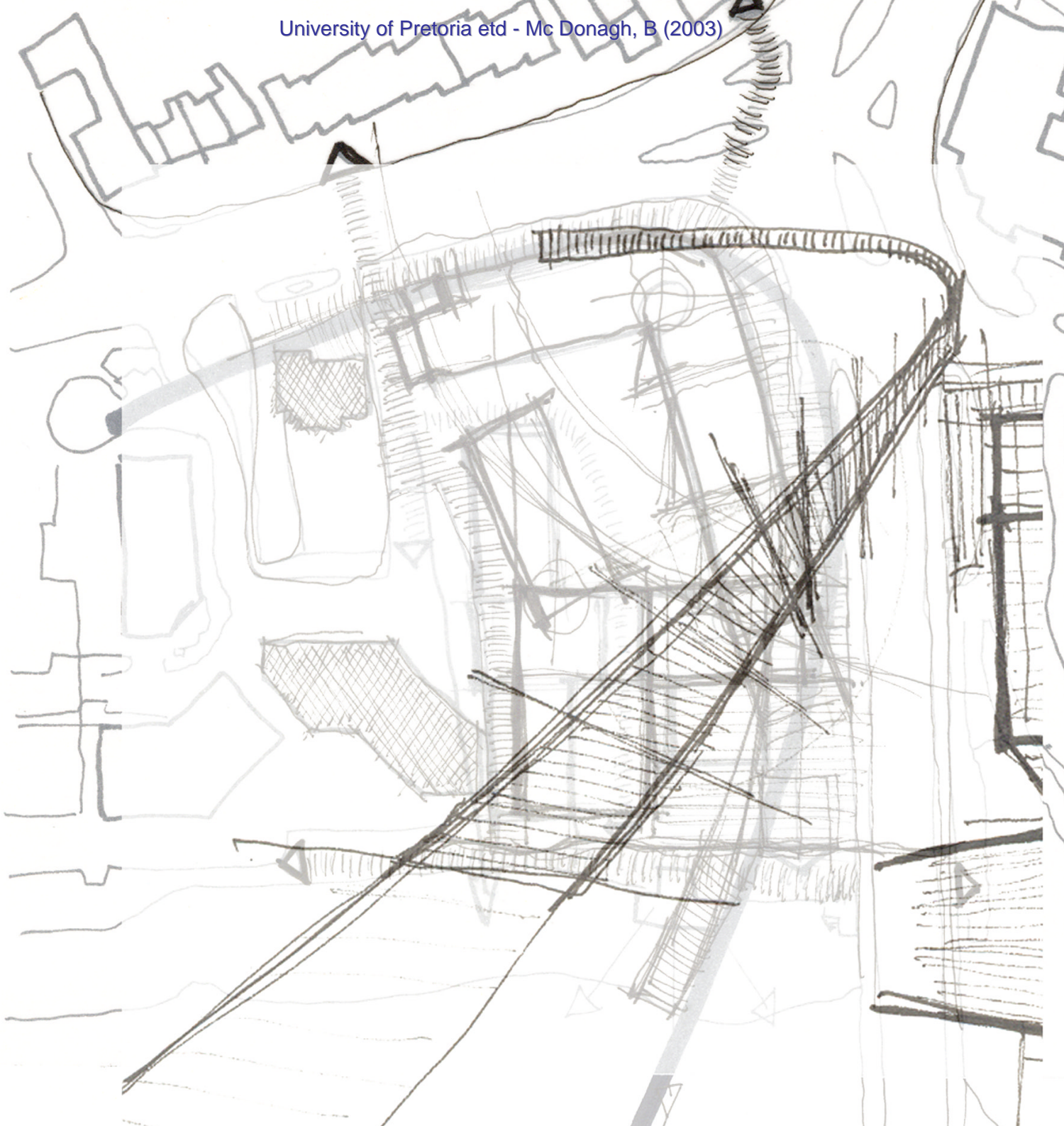


**SECTION B** \_\_\_\_\_ **BASELINE CRITERIA DOCUMENT** \_\_\_\_\_



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**1:8 INTRODUCTION**

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The following Report is based on the Sustainable Building Assessment Tool Jeremy Gibbert 2002. The SBAT tool is designed to access and to set targets for buildings in terms of their performance with regards; social, economic and environmental objectives.

Additions to the structure of the SBAT tool have come from the RIBA sustainable development checklist [www.architecture.com](http://www.architecture.com) and the Zero CO2 housing competition report 2002

The target setting will be used as a guide to ensure the design adheres to the requirements of responsible development and will be used as a measuring tool to establish how accurate the end product prescribes to these targets that have been set.



