GRENFELL TOWER REGENERATION PROJECT

STAGE D REPORT

AUGUST 2013

THE ROYAL BOROUGH OF KENSINGTON AND CHELSEA

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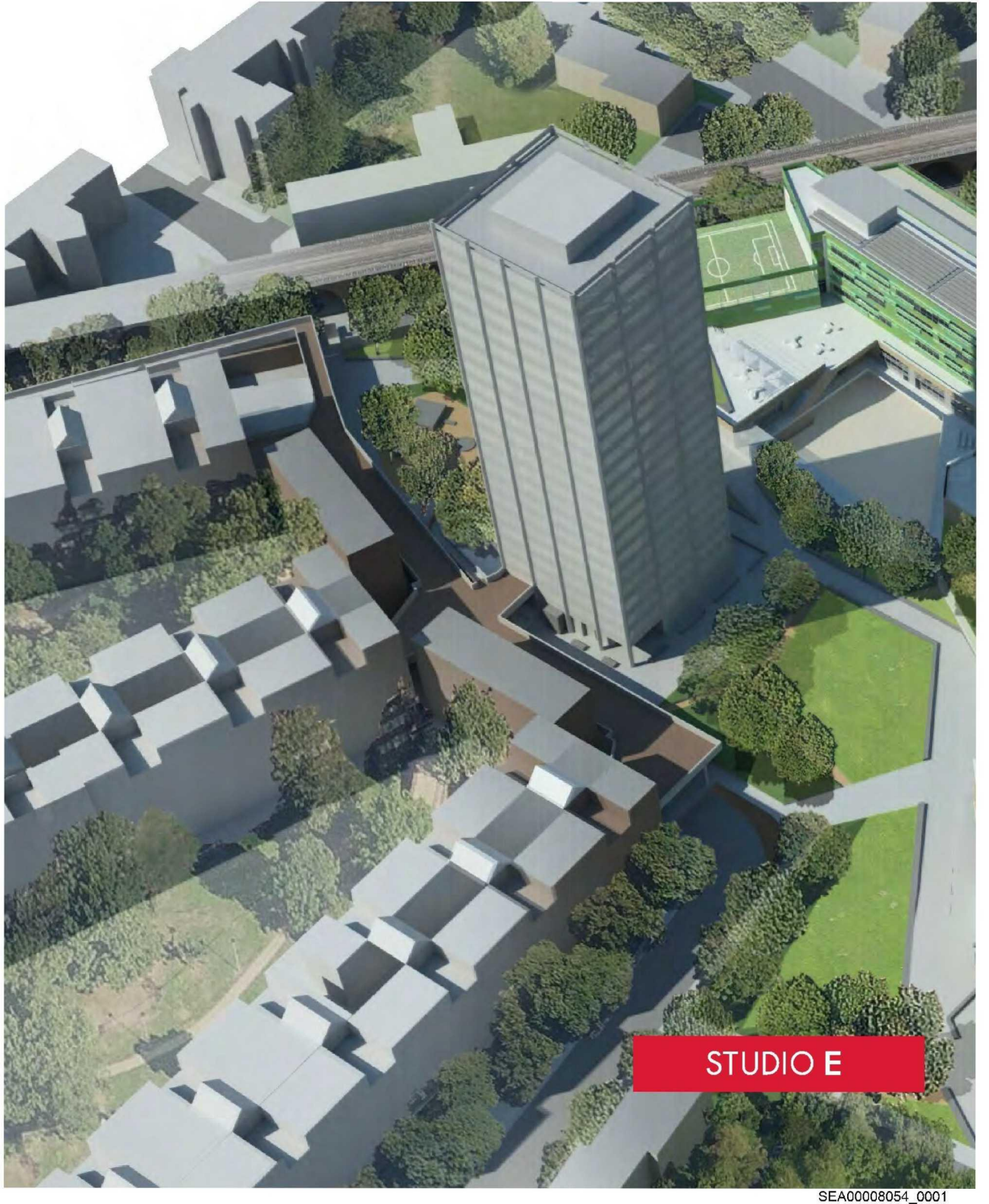

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CONTENTS

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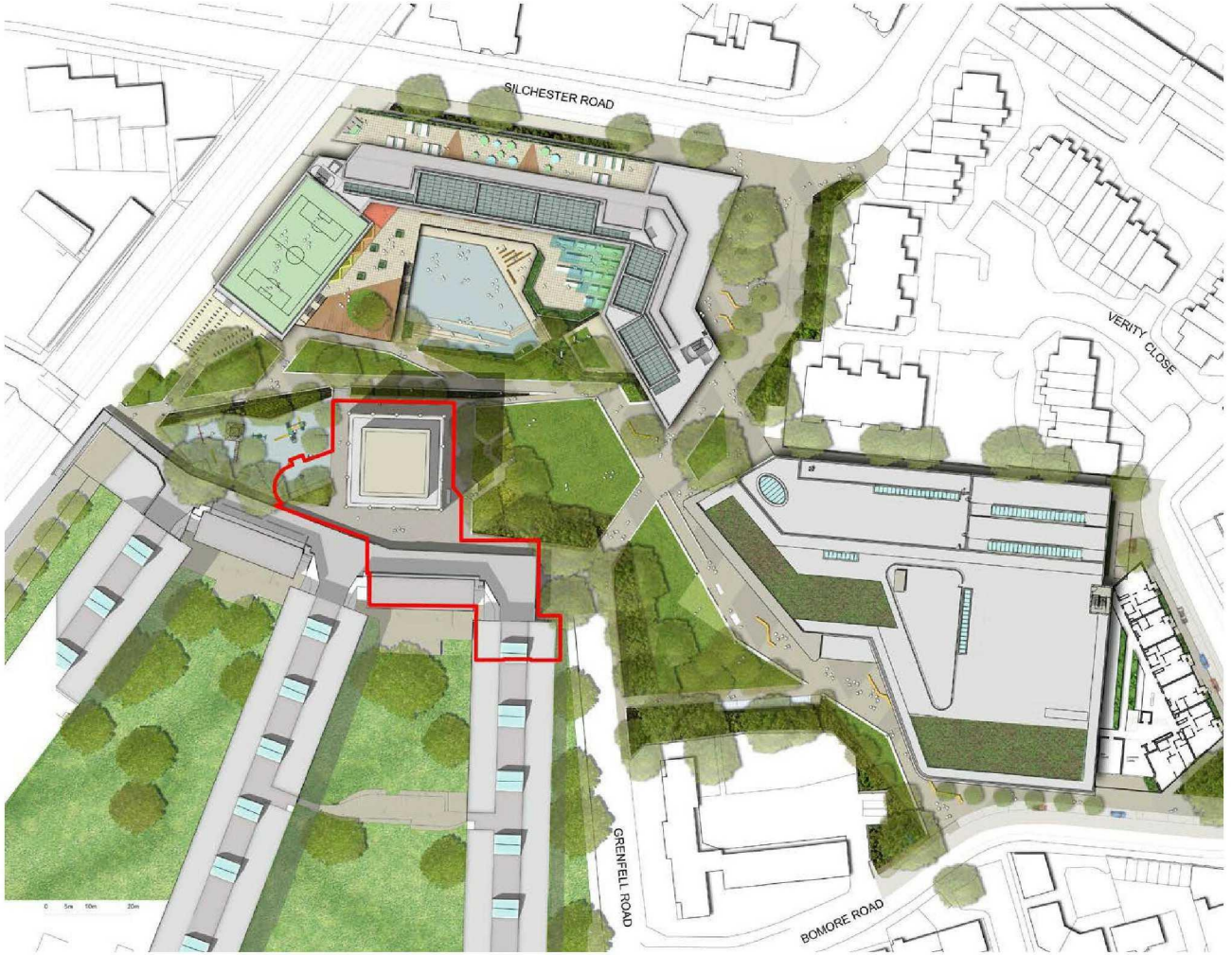
1 EXECUTIVE SUMMARY

The following report is intended to provide information in support of the development of detailed design proposals for the refurbishment of Grenfelll Tower and completion of the project design brief as per RIBA work stage D.

The project was delayed between January and July due to concerns about cost and the appropriate form of procurement. At the same time the design development had stalled after input from the Architects' Appraisal Panel late last year which led us to explore colourful elevations. This approach was ultimately rejected although a number of points raised by the AAP – such as the removal of the perimeter low level canopy – are reflected in the current designs .

The scheme is awaiting Conditional Planning Approval and it is hoped that this will be received this September, twelve months after the original submission. During this period we have substituted three sets of Planning drawings but the overall scope and design is still quite close to what we originally drew. The changes however mean that the Services and Structural engineer's packages are out of date and therefore not included in this report.



2 INTRODUCTION

The detailed design proposals contained within the report are an ongoing record of the work undertaken post Stage C towards a coordinated design and further risk and cost analysis of the design objectives in response to K&C Tenant Management Organisation (TMO) stated aims of:

- Respond to the Supplementary Planning Guidance for the site.
- Find a long term solution which is both efficient and economically viable for the Communal heating to the tower.
- Extend the life of the building and bring the standard of the external envelope in line with current standards.
- Optimise the use of space in the tower.
- Exploit any "hidden homes" opportunities to deliver additional affordably housing for the Borough.
- Improve the entrance and appearance of the block and the
- Lancaster West Estate generally.

The regeneration project on Grenfell Tower is an extension of the Kensington Academy and Leisure Centre project (KALC) and integral to the upgraded public realm. (Planning Application Reference PP/12/01833); The public realm works include new play areas, a shared surface connecting Grenfell Road and Silchseter Road, new pedestrian routes and a planting scheme. The three projects (Fig.1) represent a significant investment and make-over for the area.

The close integration between the associated KALC projects is reflected in the design team for Grenfell Tower by the involvement of the same consultant organisations as Kensington Academy.

The project team (see section 2.0) through participation in project meetings, design workshops, public consultations and site investigations along with supplementary design guidance has been able to determine and refine a number of design objectives related to the refurbishment of Grenfell Tower:

- Improve access
- Enhance security
- Boost the external envelope performance & appearance
- Increase services performance and control
- Increasing building occupancy and efficiency of use (Podium levels)

3 PROJECT DEVELOPMENT

The development of the project brief while primarily based on the stated aims of the TMO and Client aspirations and RBKC 'Hidden Homes' housing policy. Further definition is given to those aims through the requirement to comply with approved standards and consultation approvals.

The following report sections contains the results of ongoing and planned investigation works on the existing building to help define the scope and sequencing of works.

As part of the statutory approvals process for planning & building control consent in combination with best practice guidance a number of working standards can be defined. The standards define requirements for the provision of accommodation, the quality of internal and external spaces along with the quality of the environment contained within.

- The London Plan 2012 (planning)
- RBKC Core Strategy Documents inc.
  - CR2 3D street form
  - CL1 Context and Character
  - CL2 Architectural Design
  - CR7 Servicing
  - CL5 Amenity
  - CE6 Planning and Noise
- Lifetime Homes 21st Century Living - Habinteg
- BREEAM for Domestic refurbishment 2012 (target: v.good)
  - Current (2012) Building Regulations Approved Documents in particular:
  - Part B Fire Safety
  - Part E Resistance to Sound Part F Ventilation
  - Part L Conservation of Fuel and Power (L2:2010)
  - Part M Access
- BS9999:2008 Code of Practice for means of escape for disabled people
- BS 8300:2009 Design of buildings and their approaches to meet the needs of disabled people - Code of Practice
- BS 8206 part 2 code of practice for day lighting
- Department of Transport – Inclusive Mobility
- Dulux – Colour and Contrast: A design guide for the use of colour and contrast to improve the built environment for visually impaired people
- Accessible London: achieving an inclusive environment, Lifetime Homes
- LDF Access Design Guide: Supplementary Planning Document – Adopted December 2010
- RBKC Supplementary Planning Document: Lancaster West Estate
- Fire Safety Risk Assessment – sleeping accommodation. Department for Communities and Local Government 2006
- London District Surveyors Association Fire Safety Guide No. 1. Fire Safety in Section 20 Buildings – LDSA Publications 1998

Surveys / Investigations & Inspection

As part of the design process a number of surveys and invasive investigations have been carried out on the existing building, to determine the extent of risks from the proposed refurbishment works for both the residents and contractors during the works.

The tests are also designed to assess the viability of proposed materials and construction techniques in terms of the existing building structure and the fact that the building is to remain occupied in large part throughout the project.

The following is a summary of the current position with regard to investigations. Further detailed analysis of identified risks can be found in the CDM risk register or in the individual survey reports:

Asbestos

The TMO have previously issued an Asbestos report in spreadsheet format detailing previously recorded locations of Asbestos within Grenfell Tower. At the next stage specialist contractors will need to be approached on the likely cost and safe methods for asbestos removal, given that the debris will need to be taken through common areas that will be continuously in tenant and puplic use.

Concrete Health (Curtins Consulting)

Inspections and concrete analysis of dust samples was carried out by specialist subcontractors to determine the health of the existing concrete within Grenfell Tower due to the age and period of construction of the existing building (1970's). The findings did not highlight any areas of concern

Intrusive Structural Investigations (Curtins Consulting)

The location for further investigations into floor slab thickness and construction will be based on the Structural and M&E builders work drawings contained within this report. The investigations are required to determine the viability of the existing structure in areas requiring proposed penetrations for structural setting out and M&E coordination.

Some pull out testing of fixings for the proposed over-cladding have been carried out which did not highlight any areas of concern in terms of the fixing strength of the existing structure. The tests did however raise concerns on the type of drilling technique and the possible disruption to existing residents caused by noise and vibration. Non-percussive drilling may be required to minimise the impact on residents.

Existing MTHW Pipe work Survey (Max Fordham)

Max Fordham's commissioned a condition survey of the existing heating system pipe work by specialist sub contractors, to determine the viability of services design options making use of the existing system. The survey was also necessary to determine if the existing system could be modified for use in minimizing work sequences and / or disruption during switch over and removal of the existing heating system.

The survey findings concluded that the existing heating pipe work was beyond its useful design life and in a serious state of disrepair that increased the risk of proposed works on or close to leading to leakage and disruption to the existing heating / hot water service which is to maintained throughout the works.

Existing Electric Cable condition survey

With the introduction of proposed mechanical ventilation for kitchen extract fans into the scope Max Fordhams are awaiting a copy of the Grenfell Tower TMO periodic electrical testing as a preliminary step to assess the need for additional testing.

The testing is necessary to assess the condition of the existing electrical cables in particular the lighting circuits within the flats as a possible point for connecting the new mechanical extract fans into existing electrical circuits.

Until the condition of the existing wiring can be assessed the costs will include for a new dedicated circuit to power the kitchen extract fans

Condition Survey of existing residential flats & common spaces

Leadbitter noted that the scope of making good works within the existing flats lacks definition as the condition of décor in the individual flats is unknown. Leadbitter requested support from the TMO in gaining access to the properties to record the type and condition of décor in areas where work is to be carried out including the areas where materials and contractors pass through.

The condition survey should also help define the scope of works in relation to kitchen extractor fans as some existing flats may already contain vents that satisfy BREEAM requirements.

Area Schedule

	EXISTING			PROPOSED	
	m²	m²		m²	m²
	Nett	GIA		Nett	GIA
Basement		696.5			696.5
Ground Floor					
Boxing	181.1		Nursery	209.4	
Office	74.1		Concierge/Office	87.6	
Subtotal	255.2	425.2	Subtotal	297	468.9
Mezzanine Level					
Nursery	244.4		2b4p unit	74.4	
Boxing Gallery	17		2b4p unit	74.4	
			1b2p unit	50.9	
			Office	61	
			Community / Meeting	61.2	
Subtotal	261.4	272.8	Subtotal	321.9	444.7
Walkway Level					
Office	75.5		Office	75.5	
			Community Use (Boxing)	255.2	
Subtotal	75.5	198.7		330.7	441.5
Walkway +1					
Office	378		3b4p unit	101.4	
			4b6p unit	101.4	
			4b6p unit	101.4	
			4b6p unit	101.4	
Subtotal	378	394.4	Subtotal	405.6	473.9
Existing Residential Floors			x (20)		
1b2p unit	50.9		1b2p unit	50.9	
1b2p unit	50.9		1b2p unit	50.9	
2b4p unit	73.3		2b4p unit	73.3	
2b4p unit	73.3		2b4p unit	73.3	
2b4p unit	73.3		2b4p unit	73.3	
2b4p unit	73.3		2b4p unit	73.3	
Total Second Floor	395	473.9	Total Second Floor	395	473.9
x Total floors	20	20	x Total Floors	20	20
Subtotal	7900	9478	Subtotal	7900	9478
Roof Plant		250.6			250.6
TOTAL	**8870.1**	**11716.2**		**9255.2**	**12254.1**

	Nett	GIFA
Diff PROPOSED-EXISTING	**385.1**	**537.9**

4 ARCHITECTS REPORT

4.1 Context

Grenfell Tower sits at the Northern end of the Lancaster West 1 Estate, in the Notting Barns Ward of North Kensington. The Estate consists of the tower and three "finger blocks" – Testerton, Hurstway and Barandon Walks – 3 and 4 storey linear residential blocks which extend 150m south from the Tower enclosing two large green spaces.

The area to the immediate east of the tower is Lancaster Green and there are children's play areas to the immediate west. While these are retained and remodelled as part of the KALC project the open space to the north which is currently all-weather football pitches is the site of the proposed Kensington Academy. The London Underground viaduct is 70m to the west and Latimer Road Tube station is 200m walk from the entrance to the tower. The new Leisure Centre is situated beyond Lancaster Green.

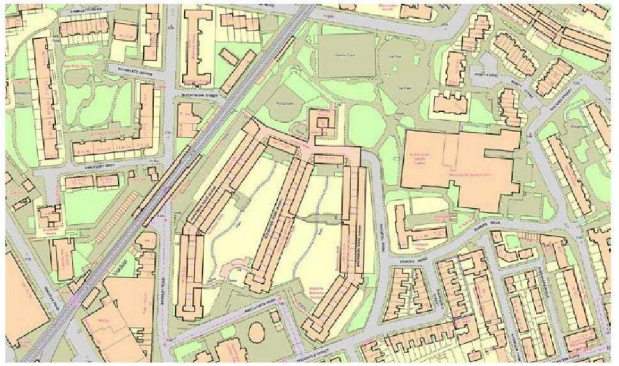


Figure 1

Supplementary Planning Document

The Special Planning Guidance (SPD) for this site deals primarily with the siting of the proposed Academy and Leisure Centre and the Public Realm. It is this last aspect which is most important because of the fractured nature of the KALC site, a consequence of its historic piecemeal development. The SPD seeks to improve the pedestrian (and visual) links across the site, beginning with a new north-south shared surface, leading from Grenfell Road on the southern end and connecting with Silchester Road on the north. The new north-south route is part of the KALC Planning Application and will be controlled by retractable bollards at both ends.

An improved east/west link is also indicated on the SPD on the south side of the tower because this is currently not a level direct pedestrian route. It is the shortest route from Station Walk and the tower entrance, and a natural desire line for anyone crossing the site by foot.

The area to the North & West of Grenfell Tower was originally a private walled garden for residents' use with no public thoroughfare. A youth club and Tenant's Association meeting areas at the base of the tower both opened directly onto the garden along with several means of access from Walkway level. One route down from the Walkway level is a stepped and curved ramp on the west side of the tower. This does not extend down to grade, perhaps because of the limited space available for the ramp. The ramp along with the intermediate ground level effectively block the direct east-west connection highlighted in the SPD by having to negotiate a flight of steps to the base of the ramp and a change of direction to pass.

Over the years the walled garden has been opened up to public access increasing routes through the site around the Tower. The Youth Club has been disbanded and the current tenants at the base of the tower include a nursery and amateur boxing club which both require better public access. The SPD sees the removal of the stepped ramp and a levelling of access around the Tower as key to re-establishing East – West movement through the site and improving public access generally.

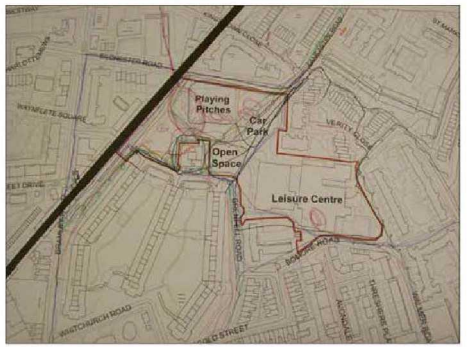
East-West Connection

5.4.5 The map in Appendix 2 shows there is a popular east-west connection at ground level to the South of Grenfell Tower under Grenfell Walk. At present this route is poorly defined, dominated by the servicing yard for Lancaster West and Grenfell Tower and includes steps, limiting disabled access. Whilst not included as part of the site, an improved pedestrian environment should be provided as an integral part of the project.

Fig. 5 SPD – Extract

Appendix 2: Walking Routes

The first image shown below is a photograph showing residents preferred walking routes. This information was obtained from the consultation event held by the Council on 20th November 2010. The second image is a graphical reproduction of this.



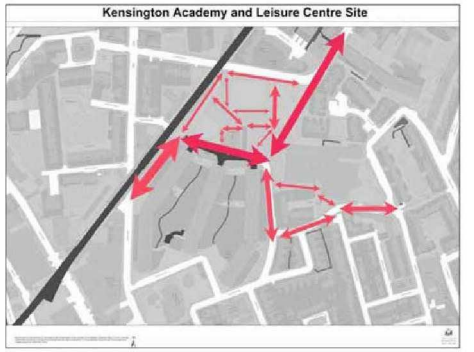


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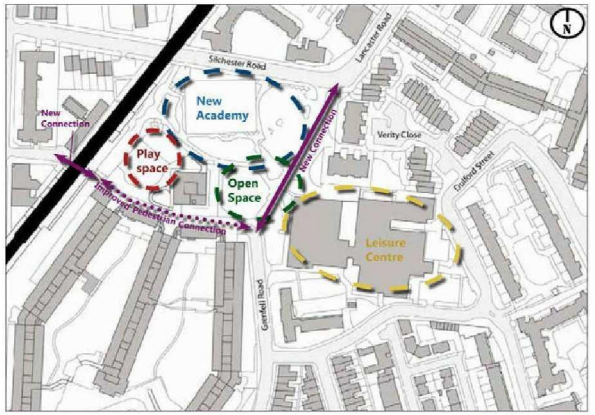
Figure 2- SPD

4.0 Vision And Objectives



7 The Masterplan

4.1 VISION

4.1.1 The vision will guide the development of the project at every stage:

4.1.2 The new Kensington Academy will provide a local school for local people that is of a high quality, cost effective design. The new leisure centre will provide a hub for healthy living for North Kensington as a whole. Located close to one another, the school and leisure centre will benefit from shared facilities by opening up school facilities for use by the community out of hours. Enhanced play facilities will be provided on the site, along with an area of public open space. Improved street and pedestrian routes will better connect the area and re-establish the grain of the historic street pattern. The amenity of residents will have been considered following close working with the community. The school and leisure centre will also provide an anchor for locally generated heat and power, which could be extended into the surrounding neighbourhood, significantly reducing carbon emissions.

Figure 4 SPD

Figure 3- Aerial view of complete development

4.2 Lancaster West

The original design concept for the Lancaster West Estate was to keep vehicle and pedestrian traffic separate by having pedestrian access into and through the site on a walkway level running above the ground level.

Security and anti-social issues associated with having public thoroughfares through the estate, open 24 hours a day, resulted in various changes being made during the early 1990's: the estate was divided into a series of independent blocks, each with its own secure entrance. The walkway connection to Grenfell was closed off by a new EMB office and all resident access to the tower is now via the southern entrance at ground level.

All vehicle access to the lower level for resident's parking and for service vehicles to the Estate is via Grenfell Road and this concentrates vehicle traffic down a narrow cul-de-suc which results in congestion at times which has to be managed by the Estate Inspectors. This service undercroft is directly opposite the entrance to Grenfell Tower.

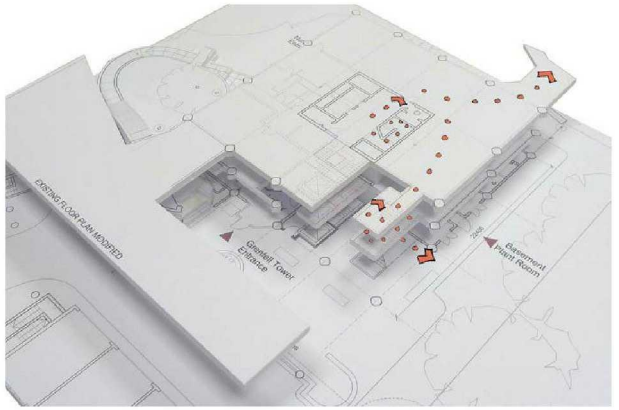


Figure 9 Model illustrating the existing escape route from the main stair which terminates at Walkway level.

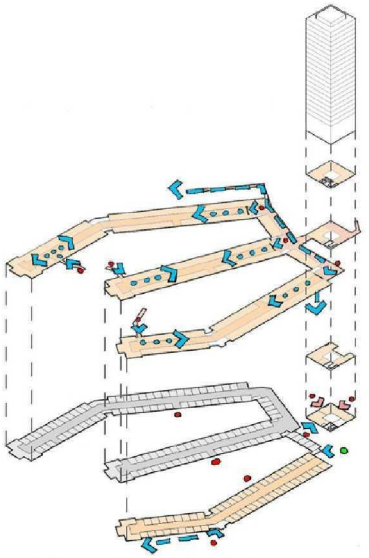


Figure 5 Diagram showing principle of separation of vehicles and pedestrians.

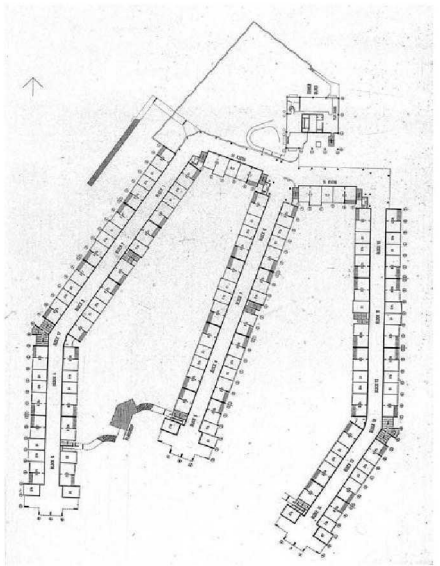


Figure 7 Original drawing of the lower ground floor showing garages and walled garden on north

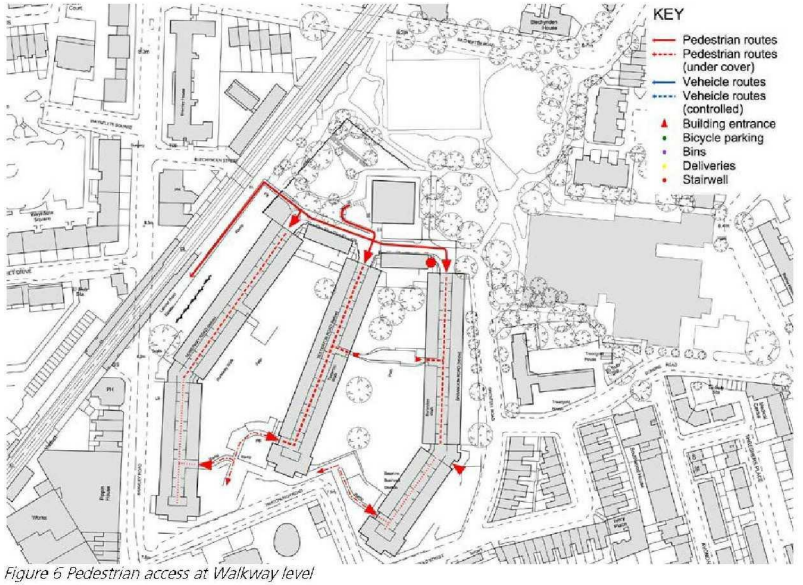


Figure 6 Pedestrian access at Walkway level

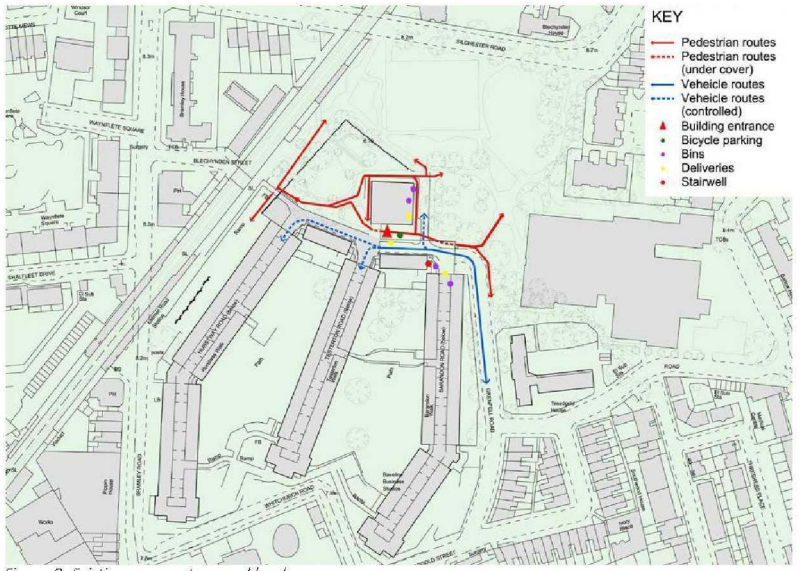


Figure 8. Existing access at ground level.

Figure 10 Existing Tower

Figure 11 Views showing vehicle access to the undercroft of Lancaster West and around the base of Grenfell Tower


Figure 12 Lift lobby – typical floor


Figure 13. Lift lobby – Fire escape door on right, refuse chute on left


Figure 14. Living Room – Existing 2 Bed


Figure 15 Living Room looking towards kitchen– Typical 2 Bed


Figure 16 Living Room – Typical 2 Bed flat


Figure 17 Bathroom


Figure 18 Kitchen – Existing 2 Bed


Figure 19 Dale Youth Boxing Club


Figure 20. Nursery on Mezzanine


Figure 21 Walkway offices


Walkway +1- Vacant offices

4.3 Design Approach: Podium

The following principles were in place at Stage C (October 2012),

- Relocation of the Boxing Club to walkway level
- Relocation of Nursery to ground floor, roughly where the boxing club is now.
- Creation of new floor space and new residential units at Mezzanine level.
- Creation of new floor space and new residential units at Walkway +1
- Creation of a new and more generous tenant entrance with good surveillance.

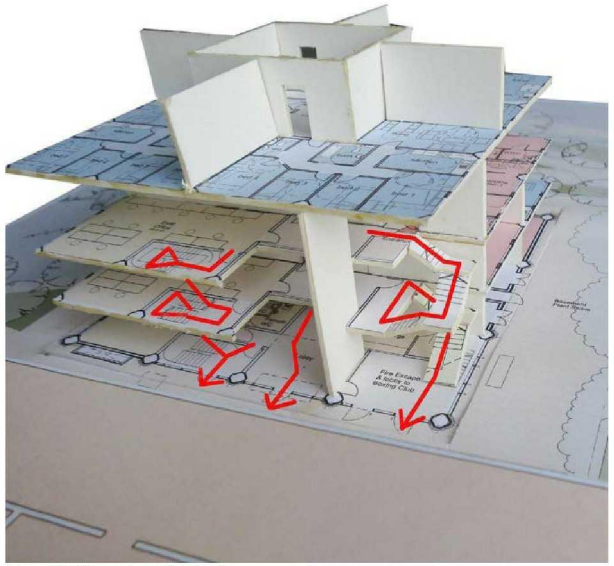


Figure 23 illustration of revised escape and access arrangements

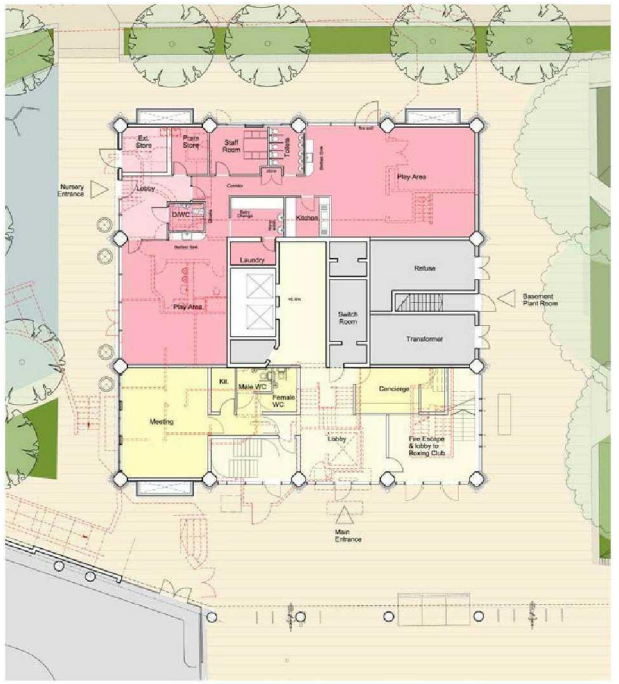
The major work involved is therefore:

- Removal of the external concrete stair and lift shaft on the south east corner to make way for new floor space at ground, mezzanine, walkway and Walkway+1.
- Creation of a new stair on the south west corner of the tower, connecting the lower three levels.
- Infill of voids and new floor space at Mezzanine and Walkway +1 to create the extra space.
- New facades; insulated cladding and windows.
- Upgrade to many of the existing building services:
  - Smoke ventilation to the lift lobbies
  - Door entry system
  - New CCTV
  - Remodelling of several of the basement vents

The following amendments have been made since Stage C:

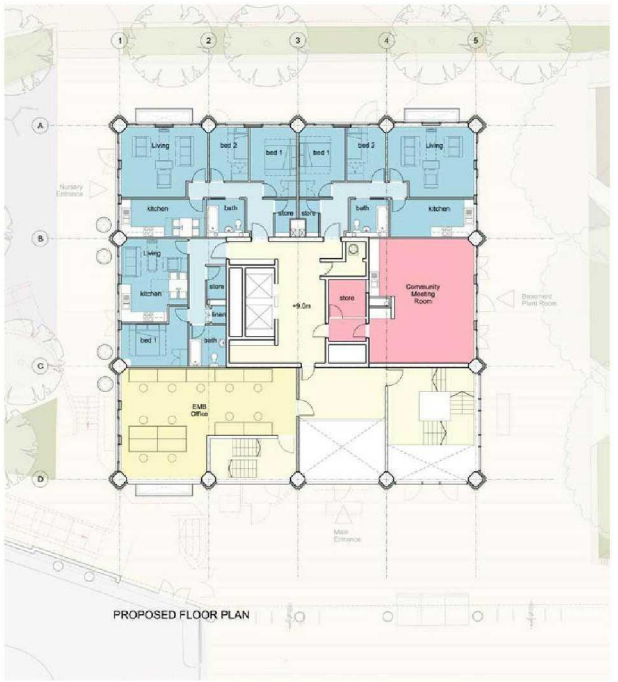
- The residents' entrance and new fire escape stair are separated. The new stair becomes the primary means of access for the boxing club. A second door at ground level will permit the boxing club to control this stair while it continues serve as a fire escape for the whole the tower.
- The boxing club occupies the majority of the Walkway level.
- The estate office now extends over three floors and has its own dedicated accommodation stair.
- The existing walkway bridge is removed. This will necessitate re-routing the primary heating pipes serving the finger blocks which run along the underside of the Walkway.

