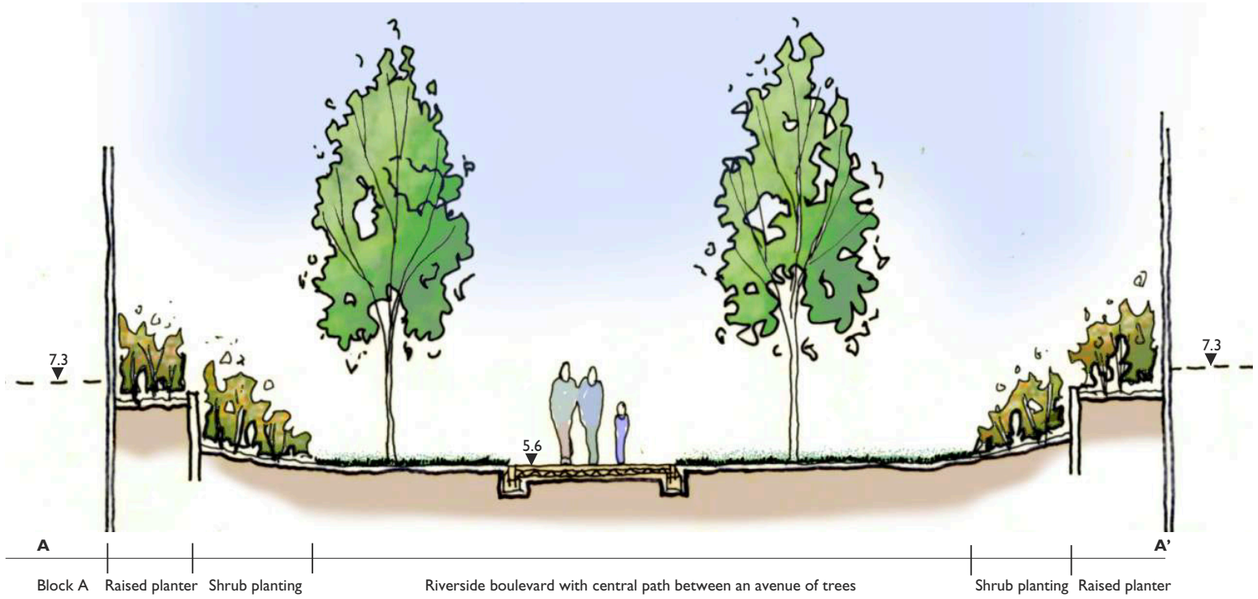
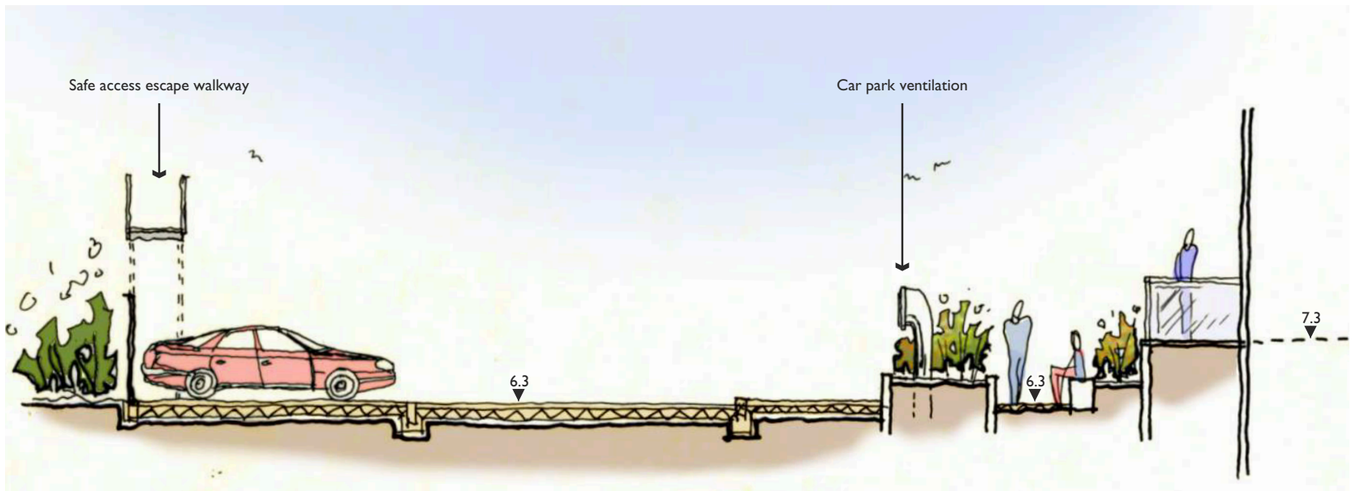


SECTION AA



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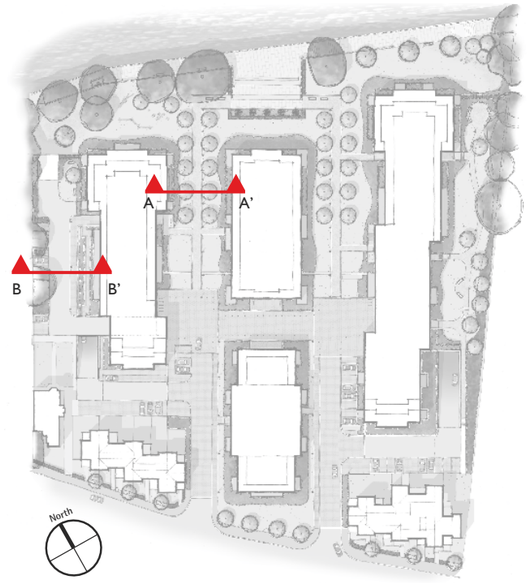