## 2.0 SOCIAL ISSUES

### 2:1 OCCUPANT COMFORT

The quality of environments in and around buildings has been shown to have a direct impact on health, happiness and productivity of people. Healthier, happier and more effective people contribute to sustainability by being more efficient and therefore reducing resource consumption and waste. However the quality of this environment needs to be achieved with minimal cost to the environment. Development Impact Assessment Tool 2003.

### 2:1:1 LIGHTING

The design of the development has where possible orientated units in such a way that the habitable rooms are south facing in order to utilise the best natural lighting opportunities.

Where natural lighting lux levels are not achieved in the variations of rooms' energy efficient fittings are to be used in all circumstances.



Natural light aspect

Fig - 2:1:1

### 2:1:2 VENTILATION

Natural ventilation is to be used as far as possible to achieve the required air changes for the various rooms. Systems of heat recovery are to be employed for the winter months so as to ensure sufficient ventilation without excessive heat loss.

Mechanical ventilation is to be explored as an option for the venting of the basement, toilets and kitchens. The potential of heat recovery from kitchen and bathroom extraction is to be explored and employed during the winter months to assist in the workload of heating systems.

### 2:1:3 NOISE

The nature of the external wall construction with regards the thermal insulation requirements will provide the potential for high levels of sound insulation from external sources, the values for which will be determined in detail with the specification of materials and quantities. The noise levels between units sharing walls will be controlled by means of insulated party walls ensuring acceptable noise levels in the work and living environments.

2:1:4 VIEWS

Stacking arrangement and orientation of residential units are of such a nature that the views towards the River Thames and Kew Gardens adjacent the site is of primary importance.

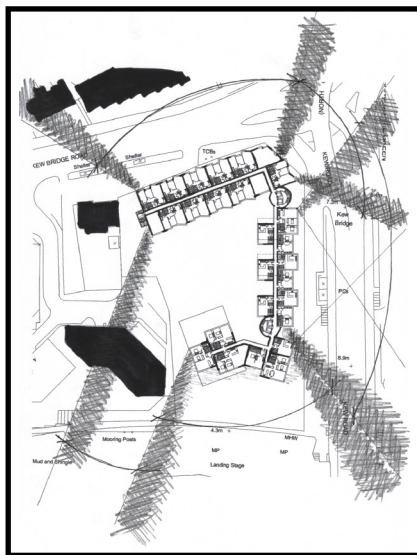
Where this is not achievable window openings and depth of rooms are to be of such a nature that sufficient light and views are accessible. All living and working environments are to be 6 metres or less from windows.

2:1:5 ACCESS TO GREEN OUTSIDE

The location of the site is within 10min walk from one of the United Kingdom's most famous parks, Kew Gardens, providing excellent opportunity for access to large open green spaces for leisurely activities. The site will however provide access to outdoor spaces for both the occupants of the development and public in the form of two separately defined spaces.

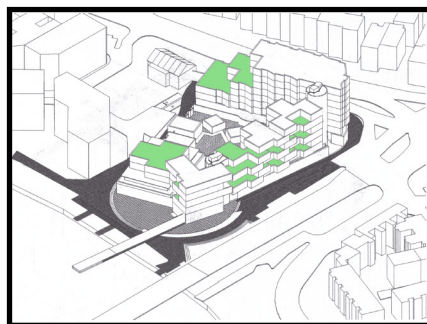
The first will be more private in nature providing a controlled secure environment for the occupants to utilise for outdoor activities such as skateboarding and a play area for the children.

The other is to be public incorporating water activities such as a children's splash pool and a pool for the remote controlled boating club, which will be linked to the Thames Boating club with activities such as sailing, rowing and boating.



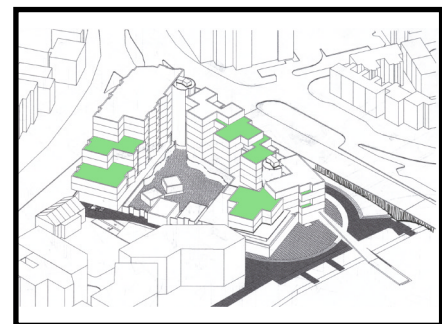
Views and sight lines

Fig - 2:1:2



Access to green outside

Fig - 2:1:3



Access to green outside

Fig - 2:1:4

## 2:2 INCLUSIVE ENVIRONMENTS

Buildings can be designed to accommodate everyone, or specially designed buildings need to be provided. Ensuring that buildings are inclusive supports sustainability as replication is avoided and change of use supported. Development Impact Assessment Tool 2003.