The location of the transformer Room, lifts and refuse chute are fixed and relocating them is beyond the scope of this project. Within the given footprint (roughly 22x22m square) and the concrete structure we are proposing the following at each level:



GROUND FLOOR

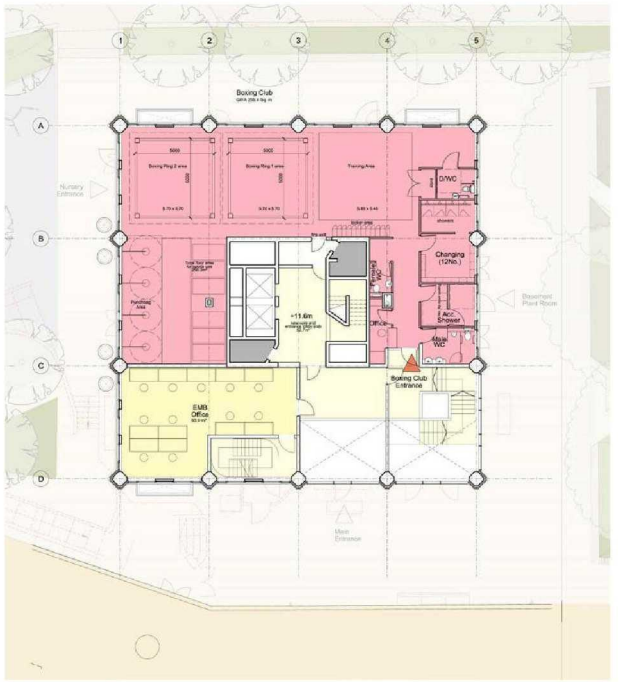
- Enlarged entrance foyer, new stair and Part M compliant lift
- Concierge / reception desk with view of main entrance, new lift and stair and the entrance to the main lift core.
- A new enlarged meeting room and facilities for the Estate Office. This suite of offices is accessed by a new stair
- New office for the EMB (Estates Management Board). This office is transferred from its existing location on the north-east corner of Barandon Walk.
- Relocated nursery in an L-shaped configuration with the new entrance in roughly the same position as the existing.
- A new fire escape stair



MEZZANINE

This level is not currently served by the two central lifts and it is proposed that a new lobby slab and lift openings be created at Mezzanine level. The existing floor to ceiling dimension is low – as little as 2050mm – and Planning felt that this was not suitable for large family dwellings so 1 and 2 bed units only are proposed.

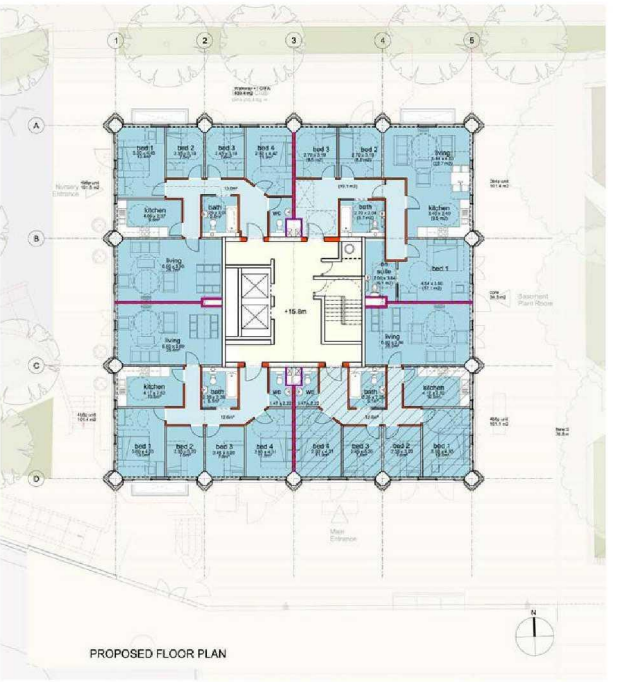
A community meeting room (pink above) is proposed above the existing bins and transformer room.



WALKWAY LEVEL

The boxing club occupies the majority of the available floor plate. Access is via the new escape stair with disabled access via the main lift core

The existing fire escape stair in the core discharges into the lift lobby and the route is continued down to ground via the new stair.



WALKWAY +1 LEVEL

A new "shell and core" arrangement similar to the 20 floors above is proposed with some structural changes: new floor slab, new lift door openings, new connection to the refuse chute and a new connection to the escape stair. Four new units are arranged in each quadrant: 3no 4 Bed and 1 no 3 Bed Wheelchair accessible unit. The structural module has a strong influence on the layout: the bedrooms are situated on the north and south elevations and the living spaces face east and west where the structural module is wider. The kitchens are stacked directly below the kitchens to the two-bed units on the floor above, which is important to maintain a vertical continuity of services such as gas and water.

4.4 Design Approach: Façade

Existing Building

Grenfell Tower is a concrete structure with mill finished (unfinished) aluminium windows. The external wall to the finger blocks are brick but there is relatively little used on Grenfell tower and only at the ground level. For the upper 20 storeys precast concrete cladding has been used: one panel type serves as a structural spandrel under the windows (horizontal) and the other is a decorative facing to the triangular pilasters, each a full storey height of 2.6m (vertical). This system sets up a simple visual language of modular elements: horizontal rough, washed aggregate for the spandrels, lighter and sharper detail on the vertical columns with cast-in vertical grooves, and aluminium framed "strip glazing" between. The infill panels between each window are a smooth white panel so that the assembly reads as a light weight infill in a concrete frame.

The original tower was divided compositionally into a base – the podium up to Walkway +1 level, a middle – the 20 residential floors, and a top – the plant room and pre-cast "crown" of tapered pilasters and ring of perforated freestanding beams. The perimeter columns have been rotated by 45° to read as diamonds in plan, and this generates the distinctive triangular pilasters running the full height of the building and grid across each elevation.

The existing windows are single glazed and sliding opening, each half sliding across the other so that it is in theory possible to clean the outside of outer half with the inner open and the outside of the inner half by moving it left and right of the outer window positioned mid-way in the opening. The low (980mm) internal cill height and need to reach up and out of an open window makes cleaning the windows potentially very dangerous. Retrofit restrictor devices have been fitted to all the windows which limit the opening to approximately 150mm. These can be disengaged but they do provide a measure of safety for residents, and in particular young children.

An Integrated Receiver System has recently been installed to Grenfell tower meaning all wall-mounted satellite dishes will be permanently removed as part of these proposals.

Concept

Grenfell Tower was designed as a large rectilinear mass lifted high off the ground on stilt-like columns and nestled in an urban garden. We interpret the original intent behind this concept was to mitigate the density of the development by handing over of the lowest levels to outdoor and community use. The latter part of this vision has been completely lost. The lowest levels are now entirely defensive in character and the building is separated by a tarmac road from what little garden there is. The under-utilized outdoor deck and stairs to Grenfell Tower are prime locations for mischief rather than community use, and plagued by pigeons.

The original pre-cast concept is a simple and direct solution for the elevations, albeit very uniform and even monotonous. The tower offers only limited interest in the modelling and silhouette at roof level and the constraints of existing structure and plant mean there is no opportunity to add new habitable space at roof level.

Our response to the detail design of the over-cladding to the residential floors has been to respect the visual language of the original: light verticals, darker horizontals and "window strips" as used throughout Lancaster West, including the finger blocks. We have also sought to maintain the podium or lowest four levels as a distinct "base" zone with a more glassy appearance and different cladding material. The glazed screen is full height across the four levels on the two centre bays of the north and south elevations, and on the south-west corner where the new stair is situated. These proportions work for the size of the tower and the glassy openness responds to a desire to address the outdoor spaces: and expanded entrance forecourt on the south, and the scoop of the Academy to the north.

Cladding Design Brief

The over-cladding works are an integral part of the upgrade to the heating of the building, while also being a complete overhaul to its appearance. New windows will deliver improved thermal performance and better functionality. The existing windows are 40 years old and at the end of their design life. More detail on the proposed energy efficiency of the complete building envelope and the parameters use in identifying the preferred window option can be found in the Sustainability Statement.

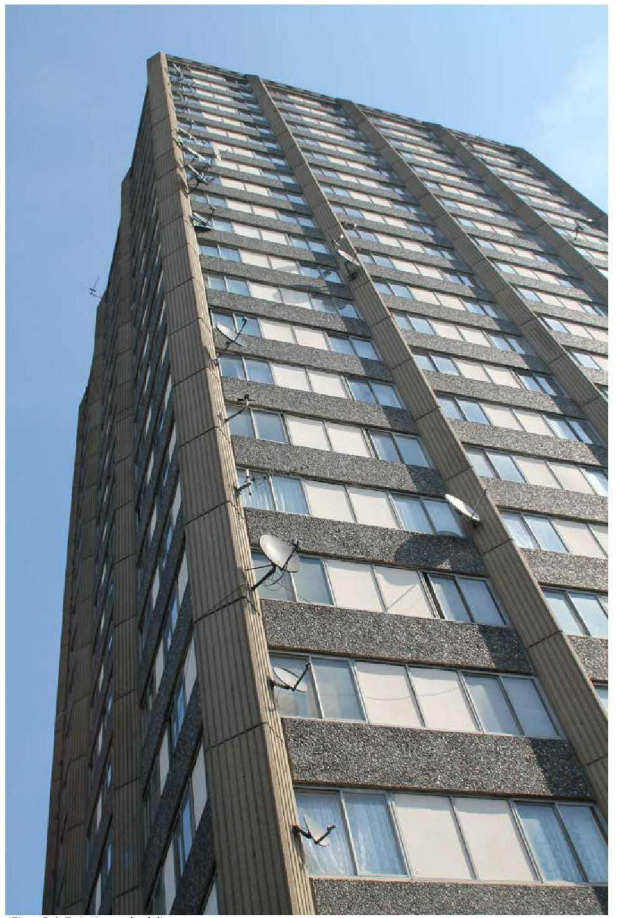


Fig. 24 Existing cladding

In consultation with the Design Team, the TMO and through several open workshops with residents we arrived at the following objectives for over-cladding:

- A dramatic improvement in heat loss with new insulation and air sealing which will generate significant energy savings.
- Windows which can be opened sufficiently to naturally vent the building throughout the year, without contributing to a risk of falling.
- Windows that can be safely cleaned from the inside.
- Windows that maintain the existing good levels of natural daylight internally.
- Improved acoustic performance which will bring the noise levels inside the flats to within Planning policy targets.
- To re-compose the tower with the reconfigured spaces at the lower floors into a coherent single entity and improve the overall appearance of the tower which is such a dominant presence in the public realm that will be upgraded as part of the KALC project.

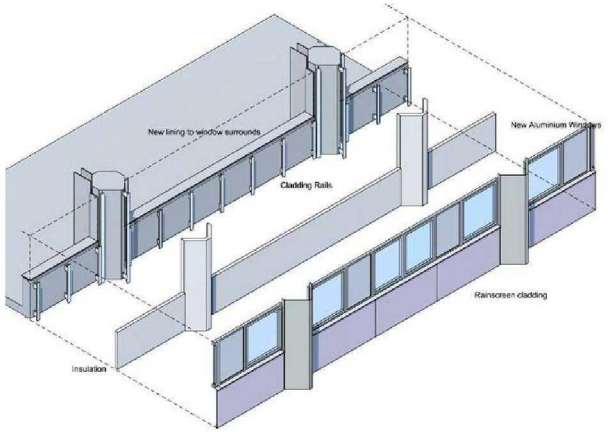


Figure 25 Principle of overcladding

Windows

Powder coated aluminium windows are proposed as replacements for the existing. The proposed configuration is not dissimilar to that illustrated below (22): A narrow "purge panel" opens inward to allow rapid ventilation. It is screened by horizontal louvers to ensure large objects cannot fall out. The larger panel is a pivot window which is the default means of ventilation and it will be restricted to a narrow opening in normal use. Both window halves can be cleaned safely from inside: the pivot window can be disengaged from the safe position and rotated by 180 degrees. The casement is narrow enough not to disturb internal furniture arrangements when open 90 degrees inwards.

We feel the narrow module of the grille to the purge panel introduces a new and interesting rhythm to the otherwise very rigorous geometry of the original. The calculations prepared by Max Fordham demonstrate the need to for this amount of openable area to safeguard the thermal comfort of the occupants. The windows are slightly larger than existing to compensate for the heavier frames and to therefore to maintain the good levels of natural daylight.

Fig. 26 Grille to purge vent

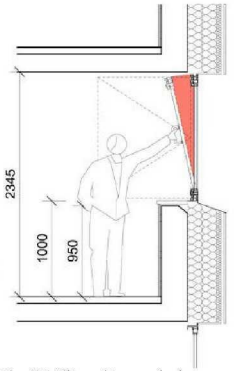
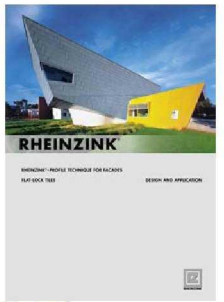


Fig. 27 Tilt and turn window

Materials

A zinc composite rainscreen cladding is proposed to the upper levels. Zinc has the advantage of being a self-finished natural material that will not corrode or weather as a coated finish eventually would. It offers a clean appearance, crisp detailing at joints and an attractive dull lustre. It is not sufficiently robust to use at low level so a combination of dark brick and new high quality concrete facings for the columns is proposed for the podium level. The colour of the brick is selected to match the pallet of the tower rather than the red multi brick used on the rest of the estate. Our view is that the tower always had a different treatment; the precast panels complemented the raw and rough brick used on the finger blocks and the neutral grey zinc will do the same in the overclad condition, albeit a lightweight and more refined material. Colour is proposed in a controlled way to the solid infil panels to the new areas of curtain wall and windows. This is proposed as coloured glass.

These works in turn have a further impact on the existing TV and Satellite systems requiring the removal existing dishes in favour of a communal system located on the roof. The renewal of the heating, domestic hot water systems and windows will also require making good works within the existing flats and common areas.



Rheinzink

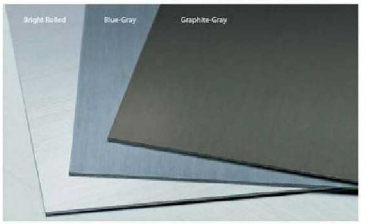


Figure 28 Rheinzink Natural and pre-patinated colours:

Architects Appraisal Panel

The proposals were presented to the RBKC AAP on the 15th November. By this time we had made a number of tweaks to the design:

- The re-provided escape stair and lift were moved to the south eastern corner, forming part of a triple height lobby.
- A new bridge connecting the tower and walkway was proposed.
- The boxing club was expanded to fill the majority of the Walkway level.
- The conversion of 5no. garages opposite for TMO offices was added.

The AAP response was critical of a number of aspects (

Figure 24). We were encouraged to be more bold in the elevation treatment and although not recorded, the comments on the night emphasised colour and the silhouette of the tower. We set about exploring options and had a number of meetings with RBKC Planners. A range of alternatives is illustrated in the Appendix. The following changes were made:

- The canopy was omitted
- A crown of perforate cladding was introduced at the top as an extension of the freestanding beams which are a distinctive feature of the existing building. The elevation is clearly articulated into bottom, middle and top sections.
- The zinc cladding was retained but shown in a lighter colour
- Coloured infill panels, proposed as a high pressure laminate were introduced, graduating in colour from deep green to a strong lime yellow at the top.

By December we felt we had arrived at a consensus with the Planning Officers and revised drawings were submitted. However in late January Planning came back to say they were rejecting the use of bold colour and had a strong preference for natural materials such as copper.

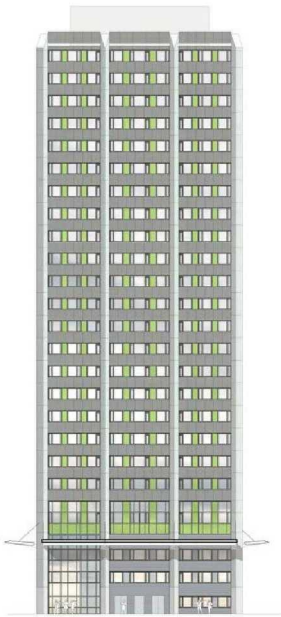


Figure 30 As presented to AAP

Figure 31 Amended Elevation in response to comments

Figure 32 Amended scheme with new bridge and coloured panels.

Royal Borough of Kensington and Chelsea

Architects Appraisal Panel Report — **15th November 2012**
Grenfell Tower, Grenfell Road, W11 — **Studio E**

Alterations to a residential tower
Proposals for the re-cladding of the tower block and remodelling of its lower floors to provide improved accommodation for a nursery and boxing club, and 7 new family-sized flats.

The AAP notes that the planning application has been submitted, but hopes that the project timescale allows sufficient scope for addressing the following:

- the brief for re-cladding the tower and updating its energy performance is supported, but more could be done to improve the amenity of its residents, particularly in terms of improving the tower's appearance and raising their spirits.
- despite a good budget and the use of expensive materials the current choice of cladding finish is dull and lifeless, offering little visual improvement compared to the existing profiled and textured concrete finish. Alternative designs and materials or mix of materials should be explored that would be more visually stimulating and would foster a more heartening identity (e.g., copper or enamelled steel).
- the Panel has discussed whether the designs should continue to emphasise the horizontality rather than the verticality, but feels the right response will emerge from the design review.
- linked to the above, however, is the sense that the building's architecture would benefit from an expression of its base, middle and top.
- the proposed canopy structure(s) is not supported and should be removed, as it clutters the elevations and detracts from the amenity of the accommodation and public space below. The problem of items dropped from upper floor windows could be better addressed by other more management-based solutions (e.g., key-operated window restrictors).
- the relocated nursery seems sensible, though functionally it would benefit from a dedicated doorstep play space rather than using the communal gardens. A protected outdoor nursery space could bring character to the building's base and allow the architecture to break out of its existing rigid structure.
- the daylighting of the upper floor flats could be improved by reducing the extent of the wall panels covering the party wall and introducing larger windows or maybe coloured glass for visual interest, and
- the need to address how the building is terminated. It is a disappointing that the opportunity is not being taken to make more of the roof space and provide a community facility, such as a meeting room or winter garden.

Will Alsop
Chairman AAP
28th November 2012

Figure 29 AAP report

Planning Re-invigoration – July 2013

The impasse on the colour, but more significantly doubts about the affordability of the entire scheme has resulted in a delay to the Planning process. The Planning Authority has not had to determine the application – ie reject it – because a Planning Performance Agreement (PPA) was signed at the outset.

Revised drawings were submitted on 29 July and a fresh period of public consultation has begun. In the intervening period the KCTMO have reviewed their priorities and the original premises of the project. Several radical departures were considered but the revised elevations and indeed the plans retain much of the original design, with the following exceptions:

- The colour is omitted although a monochrome gradation to the infill panels is retained.
- The height of the crown is reduced
- The link bridge is omitted.
- A steel pergola, providing protection from falling objects and a trellis for planting is proposed on the western elevation where the nursery entrance is located. We feel the nursery deserves the added protection given the connection to the play area, and a softer architectural treatment is called for here.

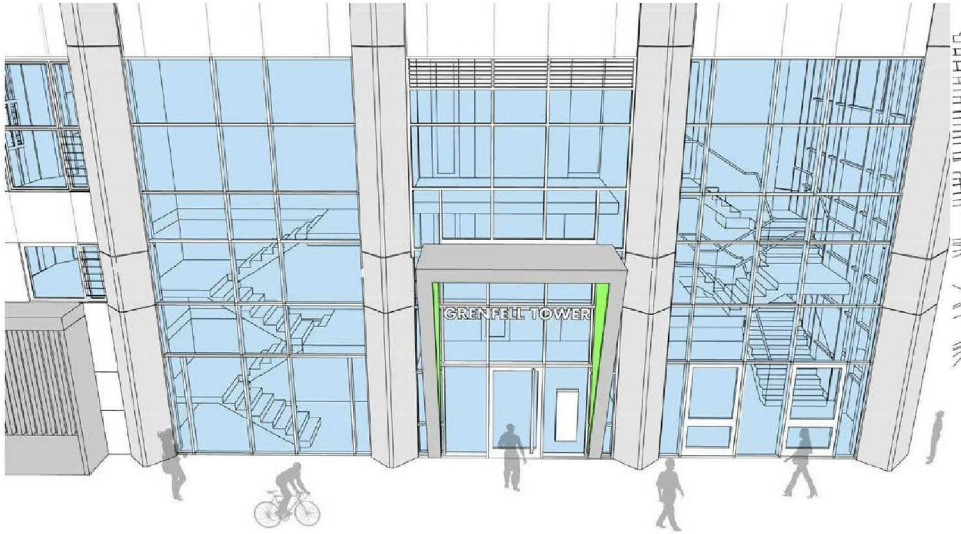


Figure 33 – New Entrance

Figure 34 Trellis/canopy to western facade, linking nursery to play area.

Figure 35 Existing approach to tower entrance

Figure 36 Revised crown detail

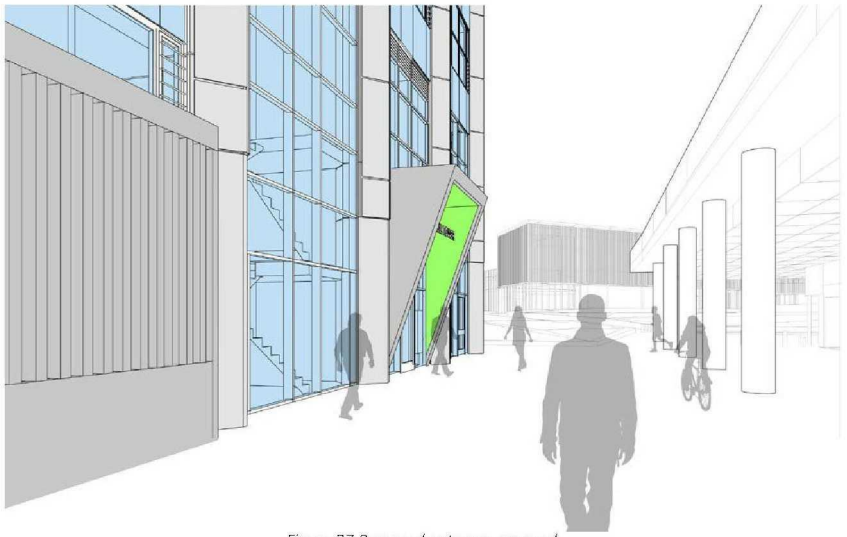


Figure 37 Proposed entrance approach

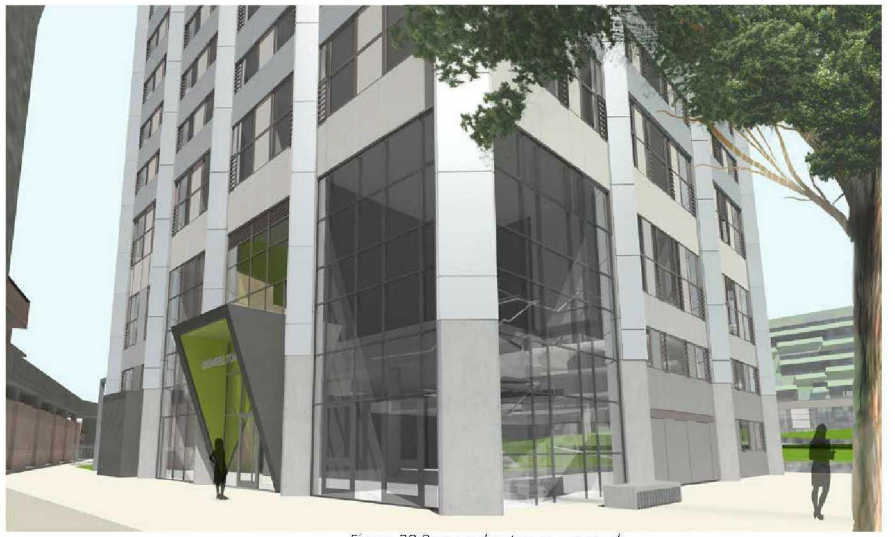


Figure 38 Proposed entrance approach

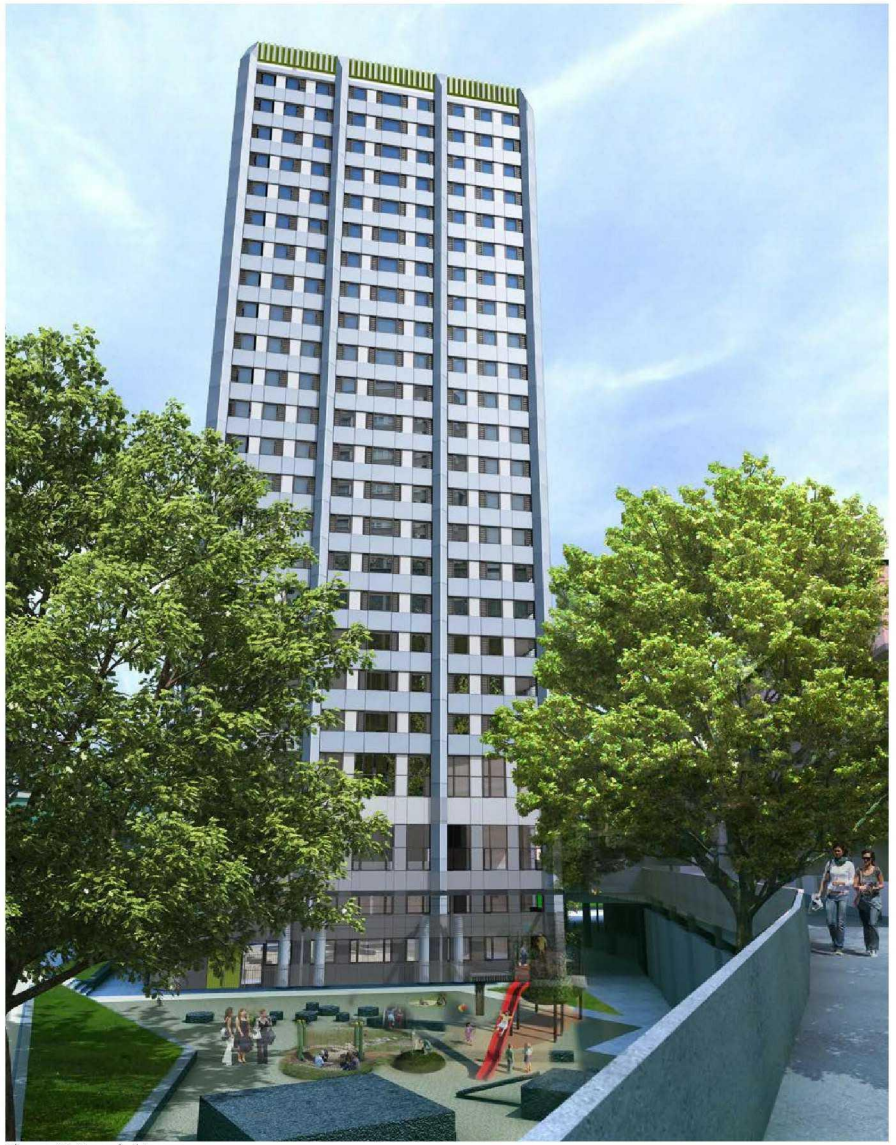


Figure 39 Overclad tower

Alternative cladding options which may be considered

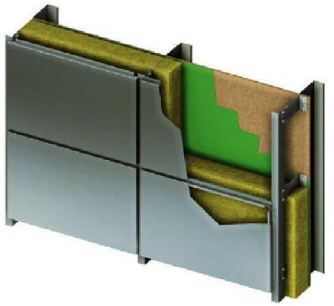


Figure 40 Aluminium Cassette rainscreen. Powerdercoated finish

Figure 41 - Coil coated aluminium: Euramax anodised aluminium

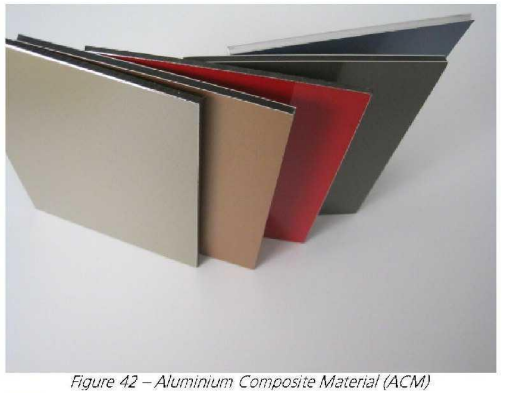


Figure 42 – Aluminium Composite Material (ACM)

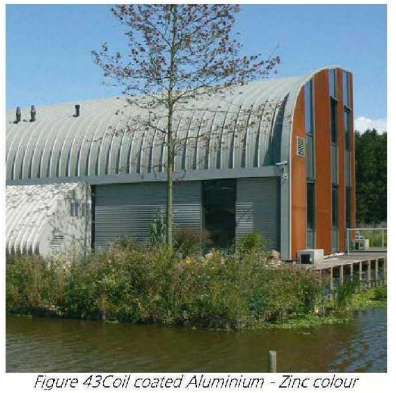


Figure 43Coil coated Aluminium - Zinc colour

Figure 44 Rheinzink BlueShingles

4.5 Issues for Stage E

Several design issues remain to be resolved as part of the next stage:

- Nursery internal layout, fixtures & fittings and level of finishes required
- Boxing Club internal layout, fixtures & fittings and level of finishes required
- Office layouts, fixtures & fittings and level of finishes required
- Traffic management across and through the site.

RBKC Accessibility Appraisal

As part of an RBKC internal procedure the planning drawings were submitted to an Accessibility appraisal the recommendations and comments are listed below:

- Provision of wheelchair accessible accommodation to be considered (see SK60 section 6.4)
- Communal approach to dwelling front doors are below lifetime homes standards (1200mm for turn approach)
- Space arrangements in some dwellings do not allow for sufficient corridor movement / bathroom use for disabled persons
- There is no storage space for the dwellings
- Refuse arrangements must be considered. Refuse areas must be accessible.
- The following should be reviewed to comply with accessibility standards
  - Lift dimensions
  - Dwelling front door widths
  - Internal corridor widths
  - Storage
  - Refuse arrangements

Architect's risk assessment schedule

Project CDM co-ordinator: **Appleyards** | Latest review: **26/10/2012** | Pages: **1**

Element / Activity	No.	Potential hazard	Persons at risk*	Risk factor*			Action taken at design stage	Actioned		Possible control options (Contractor)
				L	S	R		By	Date	
General	00a	Fire risk during works	C/P/R	2	3	6				
	00b	Asbestos: removal or containment	C/R	2	2	4	Asbestos report commissioned			
	00c	Disruption of services: water, electricity, gas, etc.	R	2	2	4				
	00d	TV dishes, etc; danger of falling while removing or, in future, erecting existing tenant installations	M/R	2	2	4	A central aerial system will be installed, tenants will not install private systems.			Carry prohibition of tenant installation to O&M manuals
	00e	Machinery – noise & vibration during the works	R	3	1	3				
	00f	Public safety; construction site activities, wet & dirty streets and access	P/R	1	2	2				Contractor to monitor during construction
	00g	Emergency vehicle access, strategy during works	P/R	1	2	2				Contractor to monitor during construction
	00h	Injury to persons resident during the works	P/R	1	1	1				
	00i	Traffic disruption; access to parking and for services and statutory bodies	R	1	1	1				Contractor to monitor during construction
	00j	Unauthorized / unintentional access to site	P/R/V	1	1	1	Hoarding and monitored security to suit local conditions			Contractors method statement required
Site clearance	01a	Collapse of structure	C/P/R	1	3	3				Temp. works method statement required
Access / egress	02a	Machine movement / risk of collision due to lack of visibility, poor sightlines	C/P/R	1	2	2				
	02b	Temporary closures of Grenfell Road to services	R	1	1	1				
Excavation, demolition	03a	Machinery – noise & vibration	C/P	3	1	3				Working hours to be agreed, out of hours working to be limited / negotiated / prohibited
	03b	Machine collision / vehicle stability	C	2	1	2				
	03c	Risk of collapse / falls	C	1	2	2				
Scaffolding	04a	Falls from height	C	1	3	3				Contractors method statement required
	04b	Falling objects	C/P/R	1	3	3				Contractors method statement required
	04c	Projections	C/R	1	1	1				
	04d	Tripping and slipping	C	1	1	1				
Stripping out, demolition	05a	Falls from openings	C/R	1	3	3				Contractors method statement required
	05b	Falling objects	C/P/R	1	2	2				
	05c	Moving objects / crushing	C/P/R	1	1	1				
Craneage	06a	Falling objects	C/P/R	1	2	2				
	06b	Moving objects / crushing	C	1	1	1				
Structural steel	07a	New lift shaft, SW corner: rises 5 levels	C/R	1	2	2				
	07b	Infill floor, SE corner, mezz & office levels	C/P/R	1	2	2				
	07c	New canopy: 4m above pedestrian traffic	P/R	1	2	2				
	07d	Handling	C	1	2	2				
	07e	Cutting, welding, hot work	C	1	1	1	Only unavoidable hot work permitted			Contractor to institute permit system

Continued over

RBKC Building Control Consultation – Fire Safety

A preliminary meeting with RBKC building control was held to discuss the current layouts and the proposed changes to the existing fire strategy. No major changes to planning layouts required but the discussions on the existing dry riser location and smoke ventilation introduced several services issues to be considered as part of the attached M&E section by Max Fordhams.

