **Required Duct Cross-Sectional Area**

$$Cross - Sectional\ Area = \frac{Ventilation\ Rate}{Duct\ Velocity} = \frac{1.8\, m^3/s}{7m/s} \approx 0.257\, m^2$$

Rectangular Duct Dimensions:

$$Width = 0.6m \quad Height = 0.43m \quad Area = 0.6x0.43 = 0.258\, m^2$$

Number of Ducts Required

Capacity of One Duct

- **Cross-Sectional Area:** 0.257 m^2
- **Duct Velocity:** 7 m/s
- **Capacity of One Duct:**

$$Capacity\ of\ one\ duct\ =\ Duct\ cross\ -\ sectional\ area\ \times\ Duct\ Velocity\ =\ 0.257m^2\ \times\ 7m/s\ =\ 1.799m^3/s$$

3. Number of Ducts Needed:

- **Required Ventilation Rate:** 1.8 m^3/s
- **Number of Ducts:**

$$Number\ of\ ducts\ =\ \frac{1.8m^3/s}{1.799m^3/s}\ \approx\ 1$$

4. Conclusion

For the given space and ventilation requirements, the following ducts are needed to ensure proper air distribution and circulation:

- 1 supply duct with dimensions 0.6 m x 0.45 m
- 1 return/extract duct with dimensions 0.6 m x 0.45 m

This setup ensures that the required ventilation rate of 1.8 m^3/s is met, providing adequate air changes per hour for the performance space.

CONSTRUCTIVE DEFINITION

The project prioritizes preserving visual appeal by concealing all Mechanical, Electrical, Plumbing, and Sanitary (MEPS) systems, ensuring they do not disrupt the aesthetic integrity of the space. This approach minimizes visual clutter and enhances the clean, unobstructed look of communal areas, fostering a serene atmosphere for residents and visitors alike.

Inspired by projects like 168 Upper Street, the design features concrete elements finished on both sides with insulation between them. This method not only ensures thermal efficiency but also enhances the aesthetic appeal of exposed concrete surfaces, promoting a sleek, contemporary appearance. By integrating these techniques, the project exemplifies a commitment to both architectural elegance and sustainable building practices, creating a visually striking and environmentally responsible urban environment in Greenwich.

STRUCTURAL DEFINITION

The structural framework of the project predominantly utilizes load-bearing walls made of reinforced concrete, with a significant portion of elements prefabricated, particularly the monolithic components. In most areas, these load-bearing walls support the slabs, ensuring structural integrity and efficient use of space. However, in specific spaces such as the performance area and bath, where concealing ductwork is essential, T-beams are employed to support the roof. This approach not only accommodates functional requirements but also contributes to the aesthetic coherence of the design, ensuring a seamless integration of architectural elements throughout the project.

II. Structure Calculations for PERFORMANCE SPACE

1. T-Section Beam Design:

Beam Height (h): 1 m

Width of Flange (b_f): Full span (considering a spacing of 1 m between beams for simplicity)

Thickness of Flange (t_f): 0.2 m (first layer of structural concrete)

Additional Structural Concrete Layer: 0.2 m thick

Depth of Web (d_w): 0.8 m (1m total height - 0.2 m flange thickness)

Width of Web (b_w): 0.3 m (typical value for T-beams)

Finishing Concrete Layer: 0.15 m thick

Density of Concrete: 25 kN/m^3

Live Load: 1 kN/m^2 (maintenance purposes)

XPS Insulation Layer: 0.2 m thick, density 0.3 kN/m^3

A. Load Calculations:

a. Dead Loads:

-Flange: $0.2m \times 25kN/m^3 = 5kN/m^2$

-Structural Concrete Layer: $0.2m \times 25kN/m^3 = 5kN/m^2$

- XPS Insulation: $0.2m \times 0.3kN/m^3 = 0.06kN/m^2$

-Non structural concrete ceiling: $0.15m \times 25kN/m^3 = 3.75kN/m^2$

b. Live Loads:

For maintenance purposes only: $1kN/m^2$

Total Dead Load:

$5 + 5 + 0.06 + 3.75 = 13.81\ kN/m^2$

➔ **Total load without wind:** $13.81 + 1 = 14.81\ kN/m^2$

c. Wind load calculations:

Basic Wind Speed

The basic wind speed for London (including Greenwich) is approximately 24 m/s.