### 2:2:1 PUBLIC TRANSPORT

The site is located within 100 metres of Kew Bridge Train Station (direct 15 min journey to Waterloo Station) two Public Bus stops (to and from central London).

In addition to this River Ferry opportunities are to become available from the proposed Boat club on the river frontage of the site. All public transport facilities cater for disabled access.

### 2:2:2 ROUTES

Surface treatments of the routes between and within buildings will be of a smooth non-slip surface providing equal access to all members of the public including the disabled.

### 2:2:3 CHANGES IN LEVEL

Due to the nature of the site and the designation of areas specific public and private, various level changes will take place.

All changes in level will however cater for wheelchair access with appropriate ramps of 1:12 fall, or lifts where necessary.

### 2:2:4 EDGES

All edges at level changes are to be treated with textured edge floor finishes.

Stair nosings are to be treated with distinguishable contrasting floor finishes.

These measures are to ensure safe movement through the development for the visually impaired.

### 2:2:5 TOILETS

Approx 30% of the residential units (across all typologies) are able to accommodate the facilities required to meet the ablution needs of the disabled person.

Public facilities are provided for at the community hall and provision will be made for both genders and physical disabilities.

### 2:2:6 PUBLIC ACCESS

The development will improve the three existing public edges namely Kew Bridge Road frontage, the Kew Road slipway leading into a new public gathering area with Boat Club and The River Thames public walkway including the public access under Kew Bridge. In addition a new

pedestrian route will be created along the western edge of the site directly linking Kew Bridge Road with The Thames River walkway.

## 2:3 ACCESS TO FACILITIES

Conventional living and working patterns require regular access to a range of services. Ensuring that these services can be accessed easily and in environmentally friendly ways, supports sustainability by increasing efficiency and reducing environmental impact. Development Impact Assessment Tool 2003.

### 2:3:1 CHILDCARE

The development will include a crèche, which will cater for the needs of the community living on the Kew Bridge site.

### 2:3:2 BANKING

No provision has been allowed for banking services on the site, these facilities are available to the public within 1.5 km along Kew Bridge Road towards Hammersmith.

2:3:3 RETAIL

The development will provide an anchor tenant in the form of a leading grocery store (decision of tenant to be based on the Green policies of tendering tenants). Further retail opportunities are available in the 2500 m<sup>2</sup> of retail floor space on the ground floor adjacent Kew Bridge Road and Kew Road.

2:3:4 COMMUNICATION

The development will provide information technology, telephone and television connections to every unit, residential and retail as a standard service.

The nearest postal facilities are available in Hammersmith a 5 min bus ride.

2:4 PARTICIPATION & CONTROL

Ensuring that users participate in decisions about their environment helps ensure that they care for and manage this properly. Control over aspects of their local environment enables personal satisfaction and comfort. Both of these support sustainability by promoting proper management of buildings and increasing productivity Development Impact Assessment Tool 2003.

2:4:1 ENVIRONMENTAL CONTROL

The individual's control over his/her immediate environment will include the opportunities for each unit to be controlled by the inhabitants by means of opening windows and in some cases adjusting of solar protective louvers.

The building is to be designed in such a way that the changing condition in one unit will not adversely affect the overall building climate stability.

The building management systems will include recycling policies and visually accessible meters that indicate building performance in terms of amount of water and electricity used.

Management will include community meetings once a month that will provide an opportunity for feedback and input from representatives of the community.

2:4:2 USER ADAPTATION

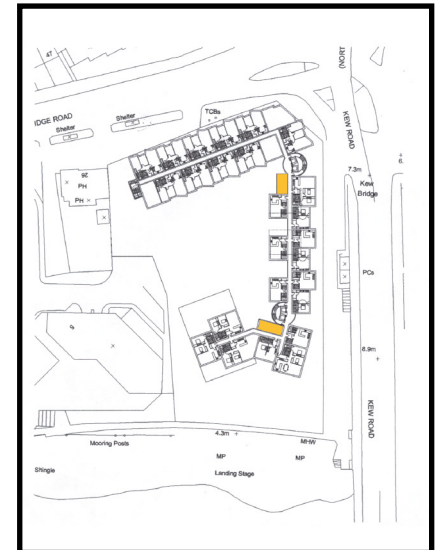
Adaptation and flexibility are provided for in the design of the residential units in the form of moveable internal partitioning walls and folding furniture.

Provision for personal storage space will be made for each unit in the form of compartmental storage either in the unit or in the basement space.

2:4:3 SOCIAL SPACES

Designated social gathering spaces exist in the form of the outdoor spaces as described above and in the form of the community hall where various social and sporting events will take place.