One of the issues was a request to extend the existing smoke extract system down through Walkway level into the proposed mezzanine level without knowing if the existing system is fit for purpose under the current building regulations.

Other issues raised to be taken into consideration are:

- Fire fighting lift location and which floors serviced to be clearly indicated on application
- Existing fire safety strategy for each floor and proposed changes to be clearly explained.

Health and Safety

Studio E's Risk Assessment is shown opposite. A full Tender Health and Safety File will need to be prepared for tender, including the phasing requirements for the building so that disruption to residents is kept to a minimum and they are not put in any danger by the building work.

Contract Site Boundary

The exact line separating works paid for under KALC and works under this project has still to be agreed. For instance is understood that the removal of the stepped ramp will fall under Grenfell project but the re-provided play area which overlaps with this area will fall under KALC. The working space available on the north side of the tower is constricted and Bouygues/Leadbitter will need to be approached to understand if there is any opportunity to move their hoarding back.

Continued…								Latest review: 26/10/2012		Pages: 2
Element / Activity	No.	Potential hazard	Persons at risk*	Risk factor*			Action taken at design stage	Actioned		Possible control options (Contractor)
				L	S	R		By	Date	
Frame preparation	08a	Shot-firing or drilling injuries	C	1	2	2				
Installation of new cladding	09a	Falling / breaking glazed units	C/P	1	3	3				Contractors method statement required
	09b	Falls from height	C	1	3	3				Contractors method statement required
	09c	Handling	C	1	2	2				
Brick- & blockwork	10a	Handling	C	2	1	2				
Plastering	11a	Working at height	C	2	1	2				
Installation of new services	12a	Making connections to existing live services	C/R	1	3	3				Contractor to carry forward to M&E installer
Decoration	13a	Working at height	C	2	1	2				
Maintenance (future)	14a	Cleaning of new external cladding windows	R	2	2	4	Horizontal 'tilt & turn' units with key-operated restrictor will now be fitted.		10/2012	Carry forward to O&M manuals
	14b	Cleaning of new curtain wall elements	M	2	2	4				Carry forward to O&M manuals
	14c	Cleaning of new canopy	M	2	2	4				Carry forward to O&M manuals
	14d	Re-lamping in double- & triple-height volumes	M	1	2	3				
	14e	Lift maintenance	M/(R)	1	1	2				
Fire	15a	General means of escape: review	R/P/V	1	3	3				
	15b	Alarm system: review	R/P	1	3	3				
	15c	Fire-fighting strategy: review	R/P/V	1	3	3				
	15d	Escape strategy at mezz. ground & walkway levels - from lifts and commercial premises	R/P/V	1	3	3				
Rubbish removal	16a	Access for sanitary services: review	M/R	2	1	3				

Key: Persons at risk: C = Contractor personnel, M = Maintenance staff, P = Public, R = Residents, V = Visitors (E = Environment)
Risk factor rating: L = Likelihood (1 = Low, 2 = Medium, 3 = High); S = Severity (1 = Low, 2 = Medium, 3 = High); R = Risk (Likelihood x Severity)

- Hazards scoring a **Risk factor 3** attracts special notice, **Risk factor of 4** or more require special management and an action plan to be agreed with the CDM co-ordinator.

5 OUTLINE SPECIFICATION

UNDERCROFT

H92 Rain-screen Cladding
Soffit ceiling
- Demountable 6mm HPL cladding (Trespa or similar) Unistrut sub-frame system. (colour coded surface fixings)

L20 Roller Shutters
New Garage Doors
New gates to cycle lockup

Superstructure: Roof – Investigate source of leaks, repair if possible.

C20 Demolition
Removal of stepped ramp and planters.

TOWER EXTERIOR

H11 PPC Aluminium thermally broken curtain walling system including:
- Aluminium access and fire escape doors and fixed light panel
- Automatically opening vents (AoV) linked to fire alarm system
- External louvers to smoke vent system air intake
- Toughened safety glazing below 1100mm from FFL
- Manifestation
- System to achieve U-value of 1.6 W/m²K

H42 Pre-cast concrete Cladding - low level columns
- Finished pre-cast concrete insulated panels fixed to existing concrete columns

L10 PPC Aluminium thermally broken windows.
- openable windows PPC Aluminium doubled glazed
- Inward opening casement windows (purge panels)
- External louvers to purge panel windows 100mm max openings
- Large tilt and turn casements. Lockable restrictors to prevent casual opening.
- Obscure panels below 1100mm from FFL
- Opaque white insulated blanking panels between windows

H92 Rain-screen Cladding: Pre-patinated zinc rainscreen cladding on aluminium cladding rails with insulation fixed directly to existing concrete.
- 1mm folded metal shingles on steel substrate: Rheinzink Blue
- Pre-formed window surrounds (cill/jamb/head). Cills angled to prevent roosting.
- Spandrel panels U-value 0.15 W/m²K (=150mm PIR)
- Columns U-value 0.18 W/m²K (=100mm PIR)
- Decorative strips to Strips to

P10 Sundry Insulation / Proofing Work
- Celotex FR5000 (100mm) to existing columns

J41 60mm min Rigid PUR roof insulation over exisitng membrane. Bitumous felt roof covering dressed over aluminum flashings at roof edges.

M22 (Plant Room external walls) External Insulated render

RECONFIGURED ENTRANCE AND OFFICE AREAS

K10 Stud Partitions
- 100mm Typical C section metal framing to EMB Office & WC

Fire: Type 1:
- 30min FR (2no. layers 15mm Wallboard)

Security:
- 225mm Heavy Duty C section metal framing around Concierge desk (2no. layers 15mm Wallboard)

Plasterboard Ceilings
- British Gypsum 9mm plasterboard on metal uni-strut sub frame to entrance lobby

L10 Glazed Screens
Fire rated (FD30) glazed screens Inc. Doors between entrance lobby and existing lift core.

Glazed security screens to Concierge desk.

L20 Doors
- Internal doors: solid core with laminate facing and hardwood lipping and beading to vision panels.
- Automatic steel fire shutter to concierge desk.

L30 1300mm High toughened glass glazed balustrade around stair and entrance lobby void adjacent to lift and staircase. 1100mm high 40mm dia. Stainless Steel handrail to follow balustrade.

N13 Sanitary Appliances & Fittings
- Doc M pack Disabled 'Unisex' WC
- Lever handle taps

N11 Domestic Kitchen Furnishings and Equipment
Kitchenette
- 850mm High worktop
- 1200mm base unit support for sink
- Single basin sink with drainer
- Lever handle taps

N10 Furnishings
- Reception desk (Concierge)
- Cabinets for CCTV equipment
- Blinds
- Barrier matting system to main entrance

M40 Large format regularised porcelain floor tiles to entrance lobby and ground floor lift lobby

M50 Carpet Tiling to EMB office
Safety Vinyl to Kitchenette & WC
Vinyl Flooring to Concierge and new lift lobbies
Aluminium with vinyl insert nosing to stairs

M60 Painting
Walls – Emulsion
Timber Skirting / trims – Vinyl Emulsion

NURSERY

K10 Internal Partitions -100mm Typical C section metal framing
- Fire: Type 1: 30min FR (2no. layers 15mm Wallboard)
- Acoustic: Type A (52db TBC) (between Nursery / EMB) Overall width 150mm Staggered 100mm C sections 50 Rockwool Insulation 2No. layers of 15mm Wallboard)

Plasterboard Ceilings
- British Gypsum 9mm plasterboard on metal furring's

K32 Panel Cubicles: 4no. 1100mm high children's toilet cubicles no requirements for doors

L10 Glazed Screens
- Glazed screens fixed light around internal Doors between entrance lobby and play spaces.

L20 Internal Doors
- Solid core laminate-faced, hardwood lippings
- Vision panels, anti-finger trap
- Stainless steel kickplates and ironmongery
- Electrically powered security roller shutters installed internally behind curtain walling / windows

N10 General Fixings
- Barrier matting system to main entrance
- Baby change unit and storage under
- Roller blinds to all windows

N11 Domestic Kitchen Furnishings and Equipment
Kitchen
- 850mm High worktop
- 1200mm base unit support for sink
- Double basin sink with double drainer
- (hand wash) 1no. WHB & 1no. childrens WHB

N13 Sanitary Appliances & Fittings
- Doc M pack Disabled 'Unisex' WC
- 5no. children's WHB & WC
- 2No. Belfast Sinks and worktop located within play areas

M50 Sheet flooring
- Vinyl Flooring throughout
- Safety Vinyl to Kitchen, WC's & Baby change
- Whiterock or similar splashbacks to all sinks / WHB and baby change

M60 Painting
- Walls – washable satin Emulsion
- Timber Skirting / trims – Eggshell

EXISTING CORE / LIFT LOBBY

Builder's work and making good associated with M&E works on relevant floors. Existing finishes to be protected throughout works.

K10 Plasterboard Ceilings
British Gypsum 9mm plasterboard on metal furring sub frame

P20 Pipework encasement Pendock profile or similar

NEW CORE / LIFT LOBBIES

New slab at mezzanine level. New lift openings at Mezzanine and Walkway +1. New connection to stair at Walkway +1 and openings for doors to flats, new connection to refuse chute.

K10 Plasterboard Ceilings
British Gypsum 9mm plasterboard on metal furring sub frame
M20 Plaster on masonry
M50 Vinyl flooring and cove skirtings
M60 Eggshell

BOXING CLUB

Fixtures and fittings to accommodate equipment to be agreed. Existing screed to be lifted to allow space for new isolated floor build up.

K10 (Inner Leaf) Structural Framing System (SFS)
Internal Partitions:
- 100mm Typical C section metal framing
- Fire: Type 1: 30min FR (2no. layers 15mm Wallboard) (see SEA drg. No. RE111)
- Acoustic: (see SEA drg. No. RE111)
- Type A (52db? TBC) (between Nursery / EMB) Overall width 150mm Staggered 100mm C sections 50 Rockwool Insulation 2No. layers of 15mm Wallboard)

L10 Glazed Screens
Glazed screen with openable sliding light to office hatch

L20 Internal Doors
Vision panels / obscure glazing
Lever handle, Kick and push plates

K40 Demountable suspended ceilings throughout. 100% RH boards to be used in showers.

M50 Raised access floor (100mm) for acoustic control within sports activity areas with safety vinyl flooring

M50 Vinyl flooring to office and corridor
Safety Vinyl Flooring to all changing, WC and Shower areas.

N10 General Fixings
To be agreed.

N10 Sanitary Appliances & Fittings
Doc M pack Disabled 'Unisex' WC
Lever handle taps throughout
Drinking water fountain located within sports activity area

K32 Shower Cubicles: HPL

N10 Kitchen Fittings
850mm High worktop Single sink with drainer

P20 Isolated trims & Skirtings
100mm pencil rounded pre-finished timber skirting to base of all partitions and external wall dry lining. (see finishes)
125 x 20mm pre-finished timber cill boards (see finishes)

N10 Furnishings

Window Blinds / obscure glazing panels to be confirmed

M40 Tiled splashbacks to all sinks / WHB
Tiled shower floors and walls.- full height.

M60 Water based Eggshell

NEW RESIDENTIAL FLATS - MEZZANINE & WALKWAY +1

Fixtures and fittings based on minimum needs TMO to agree on level of finishes, fit out for kitchen and furnishings to be included as part of the works.

K10 Internal Partitions:
100mm Typical C section metal framing throughout flats
Fire: Type 1: 30min FR (2no. layers 15mm Wallboard)
Acoustic:
- Type A (52db? TBC) (between flats) Overall width 150mm Staggered 100mm C sections 50 Rockwool Insulation 2No. layers of 15mm Wallboard)
- Type B (32db? TBC) (within flats) 100mm C section 2 layers of 12mm wallboard)

L20 Internal Doors (Typical Flat)
FD30 to all doors leading off internal corridor spaces
Additional allowance for FD30 external door to flat entrance.

K10 Plasterboard Ceilings
British Gypsum 9mm plasterboard on metal furring sub frame
British Gypsum 9mm moisture resistant plasterboard to bathrooms on metal furring sub frame.

N10 Sanitary Appliances & Fittings

N11 Domestic Furnishings - *(level of finish / storage requirements to be agreed)*
850mm High worktop continuous around 2 walls
1200mm base unit support for sink
Single basin sink with drainer (lever handle taps)
4 ring cooking hob
Extractor hood *(fan covered in M&E)*

P20 Isolated trims & Skirtings
100mm pencil rounded pre-finished timber skirting to base of all partitions and external wall SFS lining. (see finishes)
25mm square edged pre-finished timber architrave to all internal doors. (see finishes)
125 x 20mm pre-finished timber cill boards (see finishes)
Bath enclosure panel

N10 Window Blinds (to be confirmed by TMO)

M50 Timber laminate flooring & acoustic underlay to internal corridor, living, bedrooms and storage spaces
Safety Vinyl to Kitchen, WC & Bathroom

M40 Wall Tiling to Kitchen splashback around extent of worktop, WHB in WC and 2no. walls in Bathroom (WHB & Bath)

M60 Painting
Walls – Emulsion
Timber Skirting / trims – Vinyl Emulsion

EXISTING RESIDENTIAL FLATS

Builder's work and making good associated with M&E works: replacement of radiators and new heating pipework. Existing finishes to be protected throughout. New window cill/surround required to making good around replacement windows.

K10 Plasterboard Ceilings
British Gypsum 9mm plasterboard on metal furring sub frame

P20 Pipework encasement Pendock profile or similar

Finished timber surround to new window head, jambs and cill along with architrave to conceal décor area disturbed by removing existing window. Finish to be left clean or agreed with existing resident

PLANT ROOM / ROOF LEVEL

Builder's work only. Existing communal aerial cabling and receivers to be lifted above new roof and cladding. Existing ladder, roof balustrade and lantern vents to be relocated to suit overcladding.

6 PROJECT MANAGER AND COST

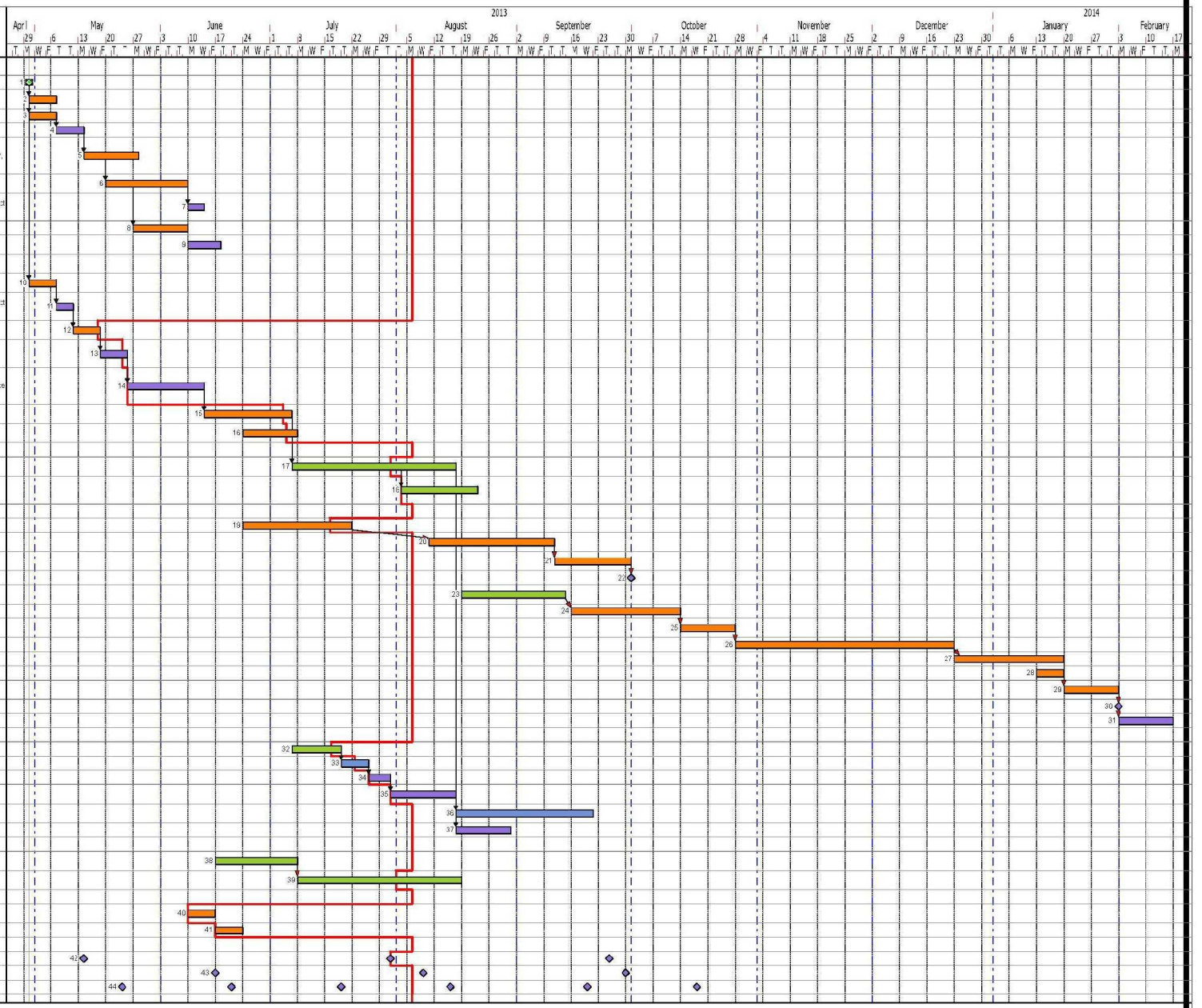
SEA00008054/34

ARTELIA INTERNATIONAL

The Royal Borough of Kensington & Chelsea TMO - Near-Term Action Plan

THE ROYAL BOROUGH OF KENSINGTON AND CHELSEA

Line	Name	Start	Finish	Notes
	AMEND TERMS OF PROJECT			
1	Project on Hold	30/04/2013	30/04/2013	
2	Advise planners that application is likely to alter significantly	30/04/2013	06/05/2013	
3	Review professional fees to date	30/04/2013	06/05/2013	
4	Pay professional fees to stage D	07/05/2013	13/05/2013	
5	Rebrief of design team, design review and VE offer workshop (within this period)	14/05/2013	27/05/2013	Attendees: TMO, Appleyards, Studio 3 Leadbitter, Max Fordham, Curtains
6	Prepare revised scope within budget including VE options and impact	20/05/2013	07/06/2013	
7	Client approval of revised scope	10/06/2013	12/06/2013	Approved but requesting full project costs
8	Communicate changes to design team	27/05/2013	07/06/2013	
9	Communicate changes to Nursery, Boxing Club & Residents	10/06/2013	17/06/2013	
	REVISE DESIGN TEAM ARRANGEMENTS			
10	Adjust high level brief for client approval	30/04/2013	06/05/2013	
11	Approve high level brief	07/05/2013	09/05/2013	Approved but requesting full project costs
12	Prepare professional appointments and procurement recommendation paper	10/05/2013	16/05/2013	Addendum report - to be issued 10/6
13	Agree professional appointments and arrangements going forward (incl. contractor)	17/05/2013	23/05/2013	
14	Legal advice on appointments	24/05/2013	12/06/2013	utilising professional services templates - legal advice may not be recuired?
15	Request revised fee proposals from professional services	13/06/2013	04/07/2013	
16	Appointments finalised with all professional services	24/06/2013	05/07/2013	
	DESIGN			
17	Design team develop new project design to RIBA D	05/07/2013	15/08/2013	
18	Develop delivery strategy	02/08/2013	21/08/2013	phasing of construction and management of residents
	CONTRACTOR PROCUREMENT OJEU			
19	Prepare OJEU notice and PQQ	24/06/2013	19/07/2013	
20	PQQ issued and response period	09/08/2013	10/09/2013	30 days response to notice
21	PQQ returns assessed and recommendation	11/09/2013	30/09/2013	
22	Client approval of PQQ assessment	01/10/2013	01/10/2013	
23	Employers requirements including Room Data Sheets	19/08/2013	12/09/2013	
24	Tender documentation	16/09/2013	11/10/2013	
25	Review / check tender docs and ER and RDS	14/10/2013	25/10/2013	
26	Tender period	28/10/2013	20/12/2013	
27	Tender evaluation	23/12/2013	17/01/2014	
28	Tender interview	13/01/2014	17/01/2014	
29	Recommendation and approval of appointment	20/01/2014	31/01/2014	
30	Contractor Appointed	03/02/2014	03/02/2014	
31	stand still period	03/02/2014	14/02/2014	
	SURVEYS			
32	Schedule of surveys to be agreed	05/07/2013	17/07/2013	
33	Surveys to be priced	18/07/2013	24/07/2013	
34	Client approval of costs for surveys	25/07/2013	30/07/2013	
35	Plan and communicate surveys to residents	31/07/2013	15/08/2013	
36	Survey building	16/08/2013	19/09/2013	Asbestos, services & structural
37	Client sign off RIBA D	16/08/2013	29/08/2013	
	PLANNING			
38	Reinvigorate existing planning application with design detail	17/06/2013	05/07/2013	
39	Planning consideration post additional detail	08/07/2013	16/08/2013	
	ONGOING MANAGEMENT			
40	Agree change control procedure and delegation of authority	10/06/2013	14/06/2013	
41	Hold a risk management workshop	17/06/2013	21/06/2013	
	COMMUNICATIONS/ MEETINGS			
42	Newsletter to residents	14/05/2013	25/09/2013	
43	Residents meetings	17/06/2013	30/09/2013	
44	TMO Board meeting	23/05/2013	17/10/2013	



Drawn by: Philip Booth | Issued: 6/8/13 | Revision No. A | Notes: None

Project Ref. \\sevintranet.appleyards.co.uk@SSL\DavWWWRoot\bu\PPM\projects\grenfell\General\13 05 01 - Grenfell - Near-Term Action.pp

SEA00008054/35

SEA00008054_0035

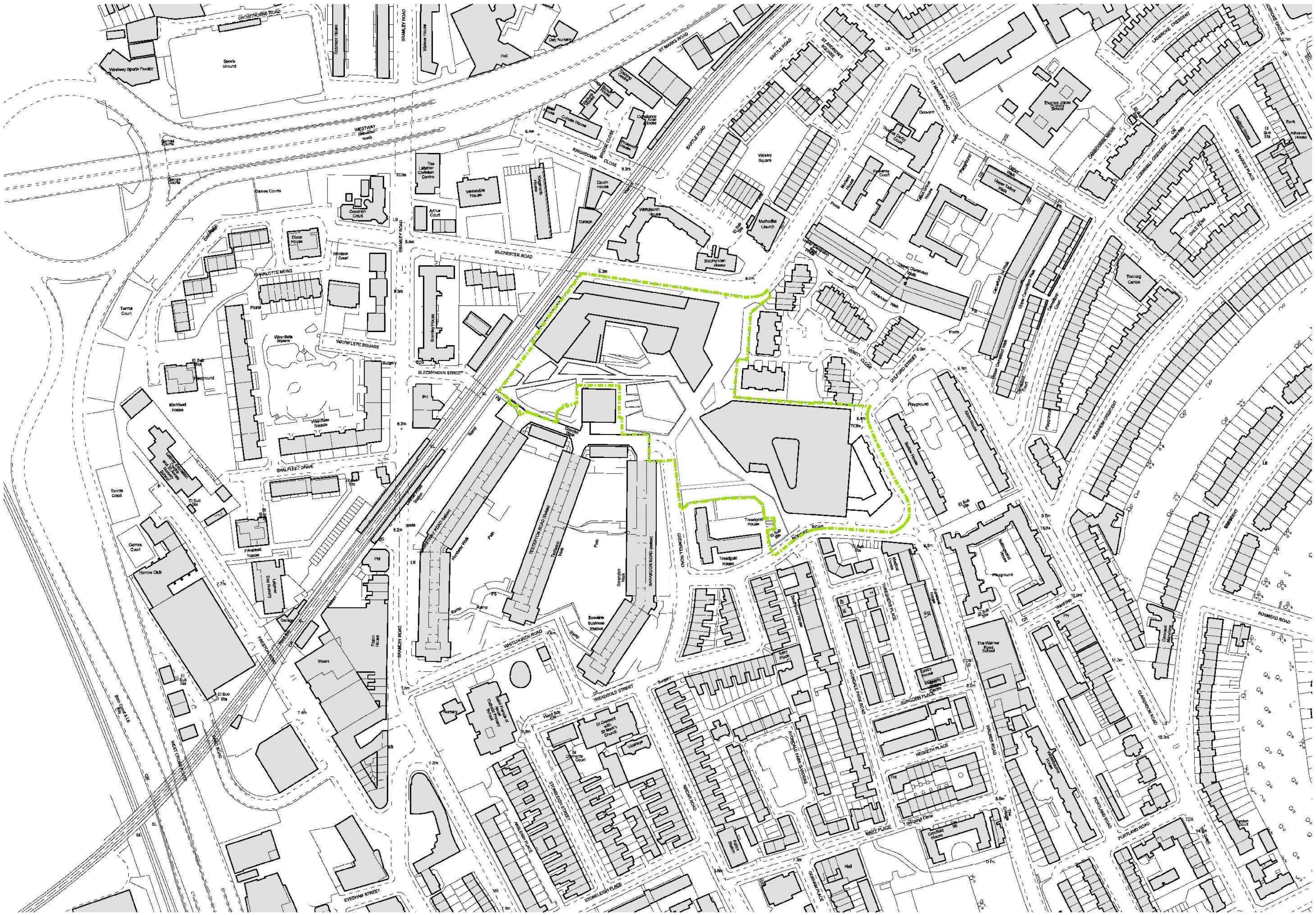
11833 Grenfell Tower Regeneration Project

Ref	Main Elements	Artelia UK (Updated on 07/8/13)
(A)	Refurbishment of social housing units (Mezz 3 units + Office level 4, total 7 units, Reduced from 8 units)	*888,126.76*
1	Demolition	Included in (g)
2	Super-structure (in-fill flooring)	73,524.01
3	External wall - new enclosure 132m2	£66,000.00
4	Staircase	£44,000.00
5	Internal wall, partition and doors	£110,389.00
6	Internal Wall, Floor & Ceiling finishes	£198,915.91
7	Fittings and furnishing	£86,500.00
8	Sanitary appliances	Inc in M&E
9	Mechanical services including above ground drainage, cold water installation, ventilation, fire alarm, BMS Excludes heating [in (i) Central Services]	£145,208.44
10	Electrical including lighting and power and External lighting	£163,589.40
(B)	Minor refurbishment works to existing 20-storey flats and lobbies, i.e. services encasement and bulkhead plasterboard ceiling (120 units) including communal decorations works	*386,019.00*
(C)	Nursery and Meeting, Concierge (Ground floor - 490m2)	*479,251.80*
1	Demolition	Included in (g)
1a	Allowance for moving nursery to temporary location, storage cost, removal company	£10,000.00
2	Super-structure (in-fill flooring)	£19,020.00
3	External wall - new enclosure	£24,780.00
4	Staircase	£44,000.00
5	Internal wall, partition and doors	£51,689.00
6	Internal Wall, Floor & Ceiling finishes	£76,680.00
7	Fittings and furnishing	£40,762.80
8	Sanitary appliances	Inc in M&E
9	Mechanical services including cold water installation, ventilation, fire alarm, BMS, heating	£122,434.01
10	Electrical including lighting and power	£87,906.00
(D)	Baseline work spaces/Garage Offices - OMITTED except Undercroft lighting and suspended ceiling (Ground floor - 280m2)	*£60,000.00*
1	Keep undercroft soffit, new uplighting and downlighting with new suspended ceiling cover	£60,000.00
(E)	Boxing club (Walkway level - 460m2, with EMB office 61m2)	*£475,693.73*
1	Demolition	Included in (g)
2	Super-structure (in-fill flooring)	£37,020.00
3	External wall - new enclosure	£115,500.00
4	Staircase	£0.00
5	Internal wall, partition and doors	£63,375.00
6	Internal Wall, Floor & Ceiling finishes	£76,483.15
7	Fittings	£36,228.25
8	Sanitary and other appliances	Inc in M&E
9	Mechanical services including cold water installation, ventilation, fire alarm, BMS, heating	111,922.33
10	Electrical including lighting and power	£35,165.00
(F)	Public realm	*223,080.00*
1	Removal of stepped ramp	£32,000.00
2	New permeable rubber crumb safety surface & New exposed aggregate concrete pavers	152,480.00
3	Trees, shrubs,	5,600.00
4	Cycle stands, bollards and fencing	33,000.00
(G)	Demolitions	*182,170.00*
	Demolition to existing staircases, steps, partitions, doors, fittings, link bridge	

Ref	Main Elements	Artelia UK (Updated on 07/8/13)
(H)	External Façade and Roof to main building	*2,302,220.00*
1	Remove existing and install new central pivot windows	1,020,370.00
2	New cladding to façade	£844,007.00
3	New curtain wall	£227,250.00
4	New render and brickwork	135,593.00
5	Scaffolding, skips removal, survey, design and site management Preliminaries	Included above & prelim £15,000.00
6	Remove existing cantilever canopy	
7	Roof covering and PPC screen	£60,000.00
(I)	Central Services	*£1,933,714.70*
1	Cap off existing services and remove redundant plants and pipework	£99,000.00
2	Heating system including new gas absorption heat pump, radiators and pipework, hot and cold water to existing flats	£1,127,069.70
3	Allow a provisional sum for new extract smoke extract system	198,300.00
4	Domestic Smoke detectors & Carbon Monoxide (CO) detectors	£7,500.00
5	Kitchen extract ventilation & WC and bathroom extract fans replacement	£128,000.00
6	Allowance for extra over to existing communal satellite	£15,000.00
7	Allowance for 10 New CCTV camera	£50,000.00
8	New emergency lighting to common/lobby areas, LED lighting to underside of canopy, new lighting in common area, upgrade of existing lighting in existing 20-storey dwellings	£110,072.00
9	Builder's Work in Connection with Services	75,000.00
10	New UKPN electrical connection (allow £75,000 if require)	-
11	Upgrade door entry system (option 1 as on Lancaster West 1)	£123,773.00
		-

1	Estimated Construction Cost Excluding Preliminaries and Contingency; Sub-total (A to I):	6,930,276.00
2	Preliminaries (15% of construction costs) Sub-total 1	1,039,541.40
3	Client's Contingency Allowance	7,969,817.40 765,000.00
4	Estimated Construction Costs	£8,735,000.00
		£950,000.00
		£100,000.00
5		£180,000.00
6	Total professional fees and surveys Planning and Building Control Fees KCTMO/ S106 Fees	£123,000.00
7	Contingency	
8	Estimated total overall project costs	
9	Total overall project funding from TMO	£10,088,000.00
10	Difference between overall project Funding and Estimated Project Costs	£9,853,000.00
11		£235,000.00

APPENDIX A – ORIGINAL DRAWINGS



Location Plan

N

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Kensington & Chelsea TMO

PLANNING

STUDIO E LLP

Palace Wharf, Rainville Road,
London, W6 9HN.
[redacted]

GRENFELL TOWER
REGENERATION PROJECT
PROJECT

Location Plan
DRAWING

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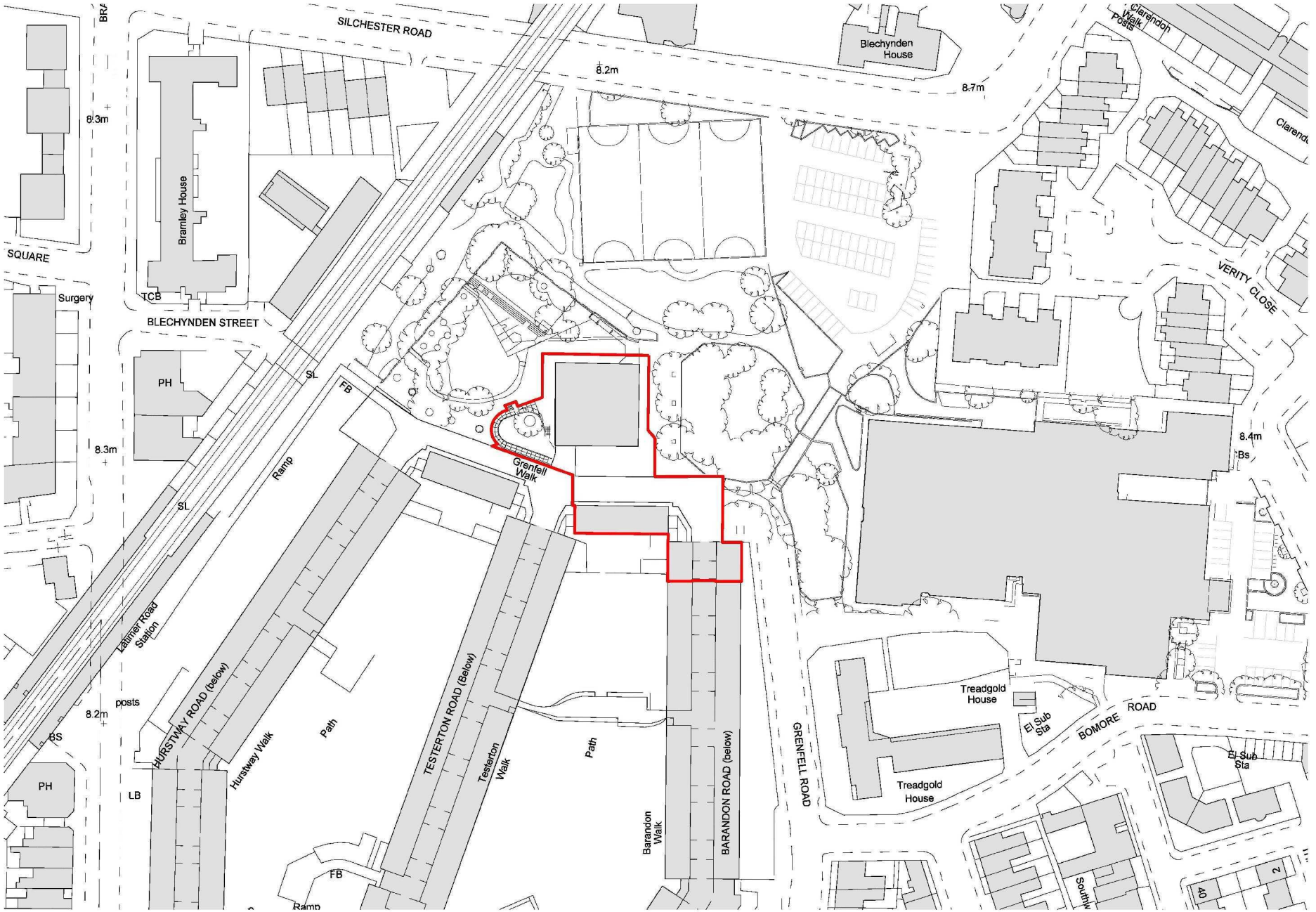