Design Wind Speed (v_des)

The design wind speed can be calculated using the formula: $v_{des} = c_{dir} \times c_{season} \times c_{prob} \times v_b$

where

c_{dir} is the directional factor (typically 1.0)

c_{season} is the seasonal factor (typically 1.0)

c_{prob} is the probability factor (typically 1.0 for ultimate limit state)

v_b is the basic wind speed (24 m/s)

so: $v_{des} = 1 \times 1 \times 1 \times 24 = 24m/s$

Wind Pressure (q)

The wind pressure can be calculated using the formula:

$q = 0.5 \times \rho \times v_{des}^2$

where:

ρ is the air density (typically 1.225 kg/m^3)

So: $q = 0.5 \times 1.225 \times 24^2 = 352.8\, N/m^2$

External Pressure Coefficients C_{pe}

For a flat roof and walls, we use external pressure coefficients from BS EN 1991-1-4. The coefficients can vary, but for simplicity:

Walls (vertical surfaces):

- Windward: $C_{pe} = 0.8$
- Leeward: $C_{pe} = -0.5$

Roof (flat roof):

- For a building height of 6 m, with aspect ratio considerations:
- Windward: $C_{pe} = -0.9$
- Leeward: $C_{pe} = 0.7$

Wind Load on Roof:

$w_{roof,wind} = q \times C_{pe}$

Windward side: $w_{windward} = 352.8 \times -0.9 = -317.52\, N/m^2 = -0.318\, kN/m^2$

Leeward side: : $w_{leedward} = 352.8 \times 0.7 = 247.04\, N/m^2 = 0.247\, kN/m^2$

The net wind load on the roof:

$w_{roof,net} = -0.318 + 0.247 = -0.071 kN/m^2$

Total Load with wind

$w_{roof,total} = 14.81 + (-0.071) = 14.739\, kN/m^2$

B. Bending Moment

For a simply supported slab, the maximum bending moment M is given by:

$M = \frac{w.L^2}{8}$

where w is the load per unit area and L is the span.

For the roof slab (14 m span):

$$M = \frac{14.739 \times 14^2}{8} = 361.85\ kN.m$$

C. Reinforcement Calculation

Using the formula for reinforcement area A_s

$$A_s = \frac{M}{0.87.f_y.d}$$

wheref_y is the yield strength of steel (500 MPa) and ddd is the effective depth (approx. slab thickness minus cover, let's assume 0.025 m cover).

Effective depth: $d \approx 0.3 - 0.025 = 0.275$

$$A_s = \frac{361.85 \times 10^6}{0.87 \times 500 \times 950} = 1722.34\ mm^2$$

For 20 mm diameter bars:

$$A_{bar} = \pi \times (20/2)^2 = 314\ mm^2$$

Number of bars per meter:

$$n = \frac{1722.34}{314} \approx 5.48\ bars/m$$

6 bars per meter.

Bar spacing: $\frac{1m}{6} = 0.146\ m$ or 167 mm

2. Load-Bearing Walls with Wind Load

Wall presizing: 6 m is height
$6/10 = 0.6m$ e=0.6m

A. Load Calculations

The walls primarily carry vertical loads from the roof and additional non-structural 0.3m thick concrete panels.

Wall Dimensions and Density

- Height of Wall (h): 6 m

- Thickness of Wall (t): 0.6 m (0.3 m precast + 0.3 m in situ)
- Density of Concrete: 25 kN/m^3

a. **Self-Weight Calculation**

Self-weight per meter of wall = $Height \times Thickness \times Density$

$= 6m \times 0.6m \times 25kN/m^3 = 90\ kN/m$

Total Load on Load-Bearing Walls

b. **Roof Load (from previous calculation)**

$w_{roof} = 14.739kN/m^2$

Load from Non-Structural Concrete Panels: $0.3m \times 25kN/m^3 = 7.5\ kN/m^2$

$w_{panels} = 7.5\ kN/m^2 \times 6m = 45\ kN/m$

Total Vertical Load on Walls (14 m span each wall):

