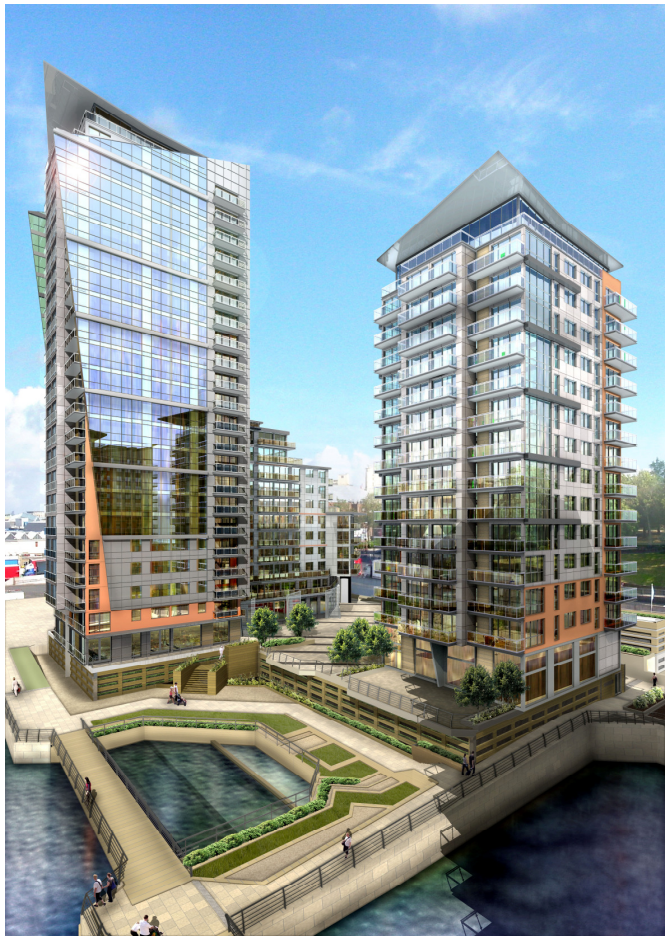


MAST QUAY – PHASE II

WOOLWICH CHURCH STREET
LONDON, SE18

DESIGN & ACCESS STATEMENT

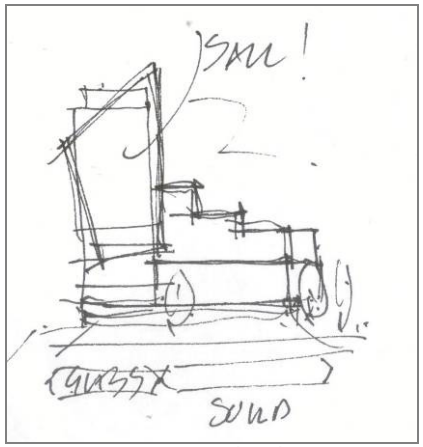
UPCHURCH ASSOCIATES
On behalf of
MAST QUAY DEVELOPMENTS LTD

JANUARY 2010

MAST QUAY – PHASE II

DESIGN & ACCESS STATEMENT

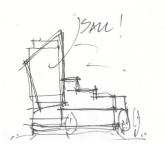
This design statement has been written to describe the proposed development and the design process undertaken to develop the scheme from early concepts to final proposals.



Concept Sketch

Design Development Sketch

Final Proposal CGI



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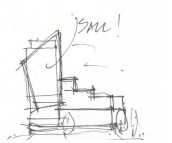


BACKGROUND

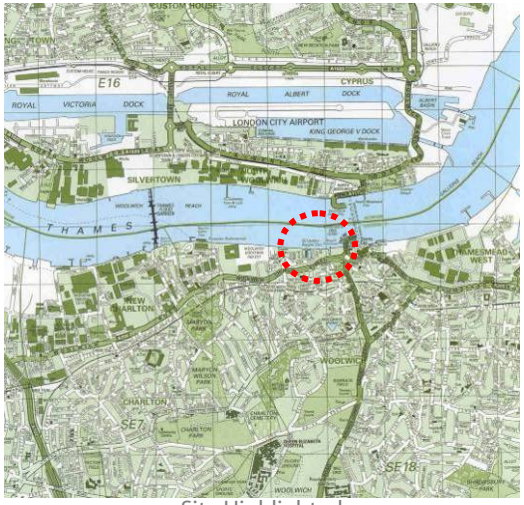
Introduction

- **Site location**

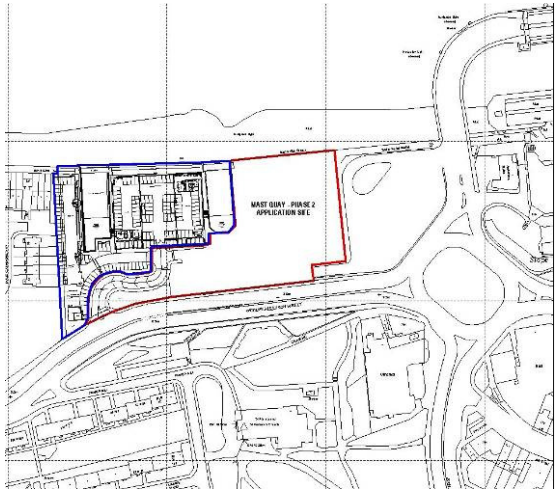
The site for the proposed development is known as Phase 2 of the site known as Mast Quay.

The site is situated to the north of Woolwich Church Street, Woolwich, London SE18 and consists of lands known separately as St Mary's and St Andrew's wharves and Mast Pond Wharf. To the East of the site is the Woolwich Ferry South Terminal and to the West of the site is Mast Quay Phase 1 and Maude Cashmore Estate.

The site lies to the north of St Mary's Church, which is situated on a hill and is surrounded by an attractive park with a platform from which views can be gained up river towards the Millennium Dome and down river towards the Thames Estuary.



Site Highlighted



OS plan

- **Summary of scheme**

The proposal is for a “mixed use” development of 218 nos. 1 & 2 bed residential units with 3 bed residential penthouse units, along with approximately 740sqm of commercial space comprising of both office space (B1) and the potential for a small café (A3) unit

The scheme includes -

Block 'D' Tower of Ground/Deck + 14 Storeys with office/potential cafe at Deck Level and residential over.
Block 'E' Tower of Ground/Deck + 22 Storeys comprising residential units. A stepping tail of deck + 10 storeys with office @ deck level with residential over.

Both Blocks are accessed from a podium deck which comprises of a public square with access to the lower river level. Secure car parking is to be located underneath the deck at ground level.

Design concept of the scheme - Drawing from the significance on the sites Maritime History and its proximity to the river, the concept of the tower façades being based on a ‘SAIL’ was explored.

The overall impression is that the site will step up from west to east, with this effect being supported by the handing of the towers of Phase 1. Block E is the main feature block of the site with materials being selected to reinforce this and is intended to be a Landmark Building. As with Phase 1 land is to be set aside for the Greenwich Water Front Transit Route.


CGI view of Phase 2 proposal from West


CGI view of Phase 2 proposal from East

Site History

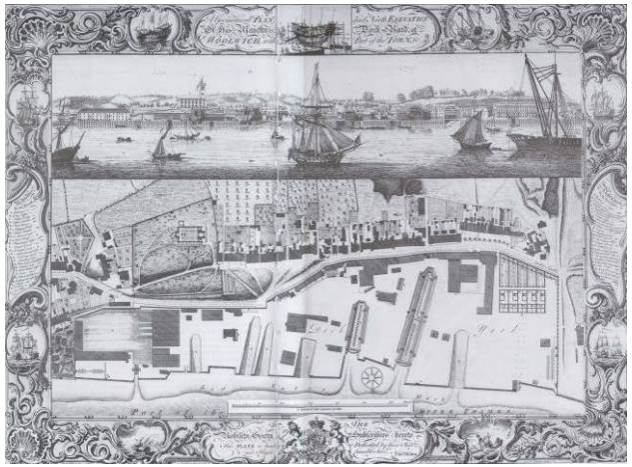
- **King Henry viii Dockyard – present day.**

The site was created through development over many centuries on the banks of the River Thames with the creation of historic docks and other associated structures, which date back beyond the reign of Henry VIII.

As with a great deal of the Thames area in Greenwich, this site is of great historic importance. The site formed part of King Henry VIII's dockyard & Phase 2 site, known as Mast Pond Wharf, stored masts imported from Scandinavia for the Navy's fighting ships.

St Mary's Church, as shown in these illustrations, is still in place today.

Painting of the old dockyard with St Mary's Church on the Left



Plan and etching of the old dockyard

The industrial nature of development on this site continued and only ceased prior to development being anticipated in the 1990s. The site is 'Previously developed land' (PDL) as defined under PPS3 and due to the previous employment history, Greenwich Council have designated the site as "mixed-use".

- **Planning history.**

  In 1999 Planning Permission was granted for 181 flats in four blocks on land at St Mary's and St Andrew's wharves off Woolwich Church Street, Woolwich. SE18 (ref: 99/0959/F).

  In addition to the residential blocks the scheme incorporated the following features:

  - Parking at ground level.
  - Hard landscaping designed to provide and protect a "dry" escape from the residential accommodation in the case of the 200 year flood.
  - The provision of flood warning measures.
  - Land is set aside to accommodate the Greenwich Water Front Transit Route.
  - The extension of the river walkway from Maude Cashmore to the Woolwich Ferry.
  - The retention of and preservation of the existing draw docks including opening up the ground around these docks for public access.
  - The incorporation of a brown roof as well as extensive roof terraces and balconies.

  Following the grant of planning permission in 1999 the client purchased the adjacent site to the East known as Mast Pond Wharf which then had planning approval for a hotel and associated services.

  A further planning application was submitted for the whole site in 2002 and was subsequently withdrawn. In 2004 works commenced on three of the approved buildings from the 1999 permission which are now complete – this part of the development is known as 'PHASE 1'

1999 Planning Permission CGI

2002 Planning Application CGI

Completed Phase 1 development

- **Current Site conditions.**

  Phase 1 is now complete and the Phase 2 site has a small number of site huts from the construction of Phase 1. There is also a link from the Phase 1 river front to the ferry car park for the riverwalk and cycle path that runs across the site. The site is generally flat and the derelict buildings that once occupied the site have since been demolished to make way for the site huts during the Phase 1 construction period.


Photograph of application site adjacent to Ferry Car Park


View of application site from 14th floor of Mizzen Mast House


Photograph of application site adjacent to Ferry Car Park

Design Brief and Site Constraints

- **Council requirements and brief requirements**

  The brief for the scheme, resulted from both the Council's and Client wish to construct a further residential development along with other factors arising from the sites designation and location.

  The Strategic Planning team at Greenwich had stated that if a high-rise building be incorporated within the scheme, then this building should be a 'Landmark Building' and be viewed as a Gateway to the Borough of Greenwich..

  The site was designated as a mixed use site in the Draft and current UDP which was adopted in 2006.

  With regards to the nature of uses for the site the Council expect that the greater proportion of the use be residential. This has been provided by incorporating a mix of 1 & 2 bed residential units with 3 bed residential penthouse units. The employment elements of the development are to be B1 commercial units

although part of the ground floor accommodation is being considered for A3 unit (either a small café or restaurant)..

One key element of the design team's vision for the site was a public square that could link the revitalised riverwalk and cycle path to Woolwich Church Street and the town centre.

The requirements for the residential units in the scheme were that all the proposed units were to meet the 'Lifetime Homes' standards and achieve an equivalent to Eco-Homes rating of excellent – now BREEAM Code 3. The office units will achieve a high BREEAM standard.

Along with these specific requirements from the Council there were also Policy details that had to be considered such as overall density issues and parking levels.

- **Client brief and requirements**

The client's requirement was for a high quality residential development comprising of 1 & 2 bed residential with 3 bed residential penthouse units, with as many of the units as possible to achieve river views from main bedrooms and reception rooms.

The overall objective for the client was to achieve a finished product that was of high quality to link in the completed Phase 1 scheme and provide a Landmark Development for the company.

- **Design constraints**

There were many design constraints placed on the site. Consultants were appointed to advise on the various elements and design solutions were developed with the design team as a whole. The main design constraints on the site are given below.

  - London City Airport
  - Flood risk & functional flood plain
  - Day-lighting
  - Visual impacts
  - The need to relate to Phase 1
  - Ecological
  - Acoustic considerations
  - Corridor for future 'Greenwich Waterfront Transit Route'

    - LONDON CITY AIRPORT - A height restriction is placed on the site due to its proximity to London City Airport. The City Airport Authority were consulted

and the following advice/guidelines were given:

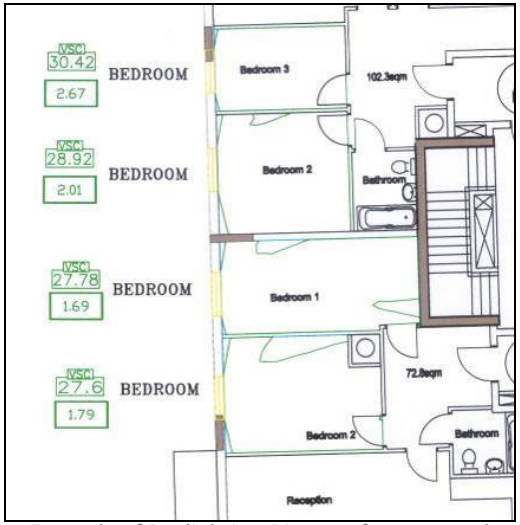
'The most northerly edge is restricted to 76m AOD and the most southerly edge is limited to 80m AOD. The surface above the site is a sloping surface with a gradient of 1:20.'

- FLOOD RISK & FUNCTION FLOOD PLAIN – The site lies in an area of the Thames riverside that is not protected by flood defence walls and is to the East of the Thames Barrier. As a result the site is susceptible to Tidal Flooding. The Environment Agency has been involved with the site and relative flood issues since the work began in 1998. Following a review of the phase 2 site, the Agency concluded that not only is the site susceptible to tidal flooding, but also has an area of the site known as 'Functional Floodplain'. In this regard, a flood risk engineer Brian Flynn was, appointed to ascertain flood risk and to develop a scheme that would be safe. The Environment Agency initially set out two main parameters for the development

    - Existing Flood Volume to be retained
    - Site to be Safe for user/occupiers during a time flood

  Having had meetings and discussions with the Environment Agency over the course of the design development of these proposals, it was finally agreed that due to safety and specific site conditions for the proposed development, the car park could be fully defended and it was conceded that this would result in a loss of flood storage volume. In this regard, the proposed development will defend the under-deck area of the development including the secure residents parking to a minimum of 7.8m AOD.

- DAYLIGHTING – As with any development, daylighting to the residential units proposed and the effect on daylighting to surrounding buildings needed to be considered. In the case of Phase 2 surrounding buildings that could be affected in terms of daylighting are the residential units in Block C – Mizzen Mast House in Phase 1. Daylighting to the proposed was also taken into account during the design process. Daylighting Consultants 'Grimley Schatunowski Brooks' were appointed to carry out BRE tests on the proposed and existing units. Ways in which daylighting can affect design includes building locations and window sizes and locations of the units.



Example of Daylighting Diagram for proposed development

- VISUAL IMPACTS – The visual impact of the development on its surroundings is important and needs to be considered in design development. The site is in a prominent location on the river and can be viewed from all angles – it is effectively an 'Island' site. It is therefore important that there is no 'BACK' of the development i.e. every façade is a principle façade. St Mary's & St Andrew's Church on the hill to the south of the site is an important landmark in the area and views of the Church need to be retained from the River as do views of the river from the Church. The outlook from the development is also key to the final design as the site is bounded on two sides by a busy A Road and a large car park.

- THE NEED TO RELATE TO PHASE 1– It was agreed from the outset of the design process that the quality of both the design and materials of Phase 2 should be of a higher standard to that of Phase 1. However the two need to read together and not as two separate developments.

- ECOLOGICAL– The site is of ecological importance not only because of its riverside location, but also because the site had previously been left derelict there has been and is potential for Black Redstarts.

- ACOUSTIC CONSTRAINTS – As stated above, the site is bounded on two sides by a busy trunk road and a car park – Woolwich Church Street to the south and Woolwich Ferry car park to the east. The results of any potential residential development in such a location are that noise levels may limit areas of the site that are suitable for residential units to be located and glazing specifications for windows will be dependant on the location of the windows in relation to noise sources. Acoustic Consultants 'Cole Jarmen' were appointed to advise on suitable locations for residential development on the site.

- CORRIDOR FOR FUTURE 'GREENWICH WATERFRONT TRANSIT ROUTE' – The provision of a 10m corridor is to be left along the South boundary of the site for the future installation of the 'GREENWICH WATERFRONT TRANSIT ROUTE'. At the time of this application, the design team have been advised that this route will take the form of a dedicated bus lane at grade with Woolwich Church Street. It is understood there is no current detailed design for the route.

As well as the consultants appointed to assist with the design limitations imposed by the physical constraints of the site, a number of other consultants were appointed for the design process, the are as follows:

▪ Structural Engineers	Walsh Group	Advise on Structural design
▪ Landscape Architects	Scott Wilson	Landscape Design
▪ Wind Environment Consultants	BMT Fluid Mechanics	Wind environment modelling
▪ Services Engineers	Curona Design	M&E and Sustainability advice and design
▪ Ecologist	Green Roof Consultancy / Dusty Gedge	Advice on green roofs and ecological planting
▪ Traffic Engineers	WSP	Traffic volume modelling
▪ Air Quality Engineers	WSP	Air quality modelling

Other Information

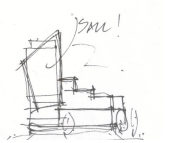
Due to the size of the development, it was advised that CABE were approached to comment on as to whether they would require any involvement in the design process. We contacted CABE and the response was that the scheme was not large enough for their involvement.

Following a review of criteria set out in the **'Statutory Instrument 2008 No. 580 - The Town and Country Planning (Mayor of London) Order 2008'** the proposed scheme would be referable to the Mayor as the proposed buildings fell under the following categories:

'Development that comprises of more than 150 flats'

'More than 25 metres high adjacent to the River Thames'

As the scheme was referable to the Mayor and would be subject to consideration against the policies of the Consolidated London Plan regard would need to be given to a series of further criteria including the achieving a 20% reduction in CO_2 emissions through the use of on site based renewable sources. The Mayor's office would also be consulted during the application process to comment on design, density and affordable housing. A meeting was held at the Mayor's office and the scheme reviewed. Curona Design were appointed to advise on sustainability issues. Please refer to the Environmental Statement for more information on the Mayor's requirements and details of the sustainability proposals.



DETAILED DESIGN & ACCESS STATEMENT

The following section gives an in-depth analysis and description of the proposed development and the concepts and constraints that informed the proposed design. The format has been based on the guidelines set out by CABE in the document – 'DESIGN AND ACCESS STATEMENTS – How to write, read and use them'.

Chapter 1 – USE
Chapter 2 – AMOUNT
Chapter 3 – LAYOUT
Chapter 4 – SCALE
Chapter 5 – LANDSCAPE
Chapter 6 – APPEARANCE
Chapter 7 – ACCESS
Chapter 8 – OTHER INFORMATION

CABE Document referred to

Chapter 1 – USE

- **Description of proposed development uses:**

The proposed development is broken down into two uses; residential and commercial. There are a total of 218 units proposed for the development. The commercial aspect is split between B1 office units and a potential A3 café/restaurant.

- **Residential Sales** – the upper storeys of both the proposed blocks are residential. The market elements are integrated with the affordable units and comprise 1 & 2 bed units with 3 bed penthouse units
- **B1 Accommodation** – the B1 accommodation is spilt into 3 self-contained units. The B1 units are situated at deck level of Block E. The option of the deck and mezzanine levels of Block D being used for B1 commercial use is also proposed.
- **A3 Accommodation** – The potential A3 unit is located at deck and mezzanine levels in Block D
- **Public Open Space** – A further element of the planning brief was for a public open space to be accommodated on the site. The public space provides access for the commercial units, café and the main entrances to the residential accommodation.
- **Access to the River** – The public open space connects the town centre of Woolwich (via Woolwich Church Street) with the Thames Cycle path.

- **Justification of proposed uses:**

The development of the brief by all parties involved set out clear intentions for suitable uses for the site. As such justification for the various uses accommodated in the development is given below.

