6.2 Refuse, recycling & servicing strategy

The new internal roads will enable all refuse collection, residential deliveries and maintenance vehicles access to set-down and collect from within the site. The security gate joining the two-way internal access roads ensures that all refuse and emergency service vehicles will be able to access and egress the site in a forward gear.

Storage for wheelie bins is located within defined private stores for each house along the mews terrace. For the apartments and the houses adjacent to the river, shared refuse and recycling stores are provided, which meet the council's required drag distances and collection volumes.

The refuse storage provision is based on the London Borough of Richmond Upon Thames Refuse and Recycling Storage Requirements supplementary planning document and allows for the following storage provision:

Waste

Houses / developments with individual refuse containers:
Storage capacity of 240 litres for refuse per household of three bedrooms or fewer
Storage capacity of 360 litres for refuse per household of more than three bedrooms

Developments using communal refuse storage containers:
Storage capacity of 70 litres per bedroom. This requirement relates to communal waste containers.

Recycling

Houses and developments of up to two units:
Storage capacity for two 55 litre recycling boxes.
Space must be provided so that the boxes can be presented within the property boundary and be visible from the kerbside on collection day.

Number of households served by bin area	Mixed paper, card and carton recycling bins	Mixed container recycling bins	Total recycling bins
3 to 5	1x 240L	1x 240L	2x 240L
7 to 8	1x 360L	1x 360L	2x 360L
9 to 11	2x 240L	2x 240L	4x 240L
12 to 17	2x 360L	2x 360L	4x 360L
18 to 25	1x 1100L	1x 1100L	2x 1100L
26 to 45	2x 1100L	2x 1100L	4x 1100L
46 to 70	3x 1100L	3x 1100L	6x 1100L

Refuse vehicle tracking diagram

Refuse store locations and refuse vehicle tracking diagram

6.3 Mechanical, electrical & public health

The following summary is provided by Desco. For a full understanding of the proposed MEP strategy please refer to the separate 'Energy Strategy' and 'Utilities Connection Report' submitted alongside this application.

"Following the disconnection of existing services and the demolition of the existing buildings on the site, new incoming services will be installed to serve the new development, including the installation of a new substation.

The services strategy for the site has been developed to meet the both London Plan targets and compliance with building regulations. The key overall targets focus on energy efficiency, CO2 emissions, water conservation and sustainable drainage. In summary, the proposed development incorporates a number of improvements which combine to demonstrate a high degree of sustainability and an improvement in reducing the site wide carbon emissions by at least 35% more than the building regulations compliance target.

Heating and hot water generation to the residential apartment buildings shall be provided through the use of Low Zero Carbon Technologies (LZC). A centralised reversible air source heat pump and condenser water loop will be installed, distributed to each apartment. The centralised plant comprises 2No. 200kW reversible air source heat pumps, a dry air cooler, thermal store, pressurisation unit and circulation pumps.

Individual heat pumps connected to the condenser water loop in each apartment, provide hot water generation via hot water storage cylinders and heating via fan assisted radiators. The heat pumps shall have both a heating and cooling facility, the latter being utilised to reduce the risk of overheating.

The townhouses will be served by standalone split air source heat pump systems to provide both heating and tempered cooling and hot water via hot water storage cylinders.

Mechanical Ventilation to both the apartments and townhouses, will utilise System 4 Mechanical Ventilation with Heat Recovery (MVHR), see figure 3. As detailed in the overheating report, the MVHR units will provide elevated air change rates/ summertime boost in the townhouses, to prevent the risk of overheating occurring within all habitable rooms. During periods outside of high external ambient temperatures the ventilation systems will operate using trickle/boost facilities in order to meet the ventilation criteria set out in approved document Part F.

Potable water will be supplied to each apartment via a central storage tank and cold water booster set, to ensure adequate water pressures at each outlet.
Potable water to each of the townhouses, will be fed directly from the new mains water supply from Thames Water. Landlord's water supplies will be provided to bin stores and irrigation points.

From a fire and life safety perspective, it is envisaged category 2 sprinklers will be installed in all open plan apartments, utilising combined potable water tank/pumps. However this is to be confirmed following issue of the fire strategy. Smoke extract ventilation shall be provided to the apartment building corridors as defined in fire report. Dry risers will be installed in each core of each apartment building. Smoke/Heat detection will be installed throughout each dwelling. A standby generator or secondary Electrical supply for fire fighting and smoke vent equipment will be installed, to be confirmed by fire strategy.

Metered mains Low Voltage (LV) electrical distribution and containment will distribute to all landlord services and apartments. The Landlord LV distribution will serve common area lighting, small power, lifts, mechanical services, door and main gate entry, Satellite/TV/DAB distribution systems. The common area lighting will comprise LED lighting and escape lighting. The common area small power will distribute to cleaners sockets and equipment. In the apartment buildings Satellite/TV/DAB outlets will be installed, there will also be a Video/audio door and main gate entry system installed in each apartment.

Individual LV electrical supplies shall be provided to each of the town houses, with meters installed in line with the local DNO's requirements. Like the apartment buildings Satellite/TV/DAB outlets will be installed in the houses.

In both the townhouses and apartments, distributing from the dedicated electrical consumer unit for the dwelling, small power circuits serving socket outlets, kitchen equipment, MVHR and heat pumps, fan assisted radiators will be provided. LED downlights will be installed throughout the dwellings. A BT and or other supplier, fibre network will be provided to serve all apartments and townhouses, with fibre termination points installed in all dwellings.

Site wide, a CCTV system shall be installed at main points of entry to the site and each apartment building. External lighting shall be installed throughout the site as set out in the external lighting report.

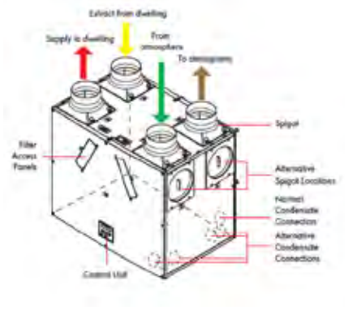
The shell and core industrial space will be provided with capped off incoming services. The units will be individually served by Daikin Altherma 3 Air Source Heat Pumps, feeding radiant panel heaters to provide space heating. Such systems are electrically driven and utilise very good coefficient of performance to minimise running costs and C02 emissions. The size and nature of the industrial units are well suited to this type of system and it is anticipated that proposed tenants would expect to install such a system as part of their fit out if required.

As detailed in the site wide Energy Strategy report, it is proposed Photovoltaic cells will be installed to the roof of each townhouse and the industrial building identified on the site plan below. The provision of photovoltaic cells shown is to ensure the site wide carbon emissions improvement is maximised."

Apartment building system illustration

Apartment building system illustration

Apartment building system illustration



MVHR unit

Photovoltaic panel locations

6.4 Overheating mitigation

The following summary is provided by Desco. For a full understanding of the proposed overheating mitigation strategy please refer to the separate 'Overheating Report' submitted alongside this application.

"An overheating analysis of all the habitable rooms in the residential apartments and townhouses was carried out to demonstrate the predicted thermal performance and the predicted temperatures that occupants using the building will expect. Please refer to the overheating report for all results.

The analysis has been based on CIBSE Technical Memorandum 59 (TM59) 'Design methodology for the assessment of overheating risk in homes'.
The criteria is as follows:

1. For all habitable rooms the number of hours during which ΔT is greater than or equal to one degree (K) during the period May to September inclusive shall not be more than 3 percent of occupied hours.
2. In bedrooms the room temperature shall not exceed 26°C for more than 1% of annual hours, between the hours of 10PM and 7AM.
3. For Homes with restricted window openings, the CIBSE fixed temperature test must be followed, i.e. all occupied rooms should not exceed 26˚C for more than 3% of annual occupied hours.

The overheating report concentrates on 3 alternative methods to prevent overheating and comply with the set criteria.

- Natural ventilation through use of openable windows.
- Enhanced mechanical ventilation with summertime boost.
- Tempered cooling to all bedrooms and Living Rooms.

The GLA additionally require the building to be tested against three different weather files Design Summer Year (DSY)1, DSY2 and DSY3 weather files in line with TM49. DSY1 represents a typical summer year, DSY 02 and 03 do not represent typical summer time temperature and weather profiles, they are historic and the theory is that these profiles will become more typical and therefore these weather files should be used in the building simulation models overheating analysis so that a means of mitigating the overheating risk can be considered.

The results from the analysis show that applying cooling to bedrooms and living rooms is the most effective method in overcoming the risk of overheating, as 412 out of 412 spaces pass the criteria specified in CIBSE TM59 using DSY01 and 02. For the iteration where openable windows were utilised in the dwellings, this resulted in the majority of rooms passing and those rooms that failed were marginal failures. Further solar shading and reducing the percentage of glazing may provide sufficient enough improvement to ensure the overheating criteria is met.