On every floor of the residential fabric 'pause areas' have been designed for reading and for residents to gather for social interaction and a cup of coffee.



Social gathering spaces

Fig - 2:4:1

2:4:4 AMENITY

In the above mentioned social areas provision will be made for access to cupachino and snack vending machines that will be maintained by a designated resident as a potential income opportunity.

Further access to retail amenities will be available in the form of the retail facilities on the ground floor.

2:5 EDUCATION, HEALTH AND SAFETY

Buildings need to cater for the well being, development and safety of the people that use them. Awareness, and environments that promote health can help reduce the incidence of diseases such as AIDS. Safe environments and first aid can help limit the incidence of accidents and where these occur, reduce the effect.

Learning and access to information is increasingly seen as a requirement of a competitive work force. All of these factors contribute to sustainability by helping ensure that people remain healthy and economically active, thus reducing the 'costs' (to society, the environment and the economy) of unemployment and ill health. Development Impact Assessment Tool 2003.

2:5:1 EDUCATION

Access to the Internet will be provided for to the residents of the development in the form of Internet connections in all the residential units.

2:5:2 SECURITY

All external pedestrian routes are to be designed in such a way as to ensure well-lit routes that have the added safety of overlooking aspects from residential units above.

These routes will have clear visual links between public spaces to ensure the safety of the public utilising the routes.

Access into the buildings will be controlled by means of security doors with key-card and visual intercom systems.

2:5:3 HEALTH

First aid kits will be provided for at the main access core on every floor and 3 members of the community per floor will be educated in basic first aid procedures in the event of an accident or emergency.

2:5:4 SMOKING

No smoking in public spaces throughout the building: lifts, stairs, passages, entrance and lift lobbies, pause areas and near any air intake for ventilation purposes for the building.

2:5:5 SAFETY

The development will comply with all Health and Safety regulations as stated by the British Standards for Building compliance.

2:5:6 CULTURAL DIFFERENTIATION

The cultural diversity of the envisaged community has been considered and is understood to be largely of a Caucasian majority.

The potential needs of other ethnic groups has been considered and catered for in the flexibility of the residential units, the units can be personalised to the needs of the specific inhabitants.



### 3 ECONOMIC ISSUES

#### 3:1 LOCAL ECONOMY

The construction and management of buildings can have a major impact on the economy of an area. The economy of an area can be stimulated and sustained by buildings that make use and develop local skills and resources. Development Impact Assessment Tool 2003.

##### 3:1:1 LOCAL CONTRACTORS

The list of tendering contracting firms will comprise of locally based London contracting firms thereby ensuring a local company will secure the right to build the development.

Local subcontractors affiliated to the tendering contracting firms will also be scrutinised in terms of their location relative to the site location.

Leniency will however be demonstrated in cases of specialised applications or skills with regards to subcontractors.

##### 3:1:2 LOCAL BUILDING MATERIAL SUPPLY

Tender applicants will have to agree to ensure that construction materials are sourced from within the proposed 200km range of the site as part of the tender conditions.

#### 3:1:3 LOCAL COMPONENT MANUFACTURER

Tender applicants will have to agree to ensure that construction materials are sourced from within the proposed 200km range of the site as part of the tender conditions.

#### 3:1:4 OUTSOURCE OPPORTUNITIES

The development will generate catering, cleaning, entertainment and security needs.

Local service providers will meet these requirements as priority service providers.

#### 3:1:5 REPAIRS AND MAINTENANCE

The driving design principal for this development is that the built fabric should respond to its environment by utilising passive heating and cooling systems in conjunction with a well insulated external skin to achieve desirable living and working environments without the need for excessive heating and cooling systems.

It is therefore that machinery would be drastically reduced and locally sourced to ensure any future maintenance would be conducted easily and efficiently.

Construction materials will be sourced from local suppliers these include recycled building materials and will therefore be maintained over the life span of the building by local supplies.

#### 3:2 EFFICIENCY OF USE

Buildings cost money and make use of resources whether they are used or not. Effective and efficient use of buildings supports sustainability by reducing waste and the need for additional buildings. Development Impact Assessment Tool 2003.

##### 3:2:1 USEABLE SPACE

Space used by plant, WCs and circulation should not make up more than 20% of total area of the development. Development Impact Assessment Tool 2003.

##### 3:2:2 SPACE USE

The community hall will accommodate various space requirements including sporting functions and social gatherings as well as providing facilities for educational purposes.