Site Plan

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GRENFELL TOWER REGENERATION PROJECT

PROJECT

Existing Site Plan

DRAWING

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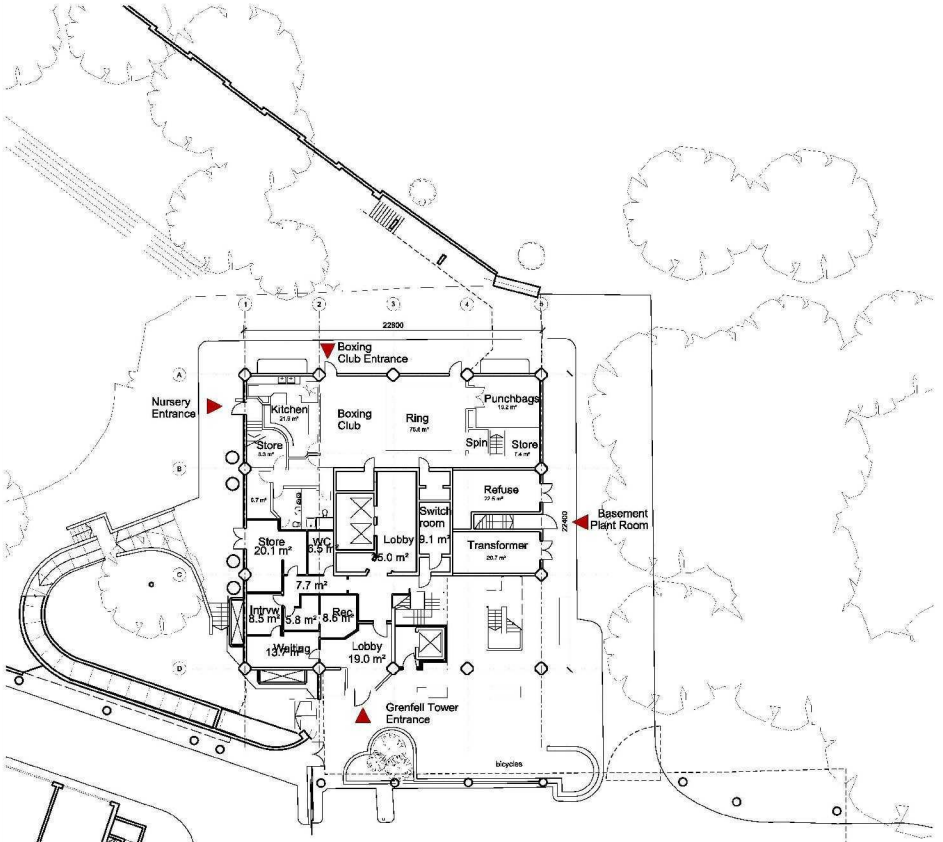
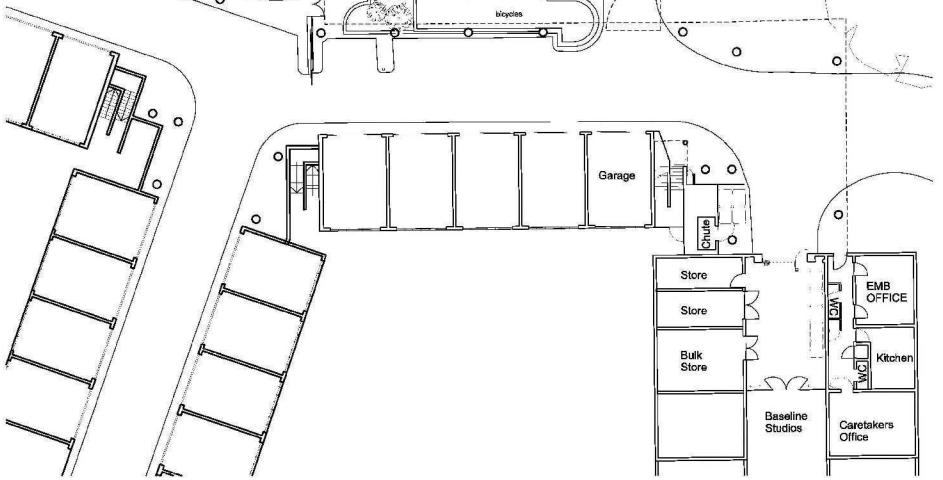
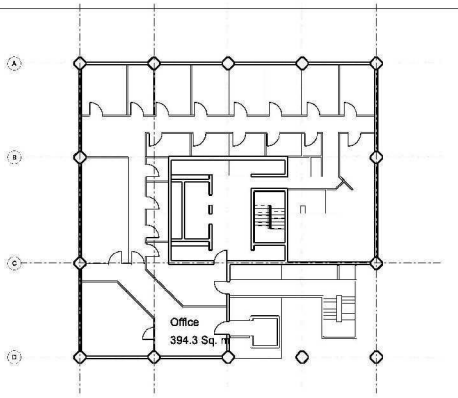
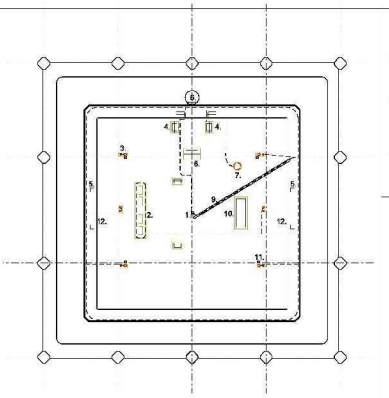




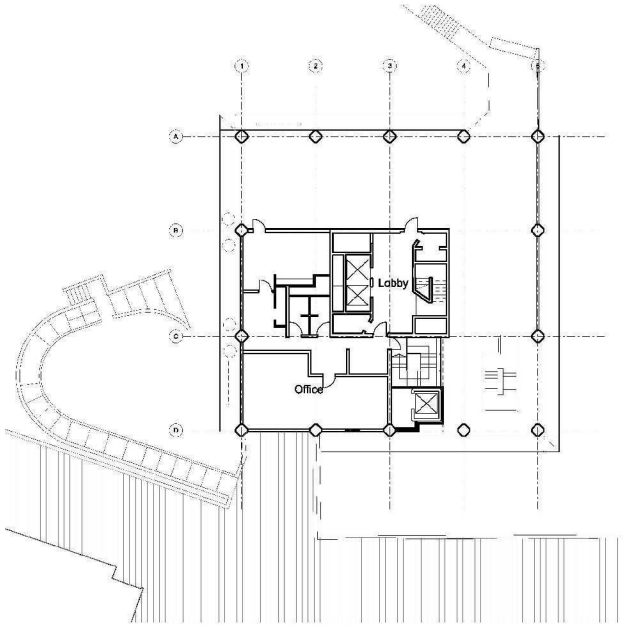
GROUND FLOOR



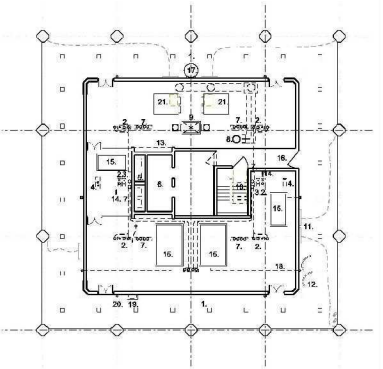
WALKWAY +1 LEVEL



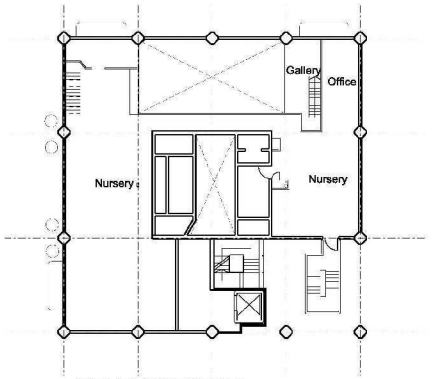
ROOF PLAN



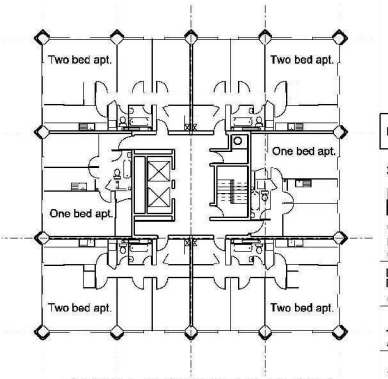
WALKWAY LEVEL



PLANT ROOM



MEZZANINE LEVEL



TYPICAL RESIDENTIAL FLOOR

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GRENFELL TOWER REGENERATION PROJECT

PROJECT

EXISTING FLOOR PLANS

DRAWING

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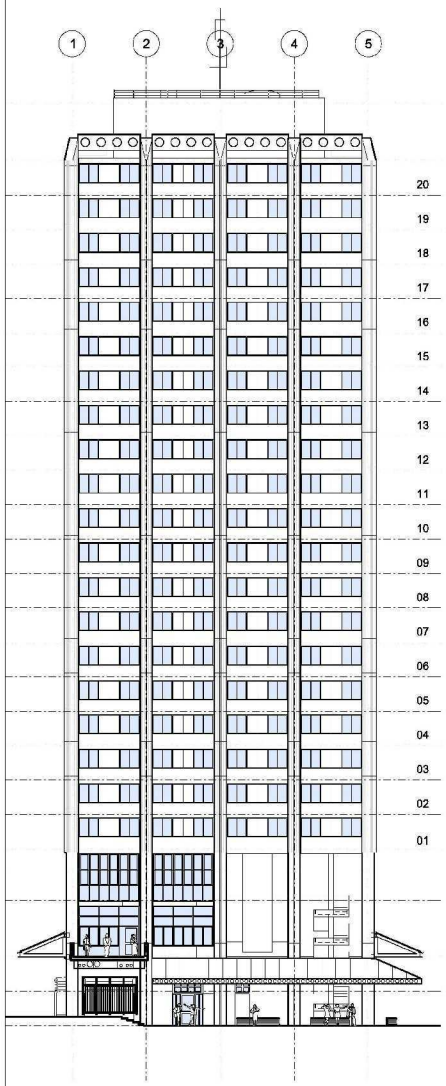

1 SOUTH ELEVATION
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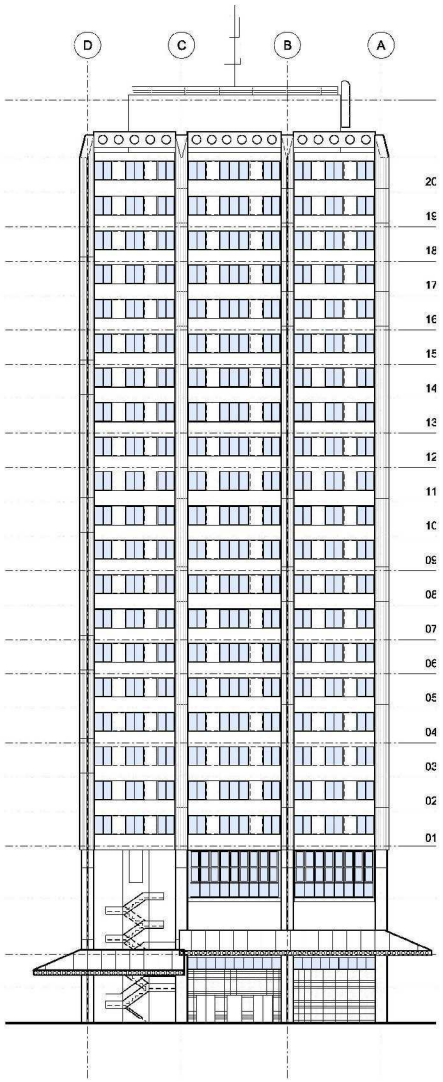

2 EAST ELEVATION
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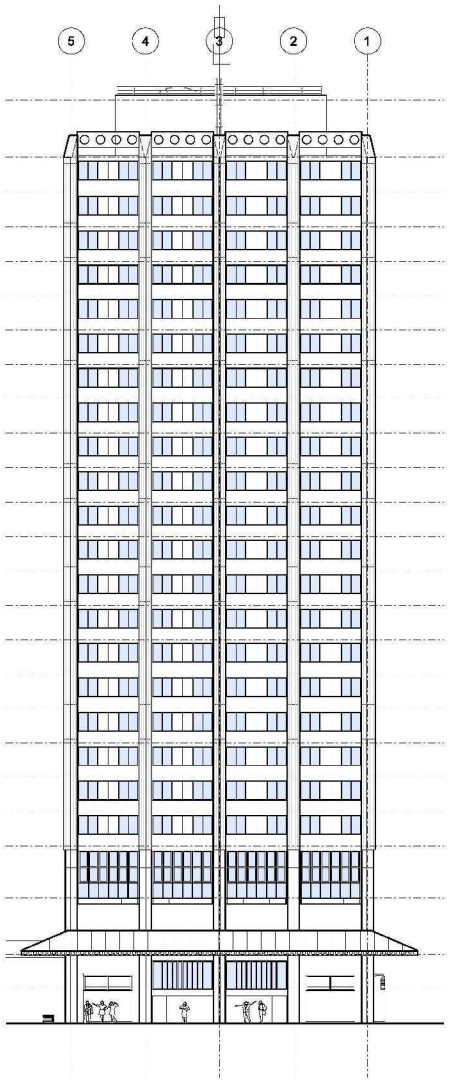
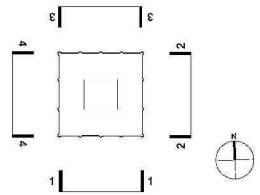


3 NORTH ELEVATION
1:200

4 WEST ELEVATION
1:200

Keyplan



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Key

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GRENFELL TOWER REGENERATION PROJECT

PROJECT

EXISTING ELEVATIONS

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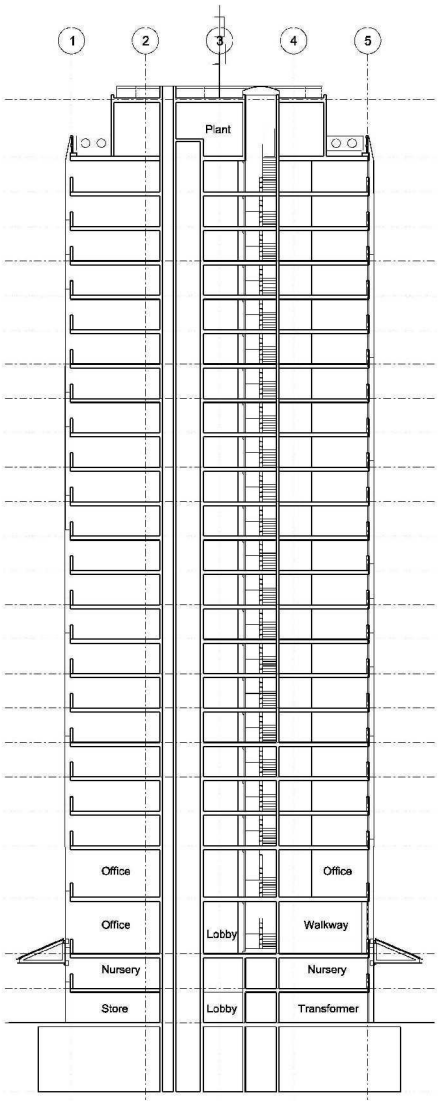

1 SECTION 1
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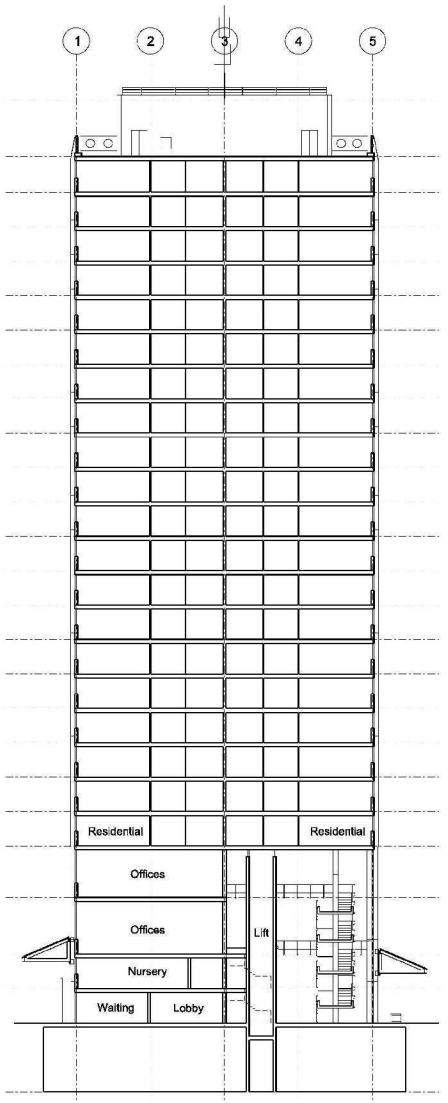

2 SECTION 2
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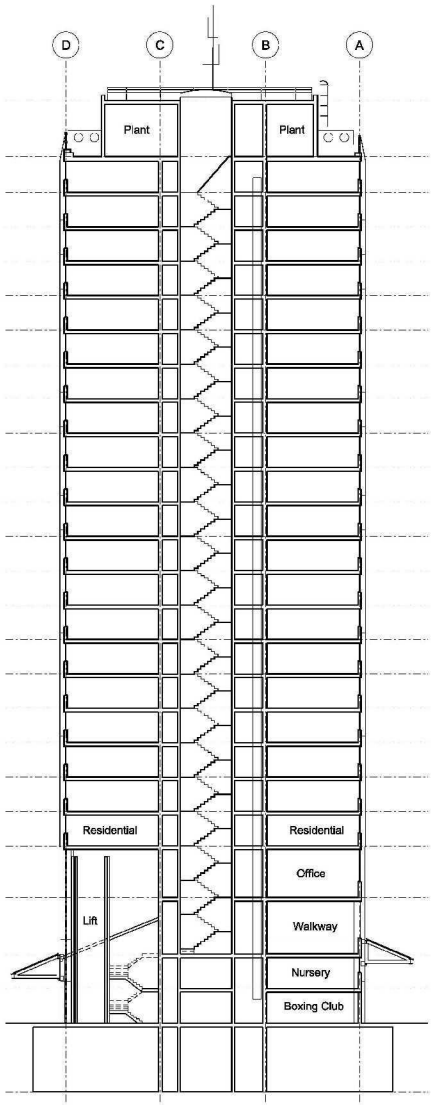

3 SECTION 3
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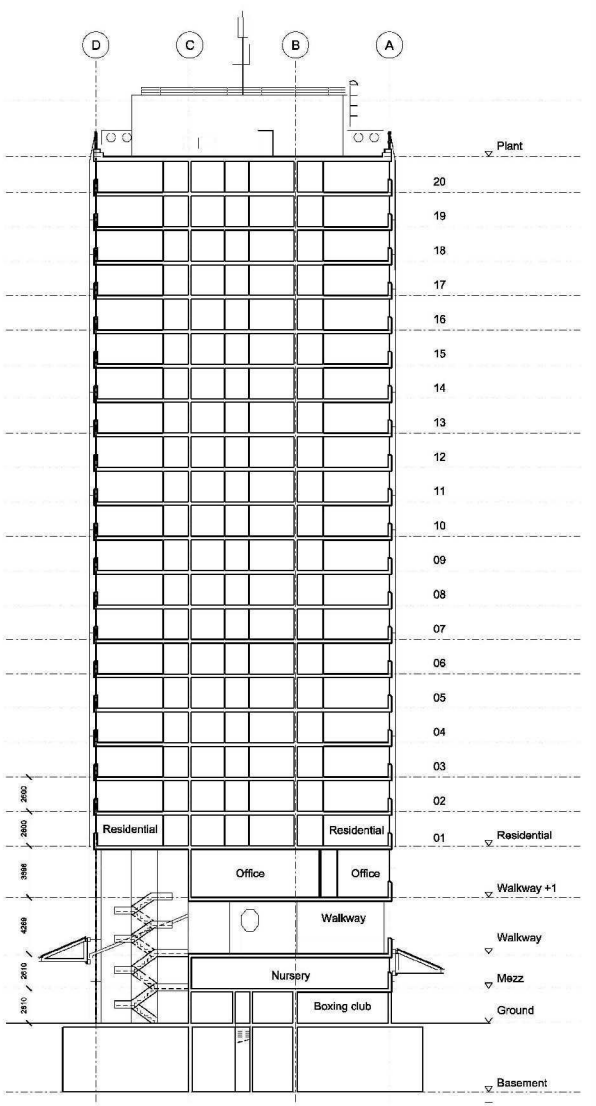

4 SECTION 4
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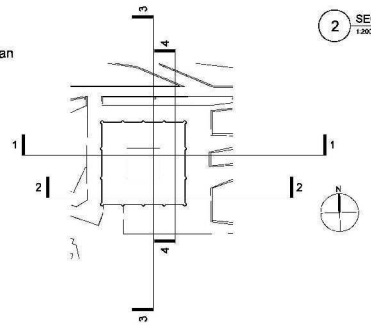
Keyplan



0 5 10 15 20m @ 1:200

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4. WHERE DISCREPANCIES EXIST BETWEEN PLANS/ELEVATIONS OR ASSEMBLY DRAWINGS & DETAIL DRAWINGS, THE LATTER TAKE PRECEDENCE.

Key

Kensington & Chelsea TMO

PLANNING

STUDIO E LLP

Palace Wharf, Rainville Road, London, SW6 [redacted]

GRENFELL TOWER REGENERATION PROJECT

PROJECT

EXISTING SECTIONS

DRAWING

1:200@A1 SCALE

16/08/12 DATE

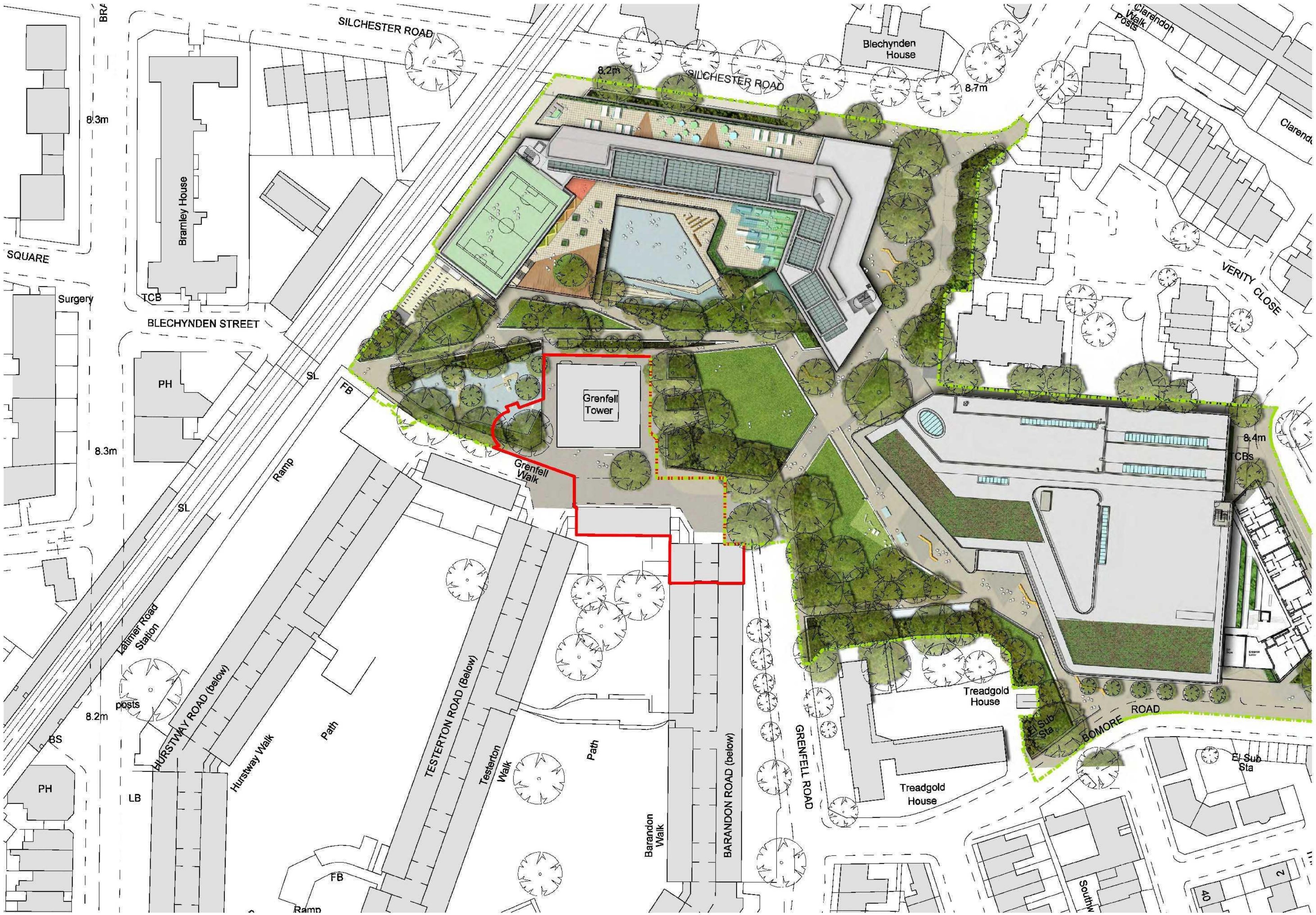
1279 DWG.NO

PL020 REVISION

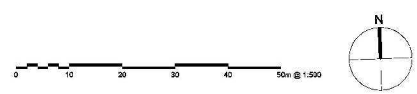
00 CHECKED

SEA00008054/42

APPENDIX B – PROPOSED DRAWINGS



Site Plan



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4. WHERE DISCREPANCIES EXIST BETWEEN REFERENCE OR ASSEMBLY DRAWINGS & DETAIL DRAWINGS, THE LATTER TAKE PREFERENCE.

Curent Boundary KALC

Proposed Boundary Grenfell

01 22/07/13 Bridge removed

Kensington & Chelsea TMO

PLANNING

STUDIO E LLP
Palace Wharf, Rainville Road,
London, W6 9HN,
[redacted]

GRENFELL TOWER REGENERATION PROJECT
PROJECT

Proposed Site Plan
DRAWING

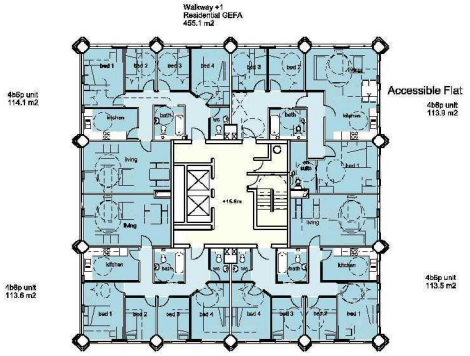
1:500@A1 15/08/12
SCALE DATE

1279 PL 003 01
DWG. NO REVISION CHECKED

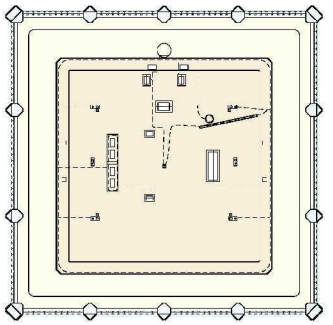
SEA00008054/44

SEA00008054_0044

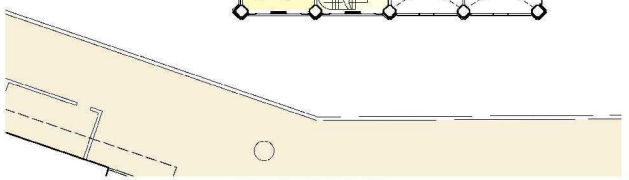
GROUND FLOOR



WALKWAY +1

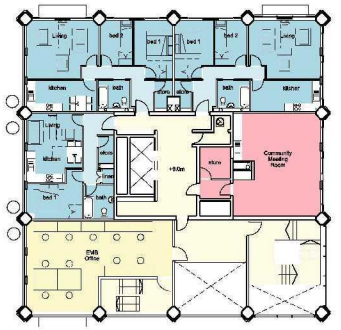


ROOF PLAN

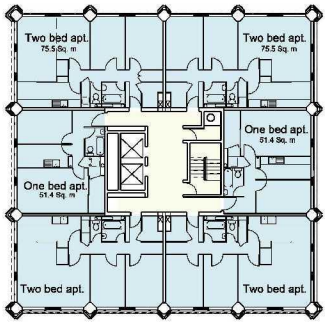


WALKWAY LEVEL

PLANT ROOM



MEZZANINE LEVEL



TYPICAL RESIDENTIAL FLOOR

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4. WHERE DISCREPANCIES EXIST BETWEEN PLANNING OR ASSEMBLY DRAWINGS AND DETAIL DRAWINGS, THE LATTER TAKE PRECEDENCE.

Key

- Circulation / Public Admin. Use
- Community Use
- New Residential
- Existing Removed

01	11/07/13	Reorganised access Bridge removal

Kensington & Chelsea TMO

PLANNING

STUDIO E LLP

Palace Wharf, Rainville Road, London, SW6 [redacted]

GRENFELL TOWER REGENERATION PROJECT

PROJECT

PROPOSED FLOOR PLANS

DRAWING

1:200@A1 SCALE | 15/08/12 DATE

1279 DWG.NO | PL110 01 REVISION | CHECKED

SEA00008054/45

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4. WHERE DISCREPANCIES EXIST BETWEEN REFERENCE OR ASSEMBLY DRAWINGS & DETAIL DRAWINGS, THE LATTER TAKE PREFERENCE.

Key

- Circulation / Public Admin. Use
- Community Use
- New Residential
- Existing Removed

01	11/07/13	Reorganised access Bridge removal Replanned undercroft

Kensington & Chelsea TMO

PLANNING

STUDIO E LLP

Palace Wharf, Rainville Road, London, W6 9HN.