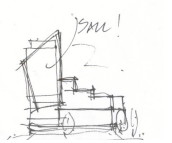
- **UDP** – Both in the draft and the recently adopted Greenwich UDP the site has been designated as a 'MIXED USE' site

- **Cohesion between uses:**

Due to the mixed use nature of the proposed development, it is crucial that the different use types in the development do not adversely affect one another.

- **Relationship between uses** - The provision for the commercial units to be accessed and located at the communal deck level results in the separation of the employment space and the residential accommodation.

- **Justification of sustainable development –** The development proposals include for secure on site parking for the residents with a number of visitor parking spaces and good access to local shops and public transport.



- **Community Benefits**

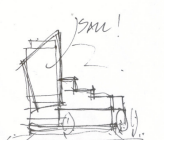
The development is to integrate into its surroundings both architecturally and socially and this includes benefits to the local community. Such benefits are given below.

- **Provision of employment opportunity** – The opportunity for employment on the site comes in the form of office accommodation, with employment also created in the proposed café. There is also employment opportunity in site management such as concierge and maintenance positions.

- **Provision of public open space and improved access to the river** – The overall Mast Quay site has improved the riverfront opportunities for the public with the completion of Phase 1 of the development. The addition of Phase 2 with the Public Square, revitalised river walk and inter-tidal bed will provide the community with further access to the River and general amenity space.

- **Provision of funds for off-site affordable housing** – A 'Flexible Agreement' between the developer and the local authority, has the capability of providing funds for off-site affordable housing.

- **Further Benefits** –As with all developments, a section 106 agreement will also be put in place to benefit areas of the community. Details of these contributions form part of the flexible agreement which is discussed later in this document.



Chapter 2 – AMOUNT

The amount of accommodation provided in the proposed development has been achieved following both the analysis of the site and available local transport as well as council guidelines on density levels.

- **Site suitability**

To ensure that the proposed level of development can be successfully accommodated on the site, a series on analytical studies were undertaken as well as parameters set out by Planning Policy and the development team.

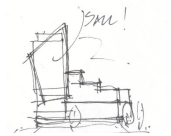
- **Site restrictions and analysis** – Being located off Woolwich Church Street and adjacent to the Woolwich Ferry car park placed several restrictions on the site with regards to the location of potential development. This included acoustic constraints & visual outlook. Advice from acoustic consultants gave a distance of 15m from Woolwich Church Street for residential accommodation to be located. The Eastern edge of the site adjacent to the Ferry Car Park did not have a restriction but the outlook over the car park by residential units should be kept to a minimum. Please refer to Acoustic section of the Environmental Statement prepared by Cole Jarman for further information. Other site restrictions included the requirement of the Council to have a visual link through the site from Woolwich Church Street to the River front and also the height restriction placed on the site due to its proximity to London City Airport. Details of this restriction are given below.

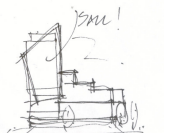
  'The most northerly edge is restricted to 76m AOD and the most southerly edge is limited to 80m AOD. The surface above the site is a sloping surfaces with a gradient of 1:20.'

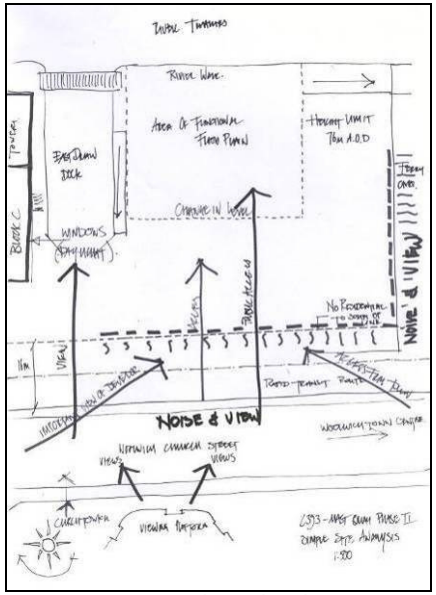
  As well as the physical constraints for development on the site, density levels were a main factor of consideration. Density levels are given as 'habitable rooms per hectare'. Habitable rooms are living rooms, bedrooms and separate kitchens (if above 13sqm in area). With regards to density levels the UDP suggests densities of over 450 habitable rooms /hectare could be acceptable for such a site:

  > *'H9iv - Over 450 HRH (182 HRA) for non-family dwellings will be accepted in exceptional circumstances, on sites of high public transport accessibility, where it can be demonstrated that the design is of exceptional quality.'*

  Initial discussion between the development team and the Council suggested that a density of 800 habitable rooms/hectare maybe acceptable subject to meeting other criteria.







Site Analysis Sketch

- **PTAL rating** – The PTAL rating – 'PUBLIC TRANSPORT ACCESSIBILITY LEVEL' attained by a site gives an indication as to what density could be deemed as acceptable. WSP carried out a full study into local public transport and a PTAL rating of 5 was given. This falls within the second highest band and as such a high density level can be achieved. Please refer to the Traffic Impact Assessment section of the Environmental Statement prepared by WSP for further information.

- **Schedule of accommodation**

A detailed schedule of accommodation can be found at the back of this Design & Access statement.

- **Number of units proposed** – The total number of units proposed is 218, split into 1 & 2 beds with 3 bed penthouse units
- **Commercial Accommodation proposed** – B1 office accommodation approximately 290 sqm in Block E, with further B1/A3 café/restaurant approximately of 450 sqm in Block D.
- **Car parking - 112** Permanent Spaces have been provided including 9 disabled spaces and 2 'Car Club' spaces.
- **Density level** – The density on the Phase 2 site alone is 728 habitable rooms /hectare and for the Phase 1 & Phase 2 sites combined a density of 695 habitable rooms /hectare.

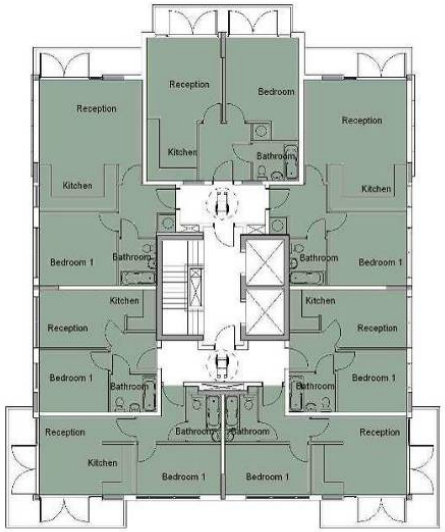
- **Mix of residential accommodation**

The council not only set out guidelines for the density of the site, but also preferred mixes of units i.e. the percentage of the overall units that were to be 1, 2 or 3 bed units. They are as follow:

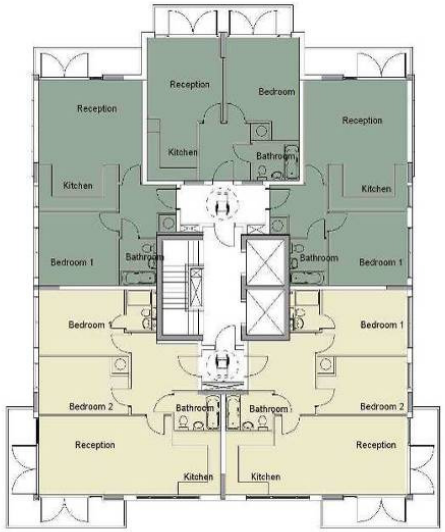
1 bed units	40% of total units
2 bed units	40% of total units
3 bed units	20% of total units

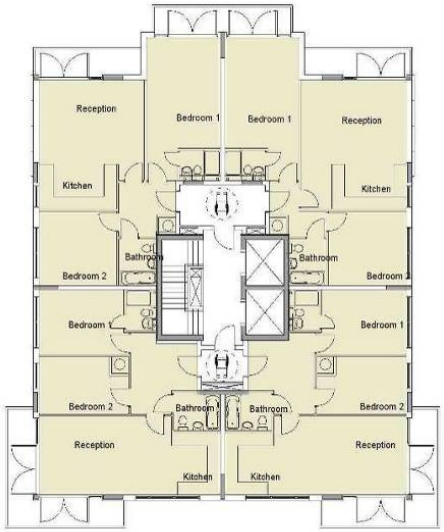
This was reviewed further and it was initially agreed with the council that the site was not appropriate for 3 bedroom family units. As a result the mix of unit type should comprise of a more even mix of 1 & 2 bed units, with a minimal amount of 3 bed penthouse units.

- **Mix of Units** – The floor plates of both the block E tower and Block D tower were designed so that a mixture of arrangement of units can be accommodated e.g. a floor plate could accommodate four two bed units or two two bed units and three one bed units. This flexibility allows the mix of units to change. Alternative unit layouts have been designed so that service runs from bathrooms and kitchens are located to form reasonable stacks. The elevations are designed so that a change of layout will not affect window locations.



I bed Unit
2 bed Unit

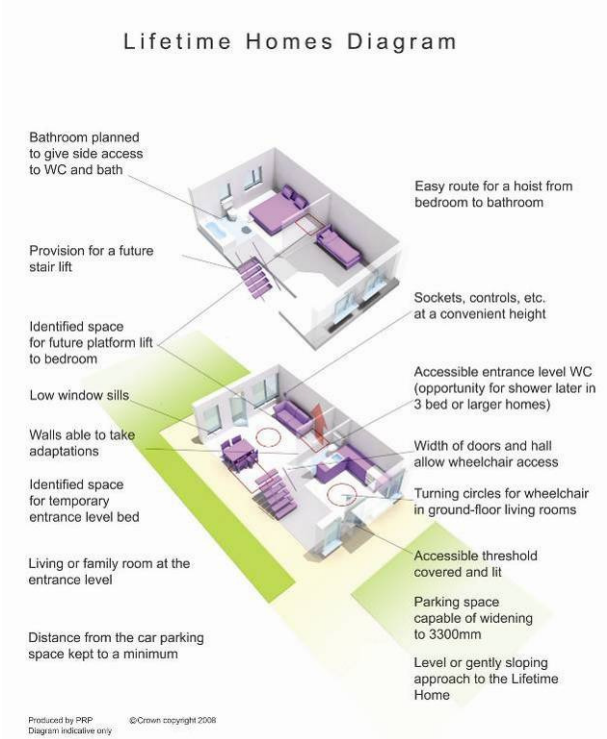




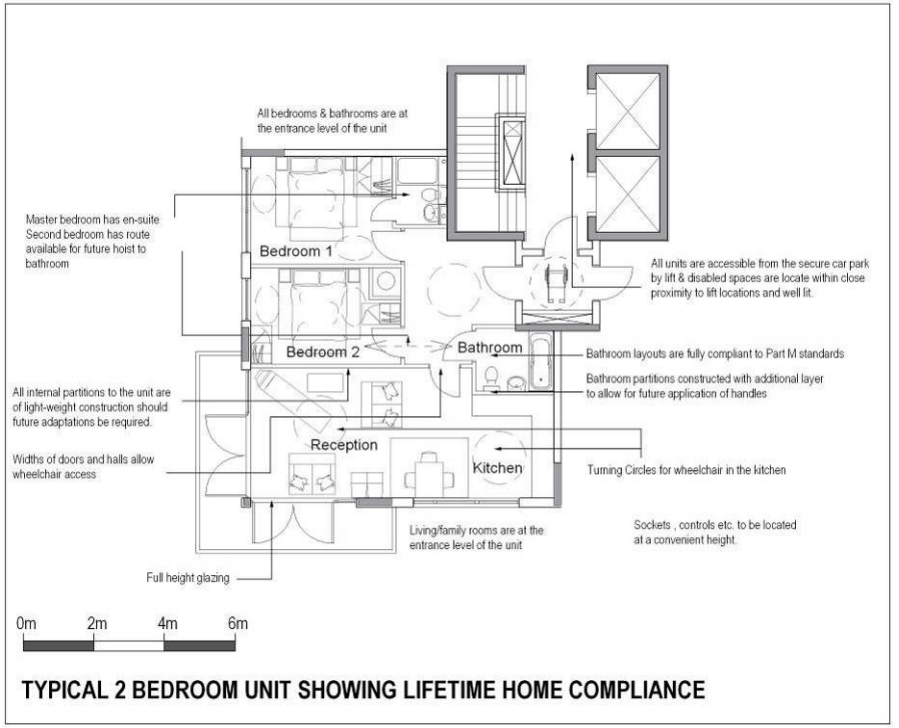
Block D Plans showing flat combinations

- **Affordable Housing –**As previously discussed, due to the nature of the development, it was finally agreed that there would be no affordable units located on the site, and a provision for off-site affordable housing had been put in place by means of a Flexible Agreement.
- .

Design Standards to Achieved –All the residential units on the site are to meet with 'Lifetime Home' Standards and BREEME CODE 3 standard which has replaced the Eco Homes 'Excellent' rating. Below is diagram illustrating the implications of the lifetime home standards and a typical proposed floor plan from the proposed development demonstrating how this has been achieved – please refer to the Environmental Statement for further information on the BREEME compliance.



Lifetime Homes Diagram



Plan of Proposed Unit

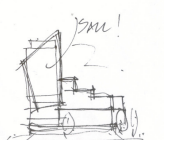
- **Impact on surrounding area**

A development of residential and commercial accommodation will impact on the surrounding area. These impacts are felt to be positive, such as an increase in potential customers for local businesses such as shops and restaurants and as previously discussed the creation of employment opportunities. Along with the provision of off-site affordable units, the development will also bring social improvement to the area with the influx of a more affluent community residing in the development. The possible negative impact could come in the form of increased traffic in the area. In this regard a 'TRAFFIC IMPACT ASSESSMENT' and an 'AIR QUALITY ASSESSMENT' were carried out as part of the Environmental Statement. Both studies returned with results that concluded that the development would not have a detrimental impact on the surrounding area. Visual impacts are also a consideration and also informed the design process by ensuring that there was no 'BACK' to the development, as the site can be viewed from all angles. Please refer to the Visual Impacts section in the Environmental Statement.

- **Benefits to surrounding area**

Benefits to the surrounding area are wide ranging from economic and social benefits to visual impacts and general physical improvements.

- **Proposals beneficial to community** – Employment
  New open space
  Availability of affordable units in the borough
  Influx of customers for local shops and restaurants.
  New Landmark Building for the borough

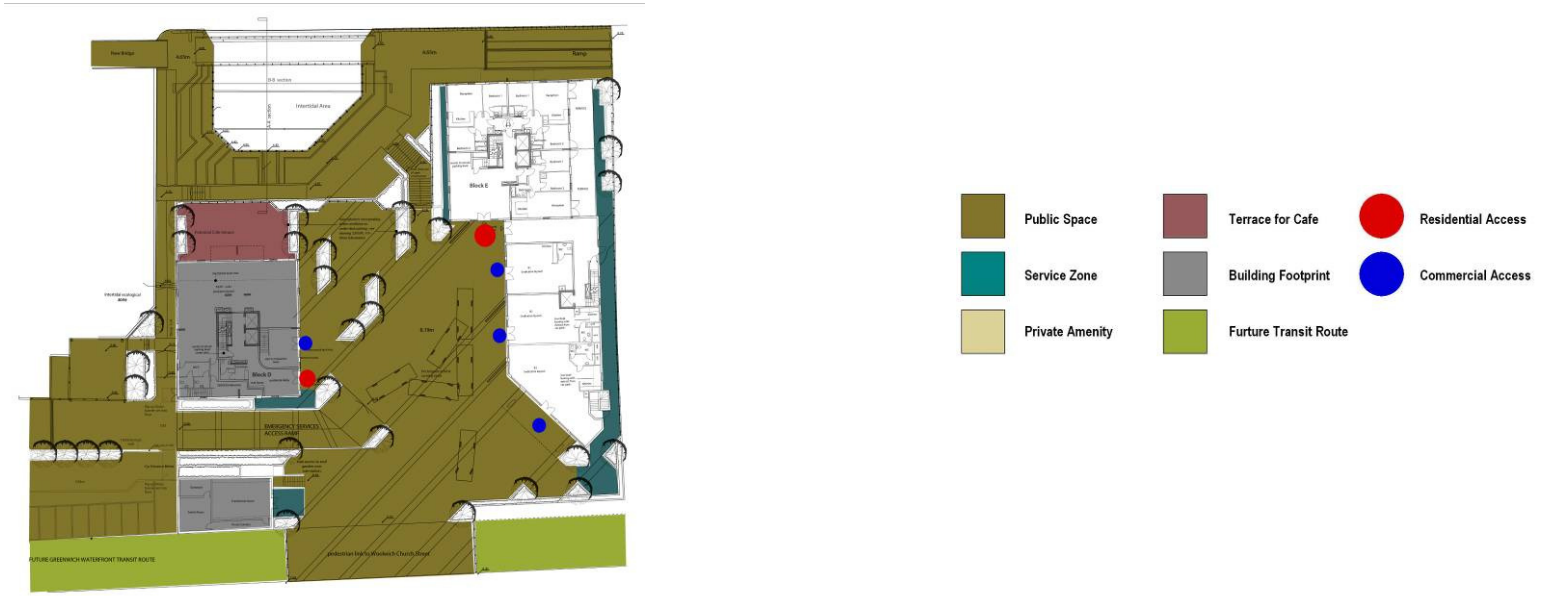


Chapter 3 – LAYOUT

- **Development of design:**

The design development process that generated the development's layout has been informed by the constraints placed on the site as discussed in the previous chapters. Other influential aspects that were taken into account were the requirement for emergency vehicle access and appropriate turning circles, disabled access within the level changes across the site. The layout can be broken down in to 5 main elements

1. River Walk and intertidal zone
2. Public Square
3. Residential Entrances
4. B1 Accommodation and associated access
5. A3 Café and associated access



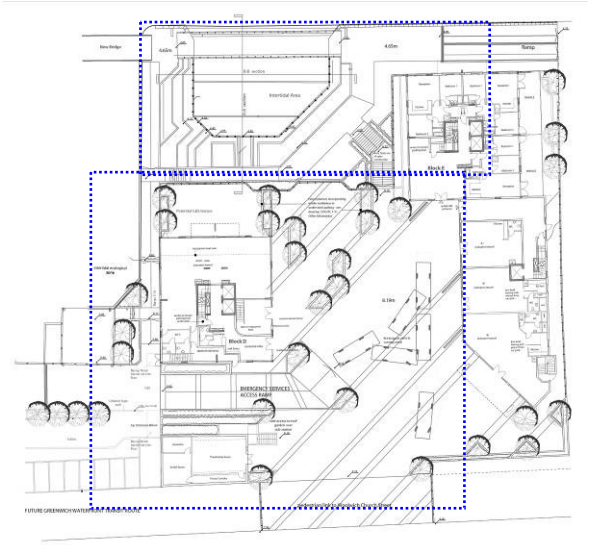
Deck plan showing public/private spaces

During the later stages of the design process Ferguson Mcilveen (now Scott Wilson) were appointed as landscape architects and took on responsibility for the planting and surfaces of the open space but also influenced along with the ecologists the forms and shape of the amenity and intertidal areas.

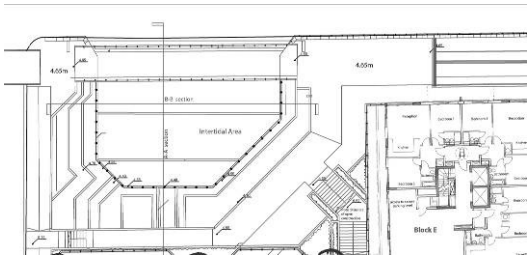
- **How the spaces will work** – The Deck level has two main functions, an area of public open space with a link through to the river and pedestrian access level to the commercial and residential accommodation. The public square is linked to the river walk and lower intertidal foreshore either by the open steps or a series of ramps running alongside the draw dock. The deck space is designed to ensure that there is suitable space for a fire engine to access the risers in the blocks and also turning space of a suitable size. The deck space is linked to Woolwich Church Street by means of a temporary bridge structure that will be in place until the rapid transit route is constructed when a pedestrian crossing will be installed in its place.

  The lower intertidal foreshore is made up of a gently graded surface with native planting and an intertidal zone that will periodically flood. It is anticipated that the public will move though this space as they use the riverwalk and educational signage will be provided to inform on the local habitat and the River Thames.