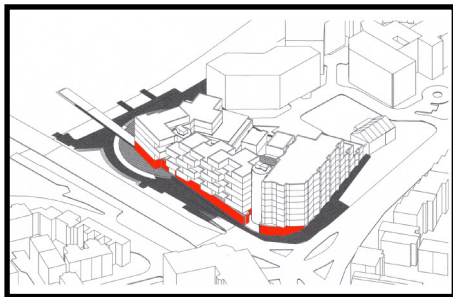
##### 3:2:3 USE OF TECHNOLOGY

Communications and information technology connections will be utilised to convert home space into workspace aiding in the reduction of travel requirements of the residents.



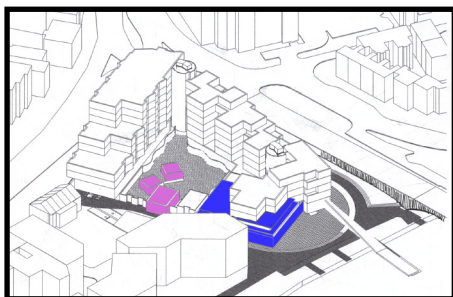
3:2:4 MIXED DEVELOPMENT

The development will cater for a range of functions namely: Retail 2500m<sup>2</sup> lettable space, Community Hall for various sporting and social events, Boat Club to accommodate various water sport disciplines on the Rive Thames, Crèche facilities providing day-care and babysitting services and a wide range of Residential unit typologies.



Retail area

Fig - 3:2:1



Community hall & creche

Fig - 3:2:2

3:3 ADAPTABILITY AND FLEXIBILITY

Most buildings can have a life span of at least 50 years. It is likely that within this time the use of the building will change, or that the feasibility of this will be investigated. Buildings, which can accommodate change easily supports sustainability by reducing the requirement for change (energy, costs etc) and the need for new buildings. Development Impact Assessment Tool 2003.

3:3:1 VERTICAL DIMENSION

The structural dimensions of floor-to-floor height are as follows:

Ground Floor Retail  
4 500mm

Ground Floor Commu-  
nity Hall 6 000mm

Residential units 1st to  
7th floor 3 000mm

3:3:2 INTERNAL PARTITIONS

The construction of the internal partitions between residential units is designed to be non-load bearing and as such could be removed for potential future flexibility of use. Development Impact Assessment Tool 2003.

3:3:3 SERVICES

Easy access provided electrical, communication and (and HVAC, where appropriate) in each useable space. Provision made for enabling easy modification of system (i.e. addition subtraction of outlets) Development Impact Assessment Tool 2003.

3:4 ONGOING COSTS

3:4:1 MAINTENANCE

Specification and material selection will be determined on the low maintenance and or low cost maintenance performance of the materials and fittings to be used in the building.

All plant and fabric selection will be based on a minimum 2-year maintenance cycle.

Low or no maintenance components (i.e. windows, doors, plant, ironmongery etc) will be selected.

Low energy light bulbs are to be installed throughout the development and replaced by likewise once replacement becomes necessary and, as far possible replacement of such fittings will be designed to be easily accessible and cost effective.



### 3:4:2 CLEANING

The selection of low maintenance in terms of cleaning and durability will form part of the criteria in materials selection.

Design will allow for easily accessible for cleaning of windows where possible.

### 3:4:3 SECURITY / CARE TAKING

The design of the development will be such that one controlling security point will be required at the main entrance to the complex and security technology measures will be incorporated to maintain a secure building at secondary entry point to the complex.

The 24-hour activities that the residential units, community centre and retail will provide, will assist in the reduction of security threat to the inhabitants of the complex.

### 3:4:4 INSURANCE / WATER / ENERGY / SEWERAGE

The running costs of insurance, water, energy and sewerage will be displayed in such a way that all users of the building will be made aware of the buildings performance these readings will be monitored and reported on in the management meetings with the Community representatives on a monthly basis.

Policies of management will incorporate proactive building participation that will be encouraged the reduction the unnecessary consumption i.e. switching off lights on leaving building spaces.

### 3:4:5 DISRUPTION AND 'DOWN TIME'

Electrical and communication services, HVAC and plant located where they can be easily accessed with a minimum of disruption to occupants of building. This should maximising access to this from circulation areas (rather than work/living areas) and lift off panels at regular intervals to vertical and horizontal ducting Development Impact Assessment Tool 2003.

### 3:5 CAPITAL COSTS

Buildings are generally one of the most valuable assets that people, and often organisations and governments own. Money spent on buildings is not available for other uses such as health and education. Often too, the high cost of buildings results in the services (i.e. health and education) and the accommodation (for work and living) is beyond the reach of people with the lowest incomes.

Buildings that are cost effective support sustainability by helping provide access to accommodation and services for low-

income areas and by enabling money to be spent on other areas that support sustainability. Development Impact Assessment Tool 2003.