GRENFELL TOWER REGENERATION PROJECT

PROJECT

PROPOSED GROUND FLOOR PLAN

DRAWING

1:100@A1	15/08/12	
SCALE	DATE	
1279	PL111	01
DWG. NO	REVISION	CHECKED

SEA00008054/46

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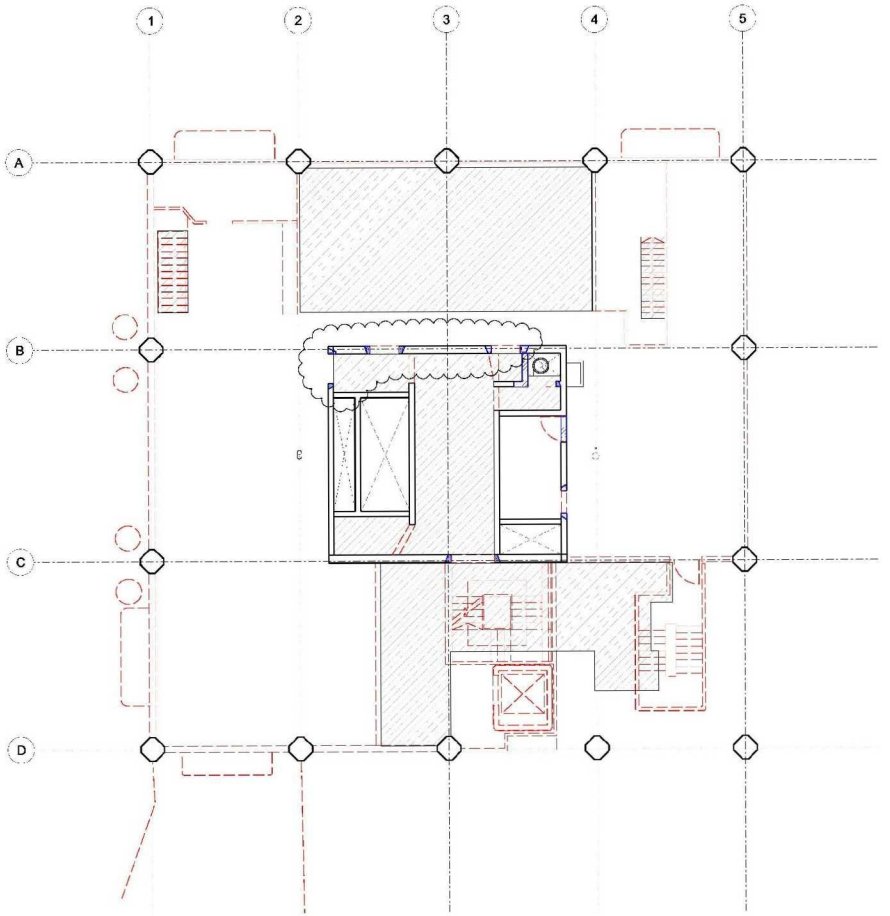
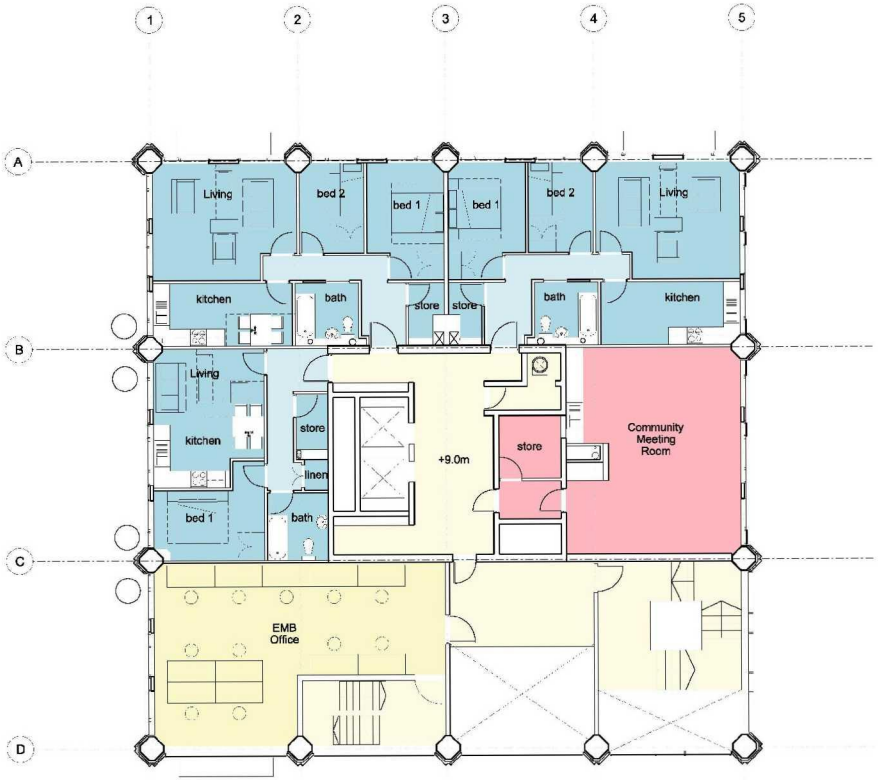


EXISTING FLOOR PLAN MODIFIED



PROPOSED FLOOR PLAN

Key

- Circulation / Public Admin. Use
- Community Use
- New Residential
- Existing Removed
- Acoustic high rated partitions
- Fire Rated Partitions (30 FR)

01 11/07/13 Reorganised access Replanned office/rest

Kensington & Chelsea TMO

PLANNING

STUDIO E LLP

Palace Wharf, Rainville Road, London, W6 9HN

[redacted]

GRENFELL TOWER REGENERATION PROJECT

PROJECT

PROPOSED MEZZANINE FLOOR PLANS

DRAWING

1:100@A1 SCALE

15/08/12 DATE

1279 DWG NO.

PL112 01 REVISION

CHECKED

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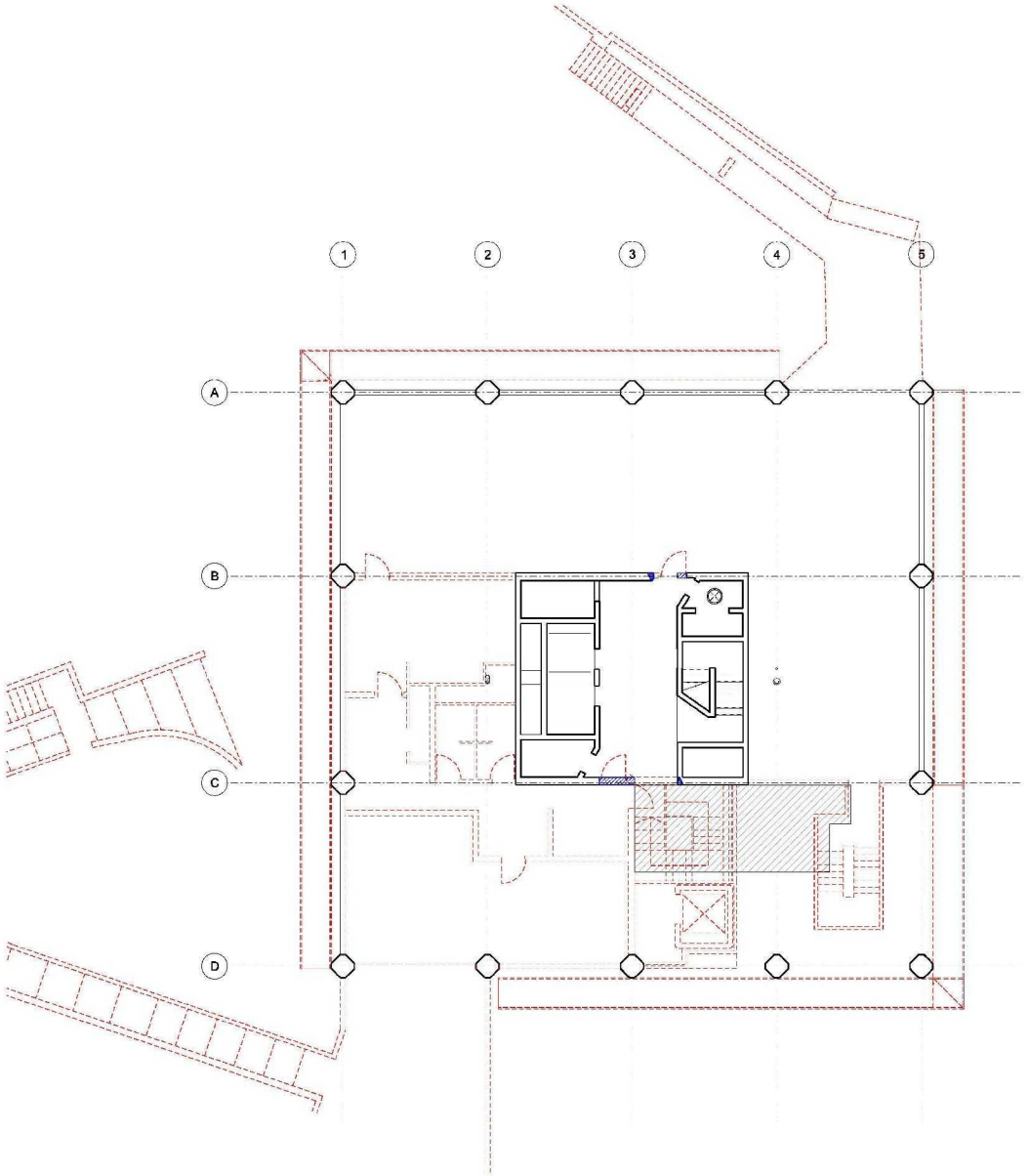
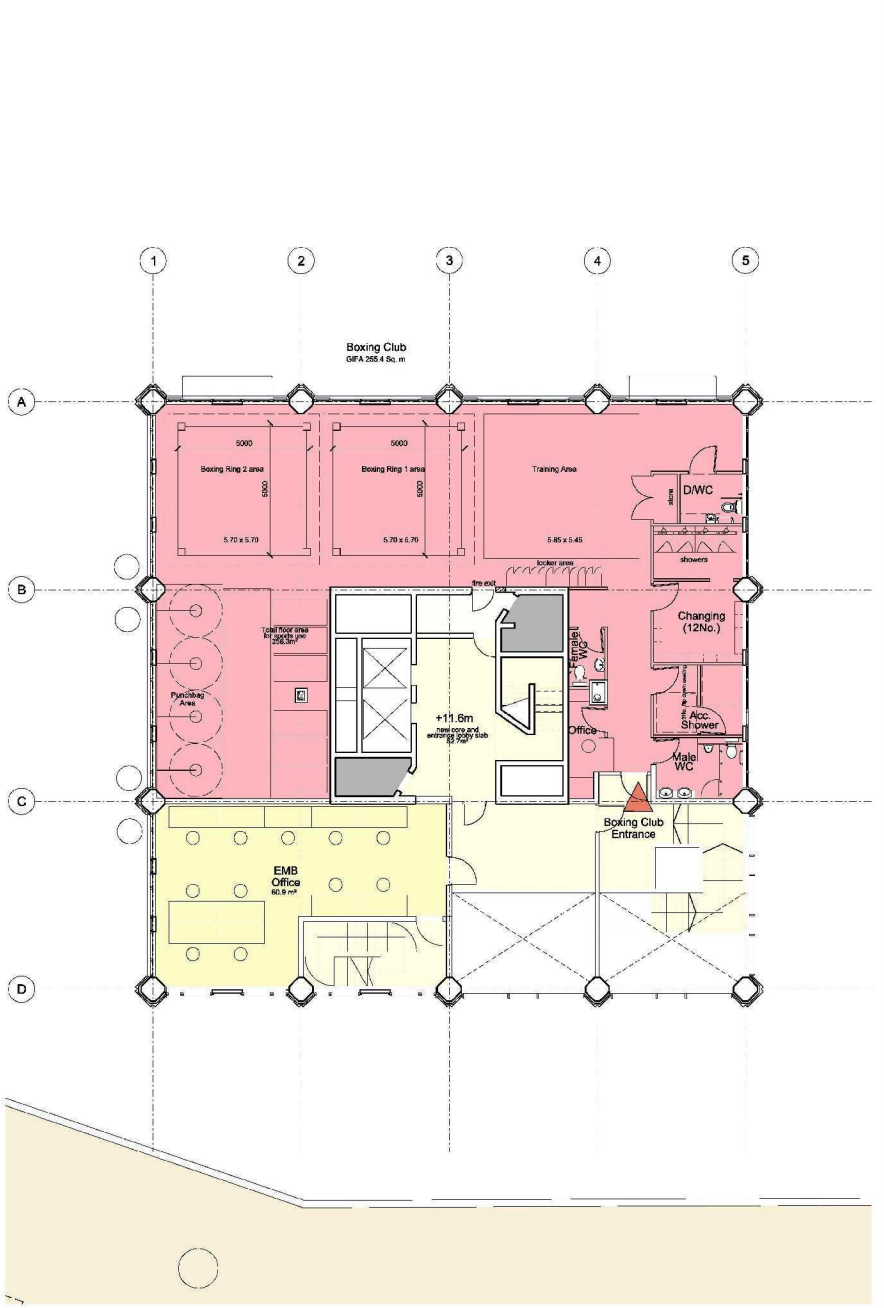
0 5 10m @ 1:100

SEA00008054/47



EXISTING FLOOR PLAN MODIFIED



PROPOSED FLOOR PLAN

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Key

- Circulation / Public Admin. Use
- Community Use
- New Residential
- Existing Removed

01	11/07/13	Reorganised access Reconfigured boxing/office

Kensington & Chelsea TMO

PLANNING

STUDIO E LLP

Palace Wharf, Rainville Road, London, W6 9HA

GRENFELL TOWER REGENERATION PROJECT

PROJECT

PROPOSED WALKWAY PLAN

DRAWING

1:100@A1 SCALE

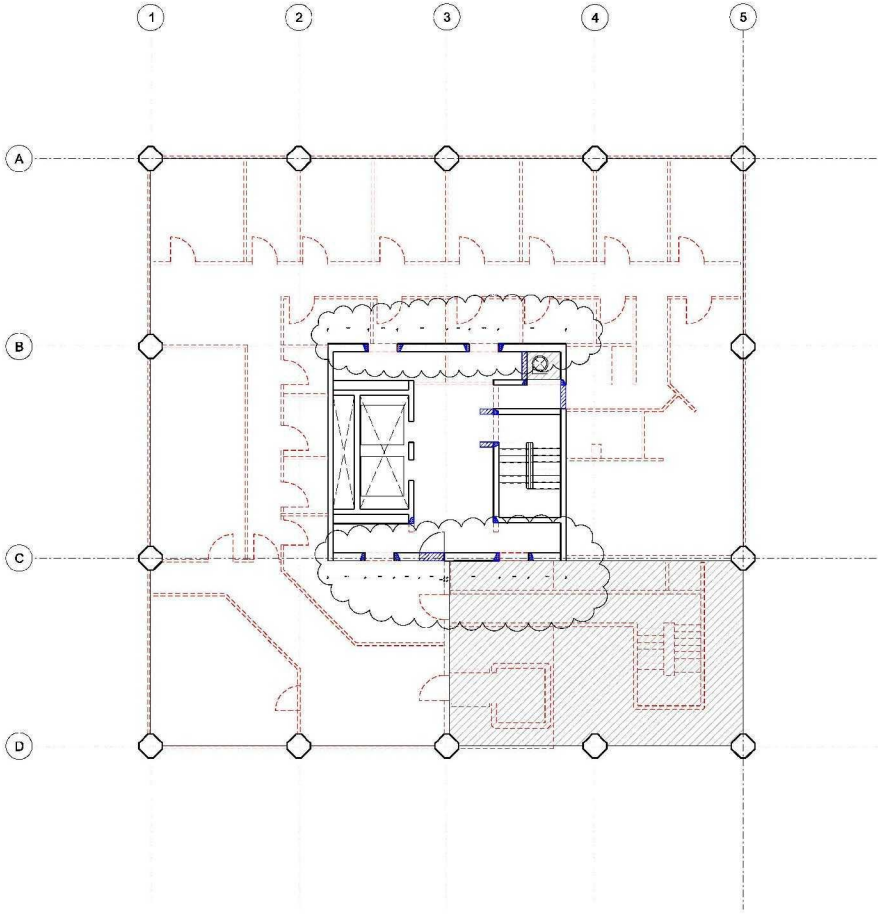
12/09/12 DATE

1279 DWG. NO

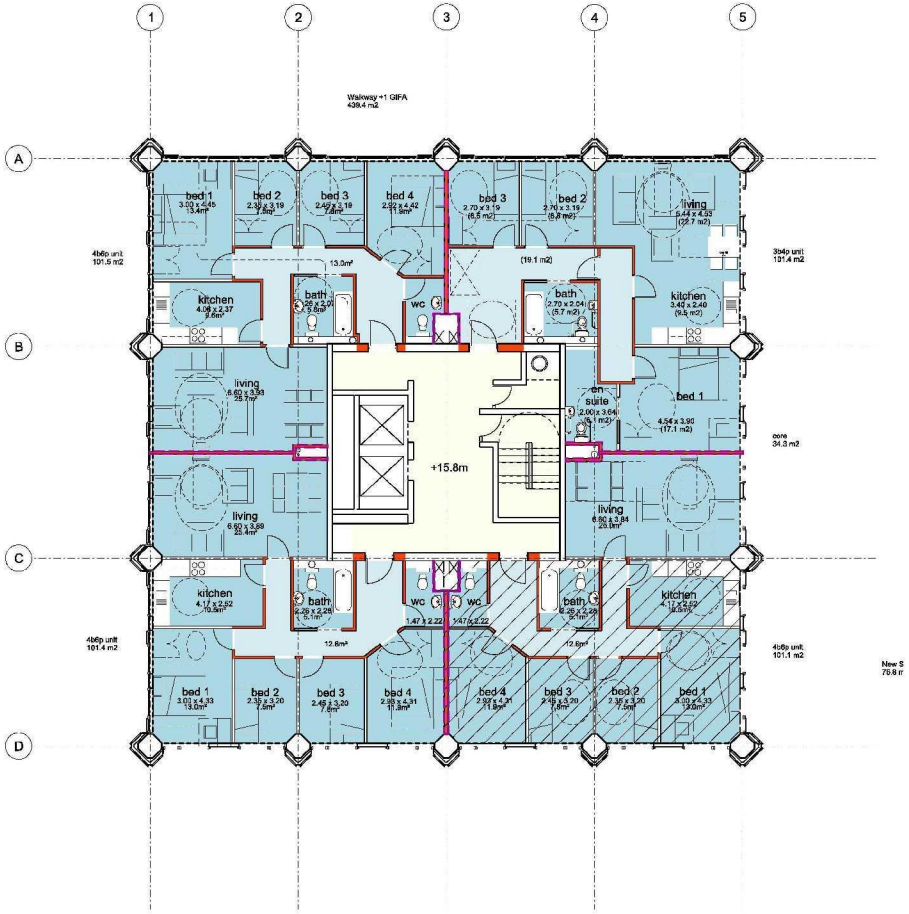
PL113 01 REVISION

CHECKED

SEA00008054/48



EXISTING FLOOR PLAN MODIFIED



PROPOSED FLOOR PLAN

N

0 5 10m @ 1:100

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4. WHERE DISCREPANCIES EXIST BETWEEN FIGURINGS ON ASSEMBLY DRAWINGS & DETAIL DRAWINGS, THE LATTER TAKE PREFERENCE.

Key

- Circulation / Public Admin. Use
- Community Use
- New Residential
- Existing Removed
- Acoustic high rated partitions
- Fire Rated Partitions (30 FR)

01	22/07/13	Chamfered corner adopted to NW flat

Kensington & Chelsea TMO

PLANNING

STUDIO E LLP

Palace Wharf, Rainville Road, London, SW6 8HR

GRENFELL TOWER REGENERATION PROJECT

PROJECT

PROPOSED WALKWAY +1 FLOOR PLAN

DRAWING

1:100@A1 SCALE

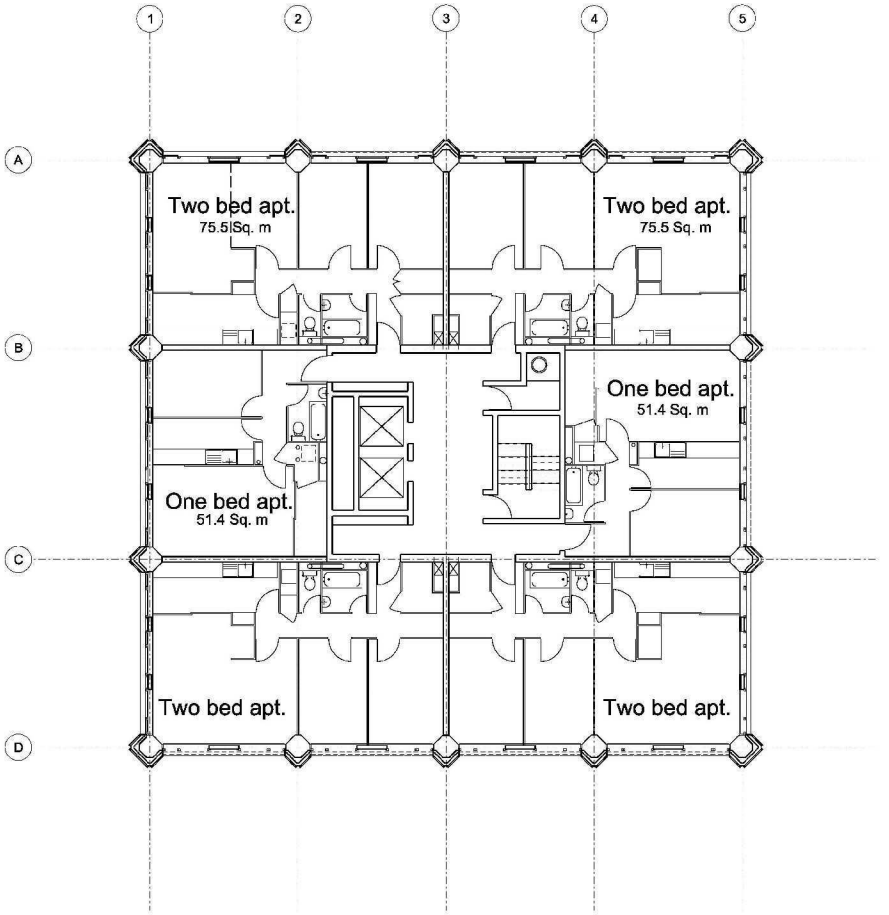
10/09/12 DATE

1279 DWG. NO

PL114 01 REVISION

CHECKED

SEA00008054/49



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4. WHERE DISCREPANCIES EXIST BETWEEN PLEMENCE OR ASSEMBLY DRAWINGS & DETAIL DRAWINGS THE LATTER TAKE PRECEDENCE.

Key

- Circulation / Public Admin. Use
- Community Use
- New Residential
- Existing Removed

Kensington & Chelsea TMO

PLANNING

STUDIO E LLP

Palace Wharf, Rainville Road, London, W6 9HA

GRENFELL TOWER REGENERATION PROJECT

PROJECT

PROPOSED RESIDENTIAL FLOOR PLANS

DRAWING

1:100@A1 SCALE

10/09/12 DATE

1279 DWG. NO.

PL115 00 REVISION

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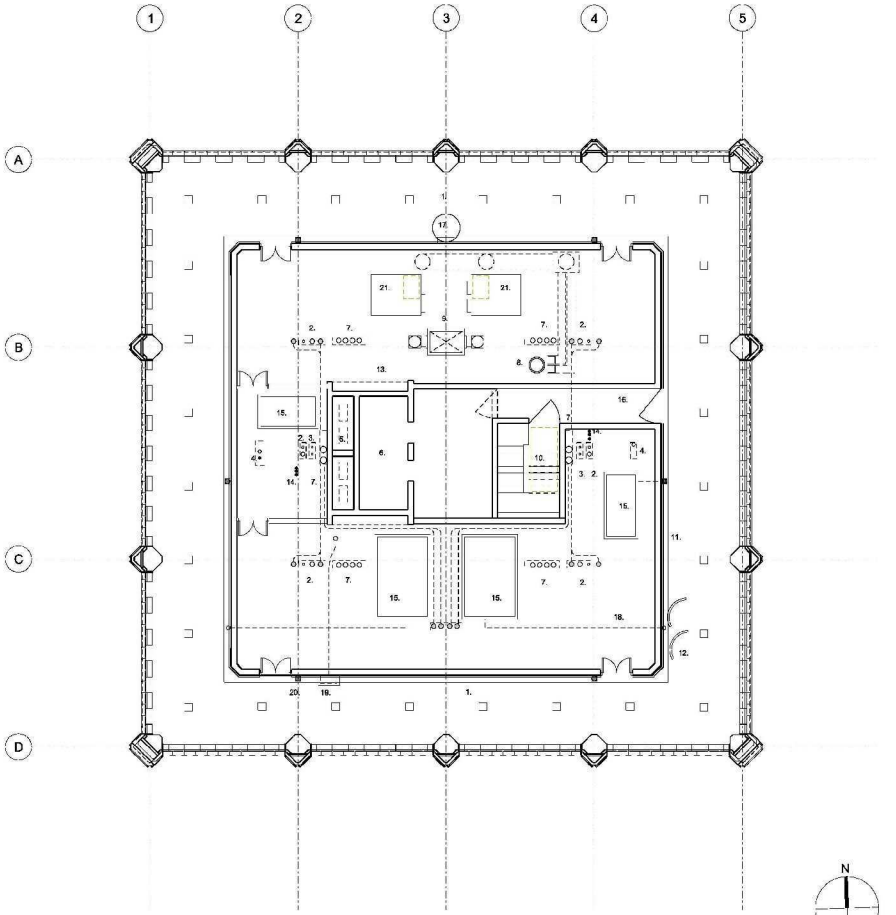
Key



PLANNING

STUDIO E LLP

Palace Wharf, Rainville Road, London, W6 9HN

[redacted]

GRENFELL TOWER REGENERATION PROJECT

PROJECT

PROPOSED PLANT FLOOR PLAN

DRAWING

1:100@A1 SCALE

10/09/12 DATE

1279 DWG. NO.

PL116 00 REVISION

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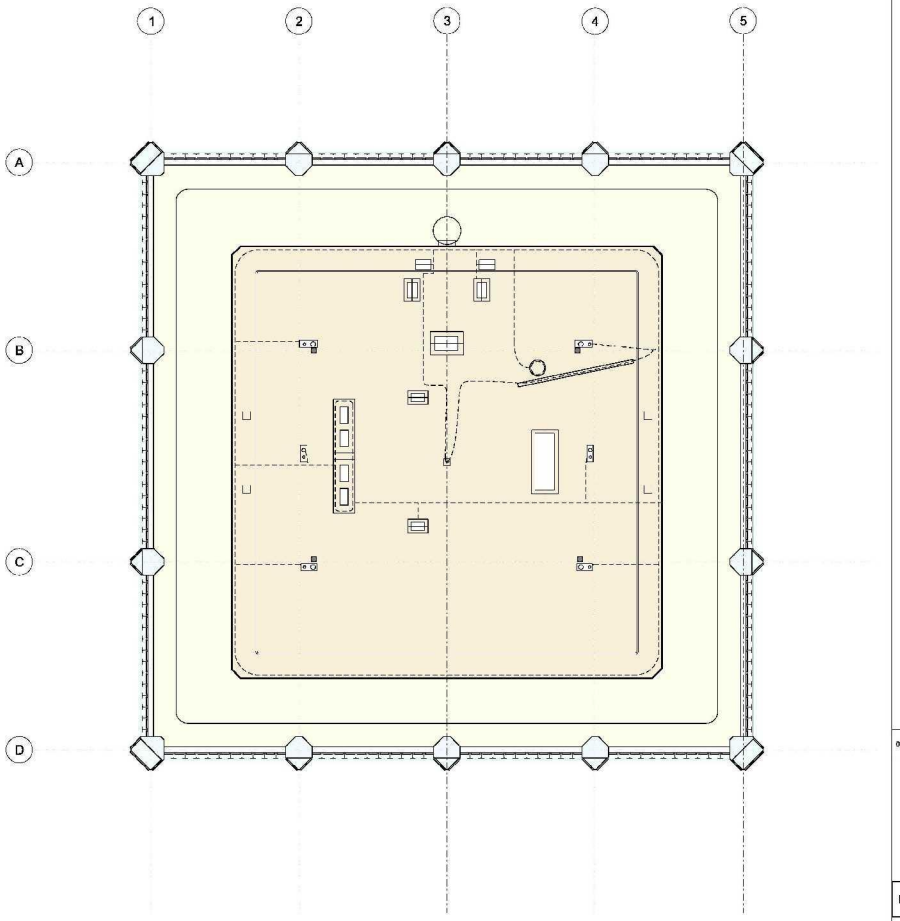
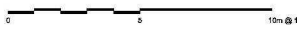




01 11/07/13 Heat Pumps replaced

Kensington & Chelsea TMO

PLANNING

STUDIO E LLP

Palace Wharf, Rainville Road, London, W6 9HA

GRENFELL TOWER REGENERATION PROJECT

PROJECT

PROPOSED ROOF FLOOR PLAN

DRAWING

1:100@A1 SCALE

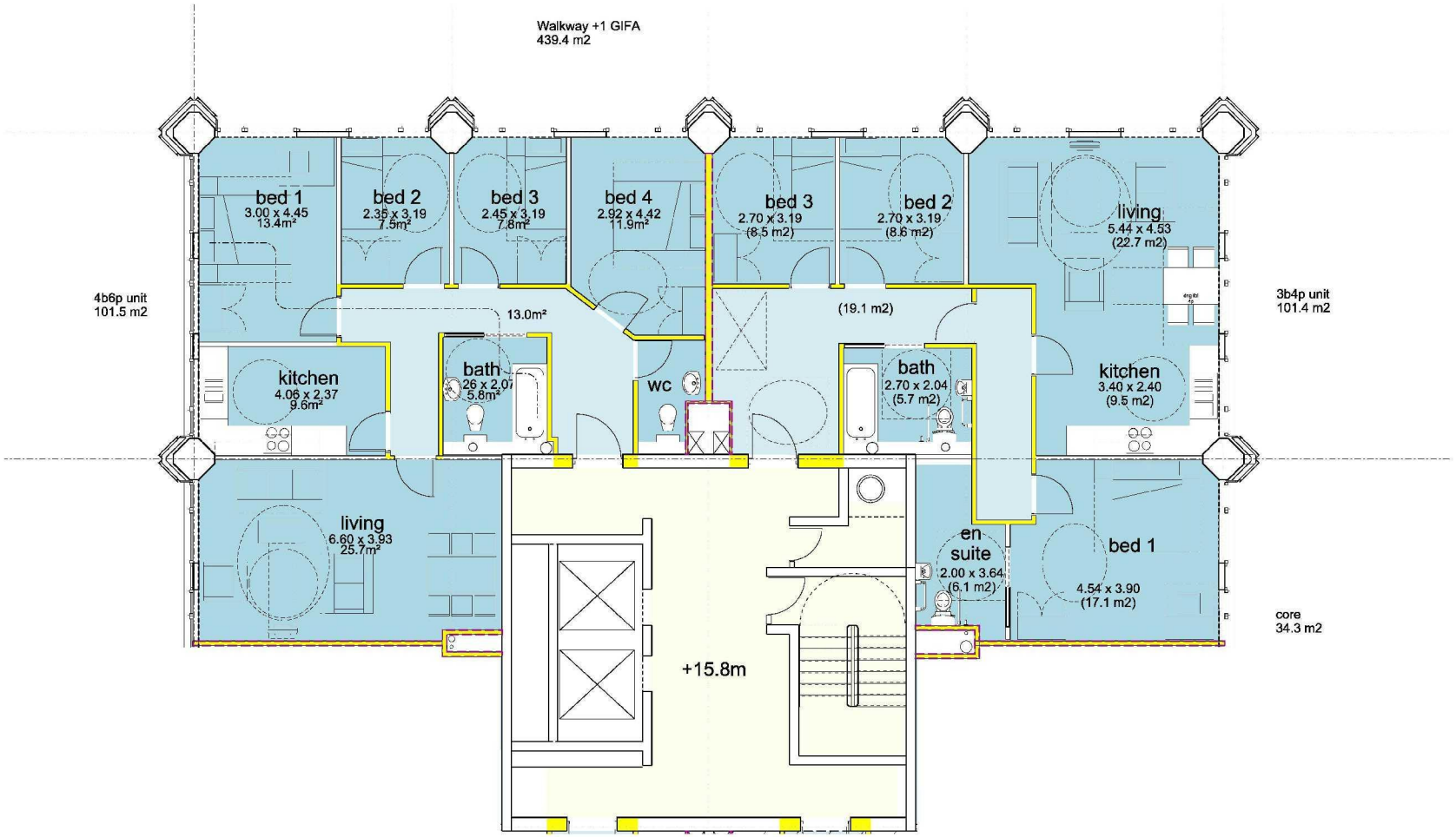
10/09/12 DATE

1279 DWG. NO.

PL117 01 REVISION

CHECKED

SEA00008054/52



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Key

- Circulation / Public Admin. Use
- Community Use
- New Residential
- Existing Removed

01	22/07/13	North East Flat Chamfer introduced

Kensington & Chelsea TMO

PLANNING

STUDIO E LLP
Palace Wharf, Rainville Road, London, W6 9HN
[redacted]

GRENFELL TOWER REGENERATION PROJECT
PROJECT

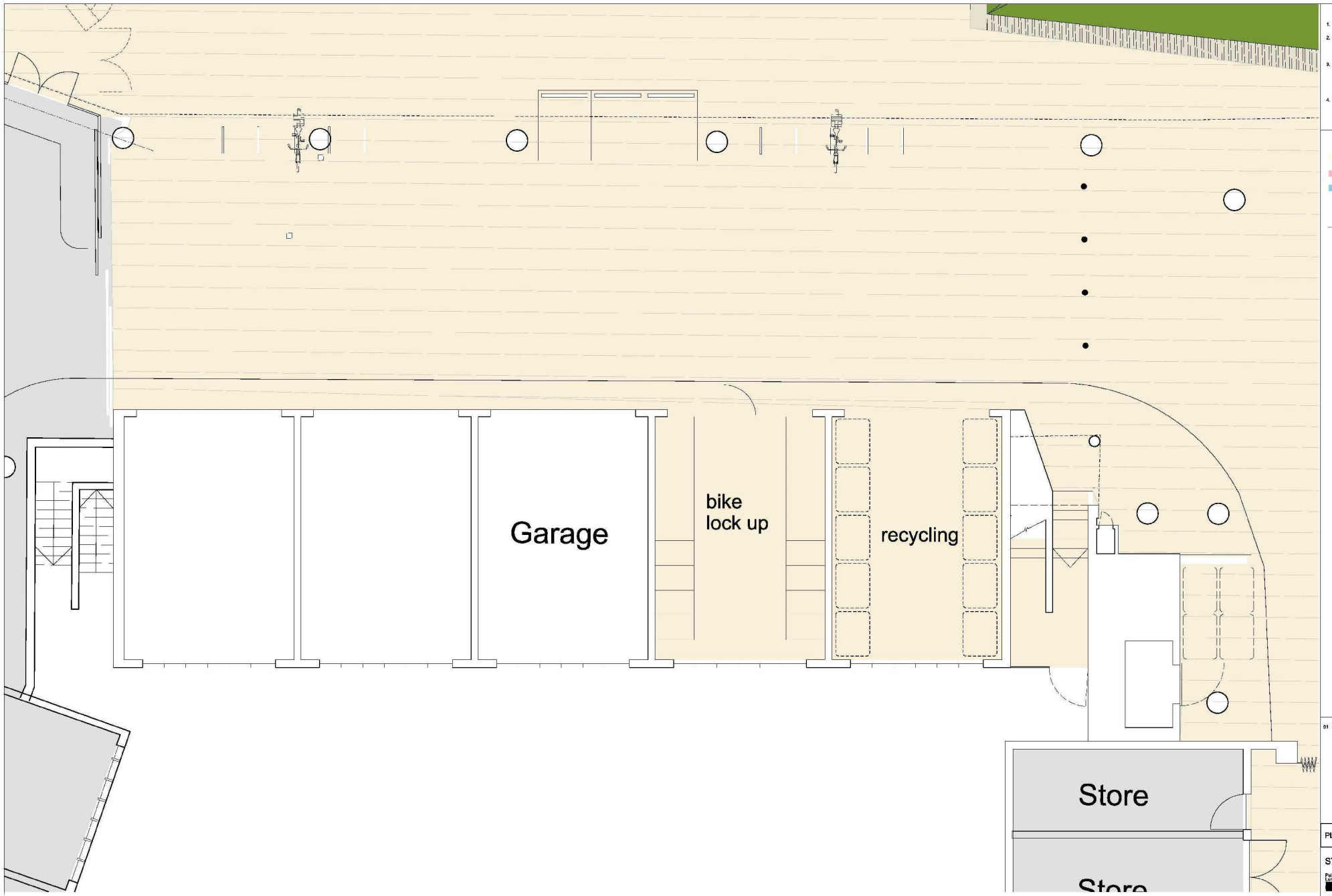
PROPOSED
4 BED & 3 BED (Accessible) FLOOR PLAN
DRAWING