Acoustic constraints have also been considered as part of the accompanying overheating assessment."

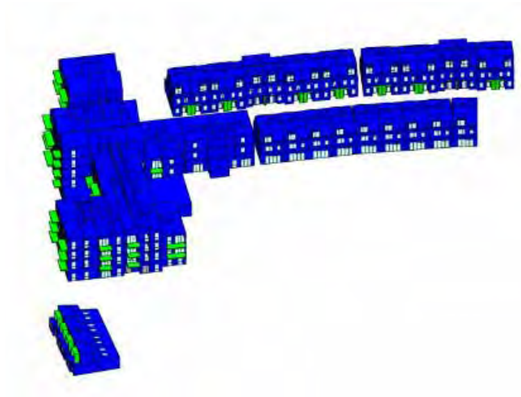
6.5 Flood risk & drainage

The following summary is provided by Waterman Infrastructure & Environment Ltd. For a full understanding of the flood risk and drainage please refer to the separate 'Flood Risk Assessment' submitted alongside this application.

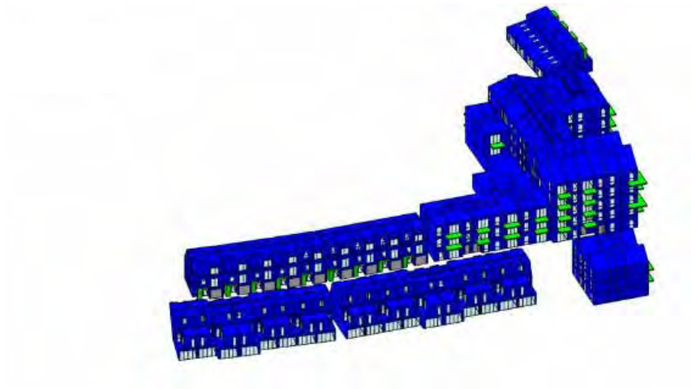
Environment Agency (EA) mapping indicates that the site is predominantly located within Flood Zone 1, denoting a low probability of flooding from fluvial flooding, with a small area along the northern boundary directly adjacent to the River Crane, located within Flood Zone 2, denoting a medium probability of fluvial flooding. The EA have provided modelled fluvial flood levels for the site which when compared to the detailed topographic survey, confirm that the bank levels along the River Crane would not be overtopped during the 1 in 1000 year flood event. The risk of flooding from pluvial, groundwater and artificial sources has also been assessed and found to be low.

To preserve access to the River Crane for maintenance, a minimum offset of 8m would be provided from the river to any proposed buildings, providing a significant betterment over the existing situation. All street furniture that falls within this offset would be removable to allow access as and when required.

Surface water runoff would discharge through a combination of infiltration and pumped outfall to the River Crane. Discharge to the River Crane would be restricted to the 1 in 100 year greenfield rate. A minimum attenuation volume of 645m3 would be provided to restrict discharge to this rate, including an allowance for the future impacts of climate change. This would be provided in the sub-base layer of the proposed permeable paving. Foul flows from the site would discharge by gravity to the Thames Water sewer network.



View looking east



View looking wast

6.6 Structures

The following summary is provided by Waterman Infrastructure & Environment Ltd. For a full understanding of the structure please refer to the separate structural drawings submitted alongside this application.

"For the Building F structure Waterman have undertaken an assessment of all the available structural options for the superstructure frame considering the criteria including: flexibility, economics, contractor preference, programme, services integration, and buildability.

Excluding the uppermost floor, an RC flat slab solution was the most cost effective and the most appropriate solution for this project, offering a number of advantages to the scheme, including:

- Free horizontal distribution of services across the exposed soffits
- Inherent thermal mass and fire protection together with good acoustic properties
- Locally sourced recycled aggregates can be specified

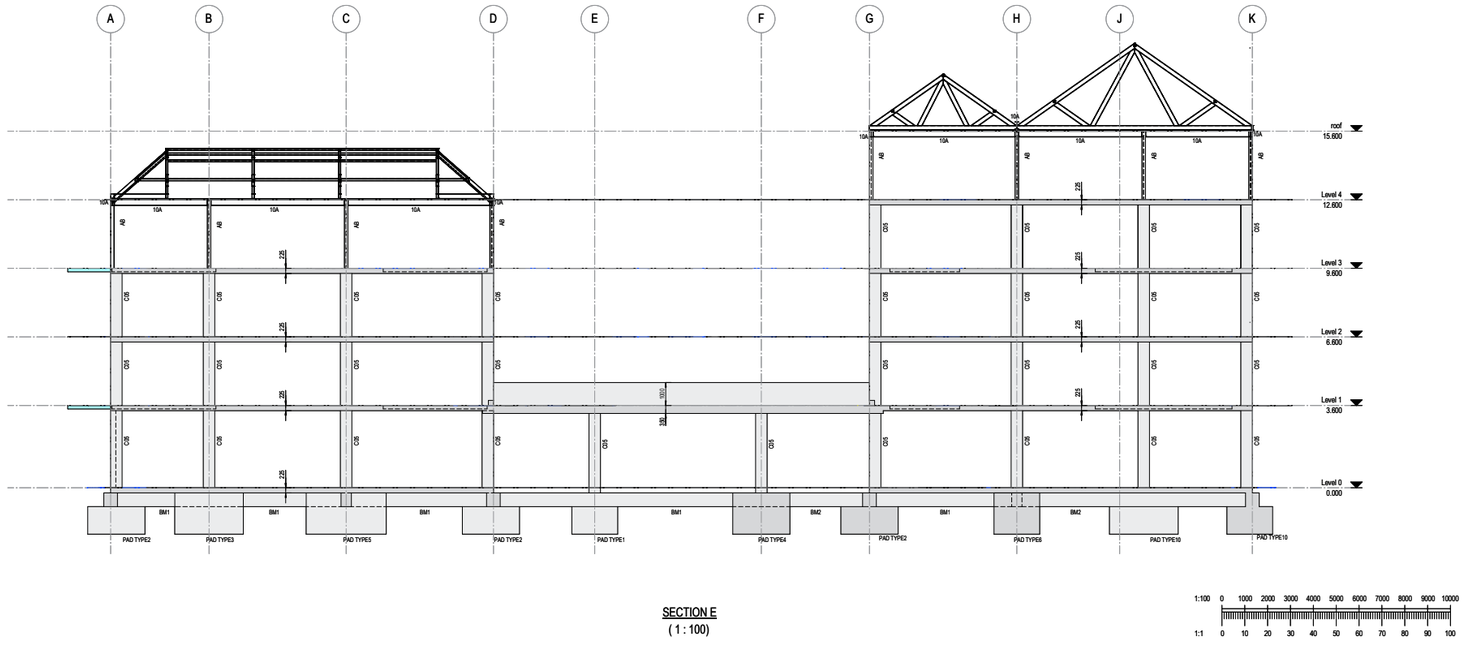
The pitched roofs lend themselves to lightweight pre-fabricated steel trusses supported off steel posts to frame out the upper floor without extending up the RC superstructure.

For the foundations, the Geotechnical Investigation has confirmed the presence of gravel at a depth of approximately 1.0m b.g.l. Initial structural loading calculations suggest that shallow reinforced concrete pad foundations can be designed to bear on to the gravel and spread the loads from the columns and core walls.

For the terraced housing the intent is to utilise simple and repetitive structural solutions. The foundations are mass concrete strip foundations, the walls are load bearing masonry, the ground floors are beam and buildings and the upper floors and roof are timber. Limited steel beams are required to trim stair openings and form the mansard roof profiles.

For the industrial building a portal frame structure is proposed with brick base and metal cladding."

Proposed 3D structural frame



Emerging structural design

6.7 Sustainability strategy

The following summary is provided by Sol Environment and Desco. For a full understanding of the proposed overheating mitigation strategy please refer to the separate 'BREAM Assessment' and 'Sustainability Checklist' submitted alongside this application.

"The proposals for the industrial units seek to achieve high standards of sustainable design by achieving a BREEAM Excellent rating with a targeted score of 74.38%. The development endeavours to promote environmental sustainability through land use, improved biodiversity, sustainable building practices, utilising clean and renewable sources of energy, designing buildings which are energy and water efficient, ensuring good resource and waste management, material selection, responsible sourcing of materials and reducing the risk of pollution and flooding as a result of the development.

The sustainability of the development will be achieved through:

- Building design – fresh air, daylight, non-polluting materials good fabric performance;
- Resource efficiency – less energy use, low carbon, water and waste minimisation; and
- Healthier, safer community – green travel, communal spaces, access to local amenities, security of site and buildings.