### 3:5:1 CONSULTANT FEES

Incentives are to be made available to consultants for innovation in capital cost and ongoing costs reductions in the form of additional fees.

### 3:5:2 BUILD-ABILITY

Prefabrication of mass quantity construction components is to be explored to increase speed and ease of construction.

These components will have the potential for reusability in future buildings.

### 3:5:3 CONSTRUCTION

The development layout will enable ease of phasing and will be conducted in the following sequence:

1. Basement construction: the entire basement will be constructed in one phase.
2. Ground Floor Retail and Residential Block A.
3. Ground Floor Retail and Residential Blocks B & C.
4. Community Centre, Crèche, Boat Club and Residential Block D.

### 3:5:4 AMENITY

The development functions were based on studies of the immediate area and are aimed at filling required function to the area and adding potential market to the existing businesses and functions.



Phasing Diagram

Fig - 3:2:3

## 4 ENVIRONMENTAL ISSUES

### 4:1 WATER

Water is required for many activities. However the large-scale provision of conventional water supply has many environmental implications.

Water needs to be stored (sometimes taking up large areas of valuable land and disturbing natural drainage patterns with associated problems from erosion) It also needs to be pumped (using energy) through a large network of pipes (that need to be maintained and repaired). Having delivered the water, a parallel effort is then required for disposal after use, i.e. sewerage systems.

Reducing water consumption supports sustainability by reducing the environmental impact required to deliver water, and dispose of this after use in a conventional system. Development Impact Assessment Tool 2003.

#### 4:1:1 RAINWATER

The rainfall for London is Approx 799mm per annum with the best rainfall during the winter months Nov-Feb, The highest recorded month in 2002 was December at 81mm. The area of roof to be used for the water collection is approx: 3460m<sup>2</sup>.

Highest rainfall month for 2002 allowing for an additional 20% safety factor makes for a tank capable to store 350m<sup>3</sup> of water. Therefore the size of tank required for rainwater storage at basement level is a cubic tank of 7x7x7m. A roof washer system is a system that ensures a level of decontamination of rainwater collected before the water is stored. The system rejects the first 50 litres of water per 1000m<sup>2</sup> of roof. The rainwater that falls on the roofs of the building will be collected and linked to the water recycling system which will filter both rain and grey water for reuse either for clothes washing, toilet flushing or garden use.

#### 4:1:2 WATER USE

Estimated inhabitants of the residential building	216	Adults
(See densities strategy for estimation breakdown)	108	Children
	324	Total
Family based on 2 adults and 1 child	108	Total families
Proposal for 2 adults and 1 child: Bath/shower	120	litres/day
Washing machine	70	litres/day
Low-flush toilets	30	litres/day
Cooking	10	litres/day
Total	230	litres/day
Total usage x families	24 840	litres/day
Zero CO2 Housing COMPETITION REPORT FEB 1999		

Specifications will also include the use of water-saving showerheads, flow restricting taps and low flush toilets.

#### 4:1:3 GREY WATER

Grey water will be collected from wash hand basins, showers, baths and kitchen sinks

Bath/shower	120	litres/day
Cooking	10	litres/day
Total	130	litres/day
Total collection x families	14 040	litres/day

Zero CO2 Housing COMPETITION REPORT FEB 1999

This water will be filtered, cleaned, and stored in holding tanks in the basement for the reuse in the following applications.

Low-flush toilets	30	litres/day
Washing machines	70	litres/day
Total	100	litres/day
Total x families	10 800	litres/day

It is therefore that of the 24 840 litres/day used by the 108 families 14 040 litres/day will be reused at a rate of 10 800 litres/day.

Surplus water of 3 240 litres/day will be added to the rainwater collection of approx 110 litres/day and used for landscape irrigation.

#### 4:1:4 RUNOFF

Runoff reduced by using pervious or absorbent surfaces. Hard landscaping minimised. Development Impact Assessment Tool 2003.

#### 4:1:5 PLANTING

Planting has low water requirement (indigenous species). Development Impact Assessment Tool 2003.

#### 4:2 ENERGY

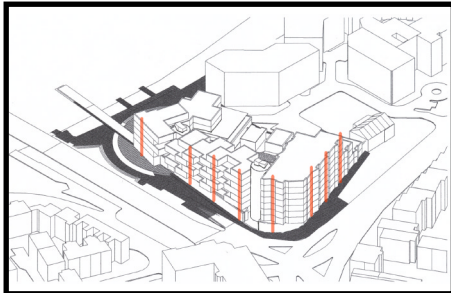
Buildings consume about 50% of all energy produced. Conventional energy production is responsible for making a large contribution to environmental damage and non-renewable resource depletion. Using less energy or using renewable energy in buildings therefore can make a substantial contribution to sustainability. Development Impact Assessment Tool 2003.