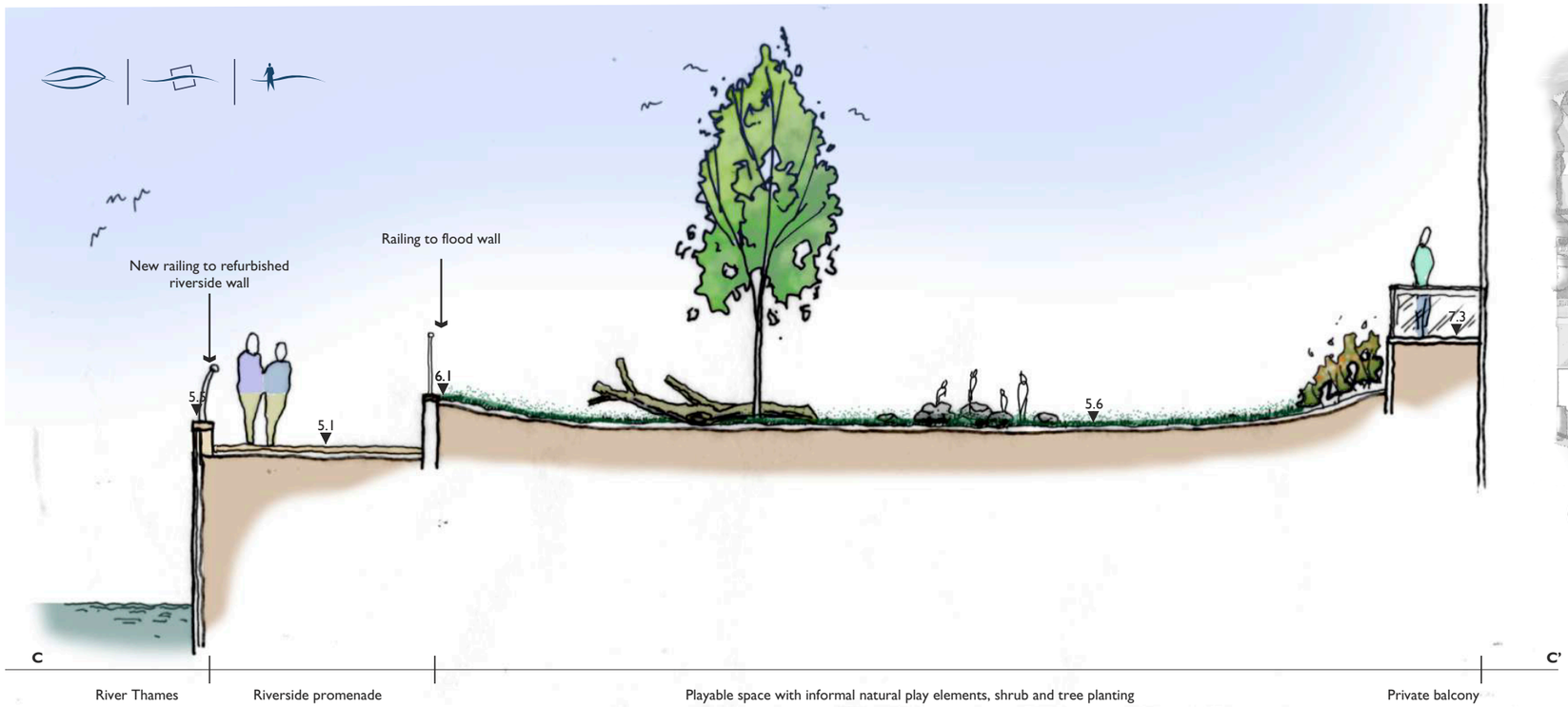

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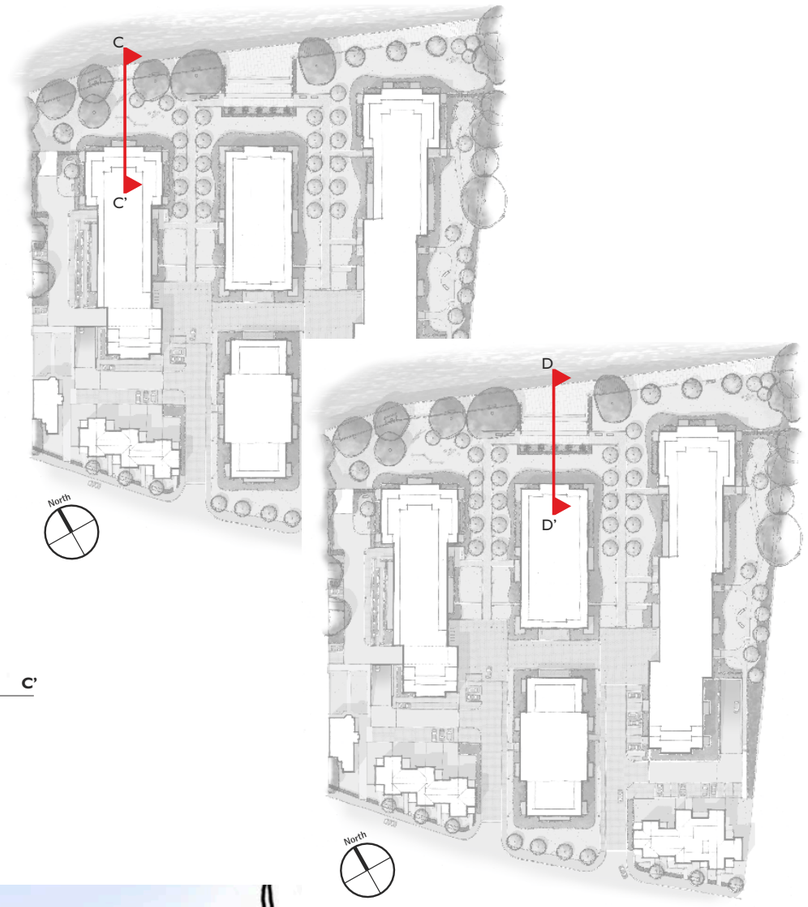
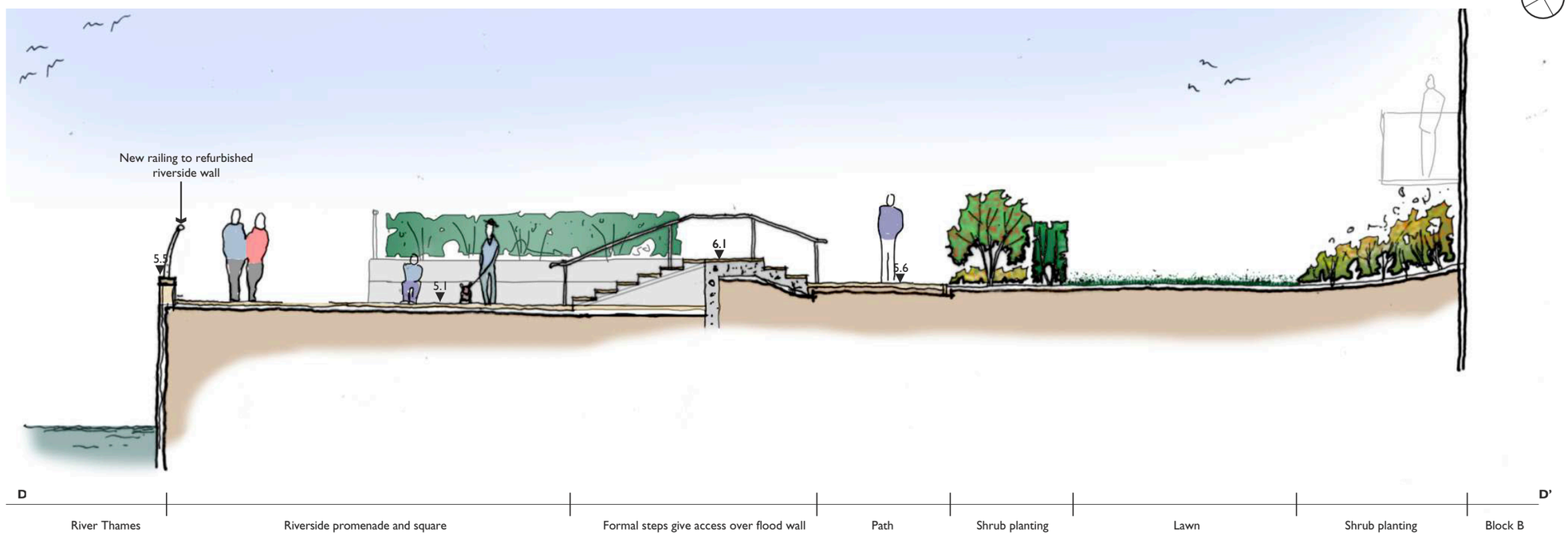
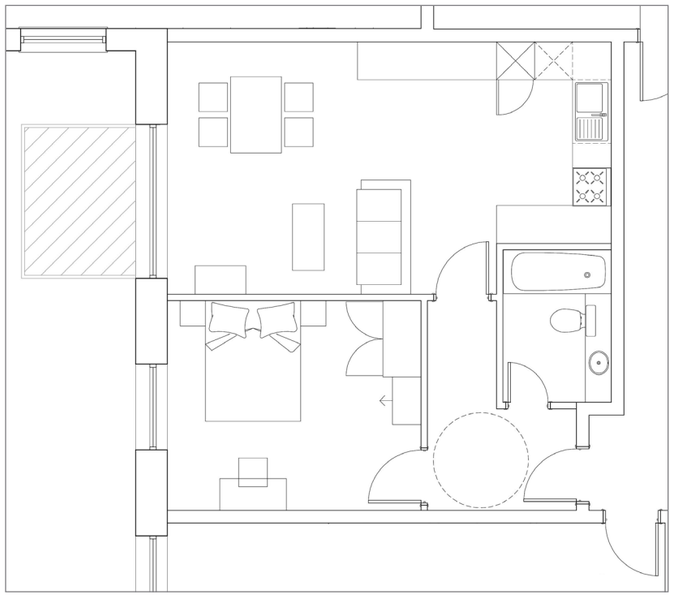