Building Design

An initial Passive Design Analysis and Low Zero Carbon Feasibility Study (LZC) has been carried out as part of the planning process. This identifies the opportunities for incorporating passive design measures such as high-performance building fabric with enhanced u-values to all elements, air tightness and low thermal bridging, maximised daylighting and passive solar gain in order to reduce the total heating and cooling demand of the building. Renewable energies will be specified in accordance with the recommendations of the LZC Study to ensure clean, green energy is provided to the building where feasible. The LZC currently recommends the use of high efficiency photovoltaic panels delivering the building's electricity together with air source heat pumps to provide heating, cooling and hot water generation (part of tenant fit out).

The project will endeavour to use materials with a low environmental impact (including embodied carbon) over the full life cycle of the building by careful selection of materials and constructions. A life cycle analysis of the building has been completed with option appraisals to enable the design team to understand the environmental impact of each decision or material selection. A more detailed life cycle analysis will be completed at Technical Design to review further construction options and their impact on the embodied carbon over the life cycle of the building.

Materials will be specified which are robust and durable to cater for their level of use and exposure. Externally the building will predominantly be faced with metal cladding and brick which provides a robust and easily maintainable finish. Materials will be sourced in accordance with the project sustainable procurement plan. All timber products used on the project will be legally harvested and traded with Chain of Custody certification (e.g. FSC, PEFC). All non-timber products will be sought to be from suppliers/manufacturers with Environmental Management System (EMS) certification (e.g. ISO 14001, BES 6001). Where appropriate, materials will be sourced that are made and/or supplied locally.

The use of materials with a high recycled content will be considered where viable such as crushed concrete to be used for hardcore.

Resource Efficiency

The building will be designed to minimise operational energy demand and reduce carbon dioxide emissions by adopting the energy hierarchy of the Be Lean - Be Clean - Be Green approach as set out within the London Plan to achieve a minimum overall 35% reduction in carbon emissions over the Building Regulations Part L 2013 and meet the BREEAM 'Excellent' minimum requirements for Issue Ene01.

The consumption of potable water for sanitary use in buildings from all sources will be reduced by at least 50% over a baseline building through the use of water efficient components, including the specification of low flush toilets and low flow rates for taps/showers.

External landscaping and planting will be designed such that it relies solely on precipitation, during all seasons of the year.

Water consumption will be monitored and managed in order to encourage reductions in use. In order to reduce the risk of undetected leaks, a leak detection system will be installed on the mains water supply within the buildings and between the buildings and the utilities meter. Flow control devices will be fitted to the water supply to each sanitary area to minimise water loss from leaking taps or appliances.

The proposal will aim to minimise the materials needed in construction and the amount of demolition, excavation and construction waste to landfill through the promotion of resource efficiency via effective management and the reduction of waste. A pre-demolition audit will be prepared covering the existing buildings, structures or hard surfaces to be removed to determine if refurbishment, reuse or recycling is feasible.

The 'Waste Hierarchy', as shown below, will be adopted to maximise the use of existing materials and resources and minimise waste generated, which will be limited to 3.4m3 or 3.2tonnes per 100m2 of gross internal floor area:

- Reduce – first priority is to reduce the amount of waste produced through design, construction methods and minimising over ordering
- Re-use – any materials to be reused where feasible either on site (preferable) or off-site
- Recycle – where materials cannot be recycled on site, a suitable waste management contractor will be employed to ensure any waste which is able to be recycled, is recycled off-site. Suppliers with 'take-back' schemes will be selected where available
- Resource Recovery – for energy generation processes – fuel, heat and power
- Disposal – will be limited to any hazardous waste or materials which cannot be recycled

Waste minimisation will also be promoted during the use of the development through the provision of suitable recyclable and general waste storage areas. A minimum of 2m2 per 1000m2 of NIFA will be provided for the storage of recyclable waste to the industrial unit.

Health and Wellbeing

The industrial units will be designed with the health and wellbeing of its occupants in mind. The proposed design includes generous amounts of glazing and floor to ceiling heights to ensure areas are provided with a uniform and good standard of natural light, as well as an adequate view out. This will reduce the reliance on artificial lighting.

Industrial occupiers also have access to the landscaped outdoor amenity along the river, along with the heavily planted shrub bordered areas around the building itself, promoting a healthier life style and sustainable modes of travel. Included within the 1,000 sq m of high-quality industrial floorspace provided, 117 sq m (12%) is affordable industrial floorspace proposed as affordable at 80% market rate.

The development will endeavour to provide a safe and secure place to live and work. The local Designing Out Crime Officers have been consulted and their recommendations will be incorporated into the design.

6.8 Fire strategy

The following text has been provided by Hoare Lea Fire. For a full understanding of the fire strategy please refer to the separate fire statement submitted in support of this application.

"The proposed development will follow the principles of current guidance and meet the functional requirements of the Building Regulations (2010).

Apartment buildings will adopt a 'defend-in-place' evacuation strategy, where only the occupants of the apartment of the fire origin will evacuate initially. Occupants in other apartments will remain in place, separated by a high level of compartmentalisation, unless advised otherwise by the fire service. The standalone office unit facing Edwin Road will adopt a simultaneous evacuation strategy. It is proposed to provide all habitable areas within the residential premises in Block F with a residential sprinkler system, which should be designed and installed in accordance with BS 9251:2014. It is not proposed to provide the remaining apartment buildings or dwelling houses with sprinkler protection as they are below 11m in height. Furthermore, the industrial premises are not proposed to be provided with sprinkler protection due to their size. The sprinkler provision to the covered car park in Block F will be assessed in detail during the next design stage.

Travel distances in a residential common corridor should be limited to 7.5m, as per recommendations in BS 9991:2015. The travel distances from any apartment in Block F to the ventilated protected lobby door will be limited to a maximum of 7.5m based on the provision of a residential sprinkler system and a 1.5m2 free area natural shaft to provide smoke ventilation to the common corridor. The individual apartments in Block F are designed to adopt an protected entrance hall design. If the apartments do not achieve the recommendations outlined in guidance, a fire engineered solution will be required, which may include Computational Fluid Dynamics (CFD) modelling. Blocks A & E are proposed to be designed as small single stair buildings as per standard guidance. The flats in this arrangement are designed as to have a protected entrance hall. The covered car park will be designed to achieve 2.5% minimum aggregate free vent area on the walls of the car park, split equally across two opposing walls. Travel distances within the car park should be limited to 18m and 45m for single direction and multiple directions respectively. Final exits and protected escape routes should be located such that these distances are maintained. The standalone industrial building is proposed to be designed as a two-storey premises, with a mezzanine level on the upper level accessed via open accommodation stairs. The travel distances will be limited based on the hazard classification of the industrial unit with 25m in single direction and 45m where escape in more than one direction is possible for a normal hazard and 12m in single direction and 25m where escape in more than one direction is possible for a higher hazard. As Blocks F, A & E in the proposed development are more than 5m but less than 18m in height loadbearing elements of structure are required to achieve 60 minutes fire resistance. Every wall separating individual dwelling houses should be separated by 60 minutes fire resistance.

The industrial building is less than 5m in height, that elements of structure should be 60 minutes in accordance with ADB for an unsprinklered industrial unit. Initial assessment of the external fire spread conditions of the proposed development appears to satisfy the necessary conditions. Where protection is required on external façades the protection should achieve the same fire resistance as the elements of structure. Façades that are adjacent to the site boundary should be constructed of fire resisting material achieving the same resistance as the elements of structure.

The buildings do not have a storey that exceeds 18m in height. Either the external walls should satisfy the performance criteria described in BRE report BR135 or the external wall surface should be in accordance with Diagram 40 of Approved Document B for surface spread of fame classification. In addition, cavity barriers in any external wall cavity are required in accordance with Section 9 of the Approved Document.

In practice, it may be necessary for external surfaces to achieve a Class 0 (National Classification) or Class B-s3, d2 or better (European Classification) surface spread of fame classification to avoid the walls contributing to the space separation (unprotected areas) calculations. As Block F is less than 18m in height it is not proposed to install a firefighting shaft, but to install a dry rising fire main in each of the staircases in Block F as to ensure all points on the floor plates are within 45m, on a route suitable for laying hose.

Where dry riser inlets are provided, the Fire Service should have access within 18m and sight of the inlet port.

Blocks A & E, the car park, dwelling houses and the standalone industrial building are proposed to be accessible by emergency service vehicles. All points on the floor plates of the respective buildings should be maintained within 45m of pump appliance access or provide sufficient perimeter access. Existing hydrants should be available within 100m of the buildings or alternatively new ones should be provided within 90m of the development and located not more than 90m apart."

6.9 Cleaning & maintenance

The current proposal is for all windows and doors to be cleaned from ground or podium level via long reach pole, or cleaned by residents from the inside via balconies or tilt and turn openings. The maximum height of the buildings is below 25 meters, well inside the reach of a long reach pole system.

In Building F large 13 person lifts are provided to facilitate plant replacement. Safe access is provided into the pitched roof of the taller building via a stair and coffin style hatch.