1:50@A1	10/09/12
SCALE	DATE
1279	PL118 01
DWG NO	REVISION

CHECKED

0 5 10m @ 1:100

SEA00008054/53



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Key

- Circulation / Public Admin. Use
- Community Use
- New Residential
- Existing Removed

01	11/07/13	Replanned bike lock-up Replanned recycling

Kensington & Chelsea TMO

PLANNING

STUDIO E LLP

Palace Wharf, Rainville Road, London, W6 9HN

[redacted]

GRENFELL TOWER REGENERATION PROJECT

PROJECT

PROPOSED BASELINE GARAGES REFURB FLOOR PLAN

DRAWING

1:100@A1 09/10/12

SCALE DATE

1279 PL125 01

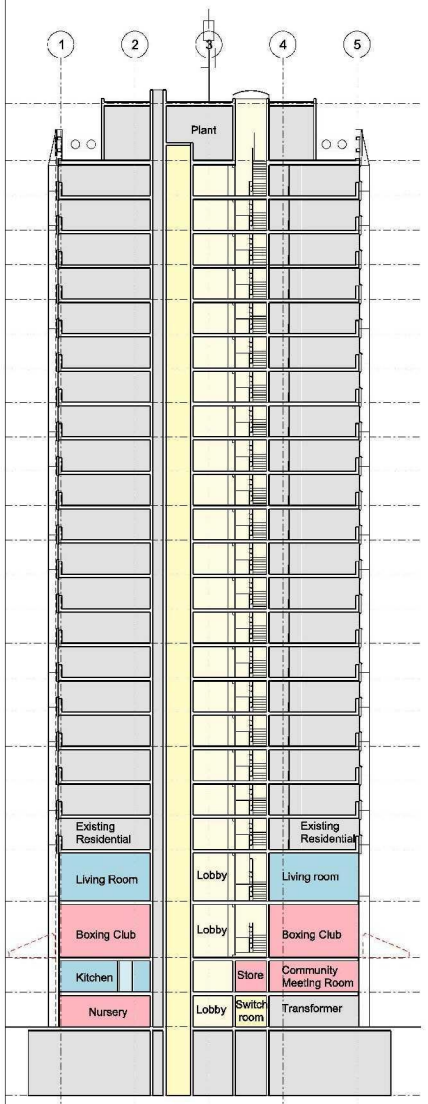
DWG. NO REVISION CHECKED

0 5 10m @ 1:100

N

SEA00008054/54

SEA00008054_0054



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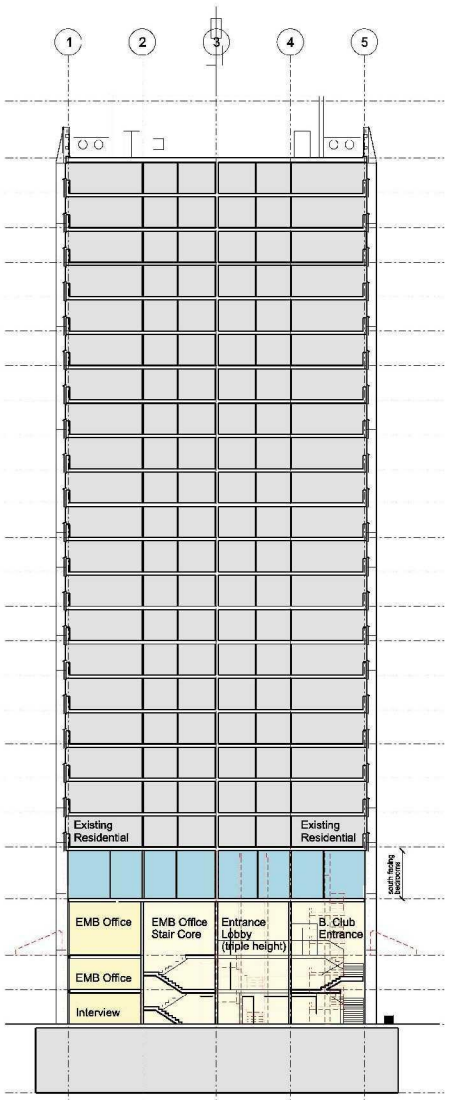

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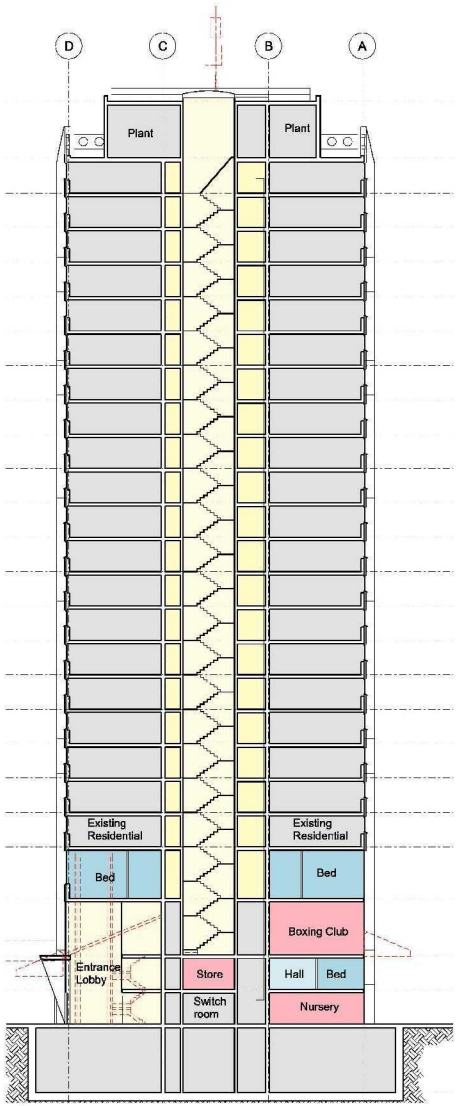

3 SECTION 3
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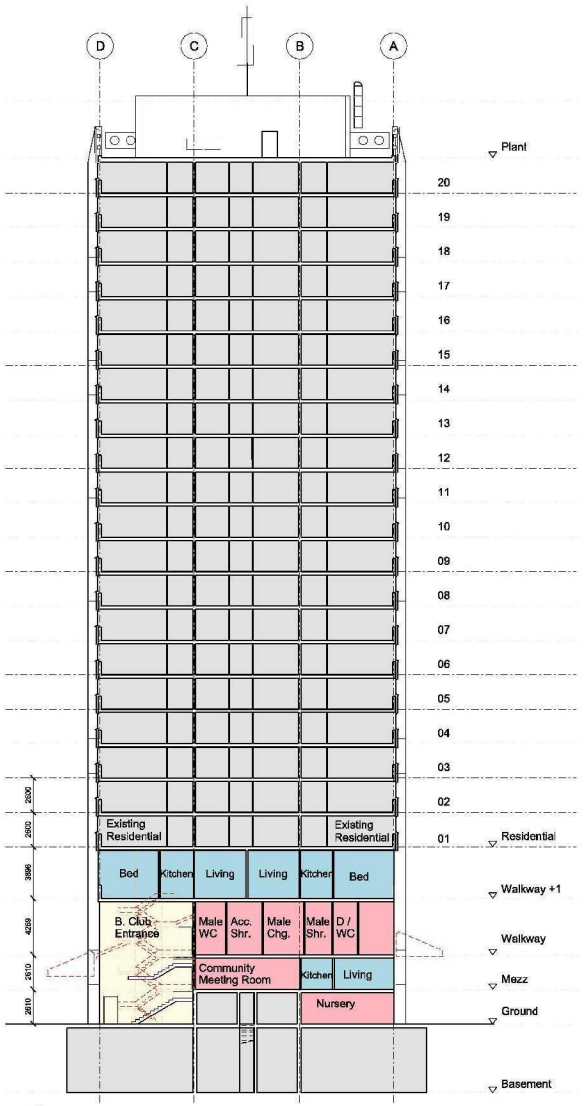

4 SECTION 4
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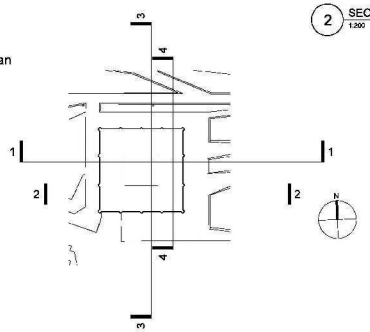
Keyplan



0 5 10 15 20m @ 1:200

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4. WHERE DISCREPANCIES EXIST BETWEEN PLANNING OR ASSEMBLY DRAWINGS AND DETAIL DRAWINGS, THE LATTER TAKE PREFERENCE.

Key

- Circulation
- Community Use
- New Residential
- Community Use Office Space

01	11/07/13	Entrance Reconfigured Bridge Removed Crown Reduced

Kensington & Chelsea TMO

PLANNING

STUDIO E LLP

Palace Wharf, Rainville Road, London, W6 9HN
[redacted]

GRENFELL TOWER REGENERATION PROJECT
PROJECT

PROPOSED SECTIONS
DRAWING

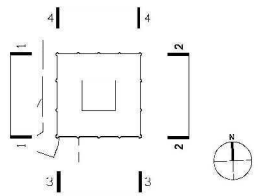
1:200@A1 SCALE
16/08/12 DATE

1279 DWG.NO
PL200 01 REVISION
CHECKED

SEA00008054/55

1 WEST ELEVATION
1:200

Keyplan



0 5 10 15 20m @ 1:200

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Key

01	11/07/13	Revised Colour Revised Material Revised Crown Height

Kensington & Chelsea TMO

PLANNING

STUDIO E LLP

Palace Wharf, Rainville Road, London, W6 9HA
[redacted]

GRENFELL TOWER REGENERATION PROJECT
PROJECT

PROPOSED WEST ELEVATION
DRAWING

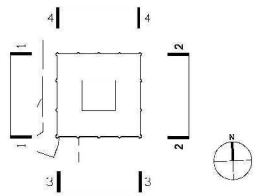
1:200@A1 SCALE
16/10/12 DATE

1279 DWG. NO.
PL302 01 REVISION
CHECKED

SEA00008054/56

2 EAST ELEVATION
1:200

Keyplan



0 5 10 15 20m @ 1:200

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4. WHERE DISCREPANCIES EXIST BETWEEN REFERENCE OR ASSEMBLY DRAWINGS & DETAIL DRAWINGS, THE LATTER TAKE PRECEDENCE.

Key

01	11/07/13	Revised Colour Revised Material Revised Crown Height

Kensington & Chelsea TMO

FOR INFORMATION

STUDIO E LLP

Palace Wharf, Rainville Road, London, W6 9HA
[redacted]

GRENFELL TOWER REGENERATION PROJECT
PROJECT

PROPOSED EAST ELEVATION
DRAWING

1:200@A1 SCALE
16/10/12 DATE

1279 DWG. NO
PL303 01 REVISION
CHECKED

SEA00008054/57

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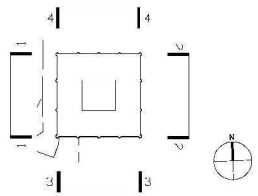
Key

3 SOUTH ELEVATION
1:200

Keyplan



0 5 10 15 20m @ 1:200

01	11/07/13	Revised Colour Revised Material Revised Crown Height

Kensington & Chelsea TMO

PLANNING

STUDIO E LLP

Palace Wharf, Rainville Road, London, W6 9HA

GRENFELL TOWER REGENERATION PROJECT

PROJECT

PROPOSED SOUTH ELEVATION

DRAWING

1:200@A1 SCALE

16/10/12 DATE

1279 DWG NO

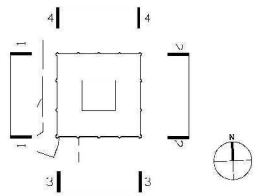
PL304 01 REVISION

CHECKED

SEA00008054/58

4 NORTH ELEVATION
1:200

Keyplan



0 5 10 15 20m @ 1:200

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Key

01	11/07/13	Revised Colour Revised Materials Revised Crown Height

Kensington & Chelsea TMO

PLANNING

STUDIO E LLP

Palace Wharf, Rainville Road, London, W6 9HA
[redacted]

GRENFELL TOWER REGENERATION PROJECT

PROJECT

PROPOSED NORTH ELEVATION

DRAWING

1:200@A1 SCALE

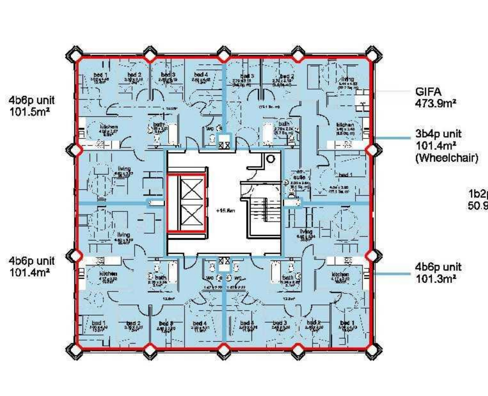
16/10/12 DATE

1279 DWG. NO

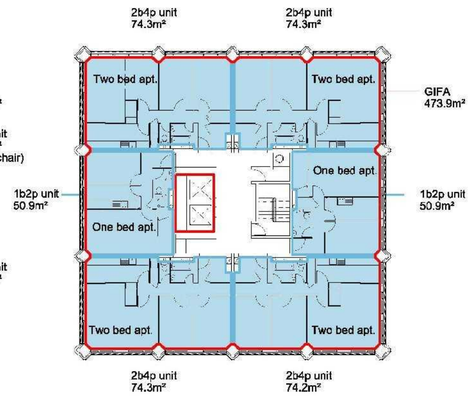
PL305 01 REVISION

CHECKED

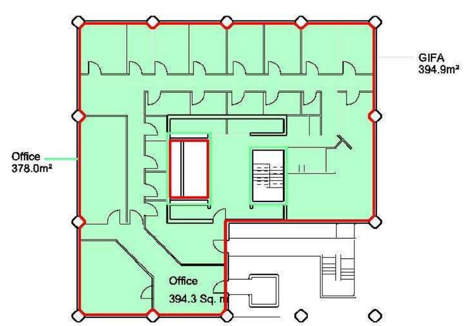
SEA00008054/59



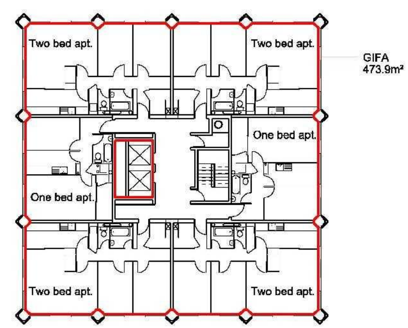
PROPOSED WALKWAY +1



EXISTING RESI LEVEL (UNCHANGED)



EXISTING WALKWAY +1



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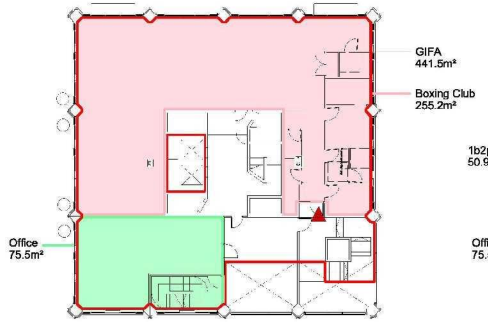

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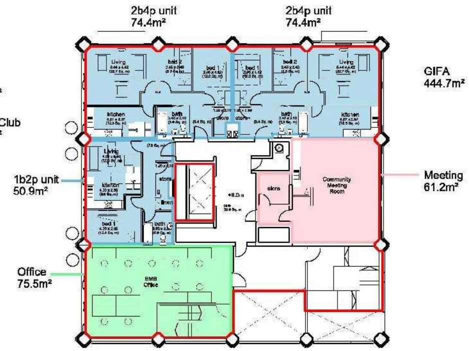
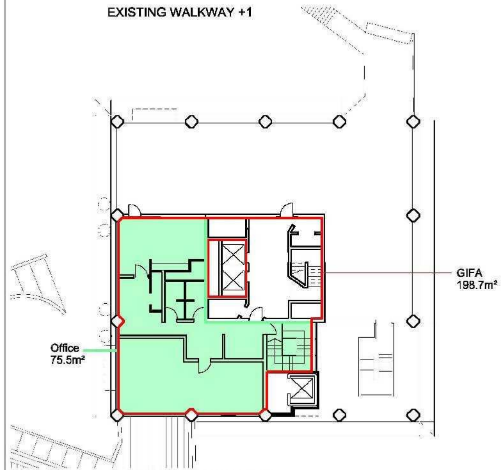
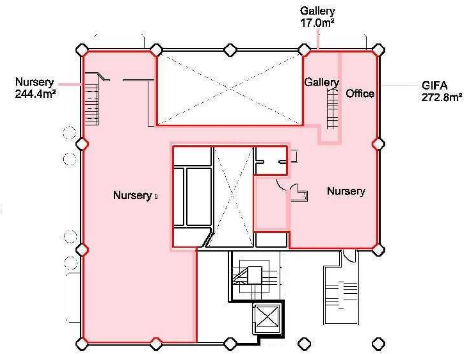


PROPOSED MEZZANINE LEVEL



EXISTING WALKWAY LEVEL

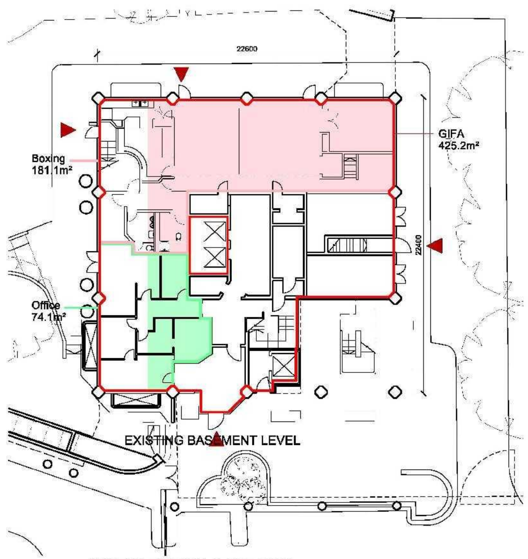


EXISTING MEZZANINE

PROPOSED GROUND FLOOR PLAN

	EXISTING			PROPOSED	
	m²	m²		m²	m²
Basement	Nett	GIA 696.5		Nett	GIA 696.5
Ground Floor					
Boxing	181.1		Nursery	209.4	
Office	74.1		Concierge/Office	87.6	
Subtotal	255.2	425.2	Subtotal	297	468.9
Mezzanine Level					
Nursery	244.4		2b4p unit	74.4	
Boxing Gallery	17		2b4p unit	74.4	
			1b2p unit	50.9	
			Office	61	
			Community / Meeting	61.2	
Subtotal	261.4	272.8	Subtotal	321.9	444.7
Walkway Level					
Office	75.5		Office	75.5	
			Community Use (Boxing)	255.2	
Subtotal	75.5	198.7		330.7	441.5
Walkway +1					
Office	378		3b4p unit	101.4	
			4b6p unit	101.4	
			4b6p unit	101.4	
			4b6p unit	101.4	
Subtotal	378	394.4	Subtotal	405.6	473.9
Existing Residential Floors			x (20)		
1b2p unit	50.9		1b2p unit	50.9	
1b2p unit	50.9		1b2p unit	50.9	
2b4p unit	73.3		2b4p unit	73.3	
2b4p unit	73.3		2b4p unit	73.3	
2b4p unit	73.3		2b4p unit	73.3	
2b4p unit	73.3		2b4p unit	73.3	
Total Second Floor	395	473.9	Total Second Floor	395	473.9
x Total floors	20	20	x Total Floors	20	20
Subtotal	7900	9478	Subtotal	7900	9478
Roof Plant		250.6			250.6
TOTAL	**8870.1**	**11716.2**		**9255.2**	**12254.1**

	Nett	GIFA
Diff PROPOSED EXISTING	**385.1**	**537.9**



EXISTING GROUND FLOOR PLAN

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01 14/08/13 Stage D

00 05/07/12 FOR INFORMATION

Kensington & Chelsea TMO

FOR INFORMATION

STUDIO E LLP

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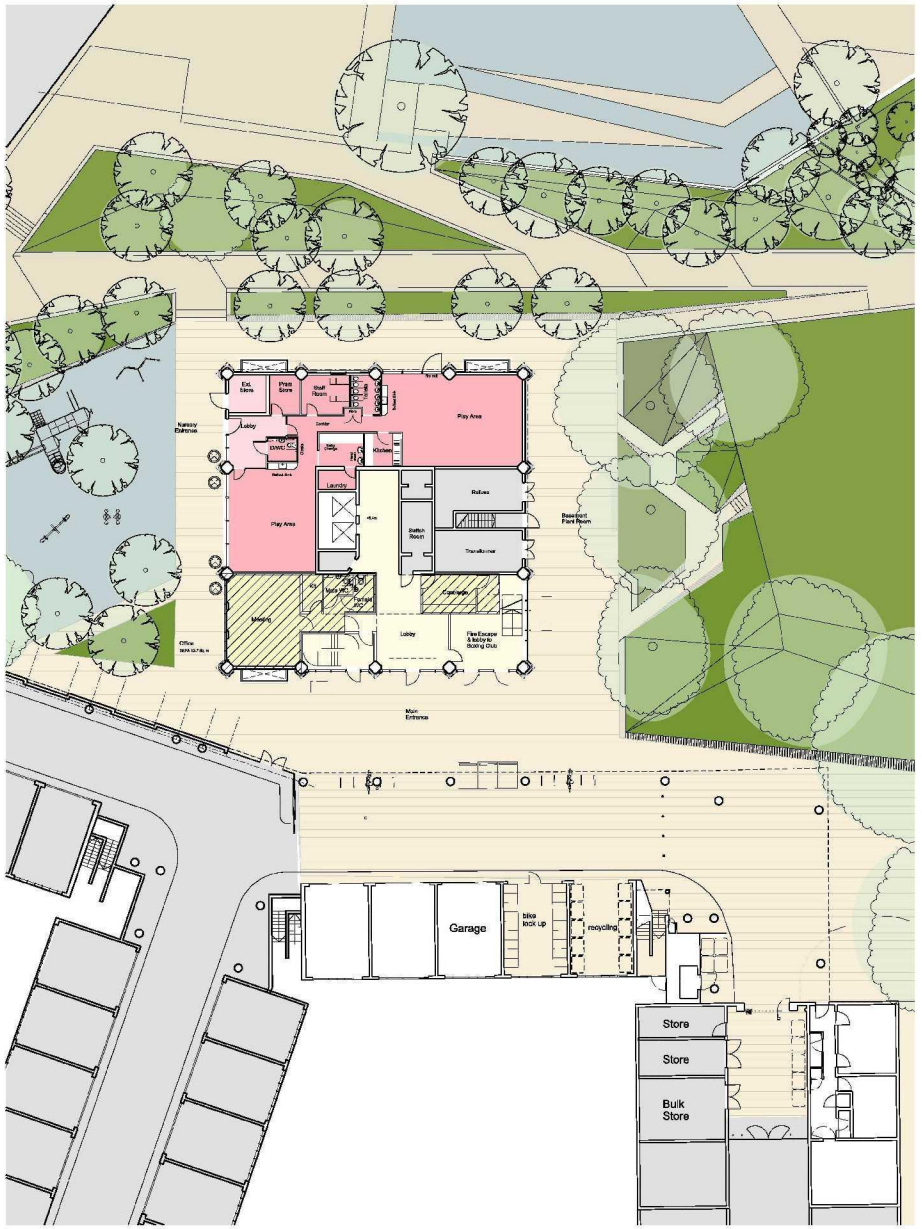
[redacted]

GRENFELL TOWER REGENERATION PROJECT
PROJECT

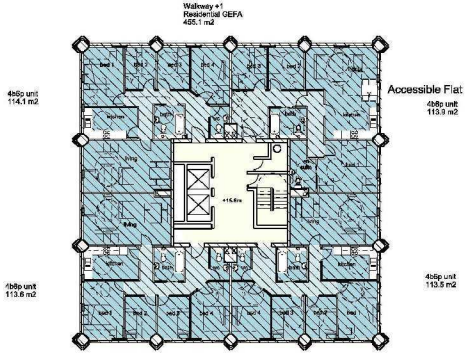
FLOOR AREA MEASURE
DRAWING

1:200@A1 05/07/2012
SCALE DATE

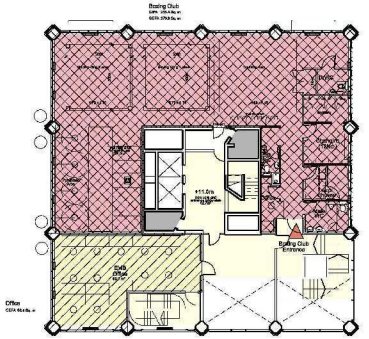
1279 SK 025 01
DWG. NO. REVISION CHECKED

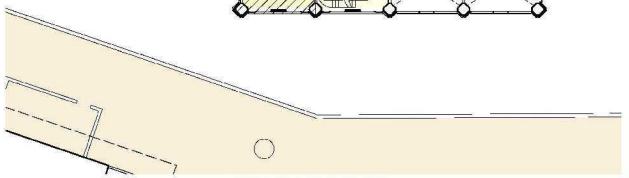


GROUND FLOOR

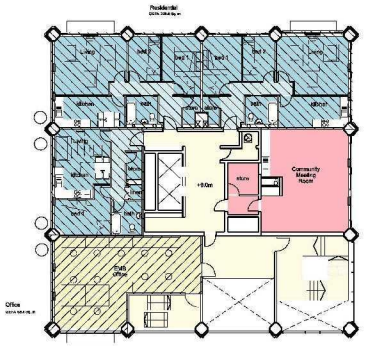


WALKWAY +1

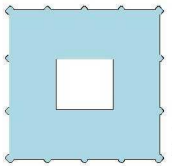




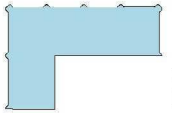
WALKWAY LEVEL



MEZZANINE LEVEL

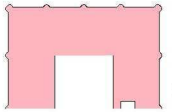


455.1 m²
Walkway +1 Level



226.6 m²
Mezzanine Level

TOTAL
Residential 681.7 m²

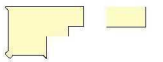


Walkway Level

TOTAL
Boxing Club 279.9 m²

68.8 m²
Walkway Level

68.4 m²
Mezzanine Level



82.7 m²
Ground Level

TOTAL
Office 219.9 m²

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Key

- Circulation / Public Admin. Use
- Community Use
- New Residential
- Existing Removed

Kensington & Chelsea TMO

PLANNING

STUDIO E LLP

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GRENFELL TOWER REGENERATION PROJECT

PROJECT

PROPOSED
Area Calculations

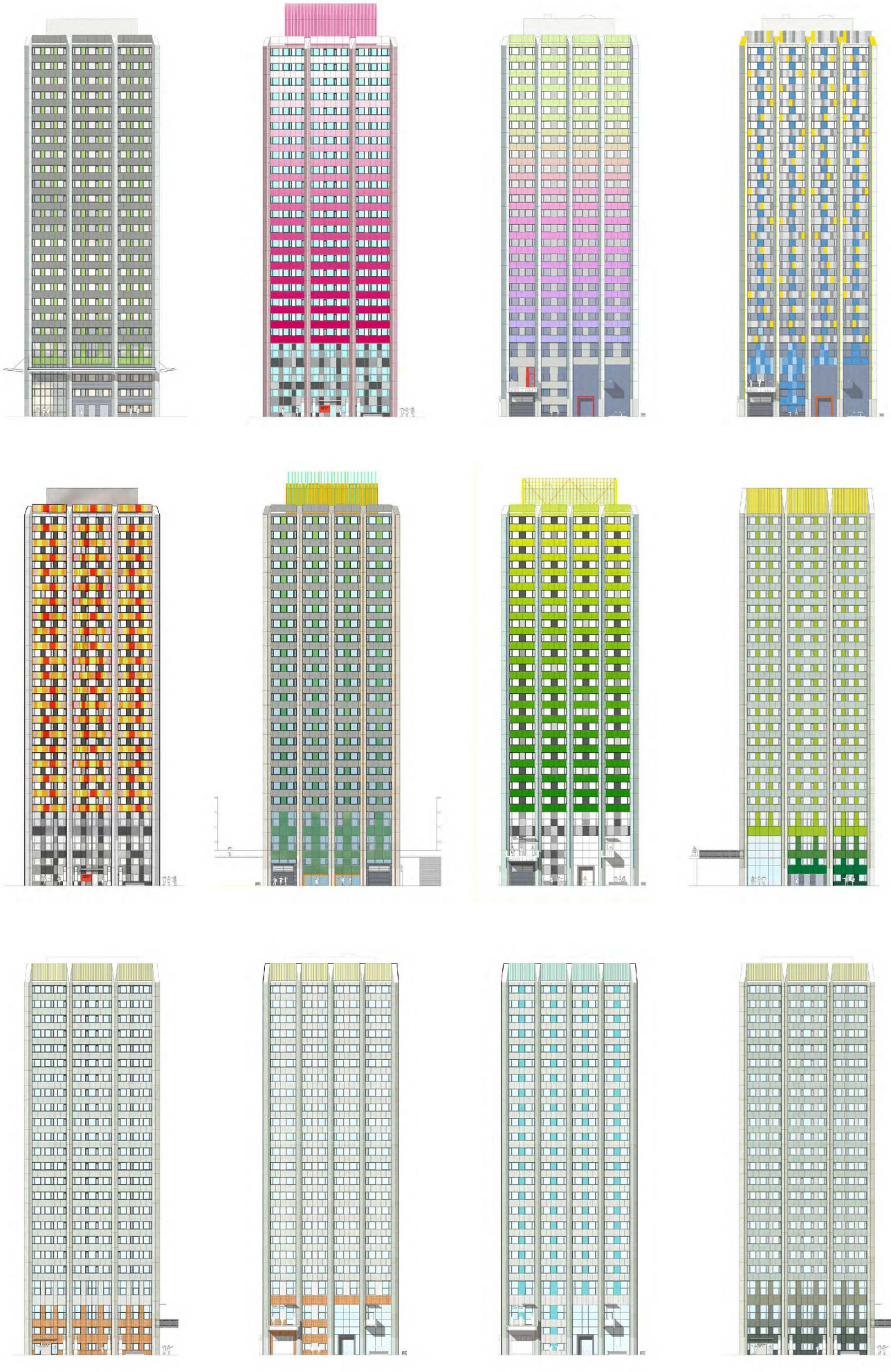
DRAWING

1:200@A1 SCALE | 07/08/13 DATE

1279 DWG.NO | PL119 00 REVISION | CHECKED

SEA00008054/61

SEA00008054_0061

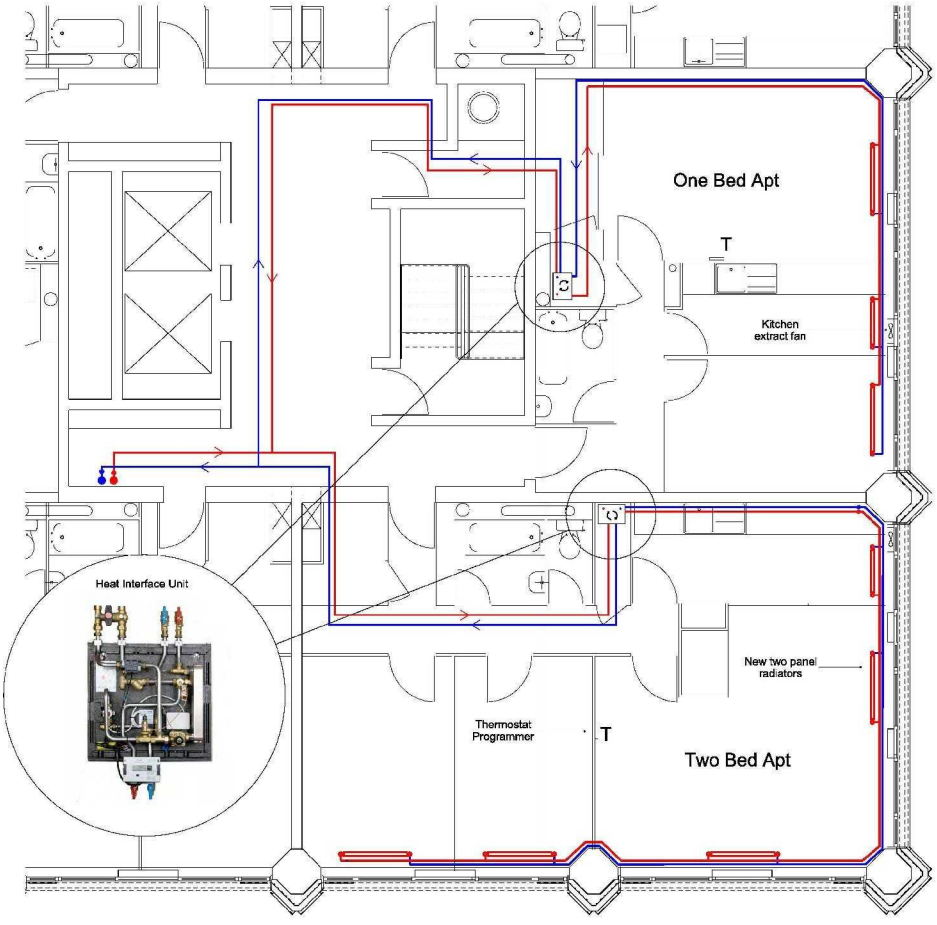


GRENFELL TOWER REGENERATION

COLOUR OPTIONS EXPLORED

STUDIOE LLP

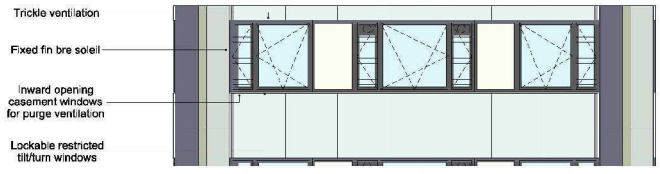
Kensington TMO



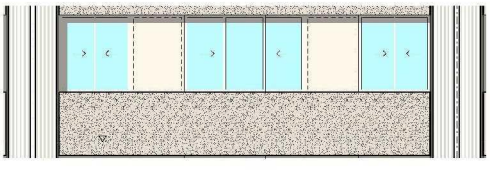
SCHEMATIC HEATING PLAN (1:50)