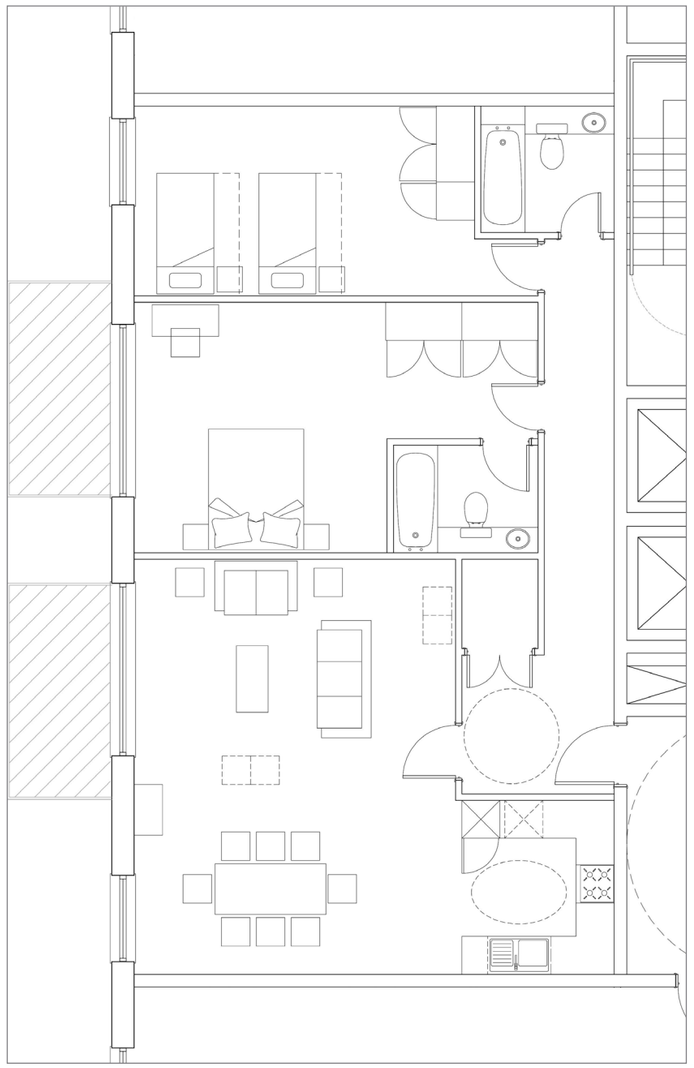
SECTION DD

Accessibility

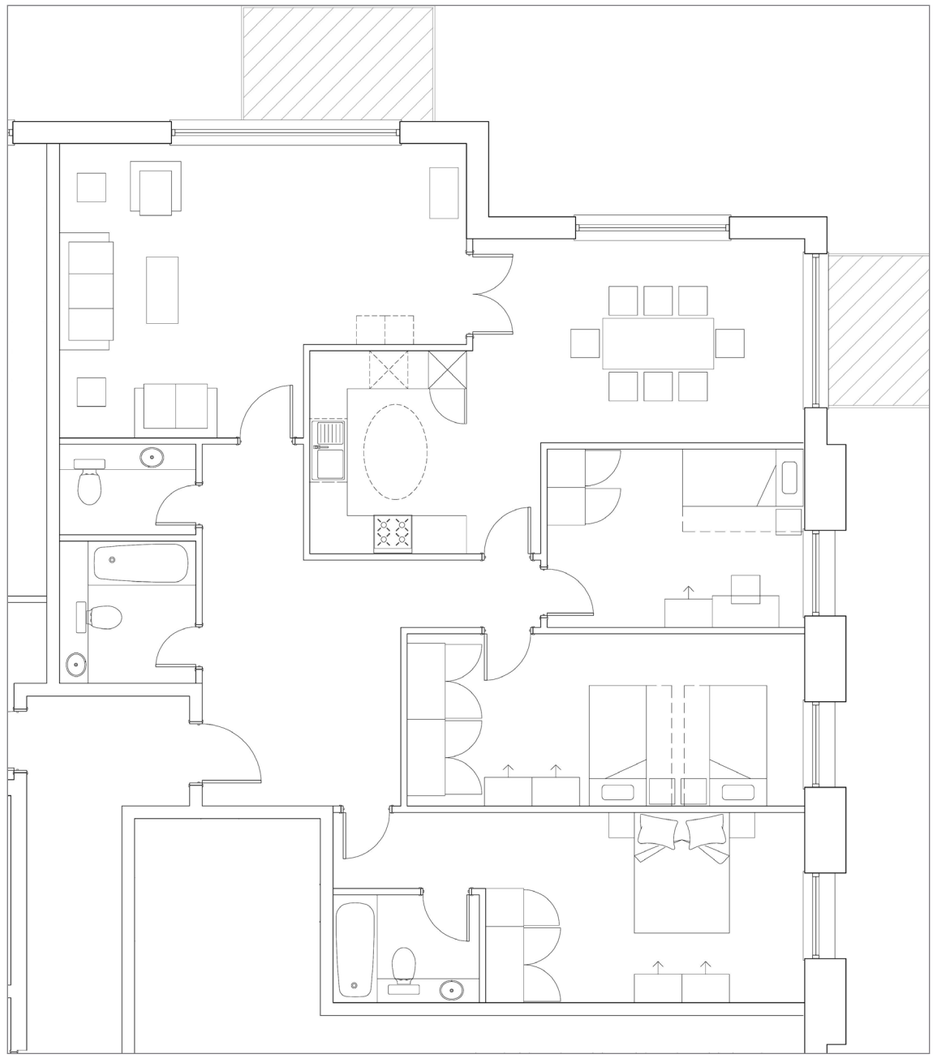


One bed unit

Units are accessible via DDA compliant lifts and corridors are short normally of 5-10m length from each core. Corridors do interconnect as part of the fire and flood plans but these are solid, unglazed, fire rated, acoustic doors kept locked shut electronically and remotely during normal circumstances. They are released by the onsite management in emergency conditions.



Two bed unit



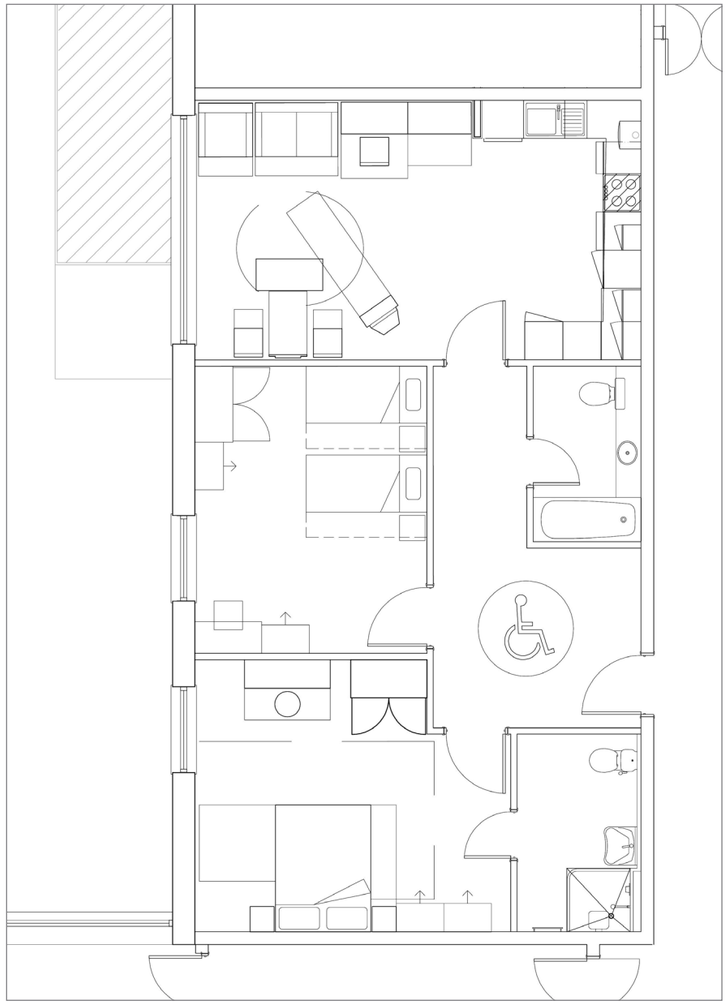
Three bed unit

All units are designed to be fully accessible. All gradients around the site are gently arranged for easy pedestrian use and all buildings