The health and safety aspects of maintaining the building will be planned to ensure the risks involved are managed from start to finish and this information is communicated effectively to those who need to know.

Example of long reach pole system

6.10 Acoustics

The following summary is provided by Paragon Acoustic Consultants Ltd. For a full understanding of the acoustics please refer to the separate acoustic reports 'Environmental Noise Survey and Limiting Noise Levels' and 'Environmental Noise Assessment' submitted alongside this application.

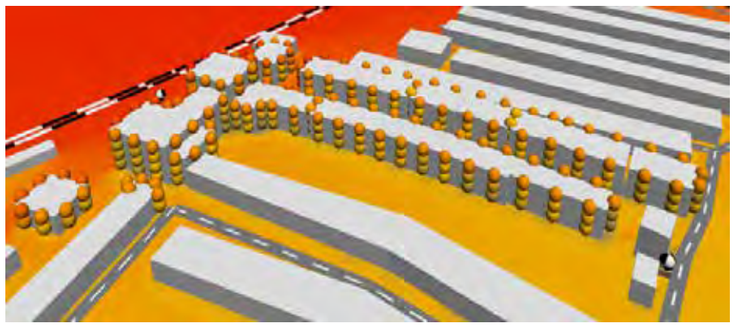
"Environmental noise surveys have been undertaken at the site to assess the noise climate around the proposed development due to transportation noise sources that include events such as train noise, neighbouring uses, aircraft overflights and vehicular traffic.

Using the noise data acquired at the site an acoustic 3D model has been produced to allow quantification of the noise impinging on the façades of all proposed properties.

Internal noise criteria for the proposed dwellings has been established based on sources of guidance such as World Health Organisation (WHO) document "Guidelines for Community Noise" and BS 8233:2014: "Guidance on sound insulation and noise reduction for buildings" both for the daytime and the night-time periods.

Using the predictions of noise impinging on the façades of proposed dwellings the broadband façade and glazing acoustic performance has been established for living areas and bedroom areas. In addition, the LAFmax events of transient noise during the night have been considered.

In addition to the background noise levels impacting on the proposed development an assessment has been made of limiting noise levels that will be required for any new mechanical plant associated with the proposed site so as to protect the amenity of existing residential dwellings in the vicinity."



Example CadnaA Acoustic modelling software


Bakers Yard
Units A - D

7.1 Access principles

An inclusive environment considers people's diversity, having the capacity to break down barriers and mitigate exclusion. Moreover, inclusive environments often achieve superior solutions that are of benefit to everyone.

This section consists of the Access Statement that relates to the proposals for the Greggs Bakery site and supports the drawings prepared for this planning scheme. The aim is to provide a clear description of how the users of the proposed development will access, and be guided through the building and the site, without discrimination or limitation.

It considers, but is not limited to, the access and circulation needs of a wide range of people including parents with children, the elderly and the disabled.

The term 'inclusive design' relates as much to the design process as to the final product and just as equally to management, operation and information, bonding user experience with professional expertise. An Access Statement is work in progress and as such evolves throughout the design and construction period. This Access section deals with the design, up to planning, and the aspirations of the design for its development and final realisation through the construction process.

11 of the residential dwellings have been identified as Wheelchair M4(3) units in accordance with the requirement of a 10% provision (2 of these are three-bedroom houses along the mews street; the other 9 are apartment units at a variety of floor levels). All accessible apartments at first floor and above are served by two lifts. These units are designed specifically for ease of use for visually impaired, ambulant disabled and wheelchair bound residents, and provide a balanced mix of unit sizes and tenure.

7.2 Legislation, standards & guidance

Policies, legislation and guidance followed in the preparation of the Access Statement:

- London Borough of Richmond upon Thames planning policies on inclusive design and access and relevant housing policies including Design for maximum access (1999)
- Building Regulations, Approved Documents M 2015 and K 2013 (hereafter referred to as AD M and AD K)
- Part B/BS 9999:2017
- The London Plan 2021
- Supplementary Planning Guidance
- Technical Housing Standards- Nationally Described Space Standard March 2015
- Requirements and implications of the Equality Act 2010
- British Standards BS 8300-1:2018, BS 8300-2:2018, BS EN 81-70:2018
- CIBSE standards A3.1 - 7
- The Human Rights Act 1998
- Equality Act 2010

7.3 Consultation

A two-day public exhibition was held at the Crane Community Centre (3rd December 2018) and the Twickenham United Reformed Church (5th December 2018). Members of the design team were present to discuss the proposals and answer any questions. This included both the architectural team and transport consultant who were able to advise on access requirements.

Across both days, 105 residents, stakeholders and interested parties attended. The scheme presented was a mixture of 118 private and affordable houses and apartments, including 52 three bed houses and 66 apartments. It included many of the features presented in the final design such as a shared surface approach and the same access points.

A more recent public consultation of the revised scheme was held at the Twickenham United Reformed Church as detailed earlier in this report (19th March 2022). 71 local residents, stakeholders and interested parties attended.

The access arrangements were generally well received with provision for lifts, accessible/adaptable houses and flats, and a step free approach to all buildings were highlighted as positive. It was also mentioned that the move from an industrial use on the site to residential with a commercial element will improve the traffic issues within the area.

Some concern was raised on the traffic entrance points at Edwin Road and Crane Road and the potential for conflict with pedestrians. These have since been reviewed by our transport consultant and amendments have been made to ensure adequate visibility splays and sense of pedestrian priority including one way shared surface street system and changes in surface textures to encourage traffic calming.

7.4 Access philosophy

The development is easily accessible by foot, cycle, public transport and car.

Pedestrian approach

Located at the site of the now disused Greggs Bakery in Twickenham, the proposed scheme borders the River Crane and sits south of Craneford Way Recreation Ground; it forms a backland vacant industrial site behind houses on Crane Road, Gould Road and Norcutt Road.

The mixed-use scheme is composed of three character areas, with an industrial building and yard to the south, mews houses along a new two-way street, and apartment buildings of differing heights along the riverside. Site access is maintained from existing access points, one from the junction of Crane Road/Gould Road for the residential elements, and the other from Edwin Road for the industrial element. This principle allows for the creation of a new neighbourhood street, along which the 27 mews houses are aligned, providing individual street-level residential entrances and passive security along the proposal's principle entrance, along with the creation of a new industrial yard and E use class industrial building benefiting from direct access off Edwin Road.

To the north of the site alongside the River Crane residential entrances are located at the bases of Buildings E and F in prominent and obvious locations. The proposals include residents' cycle and refuse stores, located adjacent to cores.

The site is well served by good footpath connectivity to the The Green, Twickenham Railway Station and Twickenham Centre. In addition to a range of public transport options, the site is also within walking distance of several local amenities and services, thus reducing the need for residents to travel by private car. The southern entry treatment and kerb radii will allow pedestrians on Edwin Road and the new street to cross safely between the footways.

Public transport

The site has PTAL rating of 2/3. Strawberry Hill Railway station is located approximately 950 metres to the south of the site (directly accessible by foot) on the South Western line serving destinations on the Kingston Loop and Shepperton Branch. Situated close by, 1.2km to the north east is Twickenham station, also serving the Hounslow loop. Through these two stations, Hounslow, Kingston, Twickenham, Clapham Junction, Wimbledon, Vauxhall, and Waterloo, among others, can be reached directly.

The nearest bus stops to the site are located on both sides of Twickenham Green (circa 4- 6 minute walk) which provide frequent services (every 10-13 minutes) to Heathrow Terminal 5, Hounslow, Richmond, Hammersmith, Hampton and Staines.

Vehicular access

There are currently two vehicular access points to the site: one to the south from Edwin Road for industrial and refuse vehicles and one to the north from the corner of Gould Road and Crane Road for residential and other general vehicles. The former was primarily used to accommodate larger operational HGVs associated with the sites former industrial use and the latter generally used for staff and visitor parking.

The proposed scheme retains the two existing access points in broadly the same locations, however these would be divided into residential and industrial elements, connected only through a gate that provides a vehicular link for permitted vehicles, such as refuse and emergency vehicles, to pass through the site where required. The proposed residential street is expected to be a two-way street; but given the low speeds and residential nature of the site, the street narrows in areas i.e. along the river edge, where there is clear visibility for cars to pass and wait.
The residential access from Crane/Gould Road will lead directly to an area of formal car parking and landscaping for residents within apartment type dwellings which are planned to the north of the site. The road leads round to north-south orientated mews with a mix of driveway and garage parking serving the respective dwellings.

The scheme provides up to eight accessible spaces. Two of these are located on the drive-way of the accessible houses, two are located below the podium and the other four are located within the public realm. These will be allocated to the accessible/ adaptable apartments as required. Five additional accessible parking space for staff of the industrial unit is provided in the industrial yard in the southern end of the site.