#### 4:2:1 LOCATION

See public transport 2:2:1.

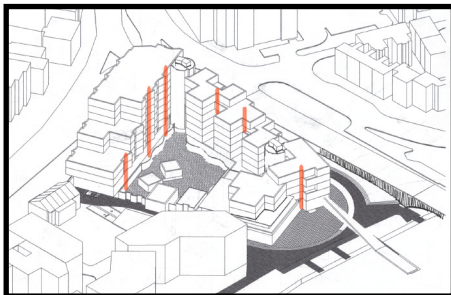
#### 4:2:2 VENTILATION SYSTEM

The nature of the heating and power plant will necessitate the use of turrets to convey heated air into units around the site. These turrets will, with minor adjustments, utilise the properties or passive thermal air movement during the summer months to cool the units by means of air extraction through the units. The target setting for habitable rooms is 1 ac/h and 3ac/h for kitchens and bathrooms.



Heating turrets

Fig - 4:2:1



Heating turrets

Fig - 4:2:2

#### 4:2:3 HEATING AND COOLING SYSTEM

Combined Heating and Power system recovers heat lost during electricity generation and distributes it through turrets around the development. The system uses an automated wood chip fired system which uses gasification technology, the engine then produces electricity at approx 40% efficiency and recovers heat at a rate of  $e=2h$ . Clean combustion of the wood is achieved by water and sand filtration.

Provision has been made for the delivery of the wood chip via the River Thames with a minimum storing capacity of 7 days on site.

The CHP plant aims to maximise mixed-use activities on site as well as the incorporation of other neighbouring sites with power and heating requirements, surplus power could be sold at a green tariff rates to these sites

#### 4:2:4 APPLIANCES AND FITTINGS

All appliances will be energy efficient. Low energy lighting and energy saving light bulbs is assumed as standard.

#### 4:2:5 RENEWABLE ENERGY

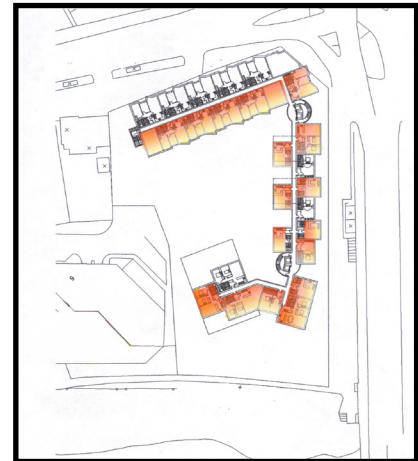
Solar panels capable of producing 170W per  $1m^2$  will be incorporated to power fans assist

with the generation of electricity and used to power the extraction fans in the turrets and bathrooms and kitchens.

Turbine generators will use the tidal flow of the River Thames to generate additional electricity, which would assist with the extraction fans power requirements.

#### 4:2:6 NATURAL LIGHT

The design of the development has as far as possible orientated the habitable room facing south utilising the solar radiation to assist in passive heating of the residence. The window openings are to consider views, natural light and solar control, for sun control. Solar protective devices will be employed to control heat gains during the summer months.



Natural lighting & passive heating Fig - 4:2:3

#### 4:3 RECYCLING AND REUSE

Raw materials and new components used in buildings consume resources and energy in their manufacture and processes. Buildings accommodate activities that consume large amounts of resources and products and produce large amounts of waste. Reducing the use of new materials and components in buildings and in the activities accommodated and reducing waste by recycling and reuse supports sustainability by reducing the energy consumption and resource consumption. Development Impact Assessment Tool 2003.

##### 4:3:1 TOXIC WASTE

Arrangements made for the safe disposal / recycling of toxic/harmful substances i.e. batteries, printer toners. Development Impact Assessment Tool 2003.

##### 4:3:2 INORGANIC WASTE

The development's management policies will include an active recycling program with collection points for the separated recycling bins at every level. These bins will be taken down to base-level for compaction and removal by partnership recycling companies.

##### 4:3:3 ORGANIC WASTE

The organic waste will be made available to the Kew Gardens Company for composting and ultimately fertiliser for the gardens.

#### 4:3:4 SEWERAGE

This will be directed into the mains sewerage from removal.

##### 4:3:5 CONSTRUCTION WASTE:

The design of the development will utilise modular sizes of components to minimise construction waste and unnecessary off-cuts.