Radiator flow and return

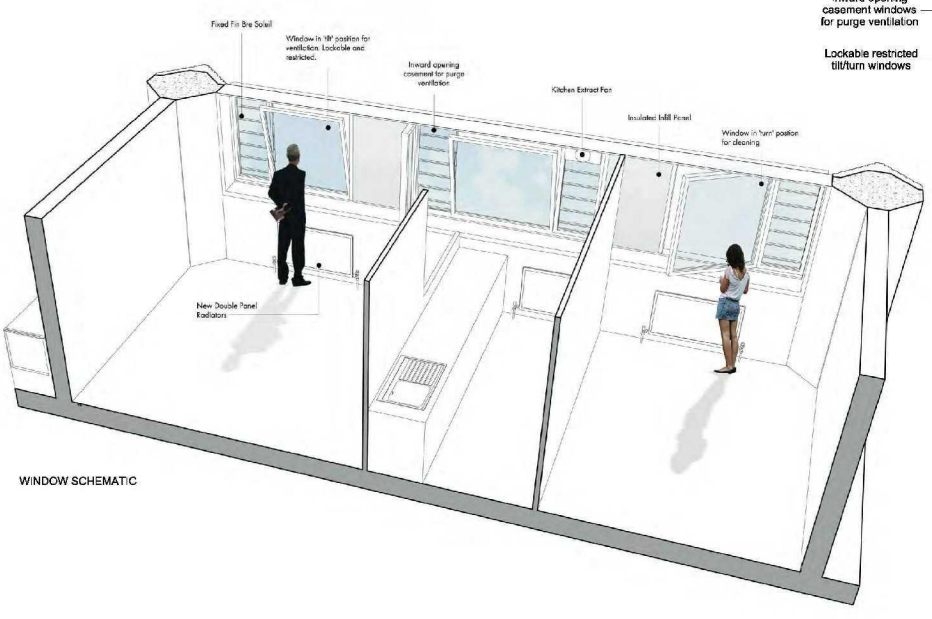
SOUTH ELEVATION (1:200)



PROPOSED ELEVATION (1:50)



EXISITNG ELEVATION (1:50)



WINDOW SCHEMATIC

GRENFELL TOWER REGENERATION

PROPOSED ELEVATION DETAIL

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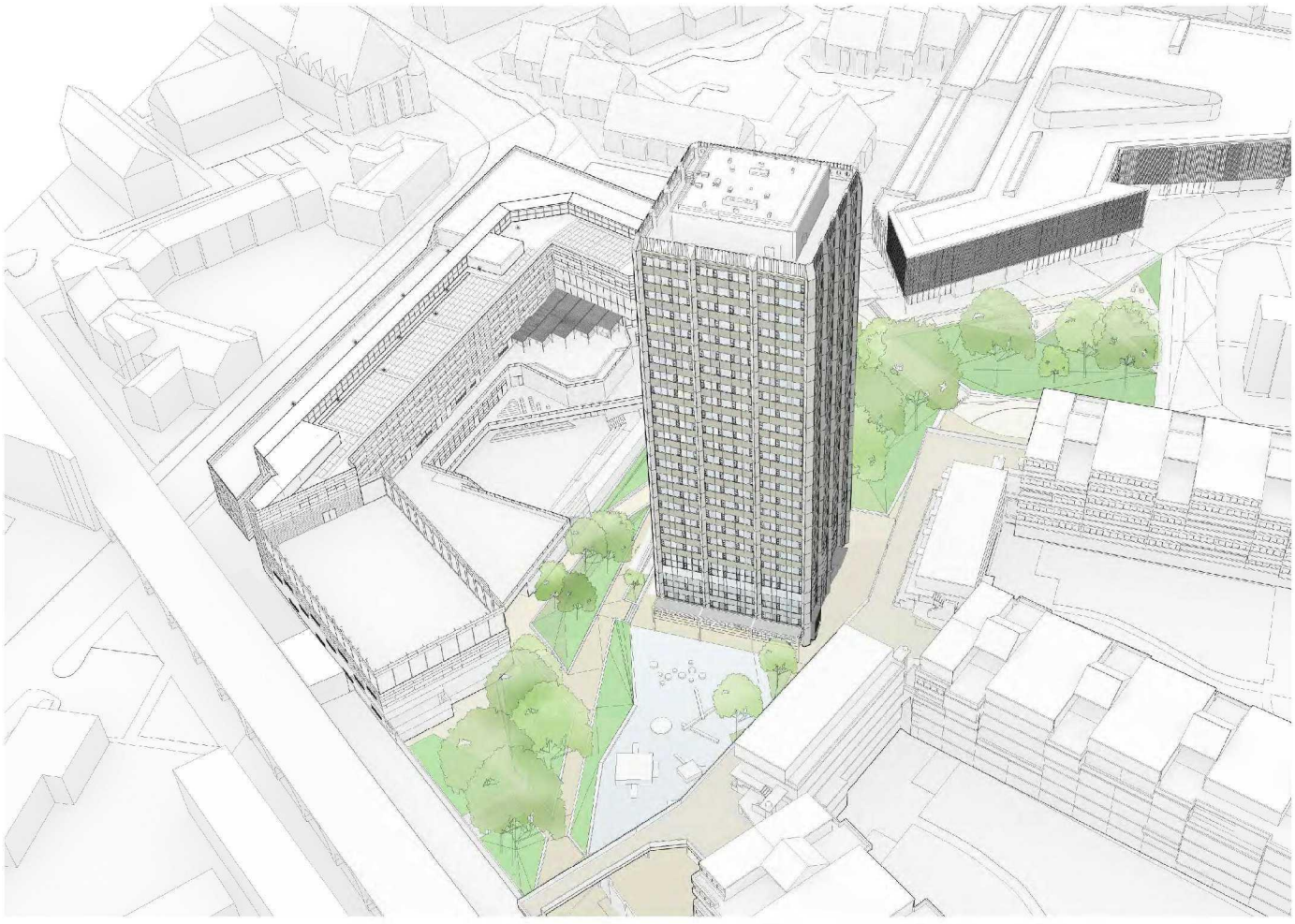
Kensington TMO

SEA00008054/63

SEA00008054_0063



PROPOSED

EXISTING

GRENFELL TOWER REGENERATION

AERIAL PERSPECTIVE SOUTH WEST VIEWS

STUDIO E LLP

Kensington TMO

PROPOSED

EXISTING

GRENFELL TOWER REGENERATION

AERIAL PERSPECTIVE NORTH EAST VIEWS (NTS)

STUDIO E LLP

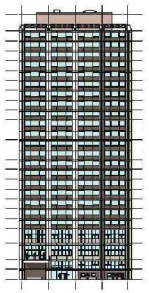
Kensington TMO

SEA00008054/66

APPENDIX C – BREEAM PRE-ASSESSMENT

SYNTEGRA CONSULTING
Intelligent & Green Building Solutions

BREEAM Domestic Refurbishment Pre-Assessment, Rev C



Grenfell Tower, London.

July 2013

Table of Contents

Syntegra Consulting Ltd, 2 The Braccans, London Road, Bracknell, RG12 2XH [redacted]
Registered Company No. 06408056 VAT Registration No. 930016044
E: mail@syntegra-epc.co.uk

Revision:		A	B	C
Date:	22/08/2012	1/10/2012	17/10/2012	01/06/2013
Prepared by:	CJ	CL	CL	RN
Checked by:	AWK	AWK	AWK	NF
Authorised by:	AWK	AWK	AWK	NF

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Registered Company No. 06408056 VAT Registration No. 930016044
E: mail@syntegra-epc.co.uk

1.0 Scope

This BREEAM Domestic Refurbishment Pre-Assessment Estimate for Grenfell Tower, a twenty three storey residential block in London, has been prepared to support the planning application for the Grenfell Tower refurbishment scheme, to be submitted to the Royal borough of Kensington & Chelsea. Also, the BREEAM pre assessment estimate aims to provide the outline sustainability strategy and act as a sustainable design guide for the refurbishment scheme.
The Pre-assessment is an estimate that sets out the method for which the proposed refurbishment could achieve a BREEAM rating of "Good".
This report and estimate has been based on information provided by:

- Studio E architects
- Appleyards (Project Management)
- Max Fordham (Energy & M&E Consultant).
- KALC

2.0 Executive Summary

The Pre-Assessment Estimate shows that at by achieving the minimum standard requirements together with assumptions of good sustainable design practice the proposed refurbishment project could achieve a BREEAM rating of "Good".
The Mechanical and Electrical specification of the building and materials used in the refurbishment of the building will be essential to the sustainable performance of the building and need to be addressed at an early stage in the design process. This assessment together with the Sustainability and Energy statement prepared by Max Fordham are therefore the starting point for developing the overall strategy of the building's sustainable design.
The BREEAM "Very Good" rating is a planning policy requirement as it is set out in Core Strategy Policy CE1 of the Royal Borough of Kensington & Chelsea Local Development Framework. However, BREEAM "Very Good" rating will not be able to be achieved for this project since the mandatory requirement for Wat 01 category cannot be met. The mandatory requirement of Wat 01 is not met since it falls outside the scope of the Grenfell Tower project. The reduction in CO_2 emissions is achieved by energy efficient design measures incorporated into the building fabric such as High Efficiency Gas Fired Boilers and Low U value windows.

3.0 Project Details

PROJECT :	Grenfell Tower.
CLIENT:	KCTMO
ARCHITECT:	Studio E Architects
BUILDING SERVICES & LZC CONSULTANT:	Max Fordham
BREEAM CONSULTANT:	Syntegra Consulting.
Structural Engineer	Curtins Consulting.
PRINCIPAL CONTRACTOR:	Leadbitter.

4. BREEAM Domestic Refurbishment

BREEAM Domestic Refurbishment is a performance based assessment method and certification scheme for refurbished buildings. The primary aim of BREEAM Domestic Refurbishment is to mitigate the life cycle impacts of refurbished buildings on the environment in a robust and cost effective manner. This is achieved through integration and use of the scheme by clients and their project teams at key stages in the design and procurement process.
BREEAM Domestic Refurbishment has been developed to meet the following principles:

- Ensure environmental quality through an accessible, holistic and balanced measure of environmental impacts.
- Use quantified measures for determining environmental quality.
- Adopt a flexible approach, avoiding prescriptive specification and design solutions.
- Use best available science and best practice as the basis for quantifying and calibrating a cost effective performance standard for defining environmental quality.
- Reflect the social and economic benefits of meeting the environmental objectives covered.

- Provide a common framework of assessment that is tailored to meet the 'local' context including regulation, climate and sector.
- Integrate construction professionals in the development and operational processes to ensure wide understanding and accessibility.
- Adopts existing industry tools, practices and other standards wherever possible to support developments in policy and technology, build on existing skills and understanding and minimize costs.
- Stakeholder consultation to inform ongoing development in accordance with the under-lying principles and the pace of change in performance standards.

4.1 BREEAM Domestic Refurbishment Environmental Issues

The environmental issues under which BREEAM assesses a building are divided up into the following seven categories:

- Management
- Health and well-being
- Energy
- Water
- Materials
- Waste
- Pollution

4.2 BREEAM Domestic Refurbishment Scoring & Rating

There elements that determine the overall performance of a refurbished project assessed using BREEAM Domestic Refurbishment, the following:

I. The BREEAM rating level benchmarks
II. The minimum BREEAM standards
III. The environmental section weightings
IV. The BREEAM assessment issues and credits

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The BREEAM rating level benchmarks:

The BREEAM Domestic Refurbishment rating benchmarks are shown on the following table:

BREEAM RATING	%Score
Outstanding	85
Excellent	70
Very Good	55
Good	45
Pass	30
Unclassified	<30

An unclassified BREEAM rating represents performance that is non-compliant with BREEAM, in terms of failing to meet either the BREEAM minimum standards of performance for key environmental issues or the overall threshold score required for formal BREEAM certification.

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The minimum BREEAM Domestic Refurbishment standards:

In order to ensure that performance against fundamental environmental issues is achieved in pursuit of a desired BREEAM rating, minimum standards of performance are set in key areas such as energy, water, waste etc. To achieve a particular BREEAM rating, the minimum overall percentage score must be achieved together with the minimum standards, detailed in the Table below.

BREEAM issue	Minimum standards by BREEAM rating level				
	Pass	Good	Very Good	Excellent	Outstanding
Ene 02: Energy Efficiency Rating Post Refurbishment	0.5 Credits	1.0 Credits	2 Credits	2.5 Credits	3.5 Credits
Wat 01: Internal Water use	-	-	1 Credit	2 Credits	3 Credits
Hea 05: Ventilation	1 Credit	1 Credit	1 Credit	1 Credit	1 Credit
Hea 06: Safety	1 Credit	1 Credit	1 Credit	1 Credit	1 Credit
Pol 03: Flooding	-	-	-	2 Credits	2 Credits
Mat 02: Responsible sourcing of materials	Criterion 3 only	Criterion 3 only	Criterion 3 only	Criterion 3 only	Criterion 3 only

The environmental section weightings :

BREEAM uses an explicit weighting system derived from a combination of consensus based weightings and ranking by a panel of experts. Each of the environmental sections consists of a differing number of assessment issues and BREEAM credits. Hence, each individual assessment issue and credit varies in terms of its contribution to a building's overall score.
The Table below outlines the weightings for each of the nine environmental sections included in the BREEAM 2011 New Construction scheme

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Environmental section	Weighting
Management	12%
Health & Wellbeing	17%
Energy	43%
Water	11%
Materials	8%
Waste	3%
Pollution	6%
Total:	100%
Innovation (additional)	10%

The BREEAM assessment issues and credits:

BREEAM Domestic Refurbishment consists of thirty three individual assessment issues spanning the seven environmental categories, plus an eighth category called 'innovation'. Each issue addresses a specific building related environmental impact or issue and has a number of 'credits' assigned to it. BREEAM credits are awarded where a building demonstrates that it meets the best practice performance levels defined for that issue.

Innovation credits are available for the recognition of sustainability related benefits or performance levels which are currently not recognised by standard BREEAM assessment issues and criteria. In that way, buildings that go beyond best practice in terms of a particular aspect of sustainability may be awarded.

5. Grenfell Tower BREEAM Domestic Refurbishment Pre-assessment performance result

This project has achieved a Pre-Assessment target score of 45.25% against the BREEAM Domestic Refurbishment Pre-assessment criteria. This translates to a Pre-Assessment target rating of "Good". The mandatory standard for "Very Good" of Wat 01 issue cannot be met due to the fact of being outside the scope of this project. Hence the BREEAM rating targeted for the project is "Good".

BREEAM Environmental Category	Environmental Weighting	Credit Available	Credits Targeted	Section Score
Management	12%	11	11	12%
Health & Wellbeing	17%	12	4	5.67%
Energy	43%	29	10	14.83%
Water	11%	4	1	2.2%
Materials	8%	45	31	5.51%
Waste	3%	5	3	1.80%
Pollution	6%	8	3	2.25%
Innovation	10%	10	1	0.00%
Total Indicative BREEAM Score	45.25% GOOD Rating			

Note: As the design is progressed, the pre-assessment may be subject to change and the score therefore is indicative only at this stage.

Specialist Reports, Calculations and other specialist items:

In order to achieve the GOOD rating the below specialist reports need to be produced:

- Flood Risk Assessment. (Curtins Consulting)
- Ecology Report. (KALC)
- Hydrologist Report (Surface Water Run-off calculations). (Curtins Consulting)
- Building User guide.
- Site Waste Management Plan. (Leadbitter)

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Registered Company No. 06408056 VAT Registration No. 930016044

6. Grenfell Tower BREEAM Domestic Refurbishment Pre-Assessment Issue Scoring Report

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Registered Company No. 06408056 VAT Registration No. 930016044

BREEAM Domestic Refurbishment 2012 Pre-Assessment Estimator v0.6: Results Summary

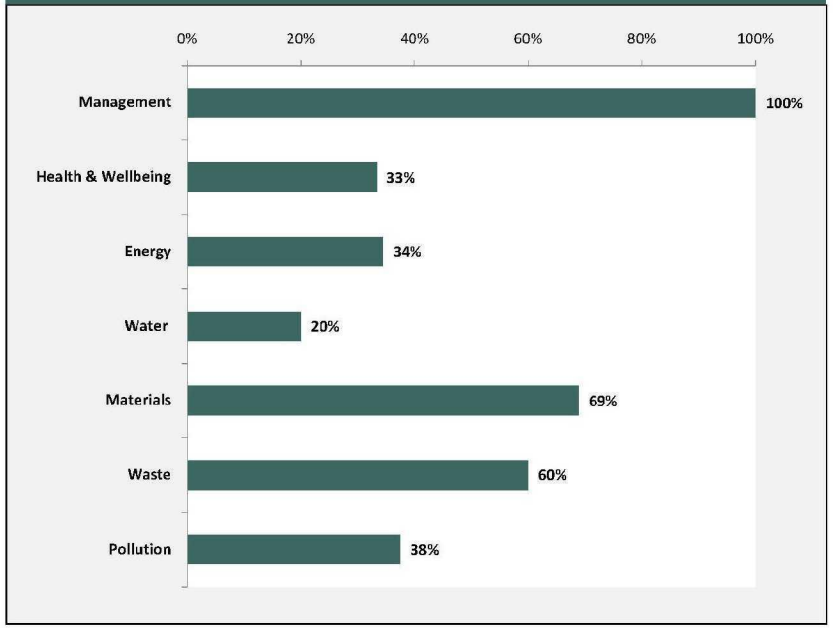
Building name	
Indicative Building Score	45.25%
Indicative Building Rating	BREEAM Good

This assessment and indicative BREEAM rating is not a formal certified BREEAM assessment or rating and must not be communicated as such. The score presented is indicative of a dwelling's potential performance and is based on a simplified pre-formal BREEAM assessment and unverified commitments given at an early stage in the design process.

	Issue	Credits Available	Indicative Credits Achieved	Weighting	Section Score
Management	Man 01	3	3	12%	12.00%
	Man 02	2	2		
	Man 03	1	1		
	Man 04	2	2		
	Man 05	1	1		
	Man 06	2	2		
Health and Wellbeing	Hea 01	2	0	17%	5.67%
	Hea 02	4	0		
	Hea 03	1	1		
	Hea 04	2	1		
	Hea 05	2	1		
	Hea 06	1	1		
Energy	Ene 01	6	3	43%	14.83%
	Ene 02	4	2.5		
	Ene 03	7	4.5		
	Ene 04	2	0		
	Ene 05	2	0		
	Ene 06	1	0		
	Ene 07	2	0		
	Ene 08	2	0		
	Ene 09	2	0		
	Ene 10	1	0		
Water	Wat 01	3	0	11%	2.20%
	Wat 02	1	1		
	Wat 03	1	0		
Materials	Mat 01	25	19	8%	5.51%
	Mat 02	12	4		
	Mat 03	8	8		
Waste	Was 01	2	0	3%	1.80%
	Was 02	3	3		
Pollution	Pol 01	3	0	6%	2.25%
	Pol 02	3	1		
	Pol 02	2	2		
Innovation		10	1	N/A	1.00%

	Minimum Standards				
	Pass	Good	Very Good	Excellent	Outstanding
Ene 02	✓	✓	✓	✓	✗
Wat 01	✓	✓	✗	✗	✗
Hea 05	✓	✓	✓	✓	✓
Hea 06	✓	✓	✓	✓	✓
Pol 03	✓	✓	✓	✓	✓
Mat 02	✓	✓	✓	✓	✓

Percentage of Category Score Attained



BREEAM Domestic Refurbishment 2012 Pre-Assessment Estimator v0.6

BREEAM

This assessment and indicative BREEAM rating is not a formal certified BREEAM assessment or rating and must not be communicated as such. The score presented is indicative of a dwelling's potential performance and is based on a simplified pre-formal BREEAM assessment and unverified commitments given at an early stage in the design process.

Building name	
Indicative building score (%)	45.25%
Indicative BREEAM rating	BREEAM Good

Management | Health & Wellbeing | Energy | Water | Materials | Waste | Pollution

	Minimum Standards				
	Pass	Good	Very Good	Excellent	Outstanding
Ene 02	✓	✓	✓	✓	✗
Wat 01	✓	✓	✗	✗	✗
Hea 05	✓	✓	✓	✓	✓
Hea 06	✓	✓	✓	✓	✓
Pol 03	✓	✓	✓	✓	✓
Mat 02	✓	✓	✓	✓	✓

INNOVATION

Section Weighting: 10% | Indicative Section Score: 1.00%

Comments

MANAGEMENT

Section Weighting: 12% | Indicative Section Score: 12.00%

Man 01 Home Users Guide

No. of BREEAM credits available	3	Available contribution to overall score	3.27%
No. of BREEAM innovation credits	0	Minimum Standards applicable:	No

Assessment Criteria

Where a Home Users Guide be provided to all dwellings, covering all issues set out in the 'Users Guide Contents list', three credits may be awarded

Indicative Credits: 3

Comments

The Design team has indicated that a home user guide will be produced. This is also confirmed within the Energy and Sustainability statement.
The Home User Guide is expected to cover all listed items in the User Guide Contents List outlined in the BREEAM Domestic Refurbishment Manual 2012.

Man 02 Responsible Construction Practices

No. of BREEAM credits available	2	Available contribution to overall score:	2.18%
No. of BREEAM innovation credits	1	Minimum Standards applicable:	No

Assessment Criteria

Where a compliant considerate construction scheme will be used, credits are awarded depending the score achieved as outlined below:

Indicative Credits: 2

Large Scale - project with more than 5 units

	One Credit	Two Credits
Considerate Constructors Scheme	Score of 24 - 31.5	Score of 32 - 35.5
Alternative Compliant Scheme	Compliance	Beyond Compliance

Small Scale - project with 5 units or fewer

	One Credit	Two Credits
Considerate Constructors Scheme	24 - 31.5	32 - 35.5
Alternative Compliant Scheme	Compliance	Beyond Compliance
Checklist A-4	50% of the optional items	80% of the optional items

Exemplary Credit

Considerate Constructors Scheme	Score of >36
Alternative Compliant Scheme	Exemplary Level Compliance
Checklist A-4*	All items (Optional & Mandatory)

Indicative Innovation Credits Achieved: Please Select

* Small Scale Project Only

Comments

2No Credit has been awarded since it is assumed that the principal contractor will use the Considerate Constructors Scheme (CCS) with a score of 32 35.5 .

Man 03 Construction Site Impacts

No. of BREEAM credits available	1	Available contribution to overall score	1.09%
No. of BREEAM innovation credits	0	Minimum Standards applicable	No

Assessment Criteria

Where evidence demonstrate that site impacts will be monitored, as detailed below:

Indicative Credits: 1

	One Credit
Large Scale	Where there is evidence to demonstrate that **2 or more** of the sections in **Checklist A-5** are completed
Small Scale	Where there is evidence to demonstrate that **2 or more** of the sections in **Checklist A-6** are completed

Sections of Checklist	
Large Scale - Checklist A-5	Small Scale - Checklist A-6
Monitor, report and set targets for CO2 production of energy use arising from site activities	Set objectives for reducing CO2 production from energy use arising from site activities
Monitor, report and set targets for water consumption arising from site activities	Set objectives for reducing water use arising from site activities
A main contractor with an environmental materials policy	Main contractor environmental materials statement
A main contractor that operates an Environmental Management System	
80% of site timber is reclaimed, re-used or responsibly sourced	80% of site timber is reclaimed, re-used or responsibly sourced

Same definition of small and large scale as in Man 02

Comments

1No Credits will be achieved since it is assumed that the main contractor will
(i)monitor, report and set targets for CO2 production of energy use arising from site activities and
(ii) operates an Environmental Management System.

Man 04 Security

No. of BREEAM credits available	2	Available contribution to overall score:	2.18%
No. of BREEAM innovation credits	0	Minimum Standards applicable:	No

Assessment Criteria

Where the following requirements will be met:

Indicative Credits: 2

One Credit Secure windows and doors	External doors and accessible windows meet minimum standards and appropriately certified
Two Credits Secured by design	Principles and guidance of Secured by Design Section 2 are complied with
	A suitably qualified security consultant is consulted at the design stage and their recommendations are incorporated into the refurbishment

Comments

1 No credit will be achieved since it the Energy and Sustainability Statement states that the External Doors and accessible windows meet the following criteria:
Doors are certified to: PAS 24:2007 or LPS 1175 Issue 7 / Security Rating 1 1 or equivalent
Windows are certified to: BS 7950:1997 (36) and LPS 1175 Issue 7 Security Rating 1 or equivalent

Man 05 Protection and Enhancement of Ecological Features

No. of BREEAM credits available	1	Available contribution to overall score:	1.09%
No. of BREEAM innovation credits	1	Minimum Standards applicable:	No

Assessment Criteria

Where the following requirements will be met:

Indicative Credits: 1

One Credit Protecting Ecological Features	Site survey carried out to determine presence of ecological features
	Statutory Nature Conservation Organisation notified of protected species
	Features of ecological value protected during refurbishment works
Exemplary Credit Ecological enhancement	A suitably qualified ecologist recommends features to enhance ecology of the site
	adopts all general ecological recommendations
	adopts 30% of additional recommendations

Indicative Innovation Credits Achieved: Please Select

Comments

It is expected that a site survey will be carried out to determine presence of ecological features and if any, these will be protected during refurbishment works.

Man 06 Project Management

No. of BREEAM credits available	2	Available contribution to overall score	2.18%
No. of BREEAM innovation credits	2	Minimum Standards applicable	No

Assessment Criteria

Where the following requirements will be met:

Indicative Credits: 2

One Credit Project Roles and Responsibilities	Where all of the project team are involved in the project decision making
	Small Scale - the project manager assigns individual and shared responsibilities amongst the project team including all trades on site
	Large Scale - the project manager assigns individual and shared responsibilities across the following key design and refurbishment stages: i. Planning and Building control notification ii. Design iii. Refurbishment iv. Commissioning and handover v. Occupation

Small Scale projects: five units or fewer or less than £100k | **Large Scale projects: more than five units or more than £100k**

One Credit Handover and Aftercare	Handover meeting arranged
	2 or more of the following committed to: A site inspection within 3 months of occupation Conduct post occupancy interviews with building occupants or a survey via phone or posted information within 3 months of occupation Longer term after care e.g. a helpline, nominated individual or other appropriate system to support building users for at least the first 12 months of occupation

Indicative Innovation Credits Achieved: 1

Exemplary Credits

One Exemplary Credit Early Design Input	Where A BREEAM Accredited Professional has been appointed to oversee key stages within the project. OR Where a BREEAM Domestic Refurbishment Assessor has been appointed at an early stage of the project, prior to the production of a refurbishment specification
One Exemplary Credit Thermographic Surveying and Airtightness Testing	Where Thermographic surveying and Airtightness testing have been carried out at both pre and post refurbishment stages Where an improved air tightness target has been set at design stage and testing demonstrates that this has been achieved post refurbishment

Comments

3No Credit will be achieved since a BREEAM AP has been appointed (Synergro) and the Project manager (Appleyards) has assigned individual and shared responsibilities across the following key design and refurbishment stages:
(i)Planning and Building control notification (ii)Design (iii)Refurbishment (iv)Commissioning and handover (v)Occupation.
Also, a handover meeting will be arranged a)A site inspection within 3 months of occupation and b) post occupancy interviews will be conducted with building occupants or a survey via phone or post.

HEALTH & WELLBEING

Section Weighting: 17%

Indicative Section Score 5.67%

Hea 01 Daylighting

No. of BREEAM credits available	2	Available contribution to overall score	2.83%
No. of BREEAM innovation credits	0	Minimum Standards applicable	No

Assessment Criteria

Indicative Credits: 0

Where the refurbishment results in a neutral impact on daylighting or where minimum daylighting standards are met, up to two credits may be awarded as follows:

For Existing Dwellings and Change of Use Projects

First Credit Maintaining Good Daylighting	The refurbishment results in a neutral impact on the dwellings daylighting levels in the kitchen, living room, dining room and study

Where the property is being extended

	New spaces achieve minimum daylighting levels
First Credit Maintaining Good Daylighting	The extension does not reduce daylighting levels in the kitchen, living room, dining room or study of neighbouring properties

For All Properties

Second Credit Minimum Daylighting	The dwelling achieves minimum daylighting levels in the kitchen, living room, dining room and study

Comments

MF's sustainability and energy statement present the results of the daylight calculations. These show that the daylightigting to exsiting areas reduce post refurbishement. Hence no credits can be awarded.

Hea 02 Sound Insulation

No. of BREEAM credits available	4	Available contribution to overall score	5.67%
No. of BREEAM innovation credits	0	Minimum Standards applicable	No

Assessment Criteria

Indicative Credits: Please Select

To ensure the provision of acceptable sound insulation standards and so minimise the likelihood of noise complaints.

Properties where sound testing has been carried out:

Up to Four Credits	Four credits awarded according to the improvement over building regulations. See table in additional information in Technical Manual

Properties where sound testing is not feasible and not required by the appointed Building Control body

Two Credits	Where existing separating walls and floors are designed to meet the requirements of Building Regulations with compliant construction details
Up to Four Credits	Where a Suitably Qualified Acoustician (SQA) provides recommendations for the specification of all existing separating walls and floors
	SQA confirms in their professional opinion that they have the potential to meet or exceed the sound insulation credit requirements
	Where these recommendations are implemented
	See table in additional information in Technical Manual

Historic Buildings

Up to Four Credits	Where the dwelling is a Historic Building and sound testing results demonstrate existing separating walls and floor meet the Historic Building credit requirements
	See table in additional information in Technical Manual

Detached Properties

Four Credits	By Default

Properties with separating walls or floors only between non habitable rooms OR Testing not required by building control body

Four Credits	By Default

Comments

An accoustics consultant has already been on board and has produced a noise assessment. In the detailed stages of the project an assessment will be made of the expected reduction in internal noise levels as a result of the refurbishment. However since no confirmation is currently available these credits are withheld

Hea 03 Volatile Organic Compounds

No. of BREEAM credits available	1	Available contribution to overall score	1.42%
No. of BREEAM innovation credits	0	Minimum Standards applicable	No

Assessment Criteria

Indicative Credits: 1

Where the refurbishment avoids the use of VOCs with new products meeting the following requirements:

One Credit Avoiding the use of VOCs	Where all decorative paints and varnishes used in the refurbishment have met the requirement listed in table 5.4 in the Technical Manual
	Where at least five of the eight remaining product categories listed in table 5.4 have met the testing requirements and emission levels for Volatile Organic Compound (VOC) emissions against the relevant standards identified within table 5.4 in the Technical Manual
	Where five or less products are specified within the refurbishment, all must meet the requirements in order to achieve this credit.

Comments

It is assumed that at least five of the categories listed in table 5.4 of the BREEAM domestic Refurbishment manual will meet the testing requirements and emission levels for VOC emissions against the relevant standards identified in table 5.4. MF's sustainability and energy statement also suggests that this credit will be achieved.

Hea 04 Inclusive Design

No. of BREEAM credits available	2	Available contribution to overall score	2.83%
No. of BREEAM innovation credits	1	Minimum Standards applicable	No

Assessment Criteria

Indicative Credits: 1

Where an access statement has been carried out using Checklist A 8 of the Technical Manual to optimise the accessibility of the home as follows:

	Checklist A-8 of the Technical Manual	
	Section 1	Section 2
One Credit Minimum Accessibility	Completed with Evidence	
Two Credits Advanced Accessibility	Completed with Evidence	Completed with Evidence

Exemplary Performance

Indicative Innovation Credits Achieved: Please Select

One Credit	Where an access expert suitably qualified member of the design team has completed sections 1, 2 and 3 of Checklist A-8, access statement template with evidence provided of the measures implemented in the refurbishment

Comments

An Access statement will be produced and checklist A-8 of the BREEAM technical manual will be completed by a member of the design team.

Hea 05 Ventilation

No. of BREEAM credits available	2	Available contribution to overall score	2.83%
No. of BREEAM innovation credits	0	Minimum Standards applicable	Yes

Assessment Criteria — Indicative Credits: 1

Where the dwelling meets the following ventilation requirements:

One Credit Minimum Ventilation Requirements	A minimum level of background ventilation is provided (with trickle ventilators or other means of ventilation) for all habitable rooms, kitchens, utility rooms and bathrooms compliant with section 7, Building Regulations Approved Document Part F, 2010
	A minimum level of extract ventilation is provided in all wet rooms (e.g. kitchen, utility and bath-rooms), compliant with section 5, Building Regulations Approved Document Part F 2010.
	A minimum level of purge ventilation is provided in all habitable rooms and wet rooms, compliant with section 7, Building Regulations Approved Document Part F, 2010.
	It is an historic building and meets historic building requirements in CN4 of the technical manual
Two Credits Advanced Requirements	Ventilation is provided for the dwelling that meets the requirements of Section 5 of Building Regulations Part F in full
	Where the building is a historic building and meets the requirements for Historic Buildings in compliance note 4 of the technical manual

Comments

It has been assumed that

1. A minimum level of background ventilation is provided (with trickle ventilators or other means of ventilation) for all habitable rooms, kitchens, utility rooms and bathrooms compliant with section 7, Building Regulations Approved Document Part F, 2010
2. A minimum level of extract ventilation is provided in all wet rooms (e.g. kitchen, utility and bath rooms), compliant with section 5, Building Regulations Approved Document Part F 2010.
3. A minimum level of purge ventilation is provided in all habitable rooms and wet rooms, compliant with section 7,Part F, 2010.