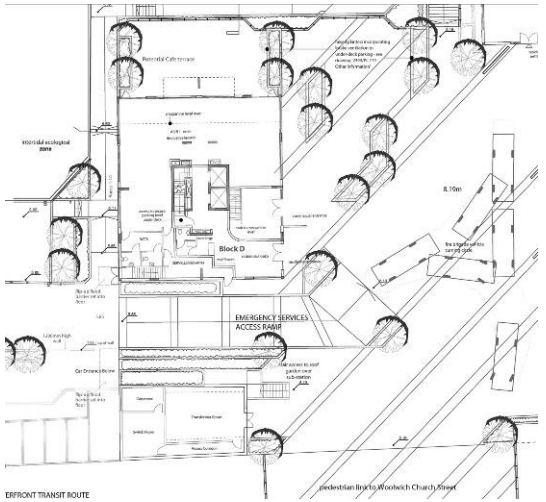
  Beneath the deck is the secure parking for the residential units and various items of plant and building servicing. There are also a number of parking spaces provided externally to the West.



Proposed Deck Plan showing 2 main zones



Detail plan of lower – 'Riverwalk and Intertidal Foreshore' zone

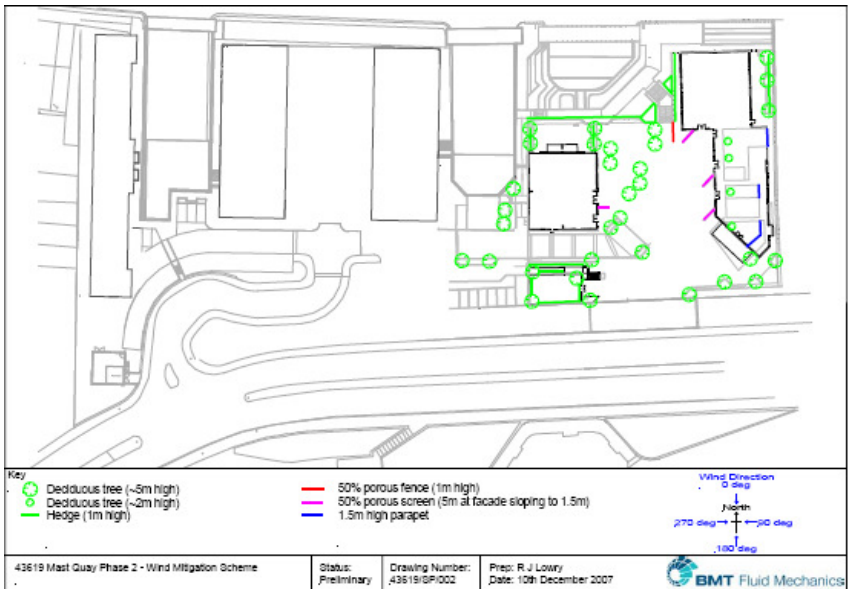


Detail plan of – 'Deck' zone/level

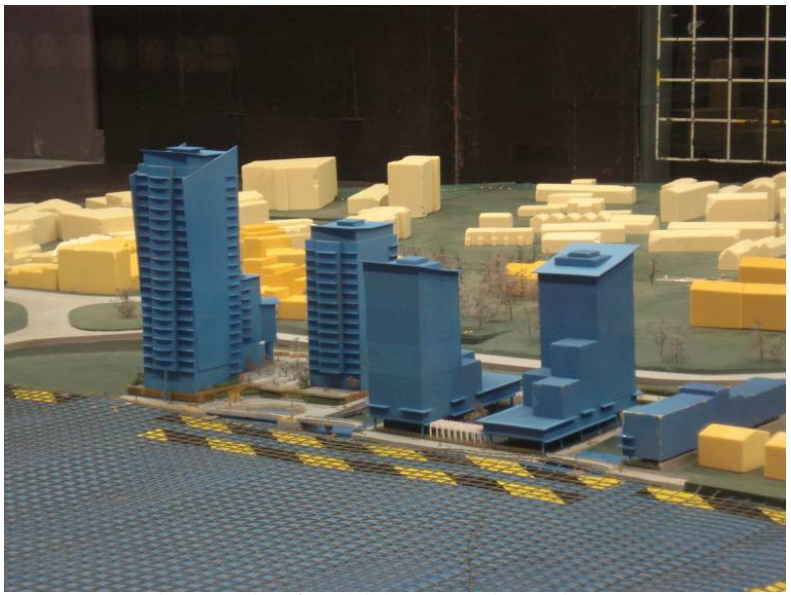
- **Justification of site layout** – One of the factors influencing the location of the blocks on the site are the river views available.

  The entrances to the various uses in the blocks have been located in a manner which keeps the commercial movement on the site separate to the residential. The residential access points to Block E have been located within close proximity to one another. This will assist with security issues such as the monitoring of people gaining access to the residential levels. During the design process a meeting was arranged to discuss 'SECURE BY DESIGN' principles with the Metropolitan police in Greenwich, and advice given during the consultation has been implemented in the design and management strategy for the proposal. The public will be able to flow through the site without the need to approach the entrance zones for the residential accommodation.

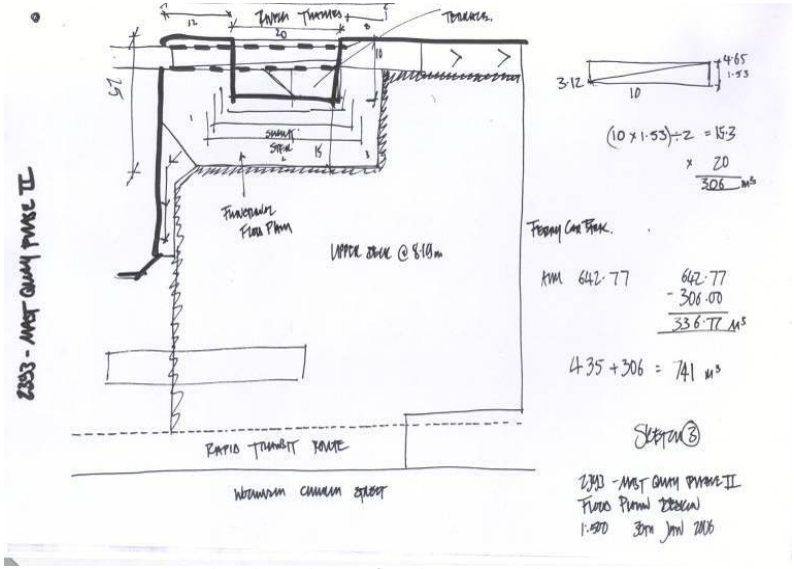
  As part of the Environment Statement undertaken, a wind tunnel test was carried out, the results of which had implications on where suitable locations for entrances and seating areas. Please refer to the wind environment studies section in the Environmental Statement prepared by BMT Fluid Mechanics.



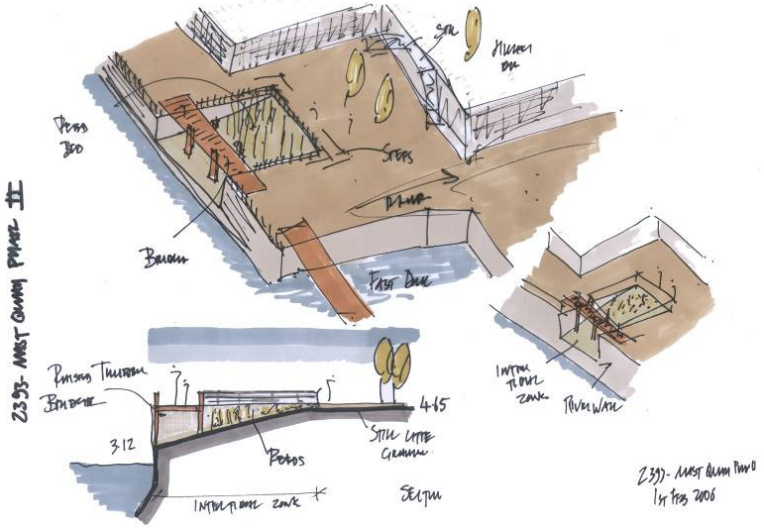
BMT final Mitigation plan


Photographs of model during wind tunnel testing

- **Flood risk & EA requirements -** Following a series of reviews and meetings with the Environment Agency, the current layout was developed. The significant influencing factors were the E.A.'s original request that the flood volume of the Functional Flood Plain be retained on the site, and that parking on the site would only be acceptable if it were over 5.39m AOD. This resulted in the inclusion of the intertidal zone and the increased area along the riverfront. The E.A also requested that access be provided for a small maintenance vehicle along side the Draw dock and a zone be created along the front of the site so that future repairs to the river wall could be undertaken.



Sketch exploring flood storage volumes



Sketch of proposed intertidal bed

Having had meetings and discussions with the Environment Agency over the course of the design development of these proposals, it was finally agreed in December 2009, that due to safety and specific site conditions for the proposed development, the car park could be fully defended and it was conceded that this would result in a loss of flood storage volume.

In this regard, the proposed development will defend the under-deck area of the development including the secure residents parking to a minimum of 7.8m AOD. This will be achieved by incorporating a concrete flood defence wall to the underside of the deck structure effectively providing a sealed box (exclusive of two access points described later) to 8.19m AOD. The car park will be ventilated mechanically through a series of ventilation points at deck level - over 8.19m

With regards to the access to the secure parking for vehicles and residents and also the refuse store, it is proposed that 'flip-up' barriers be installed. The

barriers will be located to the external side of the underdeck area. The barriers are fully automated and activated through a link to the Thames Barrier Team. Should people be in the underdeck area whilst the barriers are raised, the residential units and deck level can be accessed by lifts and stair cases located at various points around the car park. For further details of the area to be defended and the locations of the barriers please refer to Upchurch Architects Drawing 2393/PL 114 Rev C

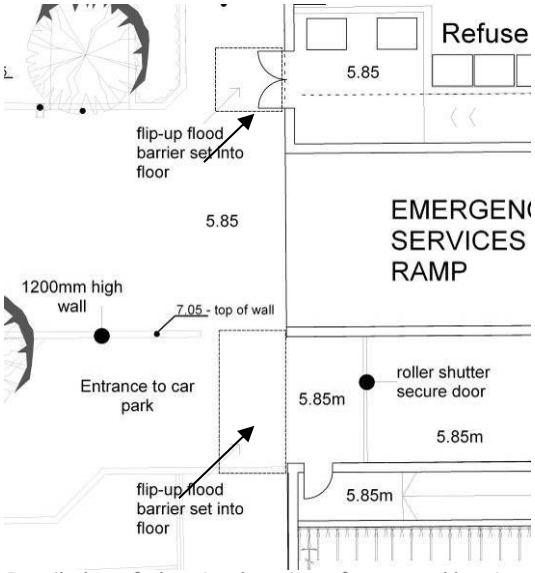
The use of the 'flip-up' barriers rather than physical barriers such as ramps and level change has been employed as the lengths of the ramps required to negotiate the level change between the general ground level of the site 5.85m AOD and the flood defence level of 7.8m, would be wholly impractical.

Flip-Up flood barrier in 'lowered/open' position

Flip-Up flood barrier in 'raised/closed' position

Example of flood barrier in Wakefield - Open

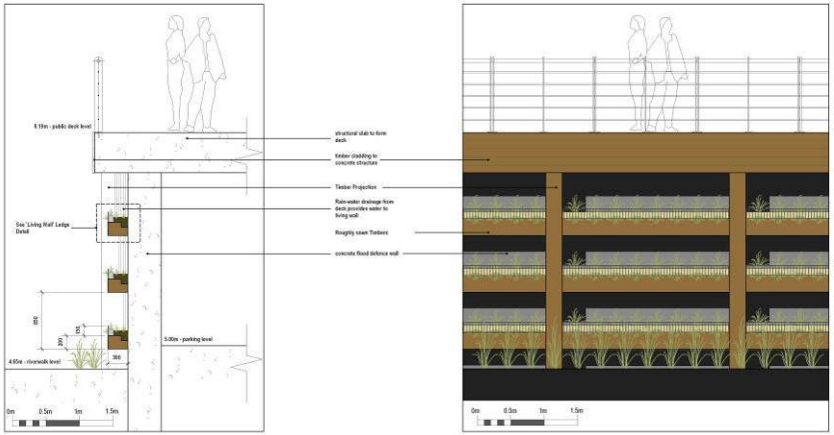
Example of flood barrier in Wakefield - Raised



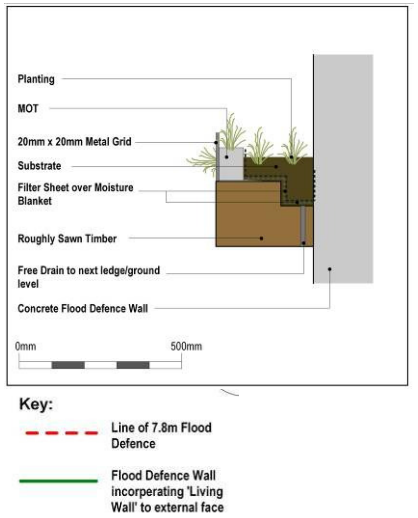
Detail plan of showing location of proposed barriers

A 'living-wall' will be applied to a number of external areas of this flood defence wall and more detail of this is given in the Ecology Chapter of the Environmental Statement and in Upchurch Associates Design and Access Statement.

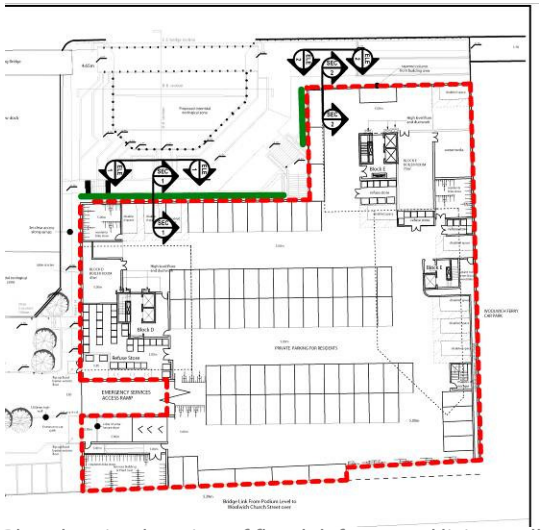
It is important to note the new flood defences incorporated into the proposed scheme are to defend the development only, and have no implication or bearing on the existing flood defences that are located to the West and South of the site, and do not enhance or replace these existing defences.



Section & Elevation of Proposed Flood Defence Wall around Under deck Parking with 'Living-Wall'

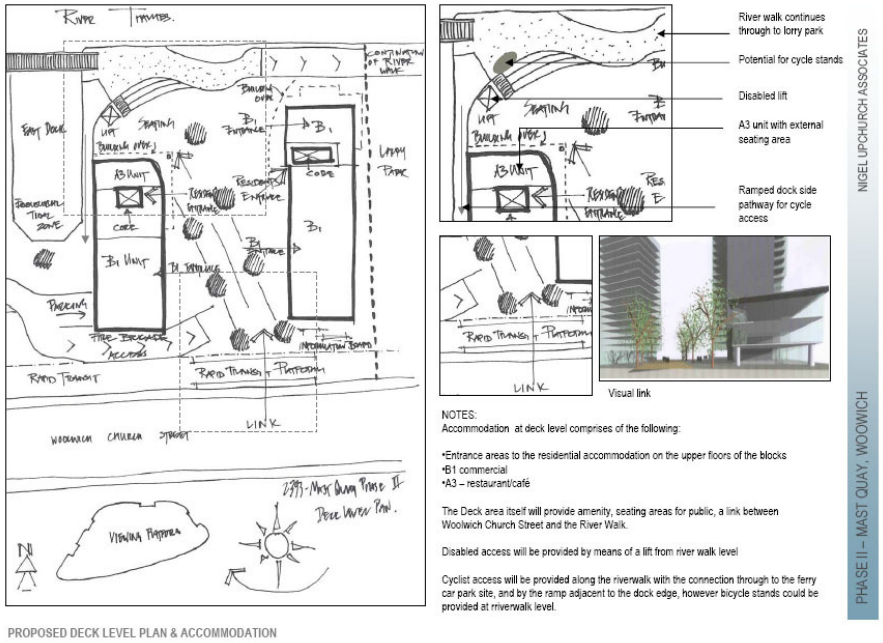


Detail of Living Wall 'Ledge'

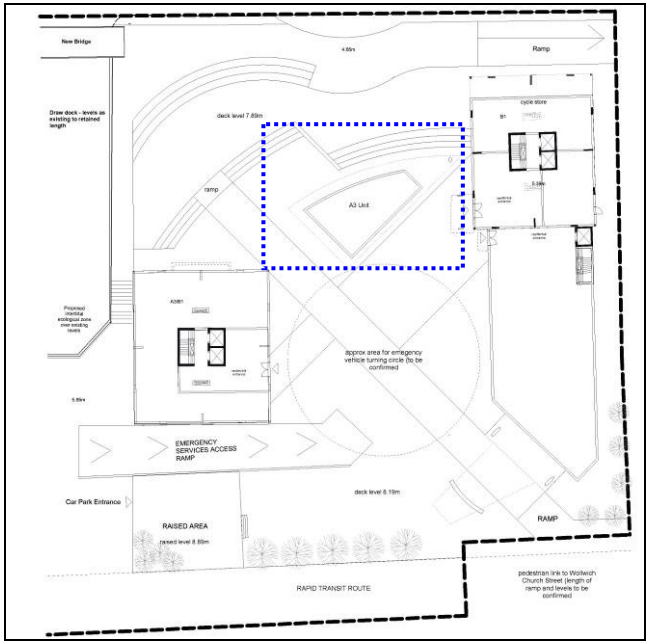


Plan showing location of flood defence and living wall (high lighted in green)

- **Alternative layouts considered –** Early design ideas looked at the towers of the proposed development aligning with one another and Block C of Phase 1 on the riverfront. B1 accommodation was located at deck level in both blocks with residential over. The design developed further and the Tower of Block D was set back to fall in line with Block B and the width of the river front was increased as shown in the early sketches which follow. This was developed further still with the potential for an A3 café unit being accommodated in a separate building in the centre of the public square. This was subsequently dismissed and the potential café located at deck level in Block D as the planners did not want any obstructions to views through the public space towards the river.



Early design sketches



Earlier Deck Plan with A3 unit located in the public square

- **Access to site**

This section gives a brief outline on the accessibility of the proposals. For further informational and supportive diagram's, please refer to Chapter 7 of this document 'ACCESS'

- **Inclusive access through the site –** There is a substantial level change between the south of the site linking the public space with Woolwich Church Street and the lower riverfront. To ensure that the site is accessible to all, a series of ramped access routes has been provided. The café, commercial units and the residential entrances are fully accessible from the deck level.

- **EA access requirements -** It is a standard requirement by the E.A. that when a development is located on the River Thames, a clear access zone should be left along the riverfront for future repair or replacement of the riverwall. This was the case on the Mast Quay Phase 2 site, but in addition they also requested that access be provided for a small maintenance vehicle along side the draw dock.

Chapter 4 – SCALE

The nature of the brief for this development and the requirement for a 'landmark building' by the Planning Authority suggested that a development consisting of one or more tall buildings would be appropriate.

- **Relationship of proposal with existing surroundings.**

  The existing immediate surroundings to the site comprise of the Phase 1 development to the West with the Woolwich Ferry car park to the East. The car park has nothing in the way of buildings and the recently completed Phase 1 development comprises of two blocks of ground plus 14 and a single block of ground plus 3 on the western edge of the site. Other buildings and points of interest in the vicinity are the low rise buildings that form the Maude Cashmore Estate to the West past Phase 1, the taller Sovereign & St Domingo houses (7 & 12 stories respectively) The Church of St Mary's and St Andrew's on the Hill to the south and the buildings that make up Woolwich Town Centre to the East. The site is a prominent site on the River adjacent to the Woolwich Ferry.

Photograph of the site as existing from North Bank of the River – site outlined in red

Photograph of the site as existing from North Bank of the River in detail - site outlined in red

Photomontage of the proposal from North Bank of the River Thames with the taller blocks of the Maude Cashmore to the West

- **Explanation of how site can accommodate the large scale development. –** Many of the more conventional limitations on the scale of a development such as a dense urban grain or a close proximity to surrounding buildings do not occur on this site. The closest building to the site is the residential Block C – Mizzen Mast House – in Phase 1. With Woolwich Church Street to the south, the River Thames to the North and the Ferry Car Park to the East the site is more or less an 'island' site. In this regard a large scale development can be justified. The following Nolli plan and aerial photograph of the site identify this.