Contractor is to incorporate best practice sustainable site management policies limiting construction waste with incentive based target setting of materials saving.

##### 4:3:6 REUSE OF EXISTING BUILDINGS

The existing area has been surveyed and the findings were that of a number of redundant office buildings had been converted into residential blocks and that these opportunities have been exhausted

##### 3:3:7 HERITAGE

The area boasts a number of listed structures namely The Grade 1 listed Steam Museum and the Grade 2 listed Kew Bridge and Kew Bridge Station. These structures have informed the massing and fabric of the development.

#### 4:4 SITE

Buildings have a footprint and a size that take up space that could otherwise be occupied by natural ecosystems which contribute to sustainability by helping create and maintain an environment that supports life, (for instance, controlling the carbon dioxide and oxygen balance and maintaining temperatures within a limited range). Buildings can support sustainability by limiting development on sites that have already been disturbed, and working with nature by including aspects of natural ecosystems within the development. Development Impact Assessment Tool 2003.

##### 4:4:1 BROWNFIELD SITE

The proposed site has previously been built on but is currently without any obvious traces of previous superstructure.

The massing of the development will 'step up' from 3 storeys at the southern boundary closest to the River Thames towards a maximum height of 7 storeys at the northern end of the site Kew Bridge Road where the impact of overshadowing will be minimised by the fragmentation of the built form.

4:4:2 VEGETATION

Planting opportunities will be realised in landscaped areas, atriums, roof gardens and balconies.

Potential small-scale urban agriculture will be possible in selected roof garden areas throughout the development.

4:4:3 LANDSCAPE INPUTS

Landscape does not require heavy artificial input i.e. fertilizer, insecticide and pesticide. Development Impact Assessment Tool 2003.

4:4:4 APPROPRIATE DENSITY FOR BUILDING LOCATION

The Development strategy for the site is to achieve urban densification, providing a range of mixed-use functions for retail, community and residential (30% is to be affordable component) opportunities. This structure will accommodate for a wide range of tenure, and a mixed population in terms of age, wealth and occupant skills promoting the notion of a balanced and integrated community, which will be sustainable in terms of social economic and environmental notions.

Apartment  
1 Bed unit @ 45m<sup>2</sup>  
24 x 2 Habitable Rooms  
Total 48HR

Apartment  
2 Bed unit @ 65m<sup>2</sup>  
84 x 4 Habitable Rooms  
Total 336HR

Apartment  
3 Bed unit @ 120m<sup>2</sup>  
12 x 5 Habitable Rooms  
Total 60HR

Residential Development Densities Requirements for Hounslow Council are as follows:

Densities higher than the maximum 247 hr/hectare set out in UDP policy H.1.4 are considered suitable.

The Area of the Kew Bridge Site is 0.731 acres therefore the minimum density required for the site as per Hounslow Council is 173 Habitable Rooms. Total number of Habitable Rooms is 444.

4:5 MATERIALS AND COMPONENTS

The construction of buildings usually requires large quantities of materials and components. These may require large amounts of energy to produce. Their development may also require process that are harmful to the environ-

ment and consume non-renewable resources.

4:5:1 EMBODIED ENERGY

The materials selection for the development will consider embodied energy as one of the criteria for final selection. However, the recyclability of materials will also be considered.

A target for 60% renewable or low embodied energy materials will be set for the development.

4:5:2 MATERIAL / COMPONENT SOURCES

90% of materials and resources will be acquired from verifiable, recycled and renewable resources.

4:5:3 MANUFACTURING PROCESSES

Environmental damage limited during product component development. No green house gases released, no pollution caused. Development Impact Assessment Tool 2003.

4:5:4 RECYCLED / REUSED MATERIALS AND COMPONENTS

10% of building materials and components are reused or from recycled sources.

These sources will include:

#### 4:6 BUILT ENVIRONMENT

Ashwell Recycled Timber  
Products Ltd.

Address:

Wick Place Farm

Unit F1

Wick Place Farm

Brentwood Road

Bulphan\_Essex

RM14 3TL

The built form and mass of the development is a result of consideration for the immediate urban fabric, potential overshadowing and urban design guidelines.

Deptord Recycling Centre.

Address:

Landmann Way

Off Surrey Canal Road

Deptford

SE14 5RS

L & B Recycling  
Solutions.

Address:

Hannah Close

Great Central Way

Neasdon

London

NW10 OUX

#### 4:5:5 CONSTRUCTION PROCESSES

The bulk of construction materials and machinery will be delivered to the site via Kew Bridge Road

The River Thames will be considered for deliveries of construction materials during high tide only as to ensure no environmental damage caused to the riverbank.