Self-Weight of Walls

$w_{self} = 90\ kN/m$

Total Vertical Load per Meter Run of Wall

$w_{total,vertical} = w_{roof} + w_{panels} + w_{self} = 341.35\ kN/m$

c. **Wind loads on Walls**

For walls, the wind load is applied horizontally. Assuming a uniform wind pressure on the walls: $q = 352.8\ N/m^2$

For the height of the wall (6 m):

$w_{wind,wall} = q \times height = 352.8 \times 6 = 2116.8\ N/m$

$w_{wind,wall} = 2.117\ kN/m$

➔ **Total Load on Walls with Wind:** $w_{total,wall} = 341.35 + 2.117 = 343.467\ kN/m$

B. Reinforcement Calculation for Walls

Using 16mm bars

$A_s = \frac{w_{total,wall} \times h}{0.87 \times f_y \times d}$

where h is the wall height (6 m), f_y is the yield strength of steel (500 MPa), and d is the effective depth.

Effective depth $d = 0.06 - 0.05 = 0.55m$

$A_s = \frac{343.467 \times 10^3 \times 6}{0.87 \times 500 \times 550}$

$A_s = 8616.34\ mm^2$

For 16mm diameter bars:

$A_{bar} = \pi \times (16/2)^2 = 201\ mm^2$

Number of bars per meter:

$n = \frac{861.34}{201} \approx 42.88$

⇒44 bars per meter.

Bar spacing: $\frac{1m}{22} = 0.0227m\ or\ 22.7\ mm$

3. Floor Slab

Since the floor load goes directly to the mat foundation, no wind load is considered on the floor slab. We will consider the live load for public use and the dead load from the concrete.

A. Load Calculations

a. **Dead Load (Concrete):** $0.3m \times 25\ kN/m^3 = 7.5\ kN/m^2$

b. **Live Load (public use):** $5kN/m^2$

➔ **Total Load:** $7.5 + 5 = 12.5\ kN/m^2$

C. Bending Moment

For a simply supported slab:

$M = \frac{wL^2}{8}$

For the floor slab (14 m span):

$M = \frac{12.5 \times 14^2}{8} = 306.25\ kN.m$

D. Reinforcement Calculation

Effective depth $d \approx 0.3 - 0.025 = 0.275m$

$A_s = \frac{306.25 \times 10^6 0.8}{0.87 \times 500 \times 275} = 2412\ mm^2$

For 12mm diameter bars:

$A_{bar} = 113.1\ mm^2$

Number of bars per meter:

$n = \frac{2412}{113.1} \approx 21.33$

Choosing the closest even number:

Use 22 bars per meter.

Bar Spacing: $\frac{1m}{22} = 0.0455m\ or\ 45.5mm$

4. Mat Foundation

➔ Total Load Calculation: 16891.6 kN (as calculated earlier)

A. Foundation Sizing

Total Load Calculation

- **Total Load**: 24020.18 kN

Foundation Area

Assuming the mat foundation covers the entire building footprint:

- **Area**: $14m \times 14m = 196\ m^2$

Pressure on Soil

- **Pressure**: $q = \frac{24020.18\ kN}{196\ m^2} = 122.55\ kN/m^2$

This pressure must be checked against the allowable bearing capacity of the soil. Assuming a typical allowable bearing capacity for London soil around 150 kN/m², this pressure is within limits.

Revised Thickness and Reinforcement

Thickness

To avoid excessive thickness, let's start with a reasonable value of 0.8 m and check if it meets the design requirements.

Bending Moment Calculation

$$M = \frac{q.l^2}{8}$$

where q is the load per unit area and L is the span.

Assuming the mat foundation spans the width of the building (14m):

$$q = \frac{24020.18\ kN}{196\ m^2} = 122.55\ kN/m^2$$

$$M = \frac{112.24 \times 14^2}{8} = 3008.35\ kN.m$$

B. Reinforcement Calculation

Using the formula for reinforcement area, A_s

$$A_s = \frac{M}{0.87.f_y.d}$$

where f_y is the yield strength of steel (typically 500 MPa) and ddd is the effective depth (assuming 50mm cover).

Effective depth $d = 0.8 - 0.05 = 0.75m$

$$A_s = \frac{3008.35 \times 10^6}{0.87 \times 500 \times 750} = 9532.55\ mm^2$$

For 20mm diameter bars:

$A_{bar} = \pi \times (20/2)^2 = 314\ mm^2$

Number of bars per meter:

$n = \frac{9532.55}{314} \approx 30.35$

32 bars per meter.