are fully accessible and socially inclusive whether being accessed from the basement carpark, where numerous blue badge bays are provided close to lifts and stairs, or on foot at ground level. All lifts are DDA accessible, and at ground floor level feature double sided lifts to give access from entry level to the flood safe 7.3m ffl, a level set so as to cater for freak circumstances such as the widespread flooding nationally of 1893 and 1947.

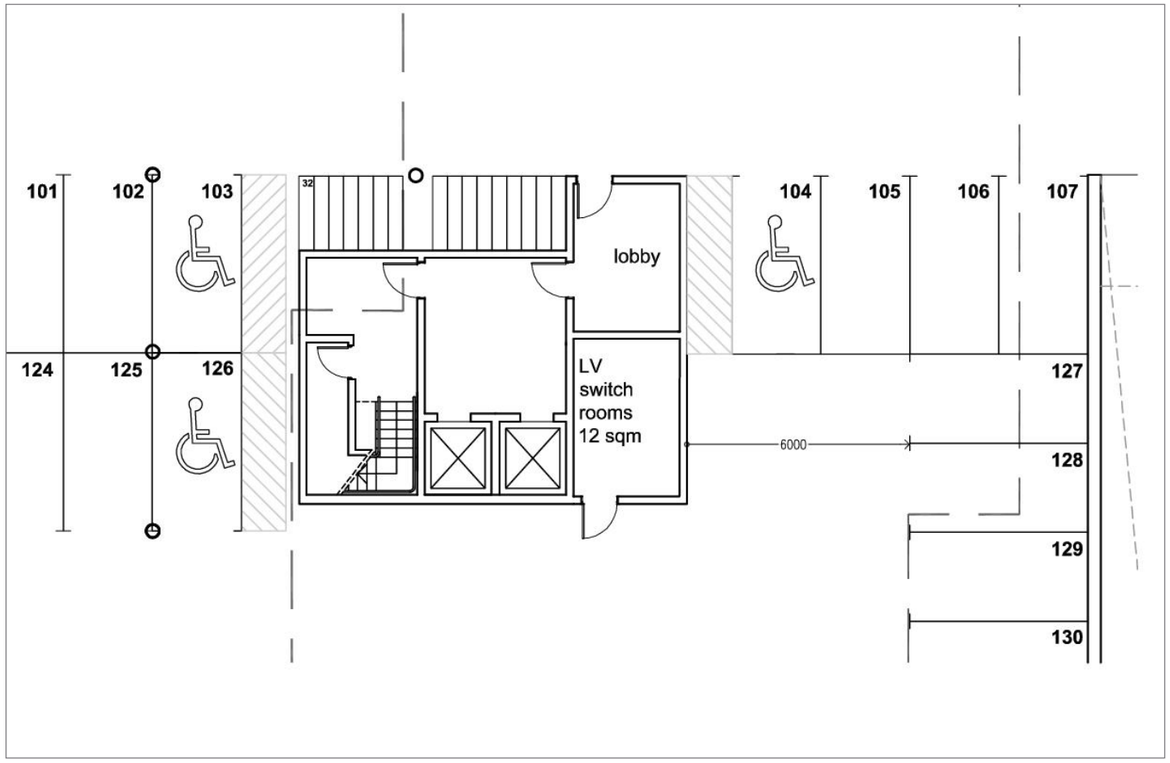
All levels will be well lit and boldly signed for users with visual impairment and 10% of all units, which are all generously sized, well above GLA minimum sizes, are capable of adaptation to suit wheelchair occupiers.