Emergency vehicles and refuse vehicles

The scheme has been tracked by the transport consultant to ensure safe movement for a refuse and fire tender vehicle through the scheme. Entrances have been reviewed to ensure adequate splays are provided when turning into the site. The schemes design incorporate a permitted access through route which means refuse and emergency vehicles are not required to turn on site or perform difficult manoeuvres. This increases the sites usability and safety. Further, the landscaping design has incorporated traffic calming features such as the planting elements in the north of the scheme which create a gentle zig-zag in the road, forcing drivers to take extra care and drive slowly through the site.

Emergency vehicles and refuse vehicles are be able to access through the industrial access and into the residential street via a controlled access gate.

Public realm

The public realm will be accessible to all as part of an inclusive design philosophy. Users with disabilities are not segregated and are able to move through the public realm and the buildings. They will use the same entrance, corridors and rooms as everyone else without detour. The raised 1.5m wide pavements with curbs to define the road edge throughout the residential element of the site provides a safe route for pedestrians, particularly for the blind and partially sighted. The industrial element will have a gated boundary wall to clearly define between the private and public realm.

Entrances

The entrances to all buildings and apartments have been designed and located in such a manner as to make them obvious and easily accessible for both the residential and industrial elements.

The main residential lobby entrances are designed to provide level access from the public realm, as required by Part M, with a clear open space in front of the doors. This accessible approach leads to a level entry threshold and to the internal lobby. A slip resistant material for this walkway will be provided. The routes to the entrance, from the public footpath, will be well lit. A similar approach is applied to the entrances of the industrial building.

Recessed doorways and timber panelling is used to denote entrances to the mews houses, with principle entrances to apartment buildings featuring recessed doorways. These easily read openings are designed to be obvious on the elevation to ensure they are easy to find and are further highlighted by landscaping. The reception aesthetic is separated from the main body of the building by the use of contrasting materials, making identification easier for the visually impaired.

The industrial building has multiple entrance points to enable the building to be divided into smaller units. Each unit is designed to have access to larger recessed doors for delivery and smaller scale doors on the front facade as well as rear access doors to the back yards. This provides flexibility for the marketability of the units. All these entrances will be step free and level access.

Hard and soft landscaping

The hard and soft landscape design is based on a strategy to ensure ease of long-term maintenance and management. Practical considerations will include the use of durable, non-slip hard landscape materials, benefiting not only disabled, but older people and children too.

The provision of direct routes between well-used locations, the utilising of the adjacent River Crane as an amenity for a riverside walk with regular placement of seating and resting points, the use of quality tactile and textured surfaces, contrasting colours, appropriate lighting and signage, will be utilised to aid navigation around the site. Visual clutter and obstructions will be minimised, where possible. See the Landscape section of this document for all details regarding hard and soft landscaping materials and design.

Surface materials

The entire public realm will be accessible as a two-way street with raised pavements selected in order to balance the needs of wheelchair users (who require a low resistant surface) and crutch and stick users (who require more purchase during wet weather) with the needs of the blind and partially sited (who require distinct surface textures and curb heights).

The key principles for the palette of considered surface materials will include the following:

- A visual contrast in colour between the pedestrian and vehicular access
- Tactile and raised pavement defining pedestrian and vehicular areas
- Surfacing designed to aid way-finding

Surface textures

Manual wheelchairs require smoother surfaces to move across. The more tactile the surface, the harder it is for the user. Counter to this is the need for ambulant disabled people to gain some purchase for their sticks or crutches.

With the blind and partially sited in mind footpaths are raised above road surfaces, as flush transitions would cause guide dogs difficulty in sensing the change in condition. Careful consideration of the transition between the two is also an important factor.

Width/gradient to footways

Pedestrian routes will follow desire lines as much as possible; street furniture such as directional signs, lighting and seating will be located just off the perimeter of the access routes to minimise obstructions. All signage will be colour contrasted.

Where required, ramps have been used in favour of steps when changes in level are required, avoiding segregation of users with disabilities and allowing access for wheeled vehicles. All external ramps within the public realm are of a gradient no steeper than 1:30.

Landings will be provided along all long lengths of steps or ramps to allow resting points. Hand rails are provided to all ramps and steps where required to provide support and guidance. They will: be colour-contrasted to make them easily visible; be easy and comfortable to grip without sharp or protruding edges; be located at the correct height (900mm); and extend 300mm, in line with building regulations.

Cross falls to footpaths

Cross falls are important on footpaths to move standing water to the edges and stop ice from forming on cold days. The need for this surface drainage must be balanced with the difficulty a manual operated wheelchair has moving across a cross fall. The design of the footpaths around the site have minimal cross fall to balance both needs.

External street lighting & CCTV

A balanced level of lighting has been considered. This will be designed to avoid strong contrasting pools of light and silhouette and be sensitive to the site's proximity to the River Crane. The lighting design will assist access, improve security, be of a safe and comfortable illumination levels, and comply with SBD guidance received.

Routes across the site will be lit in accordance with BS 5489 and CIBSE Standards, subject to planning. The spread of light will be even and the lamp type chosen will provide a light with good colour rendering properties. Timing controls will be introduced to allow the switching off of certain parts of the lighting at key times to save energy and discourage use at night close to residential areas. Key entrances to the buildings will remain illuminated.

All open spaces on upper floors such as the podium and other accessible areas within the development will be illuminated at low levels at the appropriate lux figure for their contextual setting and so as not to disturb or negatively affect wildlife.

Access to roof terraces and podium amenity

All apartment buildings are provided with lifts and apartments in Building F have direct level access to a communal roof terrace at third floor level. Selected apartments have direct level access to the podium at first floor suitable for disabled users.

7.5 Building environment

The buildings are set within a landscaped environment at street level. There is a level change across the site of approximately 650mm from the highest point at the Edwin Road entrance to the lowest point at the River Crane riverside, 189m to the North. This will be accommodated at street level by stepping the first four houses closest to Edwin Road to adjust to the levels across the site, and using ramps of very shallow gradients integrated into the landscape design. A level threshold is provided to the industrial building.

Level access is provided to all residential apartments and each building has its own entrance with level access from the street. Podium and roof level external amenity space is provided, which is only accessible by residents. The podium will include hard and soft landscaped environments that are fully accessible. Level access is provided to the podium.

7.6 Building & structures

7.6.1 Materials

The proposed materials have been specified in accordance with Approved Document M of the Building Regulations to contrast tonally with the ground finishes, enabling people with visual impairments to identify building boundaries.

7.6.2 Construction

The design follows a simple concept based on the clarity of the overall structure of the building. Slab levels have been set to ensure that the structure will not impose restraints upon individuals using and moving through the building, including ensuring obstructions are avoided in pedestrian/common areas and that level access can be provided throughout.

7.6.3 Internal floor surfaces

The floor finishes will contrast tonally with the walls and will be of a non-slip material. Finishes will be contrasting in the vertical and horizontal situations. Floor surfaces will not be overly resistant to wheelchair users, but will aid crutch users in gaining purchase. As well as this, floor finishes will be of a robust and durable nature.

7.6.4 Entrances

Each building provides a clear transition from outer spaces to inner spaces to all users. The approach to the buildings will be well lit and obvious. Covered entrances are provided in accordance with building regulations M4(2) and M4(3).

7.6.5 Transition to internal

The entrances will be designed so as to be easily identifiable, and the frames will be of a strong tone or colour to visually separate them from the surroundings. Entrances will be appropriately lit. The main entrance doors are designed to comply with relevant legislation in terms of minimum width opening and closing and the thresholds will be level.

7.6.6 Opening windows and projections on public routes

Obstructions at head height can be dangerous to the visually impaired. All opening windows and projections have been minimised within the design. Where they can't be removed completely, vegetation has been provided at ground floor to distance people from locations where there are any outward opening windows. Where possible, outward swinging doors are avoided and, where required due to fire escapes, they will be clearly demarcated.

7.6.7 Steps and ramps

All steps, stairs and ramps have been designed to comply with Approved Document M 2015 and BS 8300:2009. This includes tread, risers, handrails, lighting and nosings.

7.6.8 Door design

All doors of the scheme, both manually operated or automated, are compliant with Approved Document M 2015 and BS 8300:2018 according to different uses and users of the buildings, specifically in relation to vision panels, weight, colour, door ironmongery and materials.

To meet the requirements of Approved Document M, door closer tensions will be set to a maximum of 20N. The clear opening widths of all doors in common areas are a minimum of 850mm and there will always be 300mm nib on the leading edge of a door.

7.6.9 Movement within buildings

This key subsection relates to the internal circulation within each building, considering specific needs of disabled people.

The buildings are accessed via horizontal corridors. Vertical circulation is via lifts in the cores and ambulant disabled stairs.

Provision of lifts:

All lifts, in all buildings, are designed to comply with Approved Document M and BS 8300:2018, including: size, internal materials, door opening width, and operating apparatus.