Bar spacing: $\frac{1m}{32} = 0.03125m\ or\ 31.25mm$

C. Summary of the Mat Foundation Design

- Thickness: 0.8m
- Reinforcement: 20mm diameter bars at 31.25 mm spacing (32 bars per meter)

The upper and lower reinforcements are the same.

British Standards and Eurocodes used in the calculations

1. BS EN 1991-1-4:2005+A1:2010 (Eurocode 1) - Actions on Structures, - Part 1-4: General actions - Wind Actions

- This standard provides guidance on the calculation of wind loads on structures. It includes methods for determining wind speeds, pressure coefficients, and resulting forces on various structural elements.

2. BS EN 1992-1-1:2004+A1:2014 (Eurocode 2) - Design of concrete structures - Part 1-1: General rules and rules for Buildings

- This standard provides guidelines for the design of reinforced concrete structures, including the calculation of bending moments, shear forces, and reinforcement requirements.

3. BS 8110-1:1997 - Structural use of concrete - Part 1: Code of practice for design and Construction

- Although partially replaced by Eurocode 2, BS 8110 is still referenced for certain aspects of concrete design, particularly in the UK. It covers detailed procedures for the design and construction of concrete structures.

4. BS 8004:2015 - Code of practice for foundations

- This standard provides guidance on the design and construction of foundations, including mat foundations. It covers aspects such as bearing capacity, settlement, and structural design considerations.

THE ECONOMIC VIABILITY

The economic viability of the project has been strategically approached by leveraging cost-effective construction methods and materials. One key strategy involves using concrete cast in sand molds, sourced from the River Thames, to emulate the appearance of natural stone. This approach not only reduces material costs but also minimizes transportation expenses by utilizing locally available resources. By opting for concrete over traditional stone, significant savings are achieved without compromising the aesthetic or structural integrity of the project. Additionally, careful consideration has been given to optimizing construction processes to streamline efficiency and reduce labor costs, ensuring that the project remains economically feasible while meeting the design objectives.

NORMS AND LEGISLATIONS

The regulatory framework governing the area of intervention includes conservation laws and regulations concerning listed buildings. Multiple houses within the area of intervention are categorized as Grade II listed buildings, indicating their special architectural or historic interest. Understanding these regulations is paramount for any proposed development or intervention within this location, as non-compliance can result in significant legal repercussions.

Listed Building Categories and Consent:

In England, listed buildings are classified into three categories based on their architectural significance:

- Grade I Buildings: These structures are of exceptional interest, constituting only 2.5% of all listed buildings.

- Grade II* Buildings: Representing particularly important buildings of more than special interest, these comprise 5.8% of listed buildings.

- Grade II Buildings: This class includes buildings of special interest warranting every effort to preserve them, accounting for the majority of listed buildings.

Listed Building Consent and Material Changes:

Owners of listed buildings must obtain listed building consent for significant alterations that affect the property's character or appearance. This includes changes to windows, doors, exterior painting, roof repairs/replacement, satellite dish installation, erecting new structures, building extensions, and more. Even minor changes such as repainting external doors and windows in a different color may require consent if deemed a "material change." It is imperative to consult the local authority before undertaking any work, as non-compliance can lead to legal penalties.

Prohibited Actions:

Certain actions are strictly prohibited for listed buildings, including removing architectural features, stone cleaning, adding pipes or flues to the front of the property, removing boundary walls or gates, repointing with incorrect materials, removing chimney stacks or pots, and painting or rendering stonework.

The presence of Grade II listed buildings within the area of intervention necessitates careful adherence to conservation laws and regulations. Understanding the requirements for listed building consent and prohibited actions is crucial for any proposed development or intervention within this location. Failure to comply with these regulations can result in legal consequences and compromise the integrity of the area's architectural heritage. Therefore, it is essential to prioritize preservation efforts while planning any future projects within the vicinity.

VI. CONCLUSION

In conclusion, achieving happiness and comfort extends beyond the basic necessities of shelter, water, and electricity. Reflecting on insights from "Humanise," it becomes clear that addressing deeper human needs is essential. Despite residing in a desirable area, Greenwich residents face challenges in achieving full well-being.