Nolli Plan – No strong urban grain in the area

Aerial view of the site from a northerly direction (livemaps image)

Daylighting studies were carried out into the rooms of Block C (Mizzen Mast House) in Phase 1, with both the site in its existing state and the proposed

buildings in their final location on the Phase 2 site to ensure that they did not detrimentally impact on the flats with regards to daylighting standards. Please refer to the daylighting section in the Environmental Statement for further information.

Despite the two taller blocks in the Phase 1 development being of the same height, the handing of them on the site so that one tower – Block B – is located towards the south of the site, and the tower of the other – Block C – is located towards the North of the site, gives the illusion from the river that the development currently steps up from the smaller Block A building to the West to the Block C in the East as shown in the photographs. In this regard the rhythm of Phase 2 follows this pattern with Block D being set back from Block C and Block E being the tallest block at the East of the site. This also emphasises the landmark designation of block E.

Composite River elevation of Phase 1 & Phase 2 Development

Composite Woolwich Church Street elevation of Phase 1 & Phase 2 Development

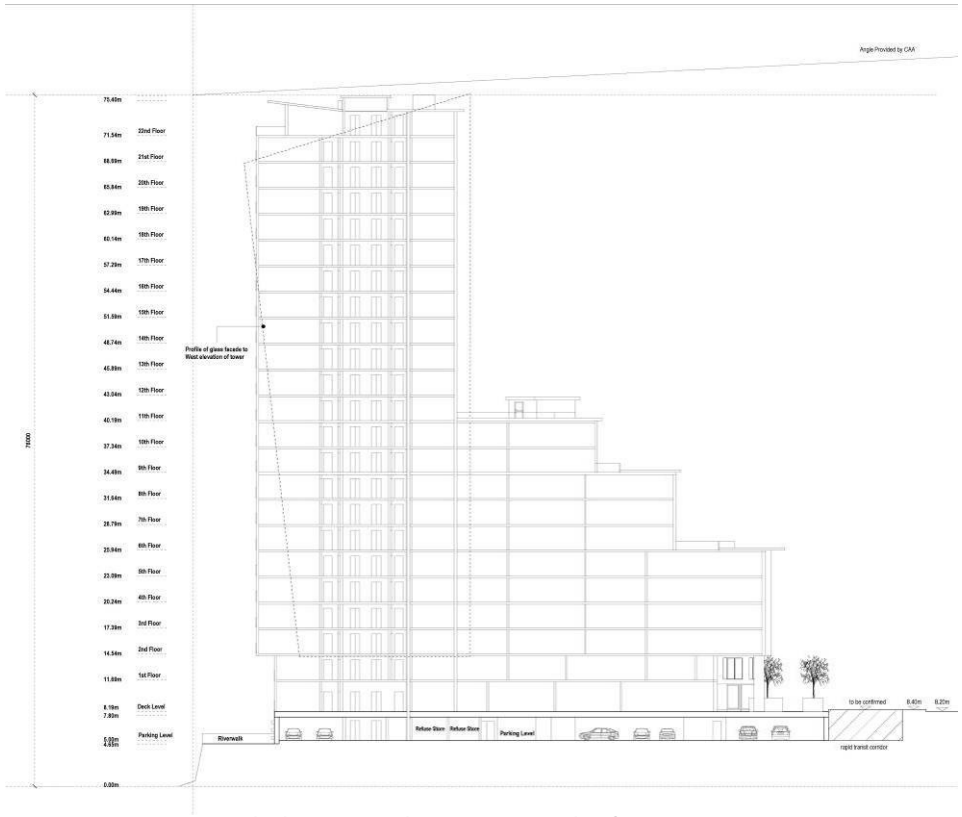
The sites prominent location on the river adjacent to the Woolwich Ferry and the completed Phase 1 development validates the scale of the proposal as does the Council's request for a Landmark Building.

- **Site Restrictions**

With regards to restrictions on the scale of suitable development for the site, the major restriction came from the sites proximity to City Airport. As previously discussed, daylighting issues to surrounding buildings were minimal as there were very few in the locality. The amount of accommodation permitted on the site also set parameters for the scale of the development – please refer to Chapter 2- AMOUNT of this report for further information.

- **London City Airport** - A height restriction is placed on the site due to its proximity to London City Airport. The City Airport Authority were consulted and the following advice/guidelines were given:

'The most northerly edge is restricted to 76m AOD and the most southerly edge is limited to 80m AOD. The surface above the site is a sloping surface with a gradient of 1:20.'



Block E Section showing CAA angle of maximum development height

- **Requirement for high standards of design –** The development with its River Front Location and function as a Landmark Building meant that a high standard of design needed to be achieved. This dealt with not only the appearance of the development but also the quality of the materials used. The high quality would also be apparent in the landscaping and public spaces in the development such as the riverwalk.

  As part of the design development other landmark buildings were reviewed. These included the Aurora Tower by Renzo Piano in Sydney and Montevetro by Richard Rogers in Battersea London.

Photographs of Montevetro by Richard Rogers - London

Photographs of Aurora Place by Renzo Piano - Sydney

- **Scale within the surrounding area**

  The main impact of the development is when it is viewed from the river. However other significant views of the development also needed to be considered. Such views included views from South of the Church and from the Town centre. A visual impact assessment has been undertaken as part of the Environmental statement.

  - **Photographs/views photo-montage from the locality demonstrating impact of development –** A selection of photomontages prepared from strategic points around the locality have been included in this report. Please refer to the 'Visual Impact' chapter of the Environmental Statement for all of the montages prepared.

Photomontage of Scheme viewed from upstream

Photomontage of Scheme from Woolwich Church Street

Photomontage of Scheme from Woolwich High Street

- **Scale of Elements**

  - **Analysis of how design & use of materials & elements help with scale of the development.** – The original concept of the sail (please refer to Chapter 6 of this report 'Appearance') offered many options that could be employed to bring the height block E to a more human scale. Taking reference from the make up of a sail such as that of a modern windsurfer, the use of a rib element was adopted. This element can be incorporated into the curtain wall façade. This was mirrored on the upper levels of block D.

    A further breakdown of the sail element was to break the materials down so that it didn't appear to be a single mass of glazing. By using metal panels along the lower section of the sail and the taller edge, and puncturing these metal panels with windows and balconies, helps break down the glazing and acts as a cradle to the man glazing element.

Image of windsurf sail

Development sketch of Block E Façade showing ribs and break down of materials

Final Elevation drawing of Block E East Façade

Chapter 5 – LANDSCAPE

This chapter has been written by Landscape Architects Scott Wilson

The second phase of Mast Quay carries on and completes the landscape design initially developed for the Phase 1.

- **The landscape character of the site:**

The main advantage of the site is its dramatic location on the river frontage, with superb views up and down the River Thames. For the first time in many centuries there is full public access over the larger part of this site. The actual area of the site is limited and the two old graving docks and the inter tidal Basin of Phase 2 further reduce the actual surface area. The external areas of the site are also required to accommodate a range of functions, such as car parking, circulation sub stations etc. Despite these demands the external spaces have been designed to have a strong and vigorous character of their own.

- **Landscape concept:**

The central plaza is deliberately kept as a simple clear and unfussy space. The area accommodates movement both down to the river frontage and towards the building entrances. The drama of the space is provided by the adjacent buildings and by the channelled views of the river. The intertidal basin, reflects the morphology of the two existing graving docks. Sketch outline is given in figure 1

- **Linkages inland and to the river.**

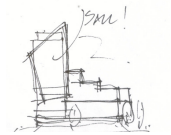
Clear and legible routes run from Church Road down to the river front. The main pedestrian plaza acknowledges the entrances into the two main blocks, but encourages movement towards the river. Movement is also encouraged by a shallow ramp running to the west to the phase 1 area. This ramp doubles as an access routes for emergency vehicles, but the detail design and surface materials give it the character of a pedestrian route.
Pedestrian and cycle routes along the river frontage are designed to be accessible to all with shallow ramps etc. The cyclists are encouraged to keep to their designated routes by using smooth surfaces and by separating rumble barriers of granite setts.
The main routes along the river frontage and across the site are well lit to encourage movement at all times.

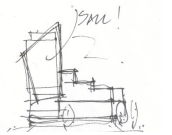
- **Public and private spaces:**

The transition to private spaces is designated by a change of quality and detailing in the paving and other hard materials. The external space of the potential café makes use of the very fine riverside views.

- **Concept of the soft landscape:**

The species selected form a spectrum imitating that found on a natural seashore. The seashore species are located on the dock level, and progressively change towards landward species inland. The inter tidal Basin in this phase is designed along the same lines as the old graving docks were in Phase 1. The inter tidal Basin is left ready for colonising species to establish themselves in the surface mix of silt and gravel dust. The gravel infill behind timber boards on the docksides act in a similar fashion as sites for colonisation. The worst flotsam on the river is kept out by floating coir barrier that rises and falls with the tide. The dockside species are able to cope with occasional flooding. The inspiration for this area is drawn from gardens on the shingle of Dungeness. See figure 2





- **Maintenance access:**

All parts of the site are readily accessible by maintenance vehicles.

- **Maintenance:**

The selection of species and the landscape design are intended to ensure relative ease of maintenance.

- **Biodiversity:**

Biodiversity is encouraged by the different zone of habitats provided. These include not only the inter tidal Basin, and the 'vertical foreshore', but also the fine gravel beds of the dock level planting and the 'brown roofs' zones on the upper levels of the blocks.
The inter tidal terraces are designed to form areas which can be readily colonised by native species. The terraces are set at different heights so they are exposed to varying tidal heights, thereby creating a range of habitats. The bulk of the species selected for the various planting locations on the site are indigenous. The species selected for the site relate closely with those of Phase 1 so that there is a continuity of style and habitat types across the site.

- **Drainage:**

Storm water run off from the deck level is fed down to the planting areas of the dock level. On this deck level a large percentage of the surface is of permeable blockwork, to allow surface water to permeate through to the sub soil.

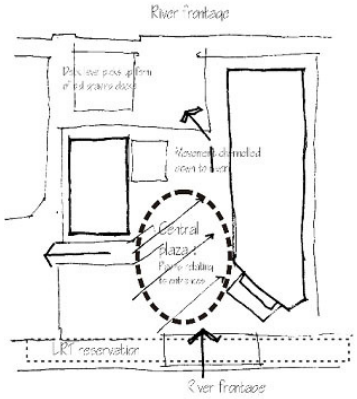
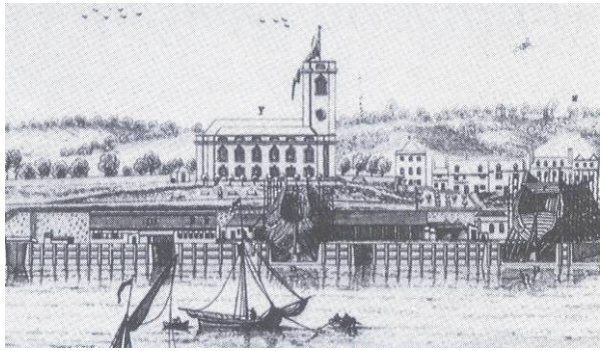


Figure 1: Initial Concept

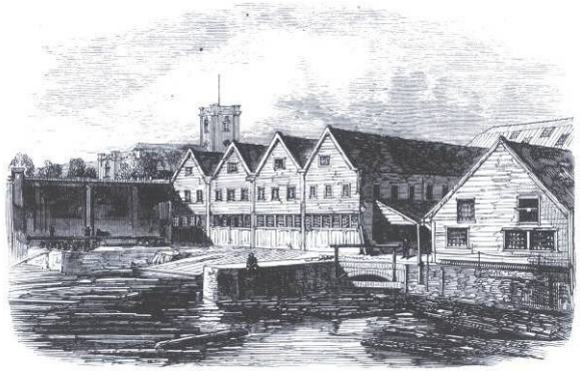

Figure 2: Shingle Garden Inspiration

Chapter 6 – APPEARANCE

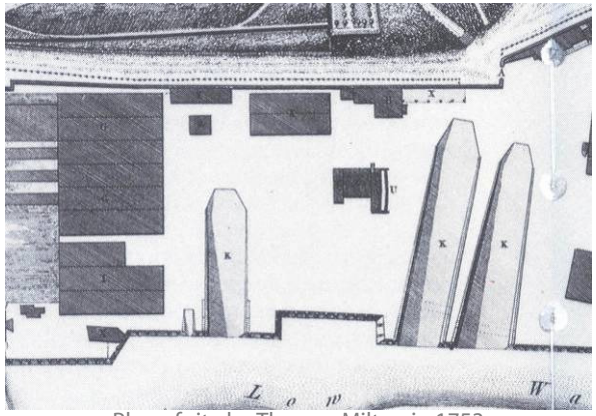
- **Concept and rationale**
  - **Design concept of the scheme** - Drawing from the significance on the sites Maritime History and its proximity to the river, the concept of the tower façades being based on a 'SAIL' was explored.



View of site by Thomas Milton in 1753



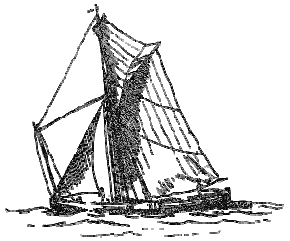
Mid 19th Century View of site showing the 'Mast Pond'

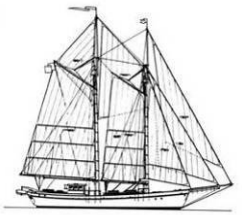


Plan of site by Thomas Milton in 1753

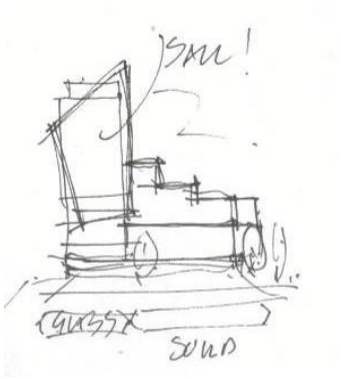
Photograph of Thames Barge off Woolwich

Windsurfers





Various sketches of sailing vessels

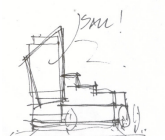


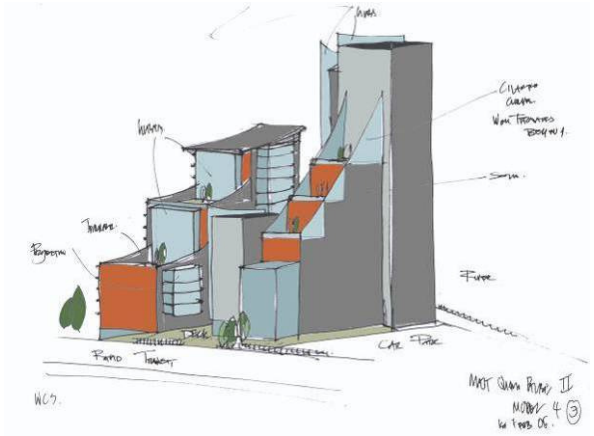
Block E development sketches

The use of glass & curtain walling would give the illusion of a light weight modern sail with the shape of the façade being based on a more traditional shaped sail such as those on a Thames Barge – as shown in the previous images. The expression of the sail battens as projections on the façade create scale.

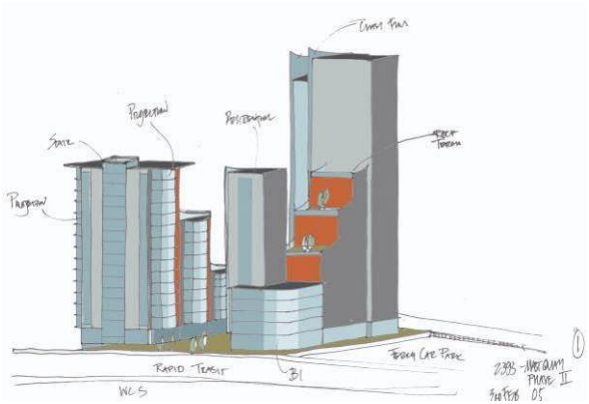
The amenity deck with residents secure parking below at the ground level has been a fundamental aspect of the underlying design concept for the site. This follows the idea of Phase 1 with the blocks being raised on piloti to allow the site to flood, with parking under at ground level. The difference with the Phase 2 proposal is that the area between the blocks is covered with a public deck. This provides both street frontage for the office and commercial accommodation as well as public space and a link from Woolwich Church Street to the River Walk.

- **Massing and Layout of Blocks –** The massing and layout of the scheme continued to develop though the design process following a series of consultations with the local Planning Authority and Environment Agency. Massing was explored through 3d sketching, computer and physical modelling. The following series of images show the development of the final massing and layout.

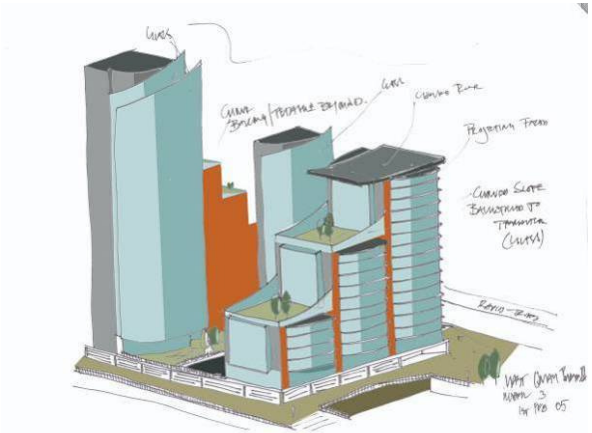




Early design sketch showing D & E towers aligned



Early design sketch showing block D stepping towards river



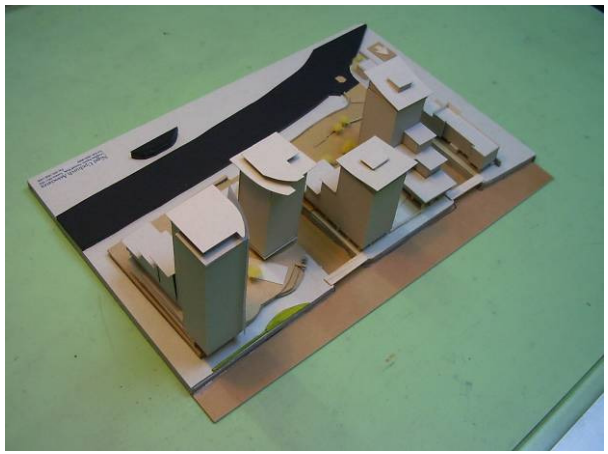
Early design sketch showing block D stepping towards river

Computer Model of second layout with block D stepping towards river

Computer Model of second layout with block D stepping towards river

Computer Model of second layout with block D stepping towards river

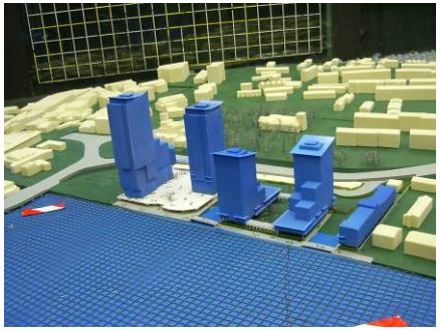
Physical Model massing studies

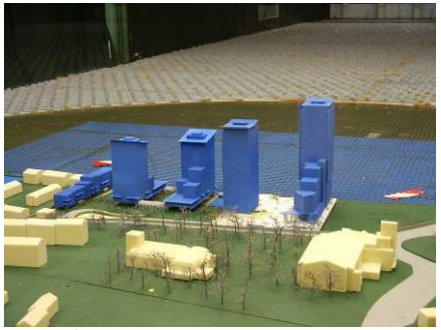


Physical Model massing studies

Physical Model massing studies

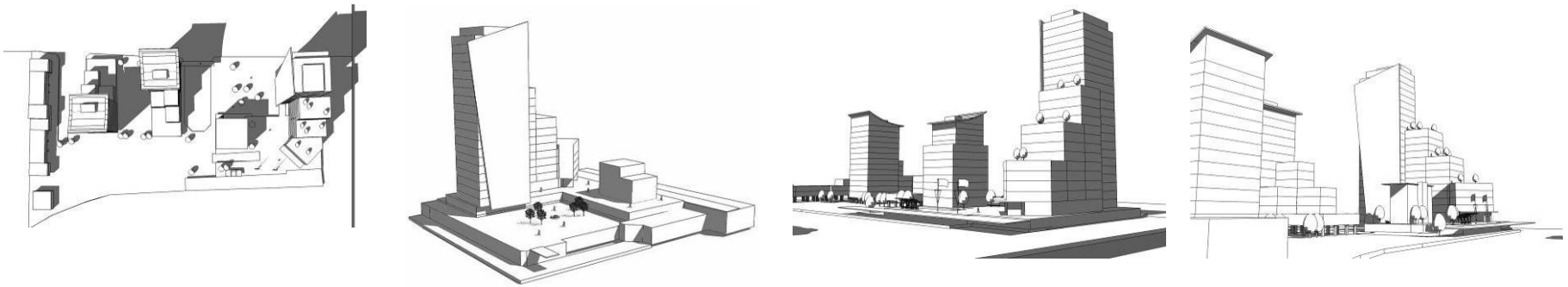
The layout and massing of the scheme at this point was subject to a wind environment test carried out at the laboratories of BMT Fluid Mechanics. This involved the testing of a scale model of the development in a wind tunnel. A physical model of the proposed development was produced and set in a context model of 500m of the surrounding site. The object of this exercise was to model the local wind environments to surrounding buildings and also within the development itself, to ensure that the development did not create localised areas of dangerous wind environments. As well as the design implications bought about as a result of the testing, the model produced of the development in its context was also a useful tool. The following images are photographs of the wind tunnel testing model taken on the test day.