Units are designed to the GLA. SPD and CSH level 4 as well as to Life Time Homes Standards and all feature flush entry, flush balconies and all best practice. Internal partitions are conceived to be non-load bearing thereby optimising the potential for flexible rearrangement to suit future trends. Typical layouts are illustrated opposite while some overall plan layouts are shown in the application drawings section.

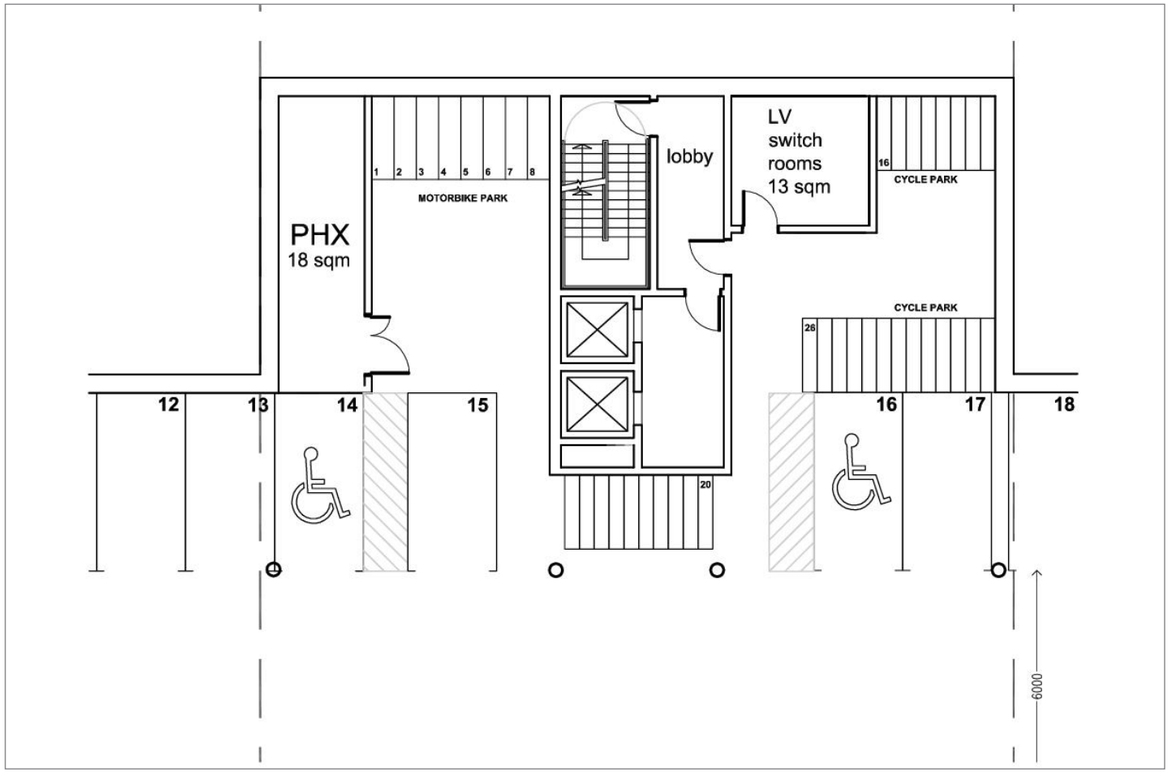
The scheme provides communal space and play space, which like internal floor areas, exceed the minimum guidance. Affordable Housing in E7 contains the correct level of provision as demonstrated by the Viability exercises and these also exceed the GLA space standards. The density at 118 units per hectare (409 hr per ha) also exceeds guidelines and are the natural product of the design quality that from the outset has sought to create a green parkland setting.



Two bed unit for wheelchair using family. All units whether for wheelchair users, others with physical or sensory impairments, or those who would not need any specific facility comfortable exceed the Mayor’s Housing SPG minimum guidelines.



10% of parking spaces are reserved alongside lifts for blue badge holders. All stairs are hobbled, as is the lift lobby. Cycles are secure by virtue of the overall car parks securely and are CCTV monitored. Screen walls are low level and all areas brightly lit and wall and floor surfaces decorated or demarcated.

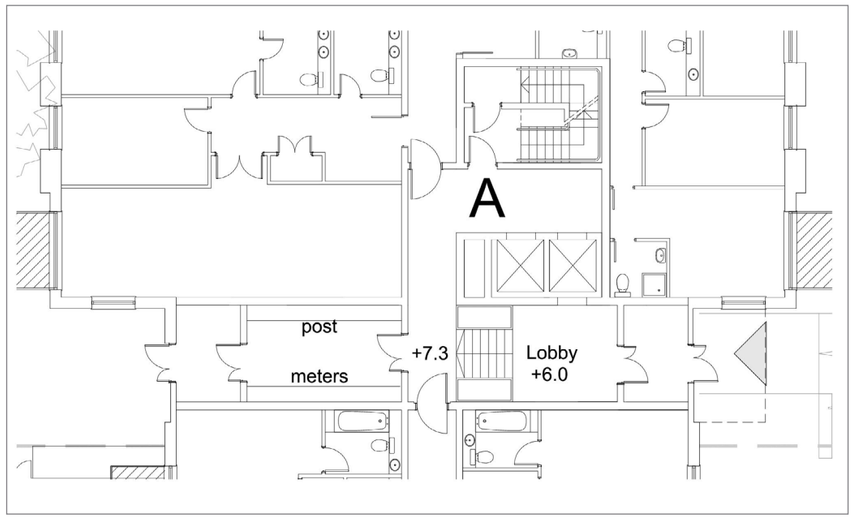


Other Considerations

Secure by Design

The scheme is designed to best practice principles: an ethos applicable to all our work.