This proposal aims to elevate the community by addressing these nuanced needs. Through engaging sensory experiences, it seeks to cultivate communal spaces that promote interaction and connection among residents. By enriching daily life through thoughtful design and communal areas, the proposal aims to improve not only the physical environment but also the social cohesion of Greenwich. The goal of introducing new daily routines for residents, expanding beyond mere home-bound activities to include diverse communal uses, underscores the project's ambition.

The design of the courtyard reflects a response to these needs by integrating features that encourage social engagement and interaction. From strategically placed gathering spots to sensory elements like natural materials and water features, every aspect is intended to enhance residents' quality of life and sense of belonging. By fostering a more vibrant community atmosphere, the project aspires to meet the deeper human needs identified in "Humanise," thereby enriching the overall well-being of Greenwich residents.

Restriction on works affecting listed buildings.
[F1(1)]**Subject to the following provisions of this Act, no person shall execute or cause to be executed any works for the demolition of a listed building or for its alteration or extension in any manner which would affect its character as a building of special architectural or historic interest, unless the works are authorised** [F2**under section 8**]**.**
[F3(2)**Subsection (1) is subject to section 33(1) of the Planning Act 2008 (exclusion of requirement for other consents for development for which development consent required).**]

Authorisation of works: listed building consent.
(1)Works for the alteration or extension of a listed building are authorised if—
(a)written consent for their execution has been granted by the local planning authority or the Secretary of State; and
(b)they are executed in accordance with the terms of the consent and of any conditions attached to it.
(2)Works for the demolition of a listed building are authorised if—
(a)such consent has been granted for their execution;
(b)notice of the proposal to execute the works has been given to the Royal Commission;
(c)after such notice has been given either—
(i)for a period of at least one month following the grant of such consent, and before the commencement of the works, reasonable access to the building has been made available to members or officers of the Royal Commission for the purpose of recording it; or
(ii)the Secretary of the Royal Commission, or another officer of theirs with authority to act on their behalf for the purposes of this section, has stated in writing that they have completed their recording of the building or that they do not wish to record it; and
(d)the works are executed in accordance with the terms of the consent and of any conditions attached to it.
(3)Where—
(a)works for the demolition of a listed building or for its alteration or extension are executed without such consent; and
(b)written consent is granted by the local planning authority or the Secretary of State for the retention of the works,
the works are authorised from the grant of that consent.
(4)In this section "the Royal Commission" means—
(a)in relation to England, the Royal Commission on the Historical Monuments of England; and
(b)in relation to Wales, the Royal Commission on Ancient and Historical Monuments in Wales.
(5)The Secretary of State may by order provide that subsection (2) shall have effect with the substitution for the references to the Royal Commission of references to such other body as may be so specified.
(6)Such an order—
(a)shall apply in the case of works executed or to be executed on or after such date as may be specified in the order; and
(b)may apply in relation to either England or Wales, or both.
(7)Consent under subsection (1), (2) or (3) is referred to in this Act as "listed building consent".

LEGISLATION CONCERNING CONSERVATION AREAS

Designation of conservation areas.
(1)Every local planning authority—
(a)shall from time to time determine which parts of their area are areas of special architectural or historic interest the character or appearance of which it is desirable to preserve or enhance, and
(b)shall designate those areas as conservation areas.
(2)It shall be the duty of a local planning authority from time to time to review the past exercise of functions under this section and to determine whether any parts or any further parts of their area should be designated as conservation areas; and, if they so determine, they shall designate those parts accordingly.
(3)The Secretary of State may from time to time determine that any part of a local planning authority's area which is not for the time being designated as a conservation area is an area of special architectural or historic interest the character or appearance of which it is desirable to preserve or enhance; and, if he so determines, he may designate that part as a conservation area.
(4)The designation of any area as a conservation area shall be a local land charge.