Photographs of BMT wind tunnel model from and earlier test day

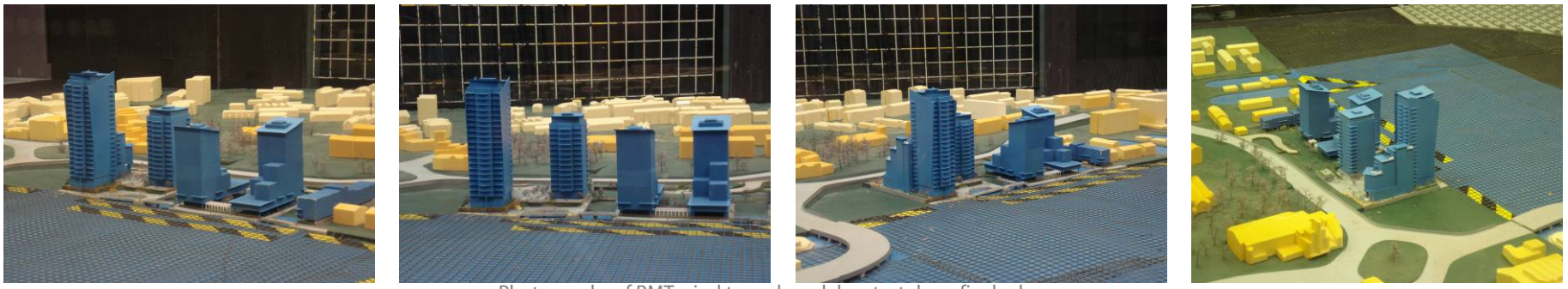
Detailed design progressed within the massing and layout. Further consultation took place with the E.A. the implications of which resulted in the available area on the site suitable for parking and development reduced due to the need to preserve the Functional Flood Plain. The number of units that could be accommodated on the site was reviewed as the reduction in parking spaces available and the Council's requirement of 70% resulted in a reduction of units and therefore a reduction in building size. Options of a reduced block D with an altered massing to the rear of block E were explored.



Massing Studies Using 'Sketch Up'

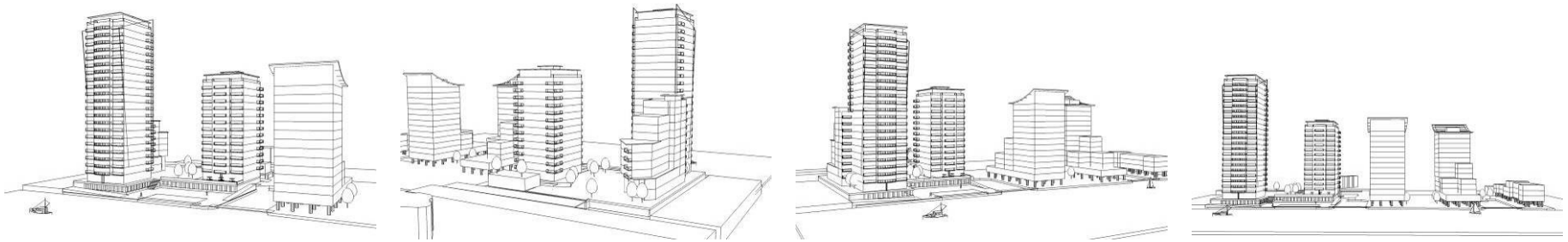
A further meeting with the E.A. was held and the concept of the 'intertidal bed' was proposed. The intertidal bed not only provided further habitat and ecology on the river but also provided flood volume, this in turn increased the available land for parking and the increase in the number of units available on the site.

The final massing and layout of the development satisfied all the criteria set out by the various bodies including the Environment Agency. The amended scheme was again tested in the wind tunnel as the layout and massing of the development had been amended.

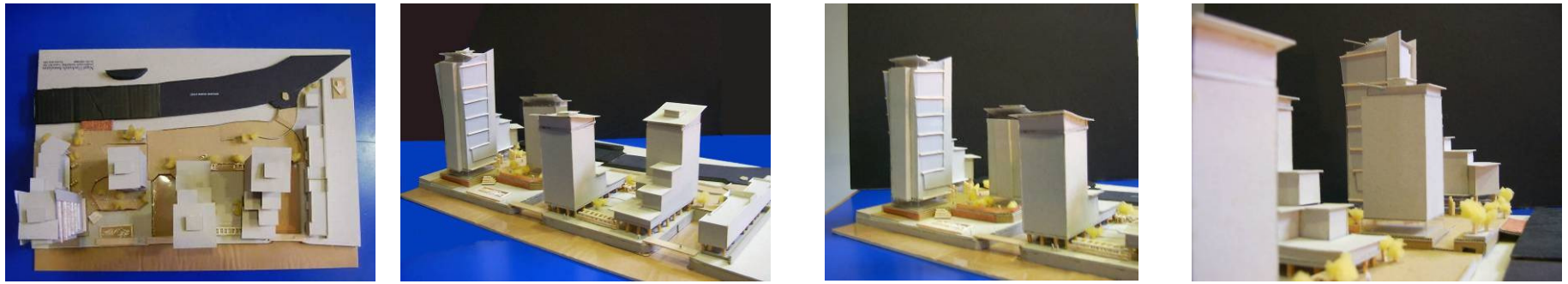


Photographs of BMT wind tunnel model on test day – final scheme

The following series of images illustrate the final scheme in its basic form.

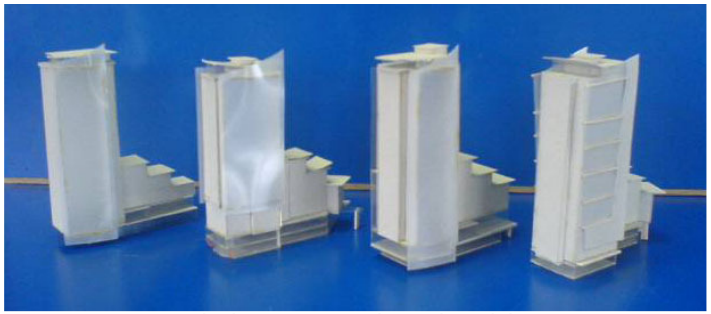


Final Massing - 'Sketch Up'



Final Massing - Physical Model

Block D Massing - Physical Models



Block E Massing - Physical Models

As previously discussed, after having had meetings and discussions with the Environment Agency over the course of the design development of these proposals, it was finally agreed that due to safety and specific site conditions for the proposed development, the car park could be fully defended and it was conceded that this would result in a loss of flood storage volume. However it was agreed that the inter-tidal zone would be retained as an ecological feature.

- **Relationship with Phase 1**

The relationship between the Phase 1 development and the proposed Phase 2 development has been a major consideration in the design process. Since the client acquired the Phase 2 land, the overall Mast Quay site has been considered as a single development that will be completed in two Phases.

- **Architectural Relationship** – It was agreed from the outset of the design process that the quality of both the design and materials of Phase 2 should be of a higher standard to that of Phase 1. However the two need to read together and not as two separate developments. In this regard, Block D has

been designed to act as an architectural link between Phase 1 and the landmark building of Block E in Phase 2, taking on the form and materials from the Phase 1 development whilst also applying materials and principles from Block E such as the curtain walling and projecting ribs.

The rhythm and massing of the Phase 1 development has also been brought through into Phase 2 development as described in the previous section. This again helps the development to be read as one.

Photograph Of Completed Phase 1 Block C –Mizzen House

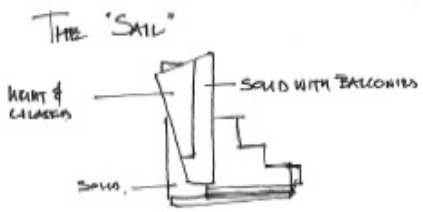
Development Sketches of Block D

Photomontage illustrating how schemes read as single development

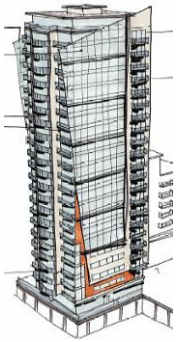
- **Development Aims and Design Response**

As previously discussed, the principle aims of this development were to provide Woolwich with a high quality Landmark development. In this regard the proposed scheme accomplishes these aims by ensuring that the quality of the materials used and the impact of a well conceived design are visible in the final finished form.

- **Scale and materials provide 'landmark building' –** Throughout the design process, the significant inhibiting factor as to the height of the development has been the restriction of 76m placed on the site by The City Airport Authority. If it weren't for such restrictions the Local Planning Authority would have encouraged a taller building. Given the limitation of height the emphasis was on the design to create a landmark building for the Borough. The symbolism of the sail and the use of large areas of glazing on the principle of facades enhance the scale of the building and the asymmetric shape of the sail feature emphasise height and scale.



Concept sketch highlighting the asymmetric sail



Development sketch of the sail facade

Early CGI of Block E

Final CGI - Block E in context as 'Landmark Building'

- **Design details**

  The following section deals with the details of the design, in particular the proposed materials for the development and the reasoning behind the choice of these materials.

  - **Images of proposals –** The following images are extracts taken from the photomontage CGI's prepared by 'MONTAGE'. They give an indication of the materials to be used in a 3d context and give a flavour of the texture and reflectivity of materials that CAD drawn elevations fail to do. A selection of full format CGI's prepared can be found at the end of this document.

CGI of Phase 2 Proposal from North East

CGI of Phase 2 Proposal from North West

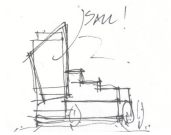
CGI of Phase 2 Proposal from South East

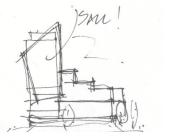
CGI of Phase 2 Proposal from South West

- **Materials** – The proposed materials for the two blocks on the site have been chosen to reinforce the high quality of the development. Materials have also been carefully considered to ensure that the Phase 1 & 2 schemes at Mast Quay will read together. An example of this is the use of timber cladding on the deck level of both blocks. The timber is used as a reference to the timber used in the Phase 1 development at the junction between the base of the buildings and the columns. A further example is the use of render on Block D to link the schemes together, where as there is minimal render on Block E which is envisaged as a more sophisticated building and metal panel is used as an alternative. A similar colour pallet will also be used. Details on the materials for the services building can be found in chapter 8 of this document – Other Information.

  The majority of the external surface materials to be used are natural such as stone setts and timber. The screens that resulted from the wind tunnel testing mitigation at deck level will comprise of steel mesh panels. The form of the panels have been designed to replicate the shape of the sails on the Block E Tower. The edge of the concrete deck is to be timber clad. Please refer to landscape chapters of this document and the Environmental statement for further details on landscaping and external area materials.

  Materials for Block D – Block D is the 'LINK' building between Phase 1 and the landmark building Block E of Phase 2. As such materials have been chosen that have been employed in the Phase 1 development and are proposed for Block E. Timber has been used on the North façade of the block in the areas behind the balconies to bring a more human scale to areas where residents will have contact with the façade. Timber cladding is used at deck level around the residential entrance.





Block D Material Breakdown

Façade	Metal Cladding Panel Render Curtain Walling Timber	**Roof**	Metal Green Roof on Lift Shaft
Windows	Metal Frame Curtain Walling	**Balconies**	Cast in slab Glass Balustrade Timer Handrail and deck.

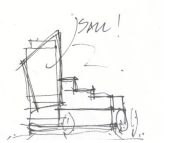
Block D Elevation extract showing materials

Block D material details

Materials for Block E – Block E is the 'landmark' building. As such high quality materials have been chosen. The render used in the Phase 1 development has been used minimally on the lower floors of the tower of Block E. A metal panel system and curtain walling has been used elsewhere. The use of a panel system helps to break down the facade of the building to a more human scale, they also provide interest on the Eastern façade of the tail.

The areas of curtain walling on the East and West 'sail' facades of the tower, not only provide the residents with unobstructed views of the Thames from within the units, but also gives the tower a lightweight modern appearance.

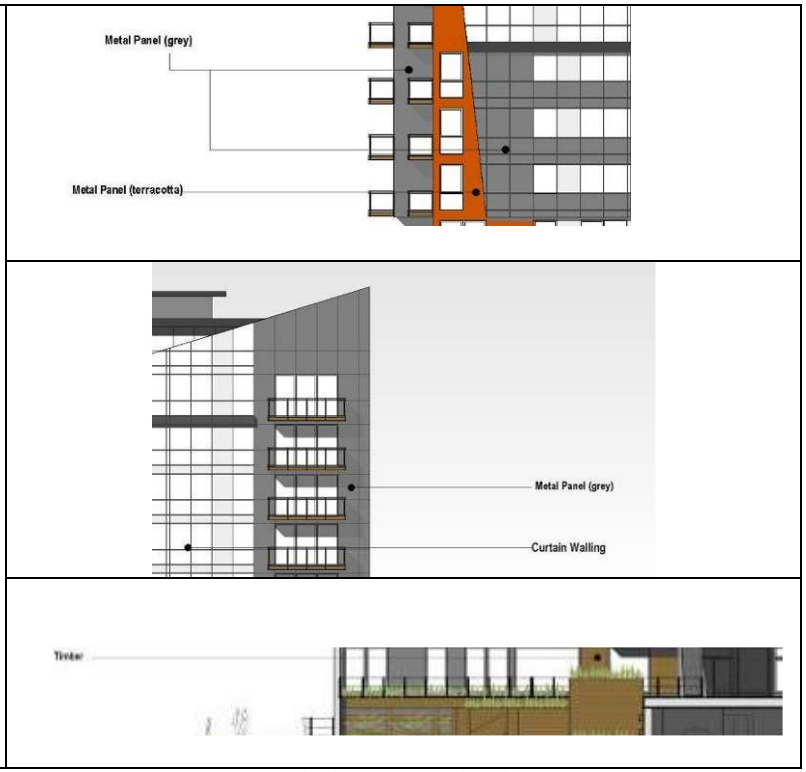
The tail of Block E is metal clad, however projecting terracotta bands have been incorporated into the panel system to help break down the mass of the building. The stair and lift tower on the eastern elevation has been clad in timber to act as a break between the tail and the tower. As with Block D timber has been used at deck level and again is mainly used around the residential entrances.



Block E Material Breakdown

Façade	Render Metal Cladding Panel Curtain Walling Timber	**Roof**	Metal Green Roof on Lift Shaft & terraces
Windows	Metal Frame Curtain Walling	**Balconies**	Cast in slab Glass Balustrade Timer Handrail and deck.

Block E West elevation extract showing materials



Block E material details

- **Seasonal changes**

  - **Effect of the day-lighting conditions throughout the day – suns path**. - As the sun moves around to the south of the site, the impact on the river elevation – the north - is minimal. However the effect on the East & West elevation will be more dramatic as the west elevation will be in shadow during the morning and full sunlight during the evening. This effect is highlighted in the following photographs of the completed phase 1 development.

Photograph East of Phase 1 taken early evening

Photograph East of Phase 1 taken mid morning

Photograph from north of Phase 1 taken late afternoon

Photograph East of Phase 1 taken early evening

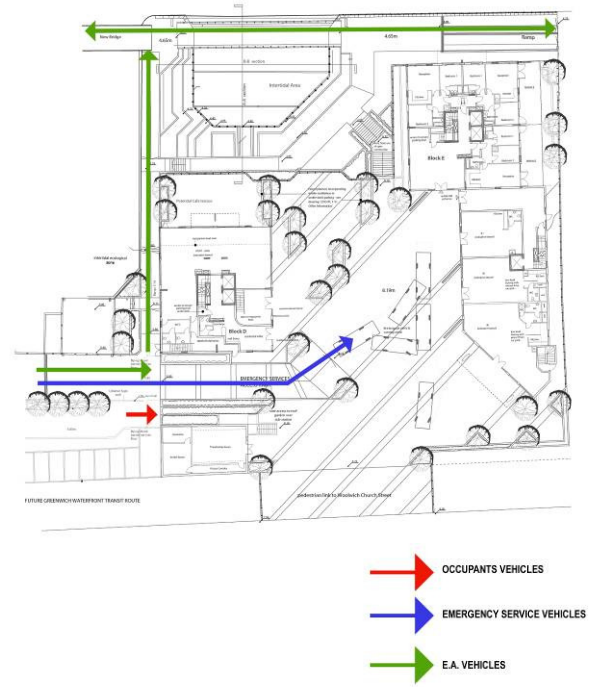
  - **Seasonal variations to appearance**. - The photographs were taken in July, and illustrate the change in daylighting in the summer months. Due to the north South Axis of the site, it is presumed that the same effect will occur throughout the year.

Chapter 7 – ACCESS

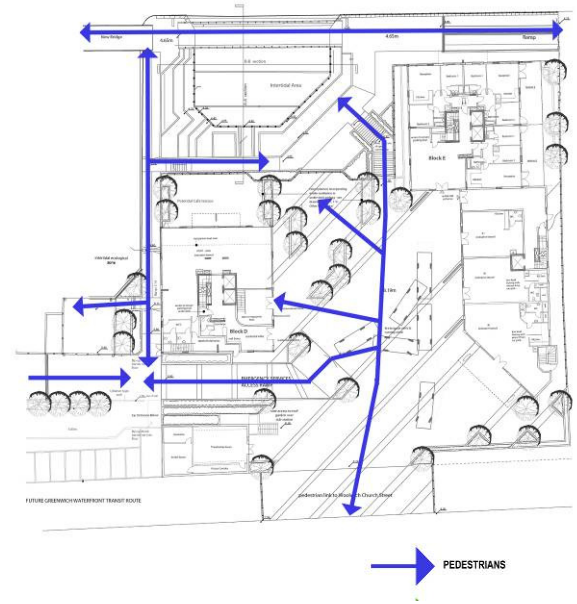
- **Access to site –** Access to the site by pedestrians and cyclists can be from either the Thames Path or from either the site access road off Woolwich Church Street completed under the Phase 1 development or via the pedestrian foot bridge from Woolwich Church Street in to the public space. Vehicular access to the site is provided via the site access road off Woolwich Church Street completed under the Phase 1 development.

- **Movement**

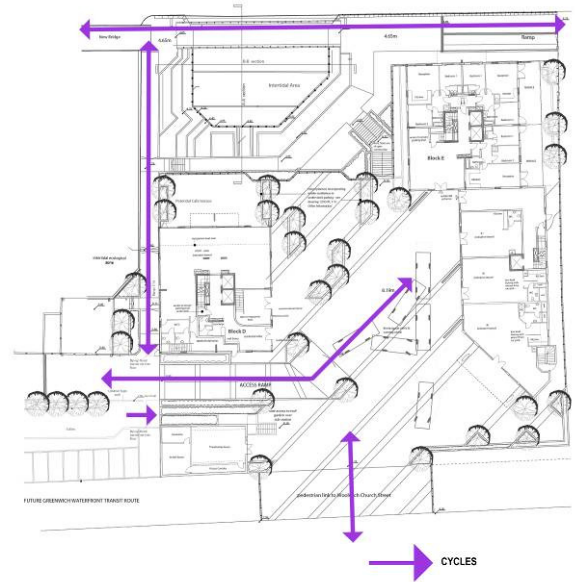
    - **Diagrams showing vehicular, pedestrian & cycle movement –** the following series of diagrams illustrate the flow and movement into and through the proposed Phase 2 site.