- Ground Floors have lobbied entrances, voice link entry for visitors and CCTV
- Ground Floors are generally set at least 1.5 metres above surrounding main ground levels and raised planters act as a buffer to the building line preventing immediate access to windows from would be burglars
- The corridors have secure doors at key points controlled by swipe or similar device
- The car park is secure, well light with allocated bays CCTV cameras and lobbied secure access to lift and stair shafts
- There is a permanent on site management suite
- The layout is clear with minimal concealment opportunity and maximum passive surveillance
- All detailed specifications for doors, locks, windows etc are to SBD standards and rooted in best practice as pioneered by “Safer Places” and developed by such documents as we illustrate.
- Rear gardens to townhouses have high perimeter walls
- Lift controls are coded and post and meters arranged so as to limit further access



Above is shown a typical entrance arrangement. Postmen and meter readers cannot progress beyond the immediate entrance lobby, so tailgating by intruders is restricted in terms of access to the apartment areas. Lifts and stairs are envisaged to have a swipe or code access facility.

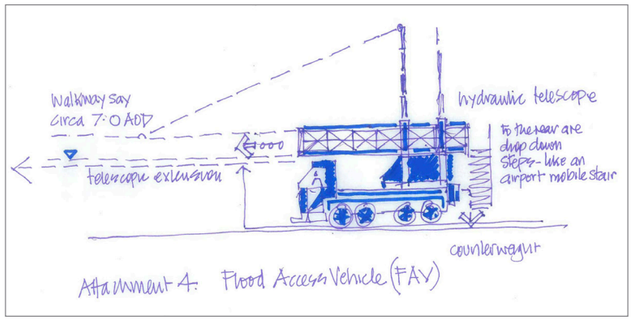
- Selected ground floor windows will have opening sash windows behind a fine S.S. security mesh and will operate in conjunction with the MVHR system described on page 43
- Most cores serve five or six apartments per floor and only in one instance does a core serve the maximum recommendation of eight apartments per core.
- No cores intercommunicate other than in fire evacuation or flood management activation when the permanent on site management team would supervise the automatically locking/unlocking corridor pass doors.

- Passive surveillance is also a strong character of the development with all faces and areas enjoying high levels of passive surveillance from windows and balconies. This in turn encourages quality public realm that feels safe, avoids honey spots, is activated by high levels of transparency, where external glazed balconies help energise the entire proposal.

The detail design has in addition been the subject of consultation with the LBRUT ALO and this is ongoing following an introductory meeting in November

Flood Risk

Hydrologic, leading flood risk consultants, with whom we work regularly, have provided the badged panels on these two pages and detailed compliant procedure followed, including the Sequential Testing by CgMs and the Exception Testing. The ground floors are set above the worst long term flood risk calculated levels and a designated access and egress route defined as illustrated right. There will also be an onsite permanent management suite dedicated to the site as a whole. Flood barriers are provided to protect the car park from ingress and full details are contained in the FRA that forms part of the application supporting documentation.



The FAV is just one option being pursued to provide safe egress and access in the event of a major flood by providing a link at circa 7.00 AOD to the modern ramp that serves the Grade 2 listed foot bridge. A telescopic bridge would extend the circa 25m from the FAV at the site boundary to the ramp, where one section of railing on the ramp could be formed into a deadlock gate to be opened in event of major flood.

Illustrated above is the original concept of the Flood Access Vehicle being developed by the architects with specialist engineers working in the field of hi-tec access systems. It would be kept permanently on site, tested annually and be deployed as part of the Flood Risk Management Plan. Opposite, on the facing page is illustrated one extending access system originally devised by others for a major pop concert.

Subject to satisfactory CDM considerations, other options are also being investigated including a “Burg Buggy”, inspired by the Burg Island courtesy vehicle that crosses the underwater causeway at high tide to connect the island with the mainland. A further investigation involves looking at the issues surrounding a possible reinstatement of a rise and fall jetty, complete with boat/barge link to reinstate a new version of the onetime ferry that operated close by.

Hydro-Logic Services

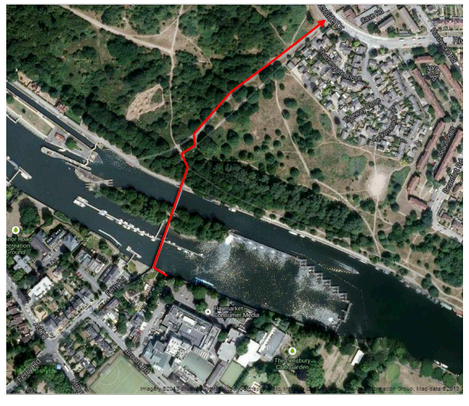
Access

Safe access/egress to the site is a fundamental part of existing flood risk planning legislation in the NPPF/PPS25 documents. This is fully addressed in the Flood Risk Assessment that includes an Appendix detailing the Flood Emergency Plan. The Plan addresses the impacts of and response to different types of flooding, ranging from moderate tidal flooding to extreme fluvial flooding.

A safe access/egress route must be provided from all parts of the site to land wholly outside the flood zones, i.e. flood zone 1. Under extreme fluvial flows, safe access is not possible from Broom Road to such areas because of deep and fast flowing water on the flood plain to the south of Broom Road. The prescribed off-site route therefore involves use of the Teddington Lock footbridge to reach land in flood zone 1 on the Ham bank of the Thames. Access from the north-west corner of the site to the bridge is to be provided by a dedicated, bespoke, telescopic bridge, mounted on a rugged heavy-duty vehicle. This will be permanently based on the site and therefore available for deployment at any time.

Within the site, the access route will be at a minimum level of 6.8 mAOD, as discussed and agreed with staff from LBRT and the Environment Agency. The design of the Piazza has therefore used this level as a fundamental part of the design. The safe escape routes from all habitable parts of the site are shown in the figure below. Safe access is also available from the basement using lifts/stairwells that are themselves protected from flooding.

Figure 1 Access/Egress route – external to site



Hydro-Logic Services

T
DESIGN & ACCESS STATEMENT: FLOOD RISK & DRAINAGE

Drainage

The proposed development incorporates a series of drainage mitigation measures. Their proposed design and layout results from iterative discussions between the Lead Architect, Landscape Architect and Flood Risk Consultant. All drainage measures have been incorporated into the design in an unobtrusive manner. The principal measures are reviewed in the Table below:

Measure	Purpose	Design impact
Flood storage	To match or better existing flood storage	Storage is in the landscaped area between the main Buildings and the realigned tidal defence wall. Flapped outlets have been included within the wall to allow the area to drain after a flood event.
Realigned tidal defence	To improve the river frontage whilst maintaining the existing level of defence.	The alignment of the wall will be subject to minor change to improve the accessibility to and safety of the river frontage.
Permeable surfaces	Reduce surface runoff	Wherever possible on site, permeable surfaces will be used for paths and access roads. This will allow rainwater to infiltrate into the soil, rather than flowing into storm drains.
Soakaways	Reduce surface runoff	Soakaways will be used to attenuate runoff from the impermeable surfaces. They will be located under the flood storage area between the main buildings and the tidal defence wall and therefore hidden from view.
Rainwater harvesting tank	Reduce surface runoff and treated water use	This tank will be located in the basement adjacent to Building C band therefore hidden from view.
Green roofs	Reduce surface runoff	There will be approximately 150 m^2 of green roof on Buildings A and D.
Culvert under Piazza	Maintain flow path	This culvert will be largely hidden from view, with grilles covering the inlet and outlet.