Control of demolition in conservation areas.
(1)A building in a conservation area[F1in Wales] shall not be demolished without the consent of the appropriate authority (in this Act referred to as "conservation area consent").
[F2(1A)Subsection (1) is subject to section 33(1) of the Planning Act 2008 (exclusion of requirement for other consents for development for which development consent required).]
(2)The appropriate authority for the purposes of this section is—
(a)in relation to applications for consent made by local planning authorities, the Secretary of State; and
(b)in relation to other applications for consent, the local planning authority or the Secretary of State.
[F3(2A)Sections 56, 66(1) and 90(2) to (4) have effect in relation to buildings in conservation areas in England as they have effect in relation to listed buildings, subject to such exceptions and modifications as may be prescribed by regulations.]
(3)Sections 7 to 26, 28, 32 to 46, 56, 62 to 65, 66(1), 82(2) to (4), [F482A to 82D] [F5, 88E]and 90(2) to (4) have effect in relation to buildings in conservation areas[F6in Wales] as they have effect in relation to listed buildings subject to such exceptions and modifications as may be prescribed by regulations.
(4)[F7Regulations made under subsection (3)] may make different provision—
(a)in relation to applications made by local planning authorities, and
(b)in relation to other applications.

Formulation and publication of proposals for preservation and enhancement of conservation areas.
(1)It shall be the duty of a local planning authority from time to time to formulate and publish proposals for the preservation and enhancement of any parts of their area which are conservation areas.
(2)Proposals under this section shall be submitted for consideration to a public meeting in the area to which they relate.
(3)The local planning authority shall have regard to any views concerning the proposals expressed by persons attending the meeting.

The project entails transforming the current plots by extracting a portion from each individual house's backyard and amalgamating them to form a courtyard. The intended use of the new plot will not be exclusively residential; rather, it will be semi-residential, incorporating a blend of leisure activities.

LEGISLATION CONCERNING CLASS USE CHANGE

Use Classes

3.—(1) Subject to the provisions of this Order, where a building or other land is used for a purpose of any class specified in the Schedule, the use of that building or that other land for any other purpose of the same class shall not be taken to involve development of the land.

(2) References in paragraph (1) to a building include references to land occupied with the building and used for the same purposes.

(3) A use which is included in and ordinarily incidental to any use in a class specified in the Schedule is not excluded from the use to which it is incidental merely because it is specified in the Schedule as a separate use.

(4) Where land on a single site or on adjacent sites used as parts of a single undertaking is used for purposes consisting of or including purposes falling within any two or more of classes B1 to B7 in the Schedule, those classes may be treated as a single class in considering the use of that land for the purposes of this Order, so long as the area used for a purpose falling either within class B2 or within classes B3 to B7 is not substantially increased as a result.

(5) No class specified in the Schedule includes any use for a purpose which involves the manufacture, processing, keeping or use of a hazardous substance in such circumstances as will result in the presence at one time of a notifiable quantity of that substance in, on, over or under that building or land or any site of which that building or land forms part.

(6) No class specified in the Schedule includes use —

(a)as a theatre,

(b)as an amusement arcade or centre, or a funfair,

(c)for the washing or cleaning of clothes or fabrics in coin-operated machines or on premises at which the goods to be cleaned are received direct from the visiting public,

(d)for the sale of fuel for motor vehicles,

(e)for the sale or display for sale of motor vehicles,

(f)for a taxi business or business for the hire of motor vehicles,

(g)as a scrapyard, or a yard for the storage or distribution of minerals or the breaking of motor vehicles.

Change of use of part of building or land

4. In the case of a building used for a purpose within class C3 (dwellinghouses) in the Schedule, the use as a separate dwellinghouse of any part of the building or of any land occupied with and used for the same purposes as the building is not, by virtue of this Order, to be taken as not amounting to development.

Class C1. Hotels and hostels

Use as a hotel, boarding or guest house or as a hostel where, in each case, no significant element of care is provided.

Class C2. Residential institutions

Use for the provision of residential accommodation and care to people in need of care (other than a use within class C3 (dwelling houses)).

Use as a hospital or nursing home.

Use as a residential school, college or training centre.

Class C3. Dwellinghouses

Use as a dwellinghouse (whether or not as a sole or main residence) —

(a)by a single person or by people living together as a family, or

(b)by not more than 6 residents living together as a single household (including a household where care is provided for residents).

Class D1. Non-residential institutions

Any use not including a residential use —

(a)for the provision of any medical or health services except the use of premises attached to the residence of the consultant or practioner,

(b)as a crêche, day nursery or day centre,

(c)for the provision of education,

(d)for the display of works of art (otherwise than for sale or hire),

(e)as a museum,

(f)as a public library or public reading room,

(g)as a public hall or exhibition hall,

(h)for, or in connection with, public worship or religious instruction.