Deck plan showing vehicle movement



Deck plan showing pedestrian movement



Deck plan showing cycle movement

- **Occupants vehicles**

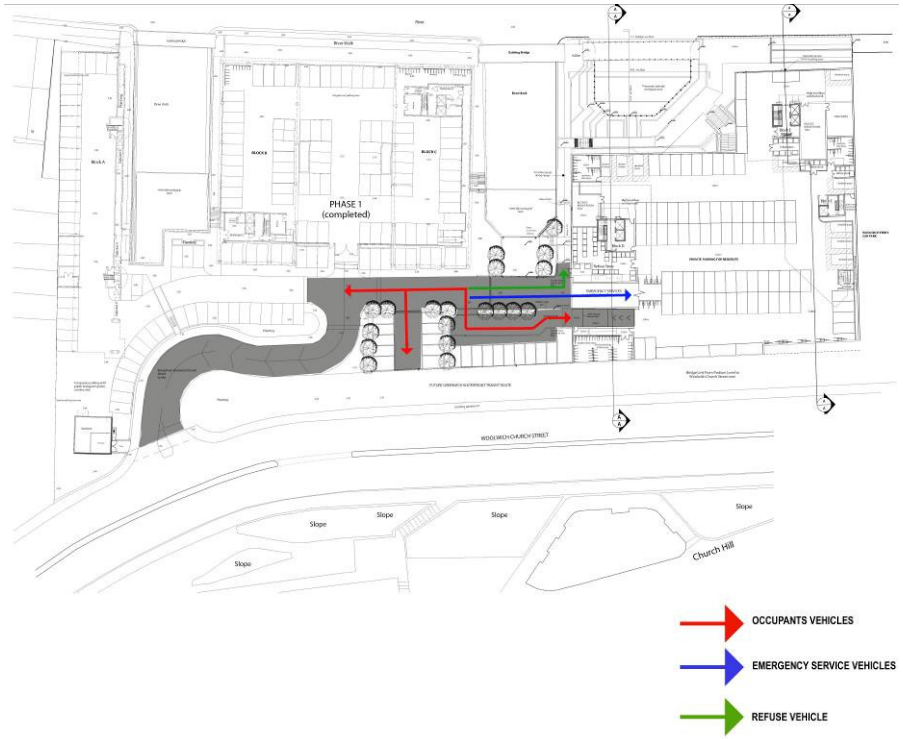
The development has achieved a parking level of over 50%. Disabled parking spaces have also been provided and located within close proximity to the access cores. Secure cycle storage has been provided for residents at the required level of 1 space per unit.

- **Private parking areas –** Secure private parking has been provided at ground level beneath the deck. Further private parking has been provided in an external area to the West which includes residents parking, visitor parking and parking for the commercial accommodation. The Secure parking beneath the deck level and following a series of meetings and discussions has been designed to ensure that it fully defended from flooding. This has resulted in the car park being mechanically ventilated. Intake louvers are located within landscape features on the deck with the extracted air being discharged through lovers at deck level to the East of Block E at Deck level – please refer to the services chapter in the Environmental statement for further details.

- **Road Lay-out** – The access road constructed in the Phase 1 development has been designed to cope with the traffic generated by Phase 2. The road leads through to the external and secure parking and also provides access to the deck for the emergency services vehicles and to the refuse store for the refuse

collection vehicles.

Site Plan Showing Parking Areas



Site plan showing road layout & vehicle access and ground level

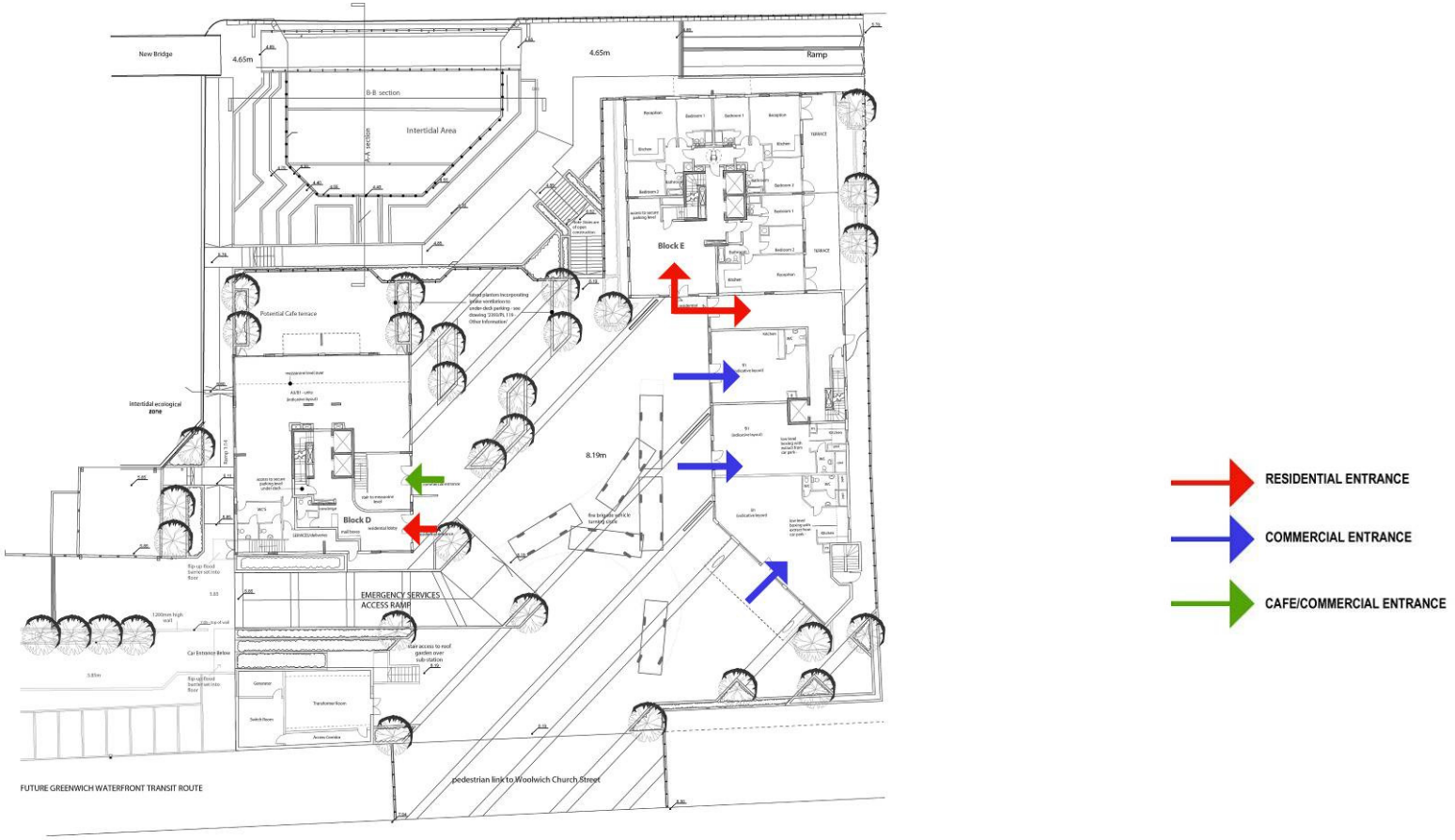
- **Building Access**

  - **Residential Access** – For the majority of people arriving by foot to the site either residents or visitor's access points are at deck level via a concierge area. Residents who have parking allotted in the secure parking will access the buildings by a further entrance at the parking level.

  - **Commercial Access** – All the commercial accommodation is accessed from the public Deck

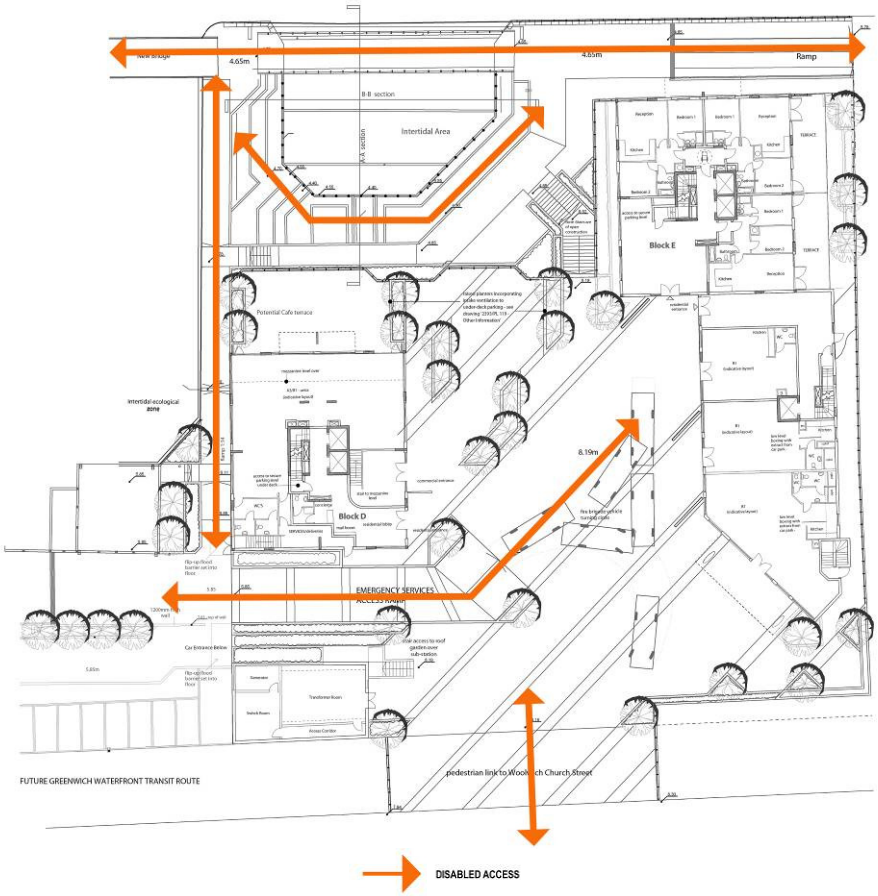
  - **Entrance locations –** As previously discussed, the entrances to the various uses in the blocks have been located in a manner which keeps the commercial movement on the site separate to the residential. The residential access points to Block E have been located within close proximity to one another. This will

assist with security issues such as the monitoring of people gaining access to the residential levels. During the design process a meeting was arranged to discuss 'SECURED BY DESIGN' principles with the Metropolitan police in Greenwich and advice given during the consultation has been implemented in the design and management strategy for the proposal. The public will be able to flow through the site without the need to approach the entrance zones for the residential accommodation.



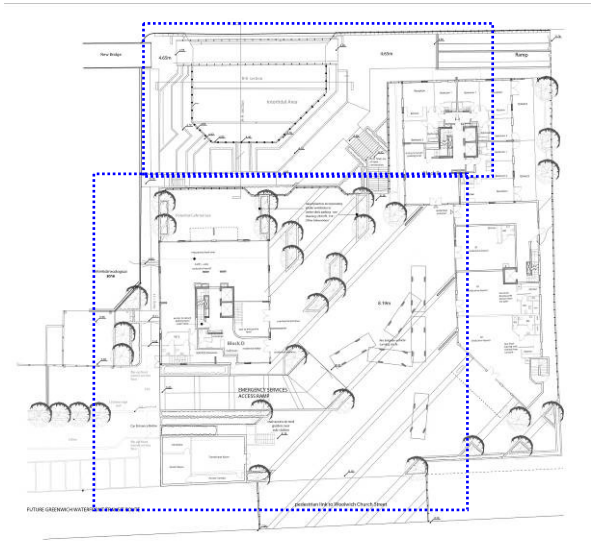
Deck plan showing entrance locations

- **Disabled access & Disabled integration -** All buildings and public areas are fully accessible to the disabled. Both the residential access and commercial access are fully accessible for the disabled from the deck level. Lifts serve all floors of the residential buildings from the car park at ground level through to the penthouses. All flats have been designed to the 'Lifetime Home' standards. Disabled access is also provided throughout the public areas of the site though a series of ramps.

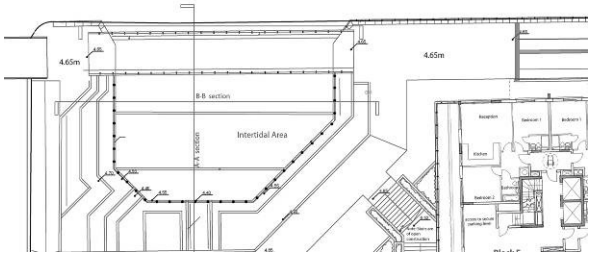


Deck plan showing disabled access

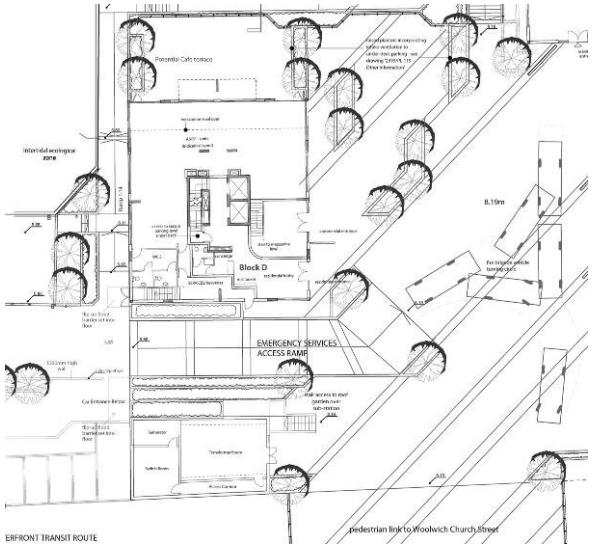
- **Level changes throughout the site –** The Public area of Site is split into two main levels – deck level which links through to Woolwich Church Street and the Town centre, and the river walk and intertidal foreshore. The height difference is approximately 3.5m. The level change on the site is negotiated by either a series of ramps or a set of steps linking the public area on the deck with the river walk and intertidal foreshore.



Proposed Deck Plan showing 2 main zones



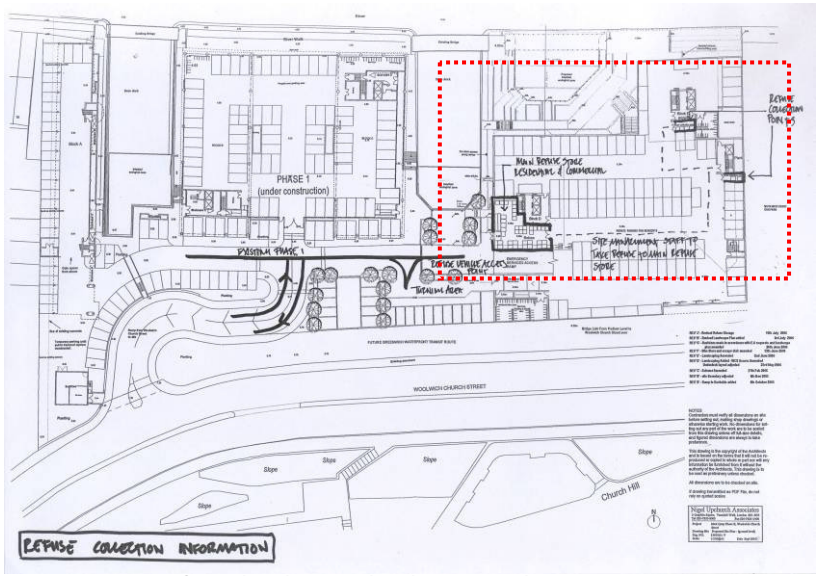
Detail plan of lower – 'Riverwalk and Intertidal Foreshore' zone – generally 4.65m



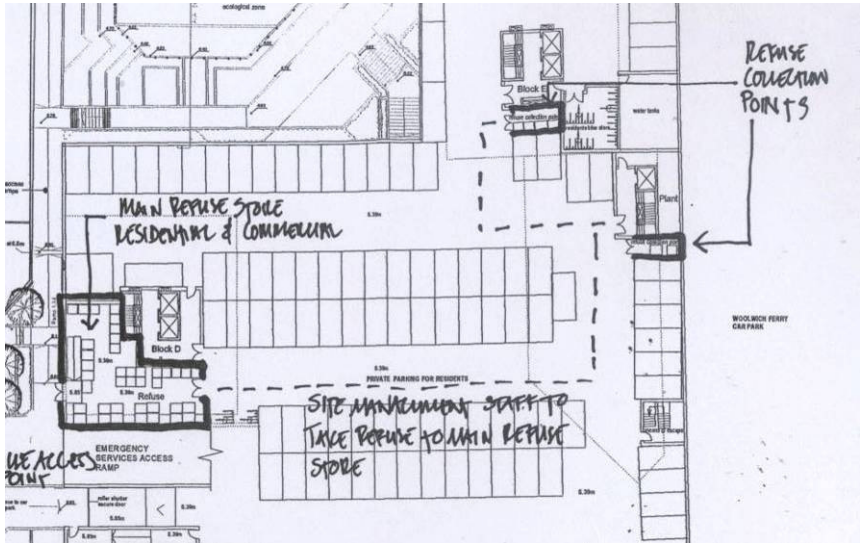
Detail plan of – 'Deck' zone/level – 8.19m

- **Emergency Vehicle and Public Services Vehicle access**

  - **Refuse collection** – The refuse collection team in Greenwich have been consulted and a review meeting was held where the refuse strategy was discussed. Adequate refuse storage has been provided at ground floor level beneath the deck and suitable access for the refuse vehicle has been provided. The proposal includes for smaller refuse stores to be located at the base of the circulation cores of block E for both the recycling bins and household waste. The site management will inspect the stores on a regular basis and full containers will be taken to the main bin store beneath block D and replaced with empty containers.



Refuse plan discussed with Greenwich Waste Team

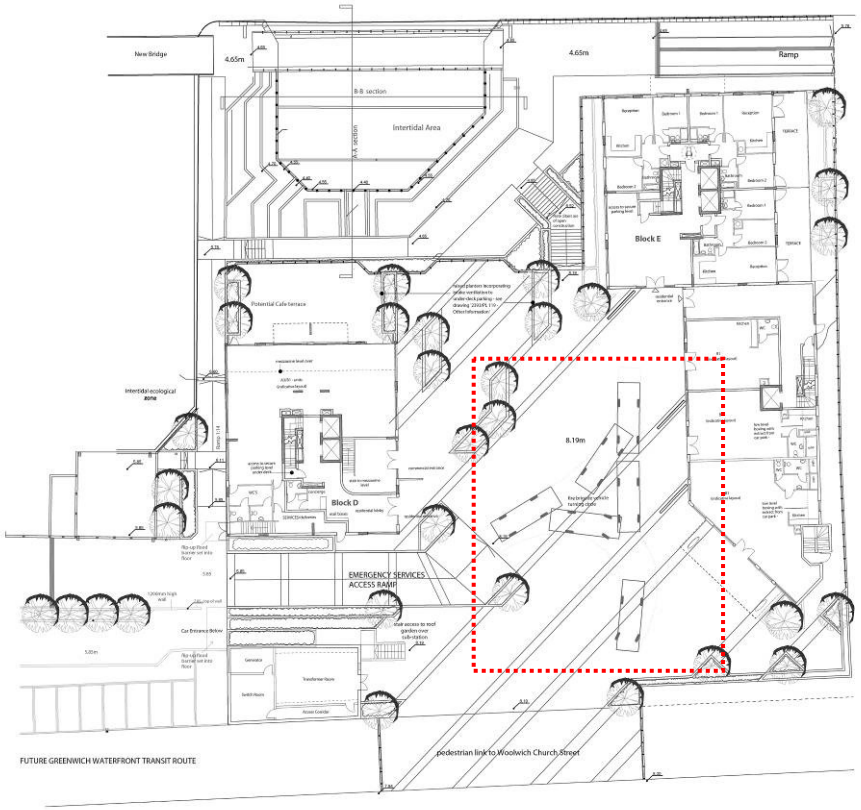


Detail of proposals

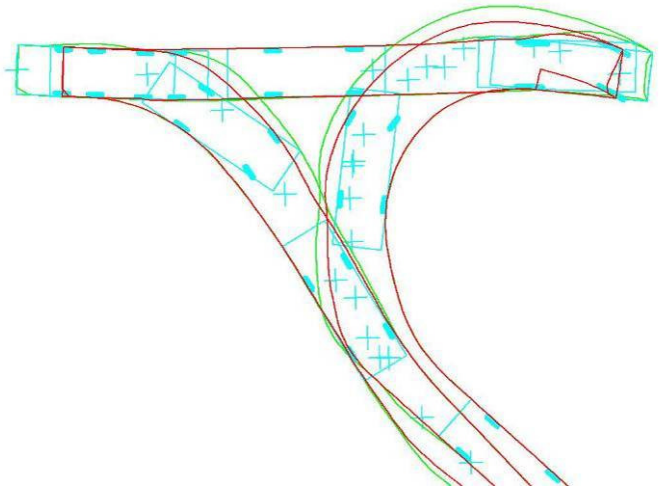
- **EDF Access** – EDF require access to the services building which contains the sub-station and transformers. This has been provided by means of the emergency services access ramp

- **Fire Brigade access –** The fire strategy for the scheme is that a fire tender will have access to the public deck via the emergency vehicle access ramp. Collapsible bollards will be located at the lower start of the ramp and will meet the standards set out in Fire Guidance Note 29. From the appliances location on the deck fire-fighters have access to the dry & wet risers in the buildings.