Hydro-Logic Services

Flood Risk

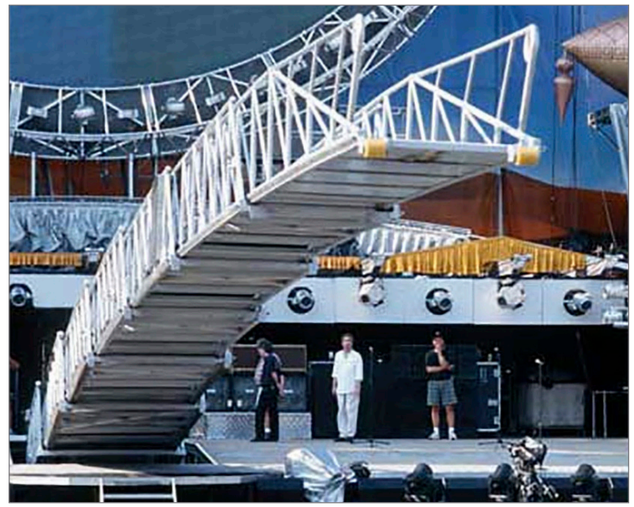
The existing site is in flood zone 3a and has been subject to flooding. The requirement for safe design of the site to protect it from flooding has featured throughout the design process. The principal measures are reviewed in the Table below:

Measure	Purpose	Design impact
Finished floor levels at 7.3 mAOD	This is 300 mm above the 1% level with allowance for climate change.	The finished floor levels of the principal buildings (Blocks A, B, C, D and Affordable Housing) have been set at 7.3 mAOD as a fundamental design feature.
Flood resistance	To protect properties with FFL that is below 7.3 mAOD.	For the Town Houses and Weir Cottage, FFL will be below 7.3 mAOD. Flood resistance measures will therefore be incorporated into the design to prevent ingress of water. These will include flood proof doors to front and rear elevations plus non-return valves on drainage connections and masonry treatments.
Flood barriers for car park	To prevent ingress of floodwater to basement car park.	Movable flood barriers will be installed across the entrance and exit to the basement car park. These will be deployed in accordance with the Flood Emergency Plan by Site Management staff.
Demountable flood barriers for entrances from gardens to Buildings A, B & C.	To prevent floodwater from entering stairwell and lift area	Demountable defences will be stored in the basement car park and deployed in accordance with the Flood Emergency Plan by Site Management Staff. They will comprise posts and boards and can therefore be deployed to the required level.

Figure 2 Access/Egress route within the site

Table 1 Description of Access/Egress Route

Distance (m)	Description	Hazards
-	Walkway within site	Set at 6.8 mAOD on central Piazza and along western boundary to north-west corner.
0 to 25	Telescopic Bridge	Set at level of 6.8 mAOD, but able to traverse raised flood defences at 6.9 mAOD
25 to 40	Teddington Lock Footbridge	Ramp on left bank, with constriction in walkway to restrict unauthorized use.
40 to 205	Bridge over lock channel	Elevated well above lock with ramps as alternative to steps.
205 to 465	Path through park	Minimum ground level at base of bridge is 7.2 mAOD. No lighting in park.



Above Right: The “Burg Buggy”

Above: These routes are only activated in the event of flood.

Far Right: A similar concept, but on a larger scale of the telescopic FAV bridge. An extending mobile bridge developed by others for the celebrity access way to a major public pop concert. There has been no on site flooding during the severe rains of winter 2013/2014.

Sustainability & Services

1. Teddington Riverside Servicing Strategy

1.1 Existing Infrastructure

Water Services
Based on the record drawings from Thames Water, a 5" municipal mains water pipework currently runs along Broom Road to the south of the site. There is a 5" mains water pipe connection from Broom Road which serves the existing studio complex. There is also a separate 4" mains water pipe from Broom Road which serves the essential fire services. There are no existing municipal water pipework shown running below the site.

Drainage
The public sewer runs along Broom Road from the North West down to the South East. There are no existing public sewers shown crossing below the proposed site.

Gas Services
Record drawings from Southern Gas Networks indicate the municipal gas pipe to be running along Broom Road. There is a single gas connection from Broom Road that enters the site from the South West. There are no municipal gas pipework crossing below the proposed site.

Telecoms
The main BT cable ducts run along Broom road. There are also distribution BT cable ducts running along the west and north of the site. There are no main BT cable ducts running below the existing studio indicated on the record drawings.

Fibre optics
Record drawings from Virgin Media indicates fibre optic cables running along Broom Road. There are currently two fibre optic connections indicated on the record drawings. One connection is south of the site from Broom road and the second connection enters from South West of the site and connects to the west of the existing studio.

Mobile Mast
Initial search indicates there are currently two mobile phone base station located within the vicinity of the proposed site. The mobile masts will need to be temporary re-located during the construction of the proposed site. The proposed new location and temporary re-location of the mobile masts will need to be agreed with the mobile mast operators.

Electrical Services
The national grid search did not indicate any services within the vicinity of the site. However, record drawings from UK Power Networks indicates a number of high voltage connections to a substation located towards the north of the site.

1.2 Substation

New substations will be required to satisfy the electrical demand of the development. Subject to further design development and liaison with the utility supplier, an initial load estimate indicates that two double substations will be required. The substations are to be located on the ground floor with 24 hour access and will be naturally ventilated via louvres located at high and low level, in accordance with utility supplier's specific design requirements.

1.3 Electrical Distribution

Each block will have an individual low voltage switch room located within the basement and will distribute electricity to the apartments via risers within core area. Each apartment will be separately metered. These areas and their final locations will be subject to further design development. The tenants supplies will be taken from Ryefield panels separate from the landlord's loads. The landlord's electrical distribution will be served separately by a metered panel.

Life Safety and Critical loads will be supported by a dedicated back-up generator and an online UPS system (for security only) which will ensure power to essential services in the event of a failure . The generator is to be located within the basement level with dedicated intake and exhaust ducts/louvres. The generator flue will rise to and terminate at least 1m above roof level or any structure that is within 2.5m of the flue.

1.4 Security & Access Control

The buildings will be provided with an entry phone voice recognition system at all main entry points that will provide secure access for all residents.

General CCTV coverage will be provided at all main entrances, the car park areas, and pertinent external areas. The system will be monitored by the main site concierge. A remote dial out facility to a control centre and a panic alarm will be provided at the concierge.