Stairs:

Stairs comply with Approved Document M and BS 8300:2018 in terms of widths, treads, risers, hand rails, nosings, top and bottom surfaces, landings and finishes.

They have also been designed for ambulant disabled, including the fire escape stairs.

Corridor and lobby design:

All corridors within the buildings comply according with their specific uses and with Approved Document M in terms of size, lighting, materials, signings, doors and colours.

There are no changes in level to any corridors and width is consistent. Vision panels in corridor doors will be designed to allow people both seated or standing to be seen.

Pull handles will only be fitted on the pull side of doors and fingerplates will be fitted on the push side. This assists all users, but especially people with learning difficulties and people with visual impairments. Handles will not extend down to floor level since this type of handle can become caught in the wheels or footplates of a wheelchair.

7.7 Means of escape

7.7.1 Design for independent means of escape

All features and materials comply with Approved Document B (2018). In addition, a management plan will be prepared for the evacuation of the buildings together with the preparation of a Personal Egress Emergency Plan.

With residential buildings it is encouraged that, in the case of fire, inhabitants stay in their apartments. Each apartment has a 60 minute fire rated compartment surrounding it, to ensure that residents are protected from the source of the fire. Sprinklers are also provided to all residential units in building F.

7.7.2 Facilities for physical evacuation

The escape routes, horizontal and vertical, meet the minimum widths to comply with ambulant disabled requirements. Escape stairs meet ambulant disabled goings and risings. At upper residential levels no refuge has been allowed for, as the fire strategy is for people to remain in their apartments while the fire brigade deal with the fire.

Together with the Fire Alarm System and the Personal Egress Emergency Plan, the buildings are designed to provide, according with their different uses, safe evacuation routes in the case of emergencies.

7.8 Signs & wayfinding

7.8.1 External signage

The signage strategy for the development will follow good practice guidelines, such as the “Sign Design Guide”. All signage will be designed for those with learning difficulties or visual impairments.

7.8.2 Internal signage

All the buildings according to their uses are designed to enable clear signposting and a messaging system complying with the Sign Design Society Guidance.

All internal signs to communal areas will be clear, with contrasting symbols to help the visually impaired. All signage will be located in obvious locations and will be well-lit.

7.8.3 The use of differing tactile materials

A palette of tactile handrails/support rails showing directions of travel to the nearest fire exit has been considered through the design of each building.

7.8.4 The layout of the buildings

The clear layout of each building, generally arranged with a sequence of entrance/lobby/lift/stair core/corridors, allows a simple circulation throughout and between the floors. The massing of each building has been designed to be distinguishable and readable, with shapes that provide an easy indication to distinguish different uses within the site.

7.9 Accessible & adaptable dwellings

In accordance with the Draft London Plan (2017), 90% of the new dwellings proposed are M4(2) compliant. The remaining 10% will be M4(3) compliant. The following section demonstrates compliance with the criteria set out by M4(2).

7.10 Part M4(2) compliance

M4(2) Section 2A: Approach to the Dwelling

7.10.1 Approach routes

General

The approach route to all dwellings is level, gently sloping or ramped where necessary. Communal parts of the approach route (except communal stairs) have a minimum clear width of 1200mm. All parts of the external approach routes will have a suitable ground surface.

External and internal ramps forming part of an approach route

All ramps comply with diagram 2.1, have a top and bottom landing of the minimum width required and have a clear width of at least 1200mm.

7.10.2 External steps forming part of an escape route

All external steps will be uniform with a rise of between 150mm and 170mm, a going of between 280mm and 425mm, and a minimum clear width of 900mm. Landings are provided where required and are of the size required. Graspable handrails are provided to every flight of three or more risers and these extend beyond the top and bottom nosing of the steps.

7.10.3 Car parking and drop-off

Parking space

Disabled parking bays are located close to the entrance to the lift cores and the M4(3) dwelling buildings and have a minimum clear access zone of 1200mm to one side. The access to the lift is step free and the parking spaces are level with a suitable ground surface.

Drop-off point

Drop off points are located close to the principle communal entrance in building F and E, are level and have a suitable ground surface.

7.10.4 Communal entrance

Principal communal entrances

The principle communal entrance has a level landing 1500mm x 1500mm directly outside and clear of any door swing. This will be covered to a minimum of 1200mm width and 900mm depth. Lighting will use fully diffused luminaires that are activated automatically by a dusk to dawn timer or a motion detector. The entrance door (including double doors) has a minimum clear opening width of 850mm, and a 300mm nib is provided to the leading edge of the door, in accordance with diagram 2.2. Door entry controls will be mounted 900-1000mm above finished ground level, and at least 300mm away from any projecting corner.

Other communal doors

All other communal doors have a minimum clear opening width of 850mm, and a 300mm nib will be provided to the leading edge of the door, in accordance with diagram 2.2. Door entry controls will be mounted 900-1000mm above finished ground level, and at least 300mm away from any projecting corner.

7.10.5 Communal lifts and stairs

Communal lifts

Lifts are provided to all apartment buildings with a minimum car size of 1100mm wide and 1400mm deep. Each lift has a clear landing of at least 1,500mm x 1,500mm directly in front of the lift door at every floor level, a door clear opening width of at least 800mm and meet BS EN 81-70:2018. Landing and car controls will be 900-1200mm above the car floor and a minimum of 400mm from the inside of the front wall.

Communal stairs

Each apartment building is served by 1 communal stair core which meets the requirements of Approved Document K for a general access stair.

7.10.6 Private entrances

Principal private entrance and alternative entrance

The principle private entrance to each apartment will have a level landing 1200mm x 1200mm directly outside. This will be covered to a minimum of 900mm width and 600mm depth. Lighting will use fully diffused luminaires that are activated automatically by a dusk to dawn timer or a motion detector. The entrance door (including double doors) has a minimum clear opening width of 850mm, and a 300mm nib is provided to the leading edge of the door, in accordance with diagram 2.2.

Other external doors

All other doors connected to the dwelling will have a minimum clear opening width of 850mm and a 300mm nib is provided to the leading edge of the door, in accordance with diagram 2.2.

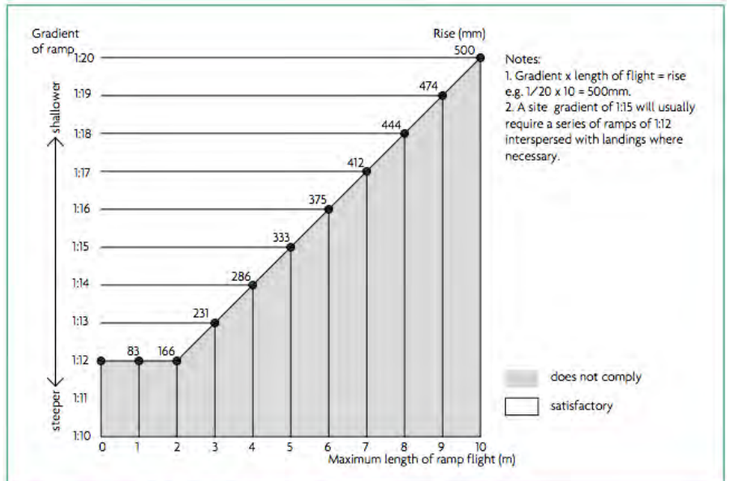


Diagram 2.1 Maximum length of ramp at a given gradient

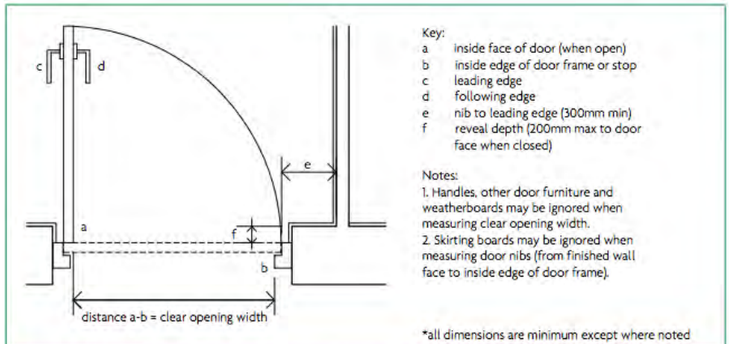


Diagram 2.2 Measurement of clear opening width and other features of external and internal doors

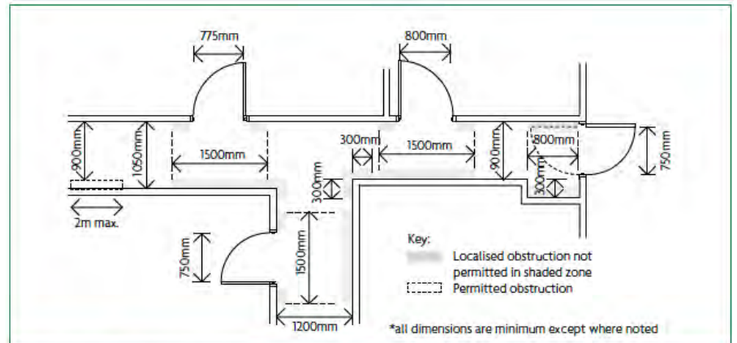


Diagram 2.3 Minimum door and hall widths and restrictions on localised obstructions

7.10.7 Circulation areas and doorways

Door and hall widths

The minimum clear width of every hall or landing is 900mm. Localised obstructions will not occur opposite or close to a doorway and the corridor will not be reduced below 750mm width at any point. The clear opening widths will conform to those set by Approved Document M and a 300mm nib will be provided to the leading edge of every door within the entrance storey.