Hea 06 Safety

No. of BREEAM credits available	1	Available contribution to overall score	1.42%
No. of BREEAM innovation credits	0	Minimum Standards applicable	Yes

Assessment Criteria — Indicative Credits: 1

Where a fire and carbon monoxide (CO) detection and alarm system is specified as follows:

One Credit Fire and Carbon Monoxide (CO) Detection and Alarm Systems	Carbon Monoxide detector installed if dwelling is supplied with mains gas or other fossil fuel
	Where a compliant fire detection and fire alarm system is provided
	Mains supplied fire detection and alarm system if project involves re-wiring
	Battery operated fire detection and alarm system if no re-wiring is to take place

Comments

It is expected that Fire and carbon monoxide detectors will be installed in each flat.

ENERGY

Section Weighting: 43%

Indicative Section Score 14.83%

Ene 01 Improvement in Energy Efficiency Rating

No. of BREEAM credits available	6	Available contribution to overall score	8.90%
No. of BREEAM innovation credits	0	Minimum Standards applicable	No

Assessment Criteria — Indicative Credits: 4

Where the following targets are met for the improvement in Energy Efficiency Rating achieved as a result of refurbishment:

Improvement in EER	Credits
≥ 5	0.5
≥ 9	1
≥ 13	1.5
≥ 17	2
≥ 21	2.5
≥ 26	3
≥ 31	3.5
≥ 36	4
≥ 42	4.5
≥ 48	5
≥ 54	5.5
≥ 60	6

Comments

The M&E consultant MF have undertaken the pre refurbishment SAP calculations as designed post refurbishment SAP calculations. The proposed startegy is for individual Gas fired boilers.The energy averaging is applied for multiple dwellings. The average EER improvement is 27, and therefore 3No credits will be achieved.

Ene 02 Energy Efficiency Rating Post Refurbishment

No. of BREEAM credits available	4	Available contribution to overall score	5.93%
No. of BREEAM innovation credits	2	Minimum Standards applicable	Yes

Assessment Criteria — Indicative Credits: 2.5

Where the following Energy Efficiency Rating benchmarks will be met as a result of refurbishment:

EER post refurbishment	Credits	Minimum requirements
≥50	0.5	'Pass' level EER of 50
≥55	1	Good' level EER of 58
≥60	1.5	
≥65	2	'Very Good level' EER of 65
≥70	2.5	Excellent' level LLR of 70
≥75	3	
≥80	3.5	'Outstanding' level EER of 81
≥85	4	

Exemplary	Credits
≥90	1
≥100	2

Indicative Innovation Credits Achieved: Please Select

Comments

The average EER for post refurbishment is 73. Therefore, 2.5No credits are achieved. As stated in Ene 01 the SAP calculations have been produced by the M&E consultant M F.

Ene 03 Primary energy demand

No. of BREEAM credits available	7	Available contribution to overall score	10.38%
No. of BREEAM innovation credits	0	Minimum Standards applicable	No

Assessment Criteria — Indicative Credits: 4.5

Where the following Primary Energy Demand benchmarks will be met as a result of refurbishment:

Primary Energy Demand Post Refurbishment (kWh/m²/year)	Credits
≤ 400	0.5
≤ 370	1
≤ 340	1.5
≤ 320	2
≤ 300	2.5
≤ 280	3
≤ 260	3.5
≤ 240	4
≤ 220	4.5
≤ 200	5
≤ 180	5.5
≤ 160	6
≤ 140	6.5
≤ 120	7

Comments

As a result of the refurbishment the average area weighted primary energy demand will be 215 kWh/m2/year. Therefore, 4.5 No Credits will be achieved.

Ene 04 Renewable Technologies

No. of BREEAM credits available	2	Available contribution to overall score	2.97%
No. of BREEAM innovation credits	0	Minimum Standards applicable	No

Assessment Criteria — Indicative Credits: Please Select

Where the dwelling will meet the following % contribution from renewables and primary energy demand targets as a result of refurbishment

Dwelling Type	Primary Energy Demand	Percentage from Renewables	
		1 Credit	2 Credits
Detached	≤ 250 kWh/m²/year	≥10%	≥20%
Semi Detached		≥10%	≥20%
Bungalow		≥10%	≥20%
End of Terrace		≥10%	≥20%
Mid Terrace	≤ 220 kWh/m²/year	≥10%	≥20%
Low Rise Flat		≥10%	≥20%
Mid Rise Flat		≥10%	≥15%
High Rise Flat		≥10%	≥15%

Comments

No LzC technologies have been proposed. Hence no credits can be awarded under this category.

Ene 05 Energy Labelled White Goods

No. of BREEAM credits available	2	Available contribution to overall score	2.97%
No. of BREEAM innovation credits	0	Minimum Standards applicable	No

Assessment Criteria — Indicative Credits: Please Select

Where Energy Efficiency White goods are to be provided as follows:

First Credit

Appliance	Appliance provided	Appliance not to be provided
Fridges, Freezers and Fridge-Freezers	Energy Saving Trust Recommended appliances specified	EU Energy Efficiency Labelling Scheme Information Leaflet provided to all dwellings

Second Credit

Appliance	Appliance provided	Appliance not to be provided
Washing Machines and Dishwashers	Energy Saving Trust Recommended appliances specified	Second credit not achieved
Washer-Dryers and Tumble Dryers	Appliances specified with B Rating under EU Energy Efficiency Labelling Scheme	EU Energy Efficiency Labelling Scheme Information Leaflet provided to all dwellings

Comments

N/A. This is not in the scope of the refurbishment.

Ene 06 Drying Space

No. of BREEAM credits available	1	Available contribution to overall score	1.48%
No. of BREEAM innovation credits	0	Minimum Standards applicable	No

Assessment Criteria — Indicative Credits: Please Select

Where adequate, secure internal or external space with posts and footings or fixings is provided with the following:

1 Credit

Number of bedrooms	Drying line required
1-2	4m–
3+	6m–

Comments

N/A. This is not in the scope of the refurbishment.

Ene 07 Lighting

No. of BREEAM credits available	2	Available contribution to overall score	2.97%
No. of BREEAM innovation credits	0	Minimum Standards applicable	No

Assessment Criteria — Indicative Credits: Please Select

Where energy efficient internal and external lighting is provided as follows:

External Lighting - 1 Credit

Energy Efficient Space Lighting and Energy Efficient Security Lighting OR
Where Energy Efficient Space Lighting is provided ONLY

Internal Lighting - 1 Credit

Maximum average wattage across the total floor area of the dwelling of 9 watts/m2

Comments

N/A. This is not in the scope of the refurbishment.

Ene 08 Display Energy Devices

No. of BREEAM credits available	2	Available contribution to overall score	2.97%
No. of BREEAM innovation credits	1	Minimum Standards applicable	No

Assessment Criteria — Indicative Credits: Please Select

Where consumption data is displayed to occupants by a compliant energy display device

Electricity usage data displayed	Primary Heating Fuel	
	Electricity	Other
Electricity usage data displayed	2 credits awarded	1 credit awarded
Primary Heating Fuel usage data displayed	N/A	1 credit awarded
Electricity & Primary Heating Fuel usage displayed	N/A	2 credits awarded

Exemplary Credits — Indicative Innovation Credits Achieved: Please Select

One credit	
Recording consumption data	Where any compliant Energy Display Device is capable of recording consumption data

Comments

N/A. This is not in the scope of the refurbishment.

Ene 09 Cycle Storage

No. of BREEAM credits available	2	Available contribution to overall score	2.97%
No. of BREEAM innovation credits	0	Minimum Standards applicable	No

Assessment Criteria — Indicative Credits: Please Select

Where individual or communal compliant cycle storage is provided as follows:

Dwelling Size	One Credit	Two Credits
Studios/ 1 bedroom	1 per two dwellings	1 per dwelling
2-3 bedrooms	1 per dwelling	2 per dwelling
4 bedrooms	2 per dwelling	4 per dwelling

Comments

N/A. This is not in the scope of the refurbishment.

Ene 10 Home Office

No. of BREEAM credits available	1	Available contribution to overall score	1.48%
No. of BREEAM innovation credits	0	Minimum Standards applicable	No

Assessment Criteria — Indicative Credits: Please Select

Where sufficient space and services will be provided to allow occupants to set up a home office in a suitable room with adequate ventilation

Comments

N/A. This is not in the scope of the refurbishment.

WATER

Section Weighting: 11% — Indicative Section Score 2.20%

Wat 01 Internal Water Use

No. of BREEAM credits available	3	Available contribution to overall score	6.60%
No. of BREEAM innovation credits	1	Minimum Standards applicable	Yes

Assessment Criteria — Indicative Credits: Please Select

Where the dwellings water consumption meets the following consumption benchmarks, or where terminal fittings meet the following water consumption standards:

Calculated Water Consumption (litres/person/day)	Equivalent terminal fitting standards	Minimum Standard	Credits
>150	Typical baseline performance	N/A	0
140-150	All showers specified to 'Good' OR All taps and WC's to 'Good' OR Kitchen fittings specified to 'Excellent'	N/A	0.5
120-130	All showers specified to 'Excellent' OR All showers and bathroom taps to 'Good'	BREEAM Very Good	1
118-128	All bathroom and WC room fittings specified to 'Good' OR All bathroom fittings specified to 'Excellent'	N/A	1.5
107-117	All Bathroom and WC room fittings specified to 'excellent' OR All Bathroom fittings Specified to 'Excellent' and WC room fitting specified to 'Good' OR All Bathroom fittings, kitchen and utility sittings specified to 'Good'	BRLLAM Excellent	2
96-106	All kitchen, bathroom, utility room and WC room fittings specified to 'Good' OR All bathrooms, kitchens and utility rooms specified to 'Excellent'	N/A	2.5
<95	All bathroom fittings specified to 'Excellent' and WC room, kitchen and utility room fittings specified to 'Good'	BREEAM Outstanding	3

NOTE: 'Good' fittings are equivalent to good practice fittings with 'Excellent' fittings equivalent to best practice fittings (see the technical manual for full details.

Exemplary Credit — If the water consumption is less than 80l/person/day

Indicative Innovation Credits Achieved: Please Select

Comments

N/A. This is not in the scope of the refurbishment. However this is a minimum requirment for the VERY GOOD rating. Due this this not being within the scope of the refurbishment a GOOD rating will be trageted for the development.

Wat 02 External Water Use

No. of BREEAM credits available	1	Available contribution to overall score	2.20%
No. of BREEAM innovation credits	0	Minimum Standards applicable	No

Assessment Criteria — Indicative Credits: 1

Where the following requirements will be met:

Requirements:

One Credit	
	Where a compliant rainwater collection system for external/internal irrigation use has been provided to dwellings. OR Where dwellings have no individual or communal garden space.

Comments

The flats have no individual garden space and the residents have no access to a communal garden space.

Wat 03 Water Meter

No. of BREEAM credits available	1	Available contribution to overall score	2.20%
No. of BREEAM innovation credits	0	Minimum Standards applicable	No

Assessment Criteria — Indicative Credits: Please Select

Where an appropriate water meter for measuring usage of mains potable water meter has been provided to dwelling(s), one credit may be awarded

Comments

N/A. This is not in the scope of the refurbishment.

MATERIALS

Section Weighting: 8% — Indicative Section Score 5.51%

Mat 01 Environmental Impact of Materials

No. of BREEAM credits available	25	Available contribution to overall score	4.44%
No. of BREEAM innovation credits	0	Minimum Standards applicable	No

Assessment Criteria — Indicative Credits: 19

Up to 25 credits can be awarded, with credits calculated using the Mat 01 calculator tool. The table below shows the maximum number of credits available for each element:

Elements	Green Guide Rating credits available	Thermal performance credits available*
Roof	5	3
External walls	5	3.8
Internal walls (including separating walls)	5	-
Upper and Ground Floor	5	1.2
Windows	5	2

*The full 25 credits represents all of the elements containing refurbished or existing materials that meet the Green Guide Rating of A-(6)

GG Rating	Points for existing / refurbished elements	Points for new elements
A+ (6)	5	
A+ (5)	4.6	
A+ (4)	4.2	
A+ (3)	3.8	
A+ (2)	3.4	
A-	3	3
A	2	2
B	1	1
C	0.5	0.5
D	0.25	0.25
E	0	0

*Where the full 25 credits cannot be achieved the score can be 'topped up' with thermal performance credits. The full number of thermal performance credits for each element can be achieved when achieving the minimum U-values shown below.

Elements	Minimum U-Value (W/m2K)
Roof	0.11
External walls	0.15
Internal walls (including separating walls)	
Upper and Ground Floor	0.15
Windows	1.4

Comments

It has been assumed that 19No credits will be achieved since all materials will have a green guide rating of at least A+(3) as it is stated in the Sustainability and Energy statement prepared by the M&E Consultant.

Mat 02 Responsible Sourcing of Materials

No. of BREEAM credits available	12	Available contribution to overall score	2.13%
No. of BREEAM innovation credits	0	Minimum Standards applicable	Yes

Assessment Criteria — Indicative Credits: 4

Where new materials are responsibly sourced, up to 12 credits may be awarded where 80% of new materials for an element are responsibly sourced. The credits achieved are dependent on % of point achieved which is based upon the responsible sourcing tier level of each material sourced as detailed below:

Table 1

Tier level	Points
1	4
2	3.5
3	3
4	2.5
5	2
6	1.5
7	1
8	0

Is the timber sourced in accordance with the UK Government's Timber Procurement Policy?: Yes

Table 2

BREEAM credits	% of available points achieved
12	≥54%
10	≥45%
8	≥36%
6	≥27%
4	≥18%
2	≥9%

Comments

It has been assumed that 4 No credits will be achieved since majority of the materials used will be responsibly sourced as stated in the Sustainability and Energy statement prepared by the M&E Consultant..

Insulation

No. of BREEAM credits available	8	Available contribution to overall score	1.42%
No. of BREEAM innovation credits	0	Minimum Standards applicable	No

Assessment Criteria — Indicative Credits: 8

Where any new insulation specified for use within external walls, ground floor, roof and buildings services meet the following requirements:

Requirements

4 Credits	
	Where the insulation Index for new insulation used in the buildings is ≥2
	Where Green Guide ratings are determined using the Green Guide to specification tool

Requirements

4 Credits	
	Where ≥80% of the new thermal insulation used in the building elements is responsibly sourced.

Comments

It has been assumed that all the new insulation installed will have an insulation index of greater than 2. It is also assumed that 80% of the insulation will be responsibly sourced. (Rockwool or similar)

WASTE

Section Weighting: 3% | Indicative Section Score 1.80%

Was 01 Household Waste

No. of BREEAM credits available	2	Available contribution to overall score	1.20%
No. of BREEAM innovation credits	0	Minimum Standards applicable	No

Assessment Criteria — Indicative Credits: Please Select

Where compliant recycling and composting facilities are provided, up to two credits may be awarded as follows:

First Credit - Recycling Facilities

Scenario	Internal recycling storage requirements
Compliant collection scheme in place	3 internal recycling containers provided where recycling is not sorted post collection
	1 internal recycling container provided where recycling is sorted post collection
	Minimum 30 litre total capacity, no single container less than 7 litre capacity
	Dedicated position in accordance with compliance note 1
No compliant collection scheme in place No adequate external storage	3 internal recycling containers provided
	Minimum 60 litre total capacity
	Dedicated position in accordance with compliance note 1
No compliant collection scheme in place Adequate external storage provided	3 internal recycling containers provided
	Minimum 30 litre total capacity, no single container smaller than 7 litre capacity
	Dedicated position in accordance with compliance note 1

Second credit - Composting facilities

With external space	Without external space
Where a composting service or facility is provided for green/garden waste	Where a composting service or facility is provided for kitchen waste
Where a composting service or facility is provided for kitchen waste	Where an interior container is provided for kitchen composting waste of at least 7 litres
Where an interior container is provided for kitchen composting waste of at least 7 litres	

Comments

N/A - this is not in the scope of the refurbishment.

Was 02 Refurbishment Site Waste Management

No. of BREEAM credits available	3	Available contribution to overall score	1.80%
No. of BREEAM innovation credits	1	Minimum Standards applicable	No

Assessment Criteria — Indicative Credits: 3

Up to three credits are available depending on the site waste management plan to be implemented as follows:

Projects up to £100k

Three Credits	Where waste generated through the refurbishment process is managed in accordance with Checklist A-9
Exemplary Credit	Where a compliant Level 1; Site Waste Management Plan (SWMP) is in place

Indicative Innovation Credits Achieved: Please Select

Projects up to £300k

Three Credits	Where a compliant Level 1; Site Waste Management Plan (SWMP) is in place
Exemplary Credit	Where a compliant Level 2; Site Waste Management Plan (SWMP) is in place
	Non-hazardous construction waste generated by the dwellings refurbishment meets or exceeds the resource efficiency benchmark
	The percentage of non hazardous construction waste and demolition waste generated by the project has been diverted from landfill and meets or exceeds the refurbishment & demolition waste diversion benchmarks

Projects over £300k

First Credit Management Plan	Where a compliant Level 2; Site Waste Management Plan (SWMP) is in place
Second Credit Good Practice Waste Benchmarks	First credit achieved
	Non hazardous construction waste generated by the dwellings refurbishment meets or exceeds the resource efficiency benchmark
	Amount of waste generated against £100,000 of project value is recorded in the SWMP
	Pre-refurbishment audit of the existing building is completed
	If demolition is included as part of the refurbishment programme, then the audit should also cover demolition materials
Third Credit Best Practice Waste Benchmarks	Where the first two credits have been achieved achieved
	Where Non-hazardous demolition waste generated by the dwellings refurbishment meets or exceeds the refurbishment & demolition waste diversion benchmarks
Exemplary Credit	Where non-hazardous construction waste generated by the dwellings refurbishment meets or exceeds the *exemplary level resource efficiency benchmark*
	Where Non-hazardous demolition waste generated by the dwellings refurbishment meets or exceeds the exemplary level diversion benchmarks

Comments

The principal contractor will have in place a BRE/LWM compliant SWMP, where best practice waste benchmarks will be achieved. [total project cost is assumed to be lower than £400k

POLLUTION

Section Weighting: 6% | Indicative Section Score 2.25%

Pol 01 NOx Emissions

No. of BREEAM credits available	3	Available contribution to overall score	2.25%
No. of BREEAM innovation credits	0	Minimum Standards applicable	No

Assessment Criteria — Indicative Credits: Please Select

Credits are awarded on the basis of NOx emissions arising from the operation of space heating and hot water systems for each refurbished dwelling as follows:

	Dry NOx Emissions
One Credit	≤100 mg/kWh (NOx class 4 boiler)
Two Credits	≤70 mg/kWh (NOx class 5 boiler)
Three Credits	≤40 mg/kWh

Comments

The current strategy specifies the use of Low Nox gas fired boilers. It has been assumed that the new boilers will have NOX emissions lower than 40mg/ kWh (Worcester Greenstar range or similar)

Pol 02 Surface Water Runoff

No. of BREEAM credits available	3	Available contribution to overall score	2.25%
No. of BREEAM innovation credits	1	Minimum Standards applicable	No

Assessment Criteria — Indicative Credits: 1

Where impacts of the refurbishment on surface water runoff are neutralised or where runoff is reduced as a result of refurbishment, up to three credits can be awarded as follows:

Requirements		
First Credit Neutral Impact on Surface Water	New hard standing areas must be permeable If building on to previously permeable area additional run-off must be managed on site Calculations should be carried out by an appropriately qualified professional	
Requirements		
Second Credit Reducing Run-Off From Site: Basic	Where all run off from the roof for rainfall depths up to 5 mm, have been managed on site using source control methods Include runoff from all existing and new parts of the roof. An appropriately qualified professional should be used to design an appropriate drainage strategy for the site	
Requirements		
Third Credit Reducing Run-Off From Site: Advanced	Where run-off as a result of the refurbishment is managed on site using source control An appropriately qualified professional should be used to design an appropriate drainage strategy for the site. The peak rate of run off as a result of the refurbishment for the 1 in 100 year event has been reduced by 75% from the existing site. The total volume of run-off discharged into the watercourses and sewers as a result of the refurbishment, for a 1 in 100 year event of 6 hour duration has been reduced by 75%. An allowance for climate change must be included for all of the above calculations, in accordance with current best practice (PPS25, 2010).	
Requirements		Indicative Innovation Credits Achieved: Please Select
Exemplary Credit	Where all run-off from the developed site is managed on site using source control The peak rate of run-off as a result of the refurbishment for the 1 in 1 year event is reduced to zero. The peak rate of run-off as a result of the refurbishment for the 1 in 100 year event is reduced to zero. There is no volume of run-off discharged into the watercourses and sewers as a result of the refurbishment, for a 1 in 100 year event of 6 hour duration. An allowance for climate change must be included for all of the above calculations, in accordance with current best practice (PPS25, 2010).	

Comments

The refurbishment is expected to have a neutral impact on the surface water run-off. It is expected that detailed calculations will be undertaken at design stage by the Flood Risk consultant and these will be detailed with the FRA. Hence 1 No. credit has been assumed.

Pol 03 Flooding

No. of BREEAM credits available	2	Available contribution to overall score	1.50%
No. of BREEAM innovation credits	0	Minimum Standards applicable	Yes

Assessment Criteria — Indicative Credits: 2

Where the dwelling is located in a low flood risk zone, or where in a medium to high flood risk zone and a flood resilience/resistance strategy has been implemented, up to two credits can be awarded as follows:

Minimum Standards	A minimum of two credits must be achieved for this issue at the Excellent and Outstanding levels
Option 1 - Low Flood Risk	
Two Credits	Where a Flood Risk Assessment (FRA) has been carried out and the assessed dwellings are defined as having a low annual probability of flooding.
Option 2 - Medium / High Flood Risk	
Two Credits	Where a Flood Risk Assessment (FRA) has been carried out and the assessed dwellings are defined as having a medium or high annual probability of flooding.
	Two credits are awarded where as a result of the dwellings floor level or measures to keep water away the dwelling is defined as achieving avoidance from flooding by following Checklist A-10; Decision Strategy Flow Chart.
	Where avoidance is not possible, two credits are achieved where a full flood resilience/resistance strategy is implemented for the dwellings in accordance with recommendations made by a Suitably Qualified Building Professional

Comments

The EA website suggests that the site lies within the Low Flood risk area. An FRA is expected to be commissioned at design stage.

SEA00008054/76

APPENDIX D – FIRE SAFETY REPORT

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Grenfell Tower
Outline Fire Safety Strategy

A Report to:	Studio E LLP
Project No:	301922
Document Reference:	MT13779R

Date:	31/10/12
Issue No:	01
Page:	1

Testing
Advising
Assuring

E-E-QU-FT-CS-WR-F-1007 (iss 04)

Revision History

Issue No :	01	Issue Date :	31/10/12
Reason for Revision:	First issue		

Prepared by:	T. Ashton Terry Ashton Associate (For and on behalf of Exova Warringtonfire)
Reviewed by:	Seán mc Eleney Sean McEleney Graduate Engineer (For and on behalf of Exova Warringtonfire)

Validity

This report is formulated on the basis of the information and experience available at the time of preparation. It is applicable to the above-mentioned project only in accordance with the client's instructions. It is only valid provided no other modifications are made other than those for which a formal opinion has been sought and given by Exova Warringtonfire.

Contents

1 Introduction

The proposed development is the refurbishment of Grenfell Tower, a 24 storey residential block incorporating a boxing club at ground storey level, a nursery at mezzanine level (between the ground storey and walkway level) and office accommodation in the mezzanine level between walkway level and first storey level.

The refurbishment comprises:

- The creation of a new reception area and office at ground storey level;
- The re-siting of the nursery to ground storey level;
- The creation of new residential apartments in the mezzanine over the ground storey;
- The re-siting of the boxing club to walkway level;
- The creation of a community office at walkway level;
- The creation of new residential apartments in the mezzanine over walkway level; and
- Improvements to the building services.

This report details the applicable statutory controls in respect of fire safety and contains an outline fire safety strategy for compliance with these statutory controls.

The report is based upon discussions held with the design team and on drawings (numbers 1279 RE 110 05, 1279 RE112 04, 1279 RE113 04 and 1279 RE114 03) produced by Studio E LLP.

2 Statutory Considerations

2.1 The Building Regulations 2010

The building work will have to be carried out in conformity with the requirements of Schedule 1 of the Regulations. To satisfy Regulation 4, it will be necessary to ensure that, where a building is altered, it is no more unsatisfactory in relation to the requirements of Schedule 1 than it was before the works were carried out.

The requirements of Schedule 1 relating to fire safety are:

a) B1 (means of warning and escape);

b) B2 (internal fire spread (linings));

c) B3 (internal fire spread (structure));

d) B4 (external fire spread); and

e) B5 (access and facilities for the fire service).

Compliance with these requirements is normally achieved by meeting the standards contained in Approved Document B (ADB)[1] and/or BS 9991[2].

2.2 The Regulatory Reform (Fire Safety) Order 2005

The Regulatory Reform (Fire Safety) Order came into effect on 1 October 2006. One effect of this Order is that the owner (or the "responsible person" as defined in the Order) will have to carry out a fire risk assessment (or have a fire risk assessment carried out on his/her behalf). Compliance with the Regulatory Reform Order is normally achieved by following the guidance given in the DCLG Guide[3].

2.3 London Building Acts (Amendment) Act 1939

The building is subject to the requirements of Section 20 of the London Building Acts (Amendment) Act 1939. Under the provisions of Section 20, the Council (the Royal Borough of Kensington & Chelsea) may make requirements for the provision of the following:

a) fire extinguishing appliances and installations;

b) effective means of removing smoke in case of fire; and

c) adequate means of access to the site of the building for fire brigade personnel and appliances.

The Council may also make requirements in respect of defined "special fire risk" areas in the building (such as transformer rooms, generators and boiler rooms).

Compliance with the requirements of Section 20 is normally achieved by meeting the standards contained in the LDSA Section 20 Guide[4].

3 Proposed Outline Fire Safety Strategy

3.1 Compliance with The Building Regulations 2010

3.1.1 Compliance with B1 (means of warning and escape)

FIRE DETECTION/ALARM SYSTEM

The nursery, the boxing club and the ground and walkway offices will all be provided with at least a Type "M" system as defined in BS 5839-1[5]. Each system in these three elements will be "stand alone" but interlinked so that an outbreak of fire in one of them will be enunciated on all fire alarm control panels.

New apartments will be provided with "LD3" systems of detection and sounders as defined in BS 5839-6[6].

MEANS OF ESCAPE

NURSERY

The nursery will have at least two exits direct to the exterior.

BOXING CLUB

The boxing club will have two exits: one direct to the walkway; and the other to the lift lobby of the residential tower from where access will be available to the exterior via the new stair from walkway level to ground storey level.

APARTMENTS

The new apartments in the mezzanine over walkway level will have access to the existing escape stair serving the residential tower.

The new apartments in the mezzanine over the ground storey will have access to the new stair serving the residential tower.

OFFICES

The new office at ground storey level and community room in the mezzanine over the ground storey will have exits direct to the new stair linking the existing stair serving the residential tower with the exit at ground storey level.

NEW STAIR

The new stair will be separated from the remainder of the accommodation at each level by construction having a standard of fire resistance to satisfy B5 (see below). The exits to this new stair from the new office at ground storey level, the community room on the mezzanine above the ground storey and from the boxing club at walkway level will be via lobbies enclosed to a standard of fire resistance to satisfy B5 (see below) incorporating self closing inner and outer doors to at least a "FD30S" standard.

Each of these lobbies will be ventilated to the exterior by an opening at least 0.4m^2 in area which will either be direct to the exterior or via suitably protected ducts. The vents will be automatic in operation and activated by smoke detectors sited within each of the areas. As an alternative to this arrangement, the community room on the mezzanine above ground storey level will be vented direct to the exterior by an automatic opening vent 0.4m^2 in area.

APARTMENTS

The new apartments will have protected entrance halls (i.e. entrance halls enclosed by construction having a 30 minute standard of fire resistance with the doorways therein fitted with"FD20" doors). Bathrooms and WCs will not be enclosed by fire resisting construction but, where they abut other rooms, they will be separated from the latter by walls having a 30 minute standard of fire resistance.

The travel distance from the apartment entrance door to the door to the furthest habitable room will not exceed 9m.

An exception to these arrangements will be the apartments on the mezzanine above the ground storey. Here, the habitable rooms will be provided with escape windows (windows with an unobstructed area of 0.33m^2 and at least 450mm high and 450mm wide with the bottom of the openable area not more than 1100mm above floor level).

SMOKE VENTILATION OF COMMON LOBBIES

The existing smoke extract arrangements within the common lobbies in the residential tower will be overhauled and the fresh air inlet/smoke extract shafts extended to serve the new common lobby in the mezzanine above walkway level.

EMERGENCY LIGHTING

Where necessary, emergency lighting will be provided in the escape routes from the building designed in accordance with the recommendations of BS 5266[7].

3.1.2 Compliance with B2 (internal fire spread (linings))

All new wall and ceiling linings will be the equivalent of the following:

a) in circulation spaces and escape routes other than circulation spaces within the apartments – Class 0 (using the UK testing methods) or Class B-s3, d2 (using the European testing methods); and

b) elsewhere – Class 1 (using the UK testing methods) or Class C-s3, d2 (using the European testing methods) although a Class 3 standard or Class D-s3, d2 could be used within rooms not exceeding 30m^2 in non residential accommodation or 4m^2 in area within the apartments.

(NOTE: the European testing methods referred to above are the new methods developed as part of a harmonisation program for fire testing within Europe as detailed in BS EN 13501-1: 2002[8]. Materials achieving the classifications to either the new European test method or the UK test methods are considered to be acceptable).

3.1.3 Compliance with B3 (internal fire spread (structure))

FIRE RESISTANCE OF ELEMENTS OF STRUCTURE

All new elements of structure will be constructed to have the same standard of fire resistance as that of the existing elements. This is assumed to be 120 minutes for the structural frame and 60 minutes for floors.

COMPARTMENTATION

Compartment walls and/or floors will be provided:

a) Between apartments and other apartments;

b) Between apartments and common areas;

c) Between the nursery and the remainder of the building;

d) Between the boxing club and the remainder of the building; and

e) Between the offices and the remainder of the building.

Compartment walls and floors will have a 60 minute standard of fire resistance unless they form part of the structural frame of the building (where they will have a 120 minute standard of fire resistance). Doorways within compartment walls will be fitted with self closing doors having a 60 minute standard of fire resistance except where a different standard will be necessary to satisfy B5 (see below).

3.1.4 Compliance with B4 (external fire spread)

It is considered that the proposed changes will have no adverse effect on the building in relation to external fire spread but this will be confirmed by an analysis in a future issue of this report.

3.1.5 Compliance with B5 (access and facilities for the fire service)

A new inlet to the existing dry rising main will be provided in a location where it will be within 18m (and in sight of) where a pumping appliance could pull up.

Access to the building for fire service personnel will either be at ground storey level or walkway level. If access is obtained at ground storey level, fire service personnel will have to proceed up the internal stair to either the mezzanine above the ground storey or to walkway level. Outlets from the dry rising main will be provided in the common lobbies at both these levels and in the mezzanine over walkway level.

The entrance hall containing the stair will be separated from all the accommodation by construction having a 120 minute standard of fire resistance. All connections to the accommodation in this enclosure (except the connections to the common lobbies) will be via lobbies enclosed to the same standard of fire resistance with the openings fitted with self closing doors of the following standard:

- To the accommodation – "FD60S"; and
- To the stair – "FD30S".

A stated above, these lobbies will be ventileted.

3.2 Compliance with the Regulatory Reform (Fire Safety) Order 2005

It is considered that the fire safety measures described above will satisfy the requirements of the Regulatory Reform (Fire Safety) Order.

Portable fire-fighting equipment (fire extinguishers) will be provided in the nursery, boxing club and office accommodation in accordance with the recommendations of BS 5306-8[9].

3.3 Compliance with Section 20

It is considered that the fire safety measures described above will meet most of the objectives of Section 20.

Openable windows equal to 2.5% of the area of each of the altered storeys will be provided. These will, where practicable, be sited on opposing faces of the building to provide cross ventilation.

4 References

1. Approved Document B. Fire safety. Volume 2 – Buildings other than Dwellinghouses. Department for Communities and Local Government - TSO 2006

2. BS 9991: 2011. Fire safety in the design, management and use of residential buildings

3. Fire Safety Risk Assessment – sleeping accommodation. Department for Communities and Local Government 2006

4. London District Surveyors Association Fire Safety Guide No. 1. Fire Safety in Section 20 Buildings – LDSA Publications 1998

5. BS 5839-1: 2002. Fire detection and alarm systems for buildings: Part 1: Code of practice for system design, installation, commissioning and servicing

6. BS 5839-6: 2004. Fire detection and alarm systems for buildings - Part 6: Code of practice for the design, installation and maintenance of fire detection and fire alarm systems in dwellings

7. BS 5266: Part 1: 1999 Emergency lighting. Code of practice for emergency lighting of premises other than cinemas and certain other specified premises used for entertainment

8. BS EN 13501-1: 2002. Fire classification of construction products and building elements. Classification using data from reaction to fire tests

9. BS 5306-8: 2000. Fire extinguishing installations and equipment on premises. Part 8: Selection, and installation of portable fire extinguishers – Code of practice