Class D2. Assembly and leisure

Use as —

(a)a cinema,

(b)a concert hall,

(c)a bingo hall or casino,

(d)a dance hall,

(e)a swimming bath, skating rink, gymnasium or area for other indoor or outdoor sports or recreations, not involving motorised vehicles or firearms.

LEGISLATION CONCERNING GENERAL PERMITTED DEVELOPMENT

Permitted development rights (PDRs) refer to the rights allowing specific alterations to a building without the requirement of obtaining planning permission. These rights originate from a broad planning permission granted by Parliament, rather than from the local planning authority (LPA). However, for certain PDRs to be exercised, the developer must first acquire "prior approval" from the LPA regarding specified aspects of the development.

Development within the curtilage of a dwellinghouse

Class A – enlargement, improvement or other alteration of a dwellinghouse

Permitted Development
A. The enlargement, improvement or other alteration of a dwellinghouse.
Development not permitted
A.1 Development is not permitted by Class A if—
(a)permission to use the dwellinghouse as a dwellinghouse has been granted only by virtue of Class M, N, P or Q of Part 3 of this Schedule (changes of use);
(b)as a result of the works, the total area of ground covered by buildings within the curtilage of the dwellinghouse (other than the original dwellinghouse) would exceed 50% of the total area of the curtilage (excluding the ground area of the original dwellinghouse);
(c)the height of the part of the dwellinghouse enlarged, improved or altered would exceed the height of the highest part of the roof of the existing dwellinghouse;
(d)the height of the eaves of the part of the dwellinghouse enlarged, improved or altered would exceed the height of the eaves of the existing dwellinghouse;
(e)the enlarged part of the dwellinghouse would extend beyond a wall which—
(i)forms the principal elevation of the original dwellinghouse; or
(ii)fronts a highway and forms a side elevation of the original dwellinghouse;
(f)subject to paragraph (g), the enlarged part of the dwellinghouse would have a single storey and—
(i)extend beyond the rear wall of the original dwellinghouse by more than 4 metres in the case of a detached dwellinghouse, or 3 metres in the case of any other dwellinghouse, or
(ii)exceed 4 metres in height;
(g)until 30th May 2019, for a dwellinghouse not on article 2(3) land nor on a site of special scientific interest, the enlarged part of the dwellinghouse would have a single storey and—
(i)extend beyond the rear wall of the original dwellinghouse by more than 8 metres in the case of a detached dwellinghouse, or 6 metres in the case of any other dwellinghouse, or
(ii)exceed 4 metres in height;
(h)the enlarged part of the dwellinghouse would have more than a single storey and—
(i)extend beyond the rear wall of the original dwellinghouse by more than 3 metres, or
(ii)be within 7 metres of any boundary of the curtilage of the dwellinghouse opposite the rear wall of the dwellinghouse;
(i)the enlarged part of the dwellinghouse would be within 2 metres of the boundary of the curtilage of the dwellinghouse, and the height of the eaves of the enlarged part would exceed 3 metres;
(j)the enlarged part of the dwellinghouse would extend beyond a wall forming a side elevation of the original dwellinghouse, and would—
(i)exceed 4 metres in height,
(ii)have more than a single storey, or
(iii)have a width greater than half the width of the original dwellinghouse; or
(k)it would consist of or include—
(i)the construction or provision of a verandah, balcony or raised platform,
(ii)the installation, alteration or replacement of a microwave antenna,
(iii)the installation, alteration or replacement of a chimney, flue or soil and vent pipe, or
(iv)an alteration to any part of the roof of the dwellinghouse.
A.2 In the case of a dwellinghouse on article 2(3) land, development is not permitted by Class A if—
(a)it would consist of or include the cladding of any part of the exterior of the dwellinghouse with stone, artificial stone, pebble dash, render, timber, plastic or tiles;
(b)the enlarged part of the dwellinghouse would extend beyond a wall forming a side elevation of the original dwellinghouse; or
(c)the enlarged part of the dwellinghouse would have more than a single storey and extend beyond the rear wall of the original dwellinghouse.