Private stairs and changes of level within the dwelling

Access to all rooms and facilities within the entrance storey will be step-free, with no level changes. The stair from the entrance storey to the storey above will have a minimum clear width of 850mm when measured above the pitch line of the treads. All stairs meet the provisions of Approved Document K for private stairs.

7.10.8 Habitable rooms

Living, kitchen and dining areas

There is a living area within the entrance storey of all units (which maybe a living room, dining room or a combined kitchen dining room). A minimum of 1200mm clear space is provided in front and between all kitchen units and appliances.

Bedrooms

Every bedroom has a clear access route, minimum of 750mm wide from the doorway to the window, and at least one double bedroom will provide a clear access zone a minimum of 750mm wide to both sides and the foot of the bed. Other double bedrooms have a clear access zone a minimum of 750mm wide to one side and the foot of the bed.

7.10.9 Sanitary facilities

General provisions

All walls, ducts and boxing to the WC/Cloakroom, bathroom and shower rooms will be strong enough to support adaptations that could impose a load of up to 1.5N/m2.

WC facilities on the entrance storey

Every dwelling will have a room that provides a WC and basin on the entrance storey. In two storey dwellings, with one or two bedrooms, the WC meets the provisions of diagram 1.3 and the basin does not impede access to the WC.

In two storey dwellings with three bedrooms, the room with the WC and basin provides a potential level access shower.

The door to the WC will open outwards.

Bathrooms

Every dwelling has a bathroom that contains a WC, a basin and a bath, that is located on the same floor as the double bedroom described as the principle bedroom above.

7.10.10 Services and controls

Consumer units will be mounted so that the switches are between 1350mm and 1450mm above floor level. Switches, sockets and controls will have their centre line between 450mm and 1200mm above floor level and a minimum of 300mm from an inside corner.

The handle to at least one window in the principle living area is located between 450mm and 1200mm, or a remote opening device will be fitted. Handles to other windows will be located between 450mm and 1400mm above floor level or a remote opening device will be fitted.

Boiler controller will be mounted in an accessible location between 900mm - 1200mm above finished floor level.

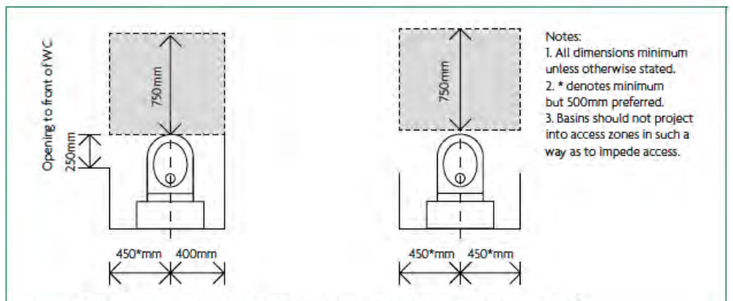


Diagram 1.3 WC access zones

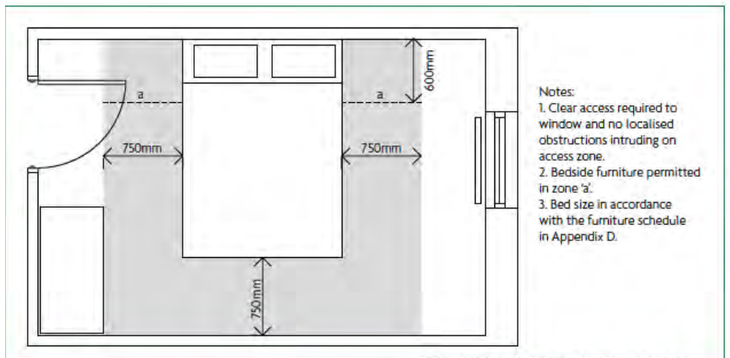


Diagram 2.4 Clear access zones to principal bedroom

7.11 Part M4(3) compliance

M4 (3) Wheelchair User Dwellings

10% of the residential dwellings will comply with the requirements of Approved Document Part M4(3) of the Building Regulations.

The following section covers the specific requirements of M4(3).

Storage

Each wheelchair dwelling layout provides a wheelchair storage (1,100mm x 1,700mm) and transfer space with a clear width of at least 1,200mm. Storage is provided in accordance with the minimum areas given. Those M4(3)b units that are multi-story dwellings are designed to allow for a provisional through floor lifting devices.

Living, kitchen and dining area

All apartments are single storey therefore the principal living area is on the entrance storey. The minimum internal floor area of the living room, dining room and kitchen meets the figures in table 3.2. The glazing system features a transom that is no higher than 850mm above floor level.

Each wheelchair dwelling features an open plan living, dining and kitchen arrangement and the kitchen has a clear access zone of 1,500mm in front and between all unit and appliances.

The (adaptable) dwellings have worktop runs in accordance with table 3.3 and the layouts demonstrate how the kitchen could be easily adapted to meet the provisions of wheelchair accessible requirements at a future date without significant structural alterations or impact upon the rest of the dwelling.

The accessible dwellings have the full run of worktops required, as stated in table 3.4. The worktop incorporates a 2200mm minimum continuous section which includes a combined sink, drainer unit and hob. This section is either a height adjustable worktop or a fixed section capable of being fixed at various heights as required.

Bedrooms

Every bedroom provides a 1000mm wide clear access route from the doorway to the window. Every bedroom has a 1,200mm x 1,200mm manoeuvring space inside the doorway, clear of the bed and closed door. The principal double bedroom has a minimum floor area of at least 13.5 sq m and a minimum width of at least 3m. The principal bedroom also has a clear access zone 1,000mm wide to both sides and the foot of the bed and 1,200mm x 1,200mm manoeuvring spaces on both sides of the bed.

Every other double bedroom has a minimum floor area of at least 12.5 sq m, a minimum width of 3m and a 1,000mm clearance zone to one side of the bed and in front of all furniture. Every other single bedroom has a minimum floor area of at least 8.5 sq m, a minimum width of 2.4m and a 1,000mm clearance zone to one side of the bed and in front of all furniture.

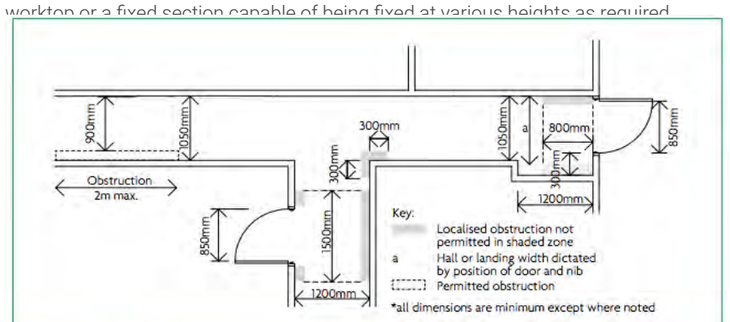


Diagram 3.4 Minimum door and hall widths and restrictions on localised obstructions

Table 3.2 Minimum combined floor area for living, dining, and kitchen space

Number of bedspaces	2	3	4	5	6	7	8
Minimum floor area m^2	25	27	29	31	33	35	37

Table 3.3 Minimum length of kitchen worktop, including fittings and appliances, to be fitted at completion for a wheelchair adaptable dwelling

Number of bedspaces	2	3 & 4	5	6–8
Minimum worktop length (mm)	4330	4730	5630	6730

Table 3.4 Minimum length of kitchen worktop, including fittings and appliances, to be fitted at completion for a wheelchair accessible dwelling

Number of bedspaces	2	3 & 4	5	6–8
Minimum worktop length (mm)	6130	6530	7430	8530

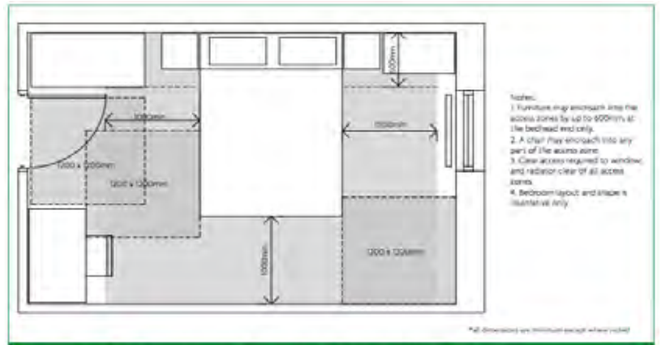


Diagram 3.9 Clear access zones and manoeuvering spaces to principal bedroom

Sanitary facilities

All wheelchair dwellings meet the requirements of table 3.5.