  The turning circle of a typical fire tender was provided by the structural engineers and the deck's structural design has taken the weight of a tender into account. Fire Guidance Note 29 has been referred to. The layout of the buildings, amenity spaces and the deck area in general has been based around the turning circle for the tender. The overall fire strategy for the development is that all the residential units will be connected to a sprinkler system as adopted in Phase 1. Please refer to the 'Fire Strategy' section found in the 'Other Information' chapter of this document.



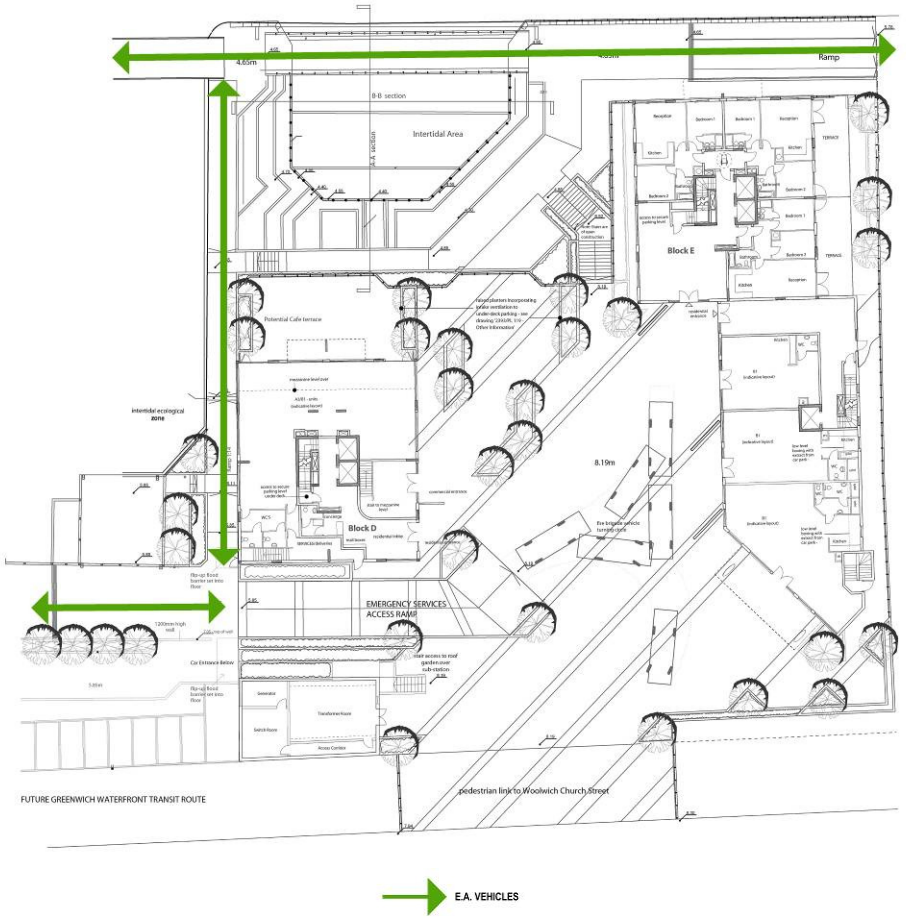
Deck plan with the fire tender turning circle high-lighted



Fire tender Turning circle

- **EA vehicle access** – As previously discussed, it is a standard requirement by the E.A. that when a development is located on the River Thames, a clear

access zone was required to be left along the riverfront for future repair or replace of the river wall. This was the case on the Mast Quay Phase 2 site, however they also requested that access be provided for a small maintenance vehicle along side the draw dock.



Deck plan showing Environment Agency maintenance access

Chapter 8 – OTHER INFORMATION

This chapter deals with other aspects of the design proposals not dealt with under the previous headings.

- **Sustainability –** As the scheme is referable to the GLA, the scheme has to meet certain criteria with regards to energy efficency. Curona Design were appointed to design a solution. The client was very proactive and enthusiastic for the inclusion of renewable and efficient energies within the scheme. Please refer to the Environmnetal Statemnt for further details.

    - **General Proposals on Building Services** - The main heating system for the two residential buildings will consist of low-pressure hot water boiler plant (LPHW). Domestic hot water will be generated in a dedicated plant room for each building. The central boiler systems will be installed in a lead-lag system, with each building having installed a Heat & Power (CHP) unit as lead boilers. The heat rejection from the CHP units will be provided as useful heat for hot water production to the heating system and for the domestic hot water system. The electricity generated by the two CHP units will be used to power the electrical systems within the residential units.

      Ventilation for the residential units will be provided by balanced mechanical systems with heat recovery.

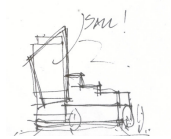
      Comfort cooling will be accommodated within the residential units by individual cooling systems. Heat rejection for the heat pumps will be via dry air coolers installed at roof level.

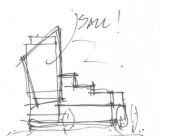
      The commercial spaces, in the two blocks will be provided with heating and cooling from the central systems.

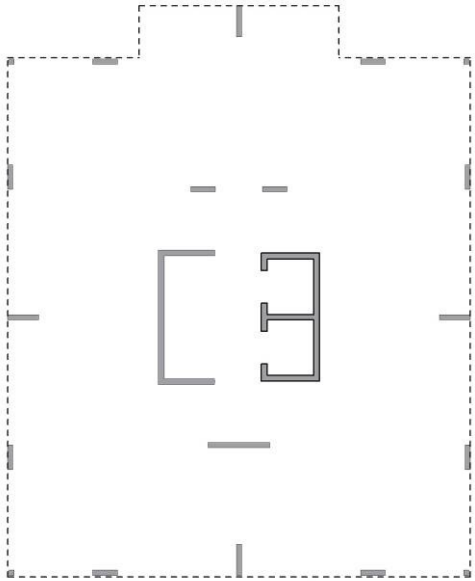
      Two ground source heat pump systems (closed loop "Energy Piles") will supplement the heating / cooling system for the development. The Energy Piles offer an economical solution by utilising the piles required for a new building. The system will be used to supplement the LPHW system and cooling system.

- **Structure –** Structural Engineers 'Walsh Group' were consulted on a suitable structure for the scheme. A floor to floor height of 2850mm has been proposed for the residential floors, with Commercial at the base of Block E being set at 3500mm and the café in block D as 5300mm with the potential for a mezzanine level.

    - **Structural Frame -** The structural design is based on a 'Post Tension' concrete frame system, where the concrete slab is poured and the reinforcement is put into tension after. This method allows the slab to remain a reasonable thickness of 225mm. A simple structural grid has been developed for the Tower elements of the buildings and the structure in the tail of block E will also be based on a simple grid. The Deck slab will act as a transfer slab beneath both towers but will also be strong enough to take the load of the emergency service vehicle that will use the deck. The deck is proposed at 600mm thick. A standard grid will be used in the parking level of to allow the setting out of standard parking spaces.



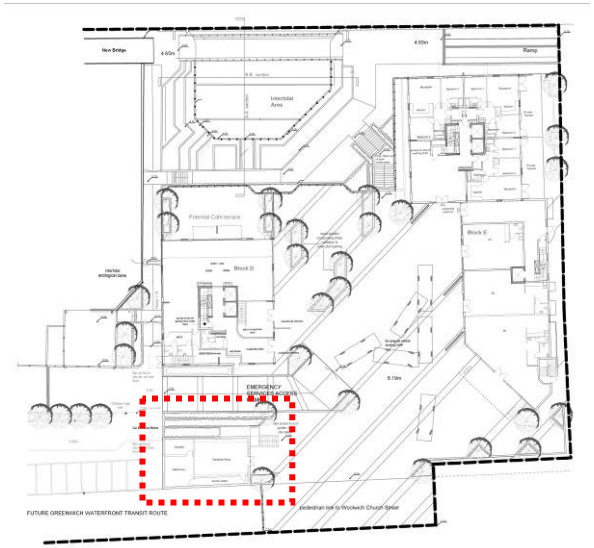




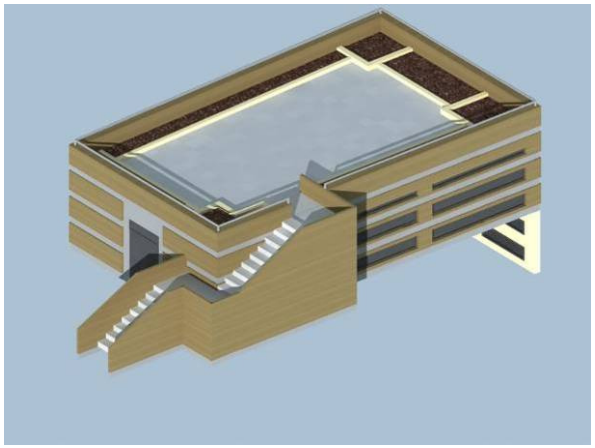
Basic Structural Grid for Block D & E towers.

- **Services –** A sub station with relevant transformers and emergency generators is required for a development of this size. A gas supply is required to fuel the Combined Heat and Power units discussed previously. A water supply is of course provided by way of storage tanks at ground floor which will also be used for providing storage for fire sprinklers in the residential units. Please refer to the services chapter of the Environment Statement for further information.

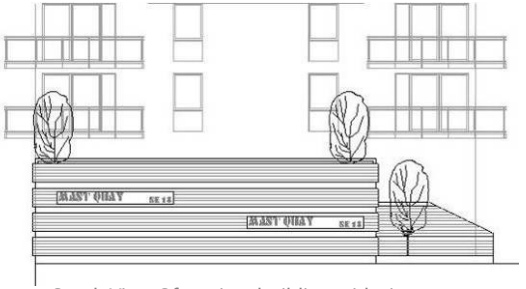
    - **Sub Station -** Curona Design have been consulted on the size requirement of such kit and in the design of a suitable building for the plant to be housed in. A key factor in locating the sub station was that it had to be located at a level on the site that would not flood in any event up to 1000 year flood (7.2m) and the EDF servicing vehicles required level access to the plant so that repair and replacement of plant could take place. As such the Sub Station has been located at deck level to the south of Block D, the building had been carefully considered and materials used will ensure that it doesn't appear as an eyesore. The facade will be made up of metal ventilation louvers to the required plant and the remainder will be timber clad. This runs through with the theme of timber cladding at the deck level referred to in the materials section of this report. The roof of the building will provide further amenity space and be heavily planted with trees.



Deck Plan showing service building location highlighted



Early CGI of services building



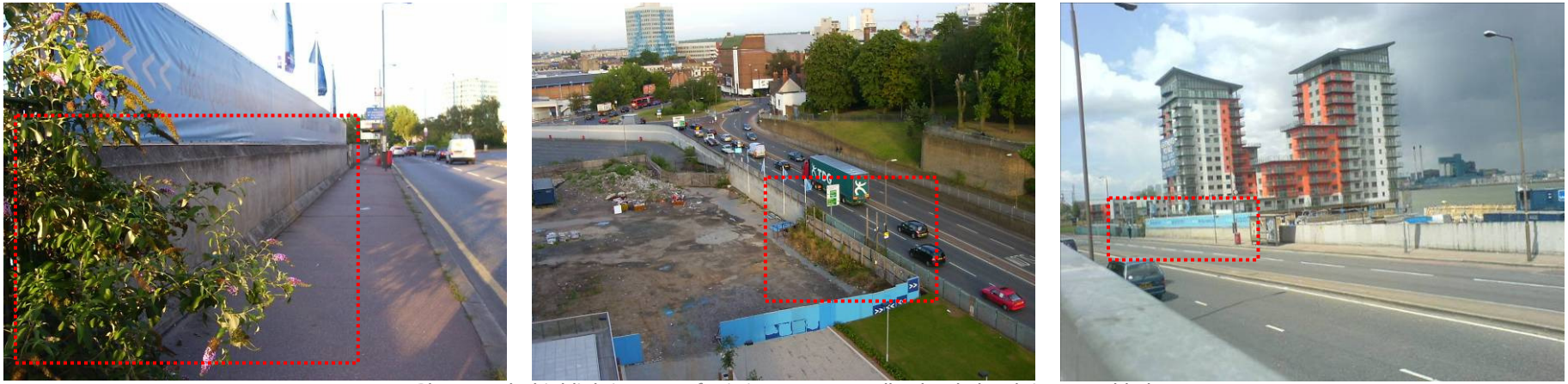
South View Of services building with signage

East elevation of services building in context with Block D

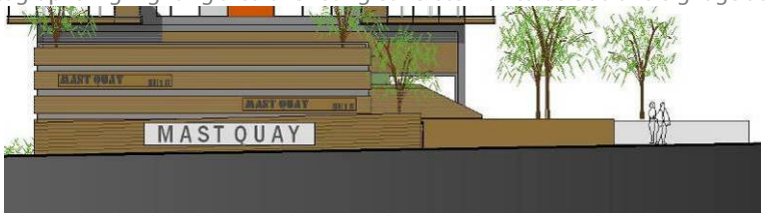
- **Water -** Curona Design have been consulted on the size requirement of plant and tanks required for water. The overall fire strategy for the development is that all the residential units will be connected to a sprinkler system as adopted in Phase 1. The water storage tanks will be used as the water storage for the sprinkle supply. Water tanks are located at ground level beneath block E.

- **Foul Sewage –** During the construction of Phase 1 development, the foul sewage drainage system was designed and installed to be capable of a future connection to Phase 2. In this regard, the capacity of the Phase 1 system is suitable to dispose of the Phase 2 foul sewage as well as the existing Phase 1 development, which connects to the public sewer on Woolwich Church Street. Please refer to application drawing '2393/ PL120 – Proposed Site Plan – (Ground Level) – Proposed Drainage.

- **Signage –** Following a site visit with the Planners, it was agreed that the existing concrete wall to the south of the site should be clad in timber and illuminated signage added.



Photographs highlighting area of existing concrete wall to be clad and signage added

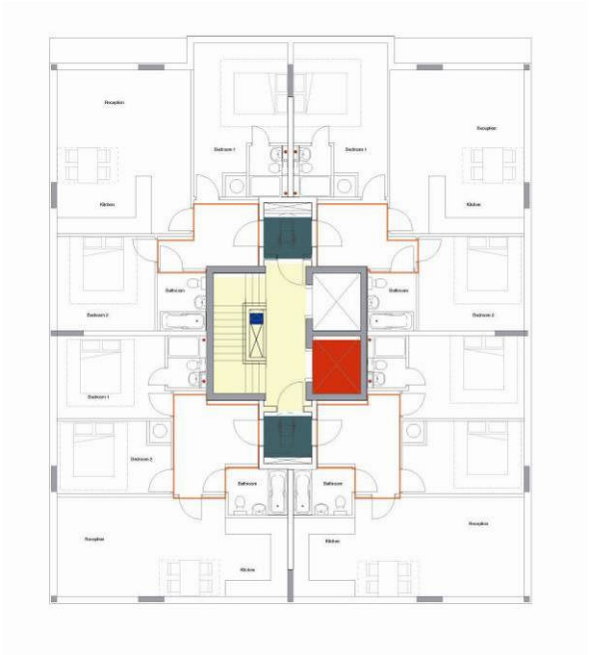


Extract from proposed Woolwich Church Street Elevation showing the proposed timber clad concrete wall & signage

- **Fire Strategy –** Due to the nature of the development and the heights and layouts of the proposed blocks, it was important to agree a fire strategy with both the Fire Brigade and Building Control at Greenwich. As part of the Phase 1 development, an innovative approach was adopted with regards to the use of a sprinkler system which gave greater flexibility with travel distances and ventilation approaches. Each flat was fitted with sprinklers as well as all the common parts. These sprinklers were fed from a communal pressurised tank. The theory (which was discussed & approved by the London Fire Brigade) was that should a fire break out in an individual unit, the sprinklers within the unit would be activated and contain the fire, preventing it from spreading through the building. This in turn, supported by the installation of wet/dry risers, gave greater flexibility with regards to means of escape distances and ventilation strategy, which in turn benefited both the end user of the development, the plan form of the buildings.

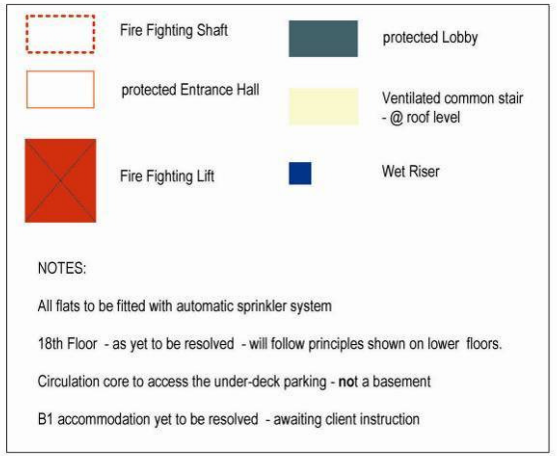
  From the initial design proposals for the Phase 2 blocks the principles of the fire design in the Phase 1 development were employed, with this in mind, from any early stage it was important to establish with Building Control and the Fire Brigade if the means of escape distances and ventilation principles of Phase 1 could be adopted for Phase 2. A meeting was arranged with Greenwich Building control to discuss these principles. The general principles were agreed and Fire Strategy Drawings were prepared following the meeting for discussion with the Fire Brigade. The drawings detail the various lobbies (protected/ventilated etc) dry & wet riser locations, fire fighting shafts and lifts. Extracts from these drawings are shown in the following pages and full copies of the drawings and minutes from the meeting can be found in the Appendix. These principles have been taken trough into the final design proposals presented as part of this application.

The provision of adequate turning circles and fire appliance access were also discussed, details of this element of the design can be found in the 'Emergency Vehicle and Public Services Vehicle access' section of the 'Access' chapter in this document. The water tanks for the sprinklers and details for the water supply for the Fire Brigade can been found in the Services Chapter of the Environmental Statement.



Block D Fire Strategy Drawing – April 2005 - Extract

Block E Fire Strategy Drawing – April 2005 - Extract



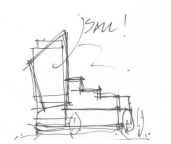
Fire Strategy Drawing Legend – April 2005 - Extract

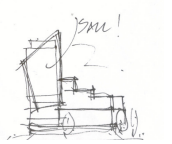
- **Secured By Design –** As previously mentioned in the 'ACCESS' chapter of this document, a meeting was held with the Greenwich Crime Prevention Design Advisor. During this meeting, the proposals were reviewed and advice was given by the advisor in ways in which the development could comply with Secured By Design. The overall response to the proposals was positive. The advice given, where practical at design level, has been incorporated into the final proposals. Theses are as follows

- The Commercial units @ deck level will have laminated glass.
- There is no access from the commercial space to the residential above.
- The residential units are accessed by visitors via a video entry system and a 24hr concierge.
- Residents of the units will be issued with proximity cards which provide access to gain access to main building, individual floor levels and communal terraces.
- Treatment of the eastern boundary with regards to security include defensive planting to be maintained at approximately 1m in height, significant height difference between the level of the adjacent Woolwich Ferry car park and a strong metal railing.

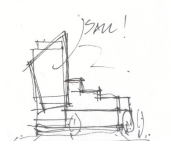
As the meeting was held early on in the design process, the design advisor was contacted and a further set of the final proposals were issued. Further consultation will be undertaken as the development progresses.