Class B – additions etc to the roof of a dwellinghouse
Permitted development
B. The enlargement of a dwellinghouse consisting of an addition or alteration to its roof.
Development not permitted
B.1 Development is not permitted by Class B if—
(a)permission to use the dwellinghouse as a dwellinghouse has been granted only by virtue of Class M, N, P or Q of Part 3 of this Schedule (changes of use);
(b)any part of the dwellinghouse would, as a result of the works, exceed the height of the highest part of the existing roof;
(c)any part of the dwellinghouse would, as a result of the works, extend beyond the plane of any existing roof slope which forms the principal elevation of the dwellinghouse and fronts a highway;
(d)the cubic content of the resulting roof space would exceed the cubic content of the original roof space by more than—
(i)40 cubic metres in the case of a terrace house, or
(ii)50 cubic metres in any other case;
(e)it would consist of or include—
(i)the construction or provision of a verandah, balcony or raised platform, or
(ii)the installation, alteration or replacement of a chimney, flue or soil and vent pipe; or
(f)the dwellinghouse is on article 2(3) land.

Minor operations

Class A – gates, fences, walls etc

Permitted development
A. The erection, construction, maintenance, improvement or alteration of a gate, fence, wall or other means of enclosure.
Development not permitted
A.1 Development is not permitted by Class A if—
(a)the height of any gate, fence, wall or means of enclosure erected or constructed adjacent to a highway used by vehicular traffic would, after the carrying out of the development, exceed—
(i)for a school, 2 metres above ground level, provided that any part of the gate, fence, wall or means of enclosure which is more than 1 metre above ground level does not create an obstruction to the view of persons using the highway as to be likely to cause danger to such persons;
(ii)in any other case, 1 metre above ground level;
(b)the height of any other gate, fence, wall or means of enclosure erected or constructed would exceed 2 metres above ground level;
(c)the height of any gate, fence, wall or other means of enclosure maintained, improved or altered would, as a result of the development, exceed its former height or the height referred to in paragraph (a) or (b) as the height appropriate to it if erected or constructed, whichever is the greater; or
(d)it would involve development within the curtilage of, or to a gate, fence, wall or other means of enclosure surrounding, a listed building.
Interpretation of Class A
A.2 For the purposes of Class A, "school" includes—
(a)premises which have changed use under Class S or T of Part 3 of this Schedule (changes of use) to become a state-funded school or registered nursery as defined in paragraph X of Part 3; and
(b)a building permitted by Class C of Part 4 of this Schedule (temporary buildings and uses) to be used temporarily as a school, from the date the local planning authority is notified as provided in paragraph C.2(b) of Part 4.

Conclusion

Given that several aspects of this project fall outside the scope of permitted development rights; such as changing the use from C3 (dwelling houses) to D2 (Leisure), which encompass certain actions permissible without the necessity of planning permission, and considering that approximately four buildings within the plot hold Grade II listed status, with the remainder of the area situated within the Greenwich conservation area, obtaining a conservation consent, listed building consent, and planning permission is imperative for its realization. Notably, given Greenwich's ongoing development initiatives, this proposal is in harmony with the local vision. Ultimately, the feasibility of this endeavor hinges entirely upon the decisions made by local authorities.

II.1.PROPOSAL FOR MODIFICATIONS TO THIS REGULATORY CONTEXT AND DISCUSSION OF THEIR FEASIBILITY.

Given the lack of clarity regarding what actions are permissible, the process of navigating planning permission applications can be complex and daunting. The requirement to obtain multiple permits and consents only adds to the length and complexity of the process. Thus, finding ways to simplify and streamline these procedures would undoubtedly be a welcome initiative. The proposed change to the current state of the plot would involve altering the use class from Class C to Class D, as well as adjusting the plot boundaries. These modifications aim to facilitate the development of the area to better align with its intended purpose and maximize its potential. However, the feasibility of implementing such changes hinges on various factors, including regulatory constraints, community considerations, and practical implications. Careful consideration and thorough evaluation are necessary to assess the viability and impact of these proposed modifications within the existing regulatory framework. Involving the neighbors and residents in the decision-making process of planning permission grants or refusals, as well as the consents, would also play a crucial role in shaping the neighborhood they want to live in. By incorporating community input, the development can better reflect the needs and preferences of the residents, fostering a sense of ownership and cohesion within the neighborhood.