1.5 External Lighting

The site will be provided with an external lighting system that is operated via photocell sensors and a time clock , a manual override will also be provided. The lighting system will be designed so that the light pollution is to a minimal level and to comply with the 'dark sky guidelines', and also reduce disturbance to bats at night. The car park lighting design will be provided in compliance with 'secured by design'.

1.6 Gas

A new gas intake room will be required for the development to serve the main energy centre. The gas intake room will be naturally ventilated in accordance with the Institution of Gas Engineers and Managers (IGEM) regulations.

There is currently no provision to supply gas to the apartments or houses for cooking or heating. Gas is provided to the main energy centre only.

1.7 Heating

Based on an initial desktop study on the district heating infrastructure within close proximity of Teddington Riverside, there is currently no existing or planned district heat network available for the site to connect to (refer to the sustainability statement for further details). As such it is proposed that a new central energy centre with combined heat and power (CHP) facility will be provided to supply heating and hot water to the individual apartments and houses via heat interface units.

The new energy centre is currently envisaged to be located at basement level and mechanically ventilated. Free access shall be provided for relief of any explosion overpressure to the atmosphere via the car park and the ramp. It is estimated the energy centre will consist of 4No. 500kW high efficiency natural gas-fired condensing boilers to satisfy peak heating and domestic hot water demand.

In-line with the sustainability strategy for the development, a 95kW$_e$/160kW$_{th}$ natural gas-fired CHP system with approximately 15m^3 thermal storage will form part of the central heating system to cover the base heating demand.

Boiler and CHP flues will rise to and terminate at least 1m above roof level or any structure that is within 2.5m of the flues.

A low temperature hot water circuit will flow from the energy centre to a plate heat exchanger in each apartment block. The plate heat exchangers are to provide hydraulic separation between the various buildings. Each flat will then be provided with a heat interface unit to serve final heating terminal units and domestic hot water. The houses and the larger 3 or 4 beds apartments will be provided with a heat interface unit coupled with local storage in order to meet the higher instantaneous hot water demand. Smaller apartments will have a heat interface unit only providing domestic hot water instantaneously.

1.8 Cooling

To minimise the carbon footprint of the development, it is currently envisaged that the development will generally be naturally ventilated by means of openable windows. The openable windows will be sized to ensure sufficient purging of the apartments can be achieved in-line with approved document Part F of the Building Regulations.

The penthouse apartments will be provided with comfort cooling. The external condensers serving the penthouse will be located within an acoustic enclosure on the terrace to each penthouse.

Where openable windows cannot achieve the required purge ventilation rate, local split type cooling systems may be required to avoid overheating in the summer. Any local cooling systems required will be selected to ensure the efficiency of the system complies with the latest Domestic Building Services Compliance Guide.

1.9 Ventilation

Individual dwelling mechanical ventilation units with heat recovery (MVHR) will meet the general ventilation requirements in accordance with Part F of the Building Regulations. Small inlet and outlet grilles will be integrated into the façade of each apartment/house.

Kitchens within the apartments will generally be provided with a recirculation cooker hood. The penthouses and houses will be provided with a dedicated cooker hood extract with separate discharge to outside or roof level complete with a weather louvre.

Internal escape staircases within the apartment blocks will be provided with a smoke extraction system to the staircase lobby and internal escape corridors with makeup air from the top of the staircase to ensure the staircase is free of smoke. Perimeter staircases will be naturally ventilated.

The underground car park will be mechanically ventilated by a series of impulse fans and two exhaust systems located remote to the driveway ramps used for air make-up. The fans are to be fire rated and used for smoke ventilation in the event of a fire to comply with approved document Part B of the Building Regulations. The exhaust fans will discharge away from the residential accommodation.

Refuse stores will be provided with dedicated extract system and exhaust air externally away from any circulation area.

1.10 Water Services

Cold Water
The existing water supply will be relocated/upgraded to serve the new cold water booster set and break tank located in the basement. From the new boosted set, separate metered pipework will distribute water to all apartments.

A central 25m^3 central insulated cold water tank will be required to provide approximately 12 hours storage for the development. A multi-stage cold water booster set will provide boosted potable cold water to the apartment blocks. The houses will have independent water mains services. Incoming water supply to the central storage tank will be conditioned and treated in-line with the water regulations.

The cold water tank room will be cooled by a split unit to prevent the room overheating.

Sprinklers

There is currently no sprinkler system envisaged for the development subject to design development with fire engineers and agreement by the fire officers.

Hydrants

Hydrant points will be provided at the fire vehicle access points feeding dry riser breeching inlets to the individual blocks subject to agreement with the Fire Brigade.

1.11 Above Ground Drainage

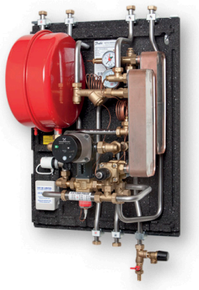
The soil and waste system to be provided for the apartments will be a single stack system dropping through the building serving bathrooms and kitchens, collecting discharge from all sanitary/kitchen appliances.

The layout of bathrooms in each apartment will be arranged to minimise offsets on vertical stacks. Soil and waste pipe work will be installed with adequate gradients to prevent blockages and noise when used. All stacks will be lagged acoustically, with fire sleeves at each floor.

Energy Centre - Combined Heat and Power Unit

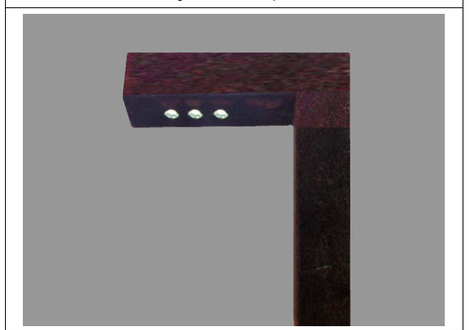
Energy Centre – Centralised Boilers

Apartment MVHR Unit



Heat interface unit (without casing)

Underground Car Park Impulse Fan



Dark Sky Compliant External Lighting

MVHR: The future of air movement

DOMESTIC HOMES AND COMMERCIAL PREMISES IN THE UK ARE BEING BUILT AS AIRTIGHT AS POSSIBLE TO CONSERVE ENERGY AND REDUCE THE AMOUNT OF FUEL WE USE TO HEAT THEM. HOWEVER, A SEALED BUILDING NEEDS AN EFFECTIVE FORM OF VENTILATION, MECHANICAL VENTILATION WITH HEAT RECOVERY SYSTEMS (MVHR) PROVIDE THE SOLUTION TO THIS PROBLEM.

Above & Right: A MVHR system is anticipated as an integral part of the detailed design to satisfy carbon reduction criteria and Part L of the Building Regulations.