Minutes of the meeting can be found in the appendices of this document.





APPENDIX 1 – Schedule of Accommodation



Schedule of Accommodation 07/01/10

	BLOCK D								Block E Tower										Block E Tail											
	1 bed				2bed			3 bed	1bed				2bed					3 bed	1 bed				2 bed							
Area Sqm	32	35	48.5	52.5	52	73	77.3	117	32	39	48.5	52.5	58	70.4	73	76	77.5	117	39	37	41	43.7	51.7	53.7	57	60	64	70	73	78
Hab Rooms	2	2	2	2	3	3	3	4	2	2	2	2	3	3	3	3	3	4	2	2	2	2	3	3	3	3	3	3	3	3
Deck/Ground														2	1															
1st	2	2	1	2					1	1			1	2						1					1		1		1	1
2nd	2	2	1	2					1	1	1	2	1								1		1		1	1	1			
3rd	2	2	1	2					1	1	1	2	1								1		1		1	1	1			
4th	2	2	1	2					1	1	1	2	1								1		1		1	1	1			
5th	2	2	1	2					1	1	1	2	1								1		1		1	1	1			
6th	2	2	1	2					1	1	1	2	1						1			1	1					1		
7th	2	2	1	2									1			1	2		1				1	1				1		
8th			1	2		2							1			1	2		1				1	1				1		
9th			1	2		2							1			1	2											1	1	
10th						2	2						1			1	2											1	1	
11th						2	2								2		2													
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20th															2		2													
21st															2		2													
22nd																		2												
Total units	**14**	**14**	**9**	**18**	**0**	**12**	**8**	**2**	**6**	**6**	**5**	**10**	**10**	**4**	**23**	**4**	**30**	**2**	**3**	**1**	**4**	**1**	**7**	**2**	**5**	**4**	**1**	**9**	**3**	**1**
Total Hab Rooms	28	28	18	36	0	36	24	8	12	12	10	20	30	12	69	12	90	8	6	2	8	2	21	6	15	12	3	27	9	3
Total Gross Internal Area of Units	448	490	436.5	945	0	876	618.4	234	192	234	242.5	525	580	281.6	1679	304	2325	234	117	37	164	43.7	361.9	107.4	285	240	64	630	219	78

SUMMARY

	no. units
Total No. Units	**218**
Wheel Chair required @ 10%	**22**

Development As Whole

	no. units	as percentage
1 bed units	91	42
2 bed units	123	56
3 bed units	4	2
Total	**218**	

Wheel Chair Units

	no. units
1 bed units	0
2 bed units	22
3 bed units	0
Total	**22**

Commercial Area (sqm)

	Block D	Block E	
Deck/Grd	**250**	**288**	**538**
Mezz	**200**		
Total	**450**	**288**	**738**

Parking Provision

		of which disabled
Underdeck	92	9
External	20	0
Total	**112**	**9**
percentage	51	41
provision for Car dub	2	
Total Spaces for Sale	**110**	

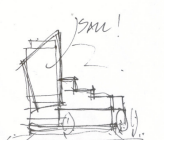
Gross internal areas of flats

			Block D	Block E
Gross internal Area of Blocks D & E	Residential	15,866.00	4958	10908
Gross internal Areas of flats		12,992.00	4047.9	8944.1

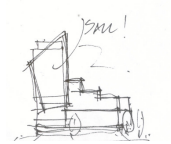
Density Calculations

Total No. Hab Rooms	567
Site Area	0.77933
Density	728

Proposed Schedule of Accommodation



APPENDIX – Proposed Computer Generated Images



Proposal viewed from Pier Road, North Woolwich

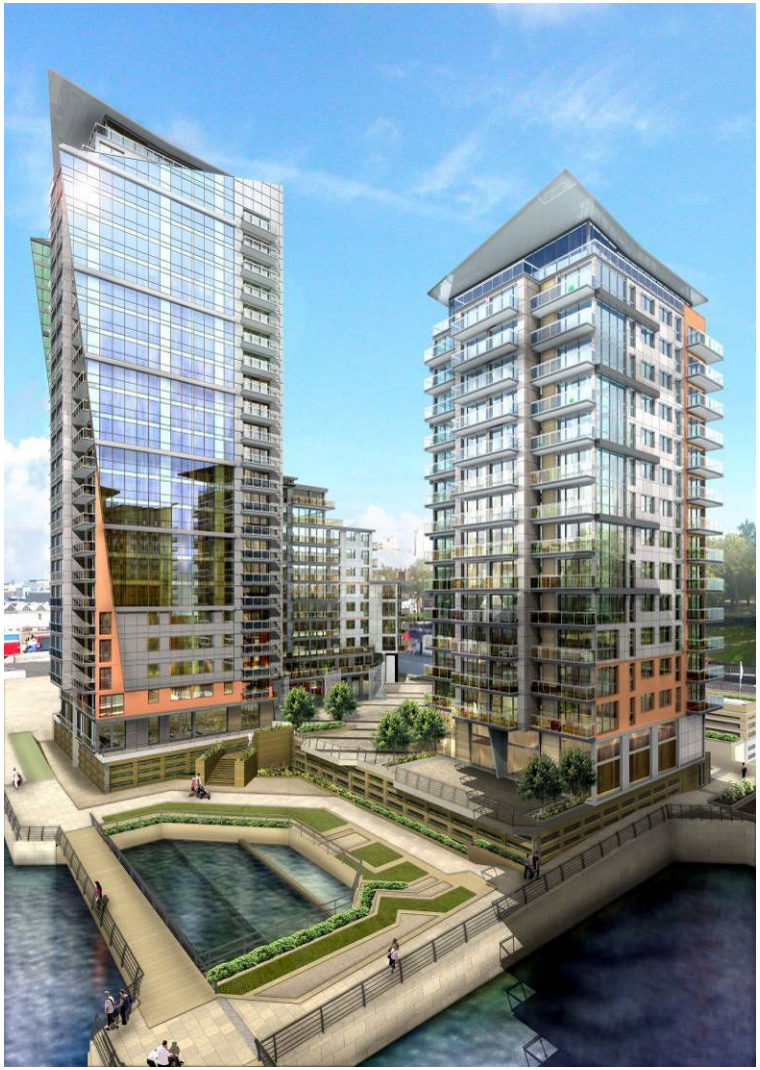
Proposal viewed from Woolwich Ferry - Mid river

Proposal viewed from Thames Clipper – Mid river

Proposal viewed from Woolwich Church Street

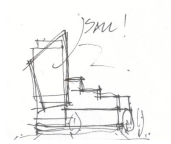
Proposal viewed from Woolwich High Street

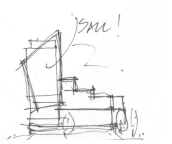
Proposal viewed from Viewing Platform



Proposal viewed from Phase 1

APPENDIX – Minutes from meeting with Robert Couchman – Metropolitan Police 'Secured By Design'





2393 – Mast Quay Phase 2

Notes from meeting held at Greenwich Police Station 6th December 2005

In attendance:

Bob Couchman – Crime Prevention Design Officer – Greenwich Borough Police.
Richard Whitbread – Crime Prevention Officer - Greenwich Borough Police.
Clare Mackness - Nigel Upchurch Associates

Issues Discussed:

- CM gave introduction to the scheme outlining the site history and the current proposals. Went through presentation.

- BC gave outline of the two standards that the scheme would be looking to comply with in regards to security:

    - **Secured By Design** – deals with the physical building:
        - Access
        - Construction
        - Surveillance
        - Infrastructure

    - **Safer Parking** – 'Park Mark' deals with parking

- CM explained the issues with the car park with regards to the measure being taken in the flood defence strategy for the development i.e. CCTV monitoring, secure, single point of access from the public realm, concierge. BC & … saw little problem in achieving the 'Park Mark' standards as these are the main criteria. Discussed use of light colours in the car park as well as good lighting.

- With regards to 'Secured by Design' BC explained that RSL's in general require the developer to 'Apply' for secured by design as do Greenwich in their UDP, however they do not state that it should be achieved.

- BC went on to explain how SBD (Secured by Design) could be achieved on the scheme;

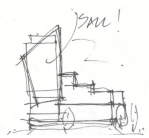
    - Commercial units @ deck level & 1st floor, glazing should be laminated glass and should be no access from the commercial space to the residential above.
    - Residential access, good to see that limited number of entrance points to monitor, however traditional SBD states that only 8 units be accessed from one point of entrance. This can be over come by either segregating the lift lobby's from the accommodation i.e. have a pass card that gets you through main entrance and then lobby door at desired floor level (preferred) or by installation of a video entry system & concierge. The use of 'Proximity Cards' to gain access to the main building and individual floor levels is the most cost effective.
    - The presence of a concierge on the scheme is a big bonus and the 24 hr nature of the proposed management is excellent.
    - The front door to every unit satisfies the 'PAS 24' requirements and any glass around the flat entrance is laminated.
    - The windows to the residential are not too much of a concern as they a two storey's above the main deck area and public space.
    - Lighting of the deck and the car park is important – use of 'white-lighting' at high level and lower bollards ensure that CCTV cameras are effective and make the user feel safe – shadows are reduced. Ensure that light fittings are vandal proof.

- BC explained that Woolwich has a particularly high crime rate and the openness of the site with its permeability to the Thames makes it a target for crime. If the above measures are implemented this can be greatly reduced making various cost savings in the long term.

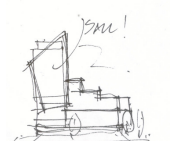
- CM raised slight concern around the area of the Eastern boundary of the site between the block E escape route and the Woolwich Ferry Car Park. Both BC & RW agreed that this should not be accessible by the public. CM explained that there was an approximate level difference of 3m between this strip of land and the car park – this would for a natural barrier to potential intruders. BC suggested areas of defensive planting be provided but must be maintained and be approximately 1m in height and also suggested the installation of a reasonably high strong metal fence. CM saw no issue with these suggestions.

- BC requested that he continue to be consulted about the scheme and the application forms were on the relevant Web pages. SBD is excellent from a sales point of view as is the Park Mark scheme, especially in an area that has a high crime rate as Woolwich does. The application and granting of SBD doesn't cost the developer, however the implementation of the measures to ensure the SBD is achieved do come with a financial implication. The monitoring of the car park and the inclusion of high quality management of the site including the 24 hour concierge for the flood warning strategy work in tandem with keeping the development safe and secure for its users.

- CM agreed to keep BC fully informed on the development of the scheme and agreed to consult with BC at the time of planning submission.



APPENDIX – Minutes from meeting with Greenwich Building Control & Fire Strategy Drawings



2393 – Mast Quay Phase 2

Notes from meeting held at Greenwich Building Control Department Friday 29th April, 2005.

In attendance:

Chris Stevens	-	Greenwich Building Control Team
Patrick Murphy	-	Greenwich Building Control Team
Nigel Upchurch	-	Nigel Upchurch Associates
Clare Mackness	-	Nigel Upchurch Associates

Meeting set up to discuss the approach to fire fighting design in phase 2 and other building regulation matters. NU introduced the scheme in its present design state and reviewed site plans and floor plans prepared.

Issues Discussed:

- **Part B** – Concept for scheme. As with Phase 1 both blocks would be sprinklered and as with Phase 1 this would be done by means of a pressurised tank probably sited in the undercroft parking area. Need to establish with Building Control and the Fire Brigade if the means of escape distances and ventilation principles of Phase 1 could be adopted for Phase 2. The fire strategy drawings for Phase 1 were reviewed. On first look both CS & PM saw no immediate problems with the proposed scheme shown during the meeting.

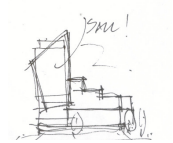
- **Part B** – Mixed use. Unlike Phase 1, Phase 2 is a mixed use scheme with B1 & A3 uses at lower levels. It was agreed that the blocks could be treated as individual buildings i.e B1/A3 lower floors one building and residential upper floors another. The impact of this would be that the lower commercial floors would not be served by the fire stairs. The design of the commercial units with regards to means of escape was not discussed as NUA awaiting brief on design requirements of the B1 & A3 units from the client.

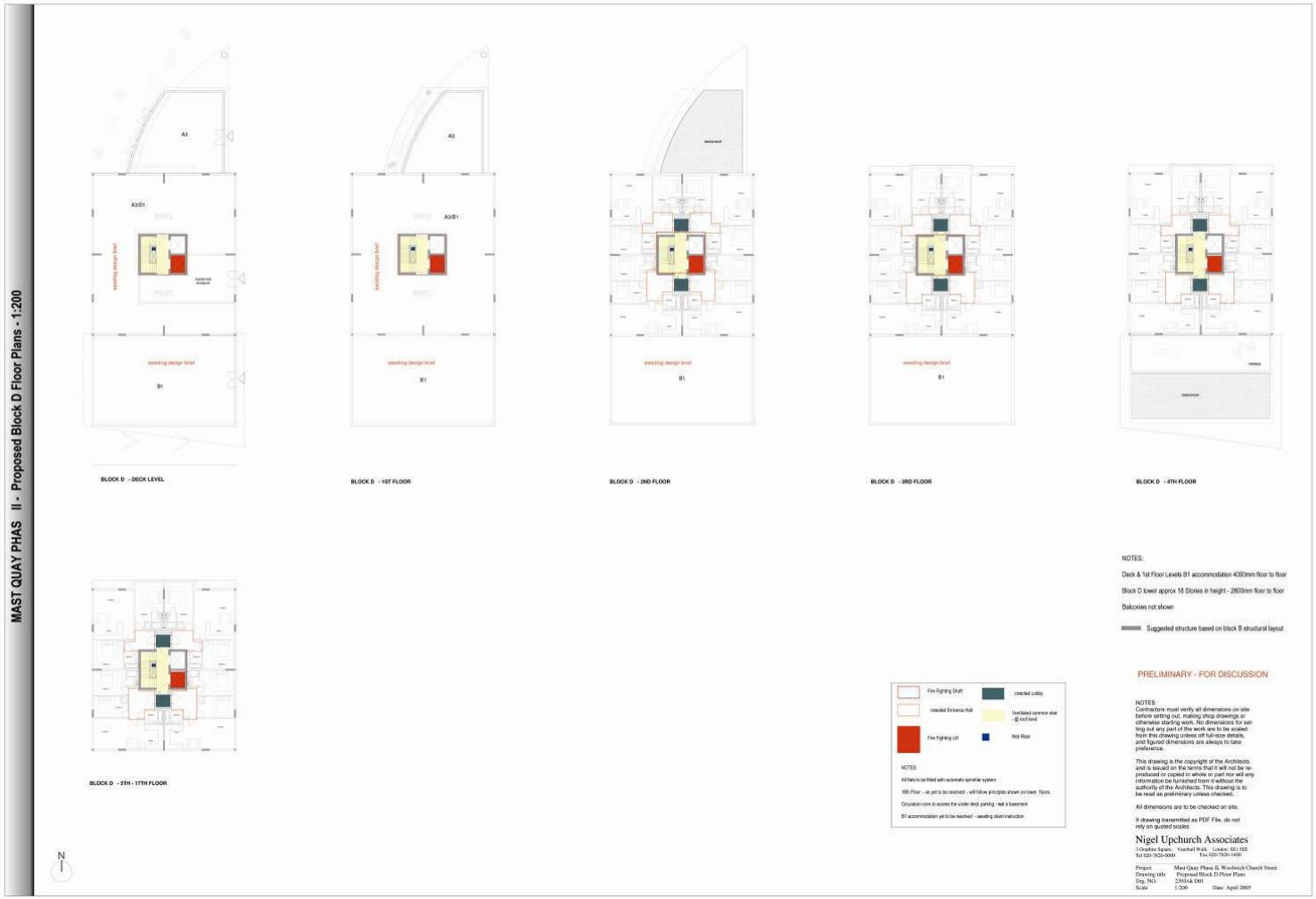
- **Part B** – Fire Stairs. It was agreed that all three stair cases would need to be fire stairs as the buildings they are servicing are all over 18m in height. Also riser in block E would need to be a wet riser. After debate it was agreed that the main stair could access the undercroft parking as this area did not constitute a basement as it would be open on all sides.

- **Part B** – Access for Fire Tenders. It was anticipated that 2 fire tenders would need access to both blocks by means of a ramp onto the public square –their turning circles would have to be incorporated into the design of the public space.

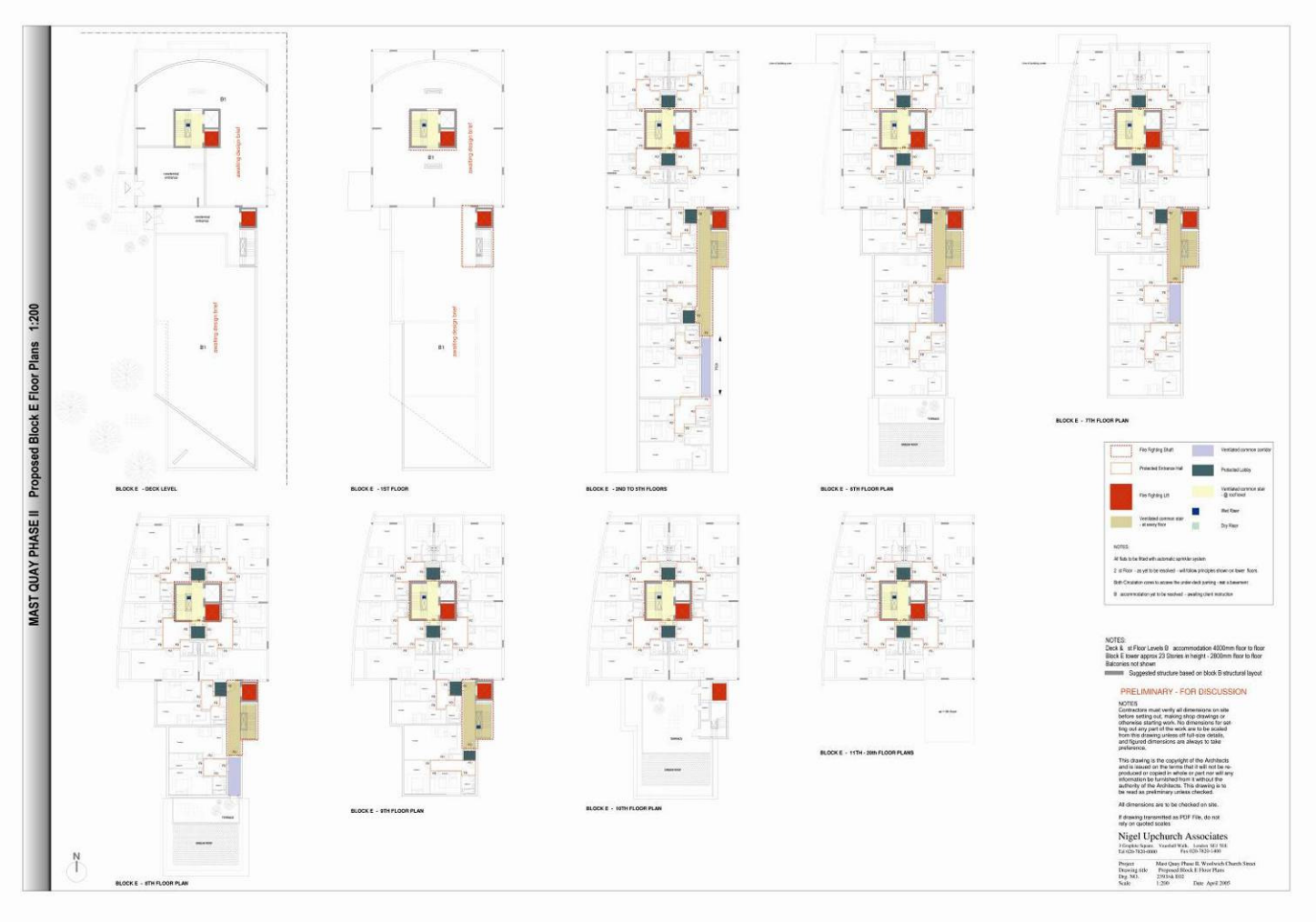
- **Part B** – Next Stage. Was agreed that NUA would prepare a method statement and marked up drawings (similar to those prepared for Phase 1) which building control would then take to the Fire Brigade to discuss.

Minutes from meeting with Greenwich Building Control





Fire Strategy Drawing – Block D – April 2005



Fire Strategy Drawing – Block E – April 2005