Every wheelchair dwellings provides a wet room on the entrance storey which contains a WC, wash hand basin and installed level access shower and features an outward opening door.

The (adaptable) dwellings have bathrooms which comply with diagram 3.10 and can be easily adapted in future to become wheelchair accessible.

The (accessible) dwellings have bathrooms which comply with diagram 3.11.

All 2 and 3 bedroom apartments have a compliant bathroom and a separate compliant en-suite for the master bedroom, with outward opening doors.

All principle bathrooms and en-suites provide a minimum 1500mm clear wheelchair turning circle. This applies to both adaptable and accessible units.

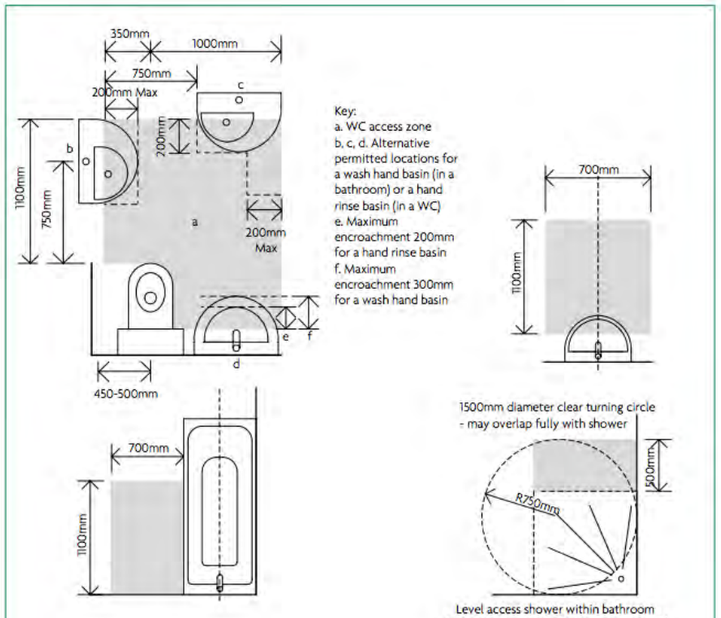
Table 3.5 Summary of minimum requirements for sanitary provision in typical dwelling types (dwellings should also comply with relevant detailed requirements set out in paragraphs 3.36-3.43)

Single storey dwelling (typically a flat or bungalow)

Occupancy	Typical minimum sanitary provision
2 or 3 bedspaces	Bathroom with level access shower
4 bedspaces	Bathroom with level access shower and separate WC/cloakroom
5 bedspaces or more	Bathroom with level access shower and separate WC/cloakroom (or second bathroom). Wheelchair accessible dwellings must also provide both a level access shower and a bath

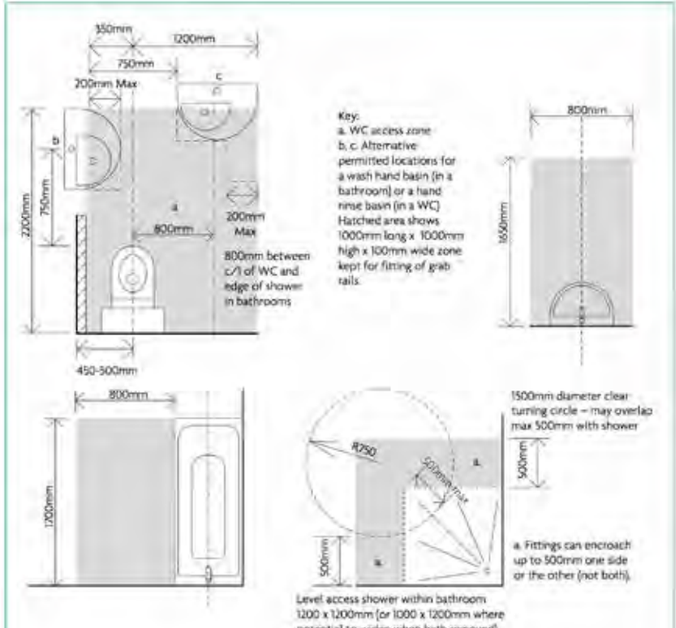
Two or three storey dwelling (typically a house or maisonette)

Occupancy	Typical minimum sanitary provision
2 or 3 bedspaces	Bathroom with level access shower on same level as principal bedroom + entrance storey WC/cloakroom (where bathroom not on the entrance storey)
4 bedspaces	Bathroom with level access shower on same level as principal bedroom and entrance storey WC/cloakroom or second bathroom
5 bedspaces or more	Bathroom with level access shower on same level as principal bedroom and entrance storey WC/cloakroom or second bathroom. Wheelchair accessible dwellings must also provide both a level access shower and a bath



Notes:
1. Sizes of fittings are minima based on the furniture schedule in Appendix D. Other sizes may affect the overall size of a bathroom or WC/cloakroom.
2. Access zones may overlap except where noted.
3. In WC/cloakrooms the basin and/or WC may encroach into the shower space but this should be minimised.
4. Any radiator or towel rail should be clear of all access zones.

Diagram 3.10 Sanitary fittings associated clear access zones and permitted encroachment of basins – wheelchair adaptable



Notes:
1. Sizes of fittings are minima based on the furniture schedule in Appendix D. Other sizes may affect the overall size of a bathroom or WC/cloakroom.
2. Access zones may overlap except where noted.
3. Clear access zone minimum 400mm-600mm high required under all basins other than essential traps and drainage connections providing these do not impede approach by a wheelchair user.
4. Any radiator or towel rail should be clear of all access zones.

Diagram 3.11 Sanitary fittings, associated clear access zones and permitted encroachment of basins – wheelchair accessible

7.12 Part M4(3) compliance layouts

In accordance with the Draft London Plan 2017, 90% of the new dwellings are M4(2) compliant and 10% are M4(3) compliant.

The proposed locations, layouts and mix of the M4(2) and M4(3) compliant wheelchair user dwellings are detailed in the following table, diagrams and plans.

DESCRIPTION			NET AREA		AMENITY SPACE		GROSS AREA				UNIT MIX					OCCUPANCY	
Floor	Flat No	Unit Type	NIA (sq.m)	*NIA (sq.ft)*	(sq.m)	*(sq.ft)*	GIA (sq.m)	*GIA (sq.ft)*	GEA (sq.m)	*GEA (sq.ft)*	1 Bed	2 Bed	3 Bed	4 Bed	Total Units	*Hab Rooms*	Occupants
	C-3	HT 4" 3 Bed	130	*1,399*	20	*215*							1		1	*4*	5
	C-4	HT 4"" 3 Bed	130	*1,399*	19	*205*							1		1	*4*	5
G	E0-1"	1 Bed	55	*592*	12	*129*					1				1	*2*	2
G	E0-2"	1 Bed	55	*592*	9	*97*					1				1	*2*	2
G	F0-5"	3 Bed	100	*1,076*	25	*269*							1		1	*4*	4
G	F0-8"	1 Bed	61	*657*	26	*280*					1				1	*2*	3
1	F1-8"	1 Bed	55	*592*	14	*151*					1				1	*2*	2
2	F2-8"	1 Bed	55	*592*	5	*54*					1				1	*2*	2
3	F3-7"	1 Bed	55	*592*	5	*54*					1				1	*2*	2
4	F4-1"	1 Bed	55	*592*	5	*54*					1				1	*2*	2
4	F4-4"	2 Bed	80	*861*	12	*129*						1			1	*3*	4
Building G Total			**831**	**8,945**	**152**	**1,636**	**-**	**-**	**-**	**-**	**7**	**1**	**3**	**-**	**11**	**29**	**33**
											64%	9%	27%	0%			

Key

Accessible units

Ground floor plan

First floor plan

Second floor plan

Third floor plan

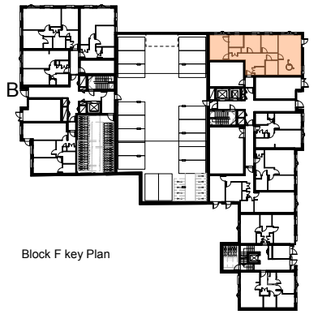
Fourth floor plan

Part M(4) 3 Adaptable - 3 Bedroom apartment (ground floor)

Occurs within Building F

Typical M4(3) Adaptable 3 Bed Apartment

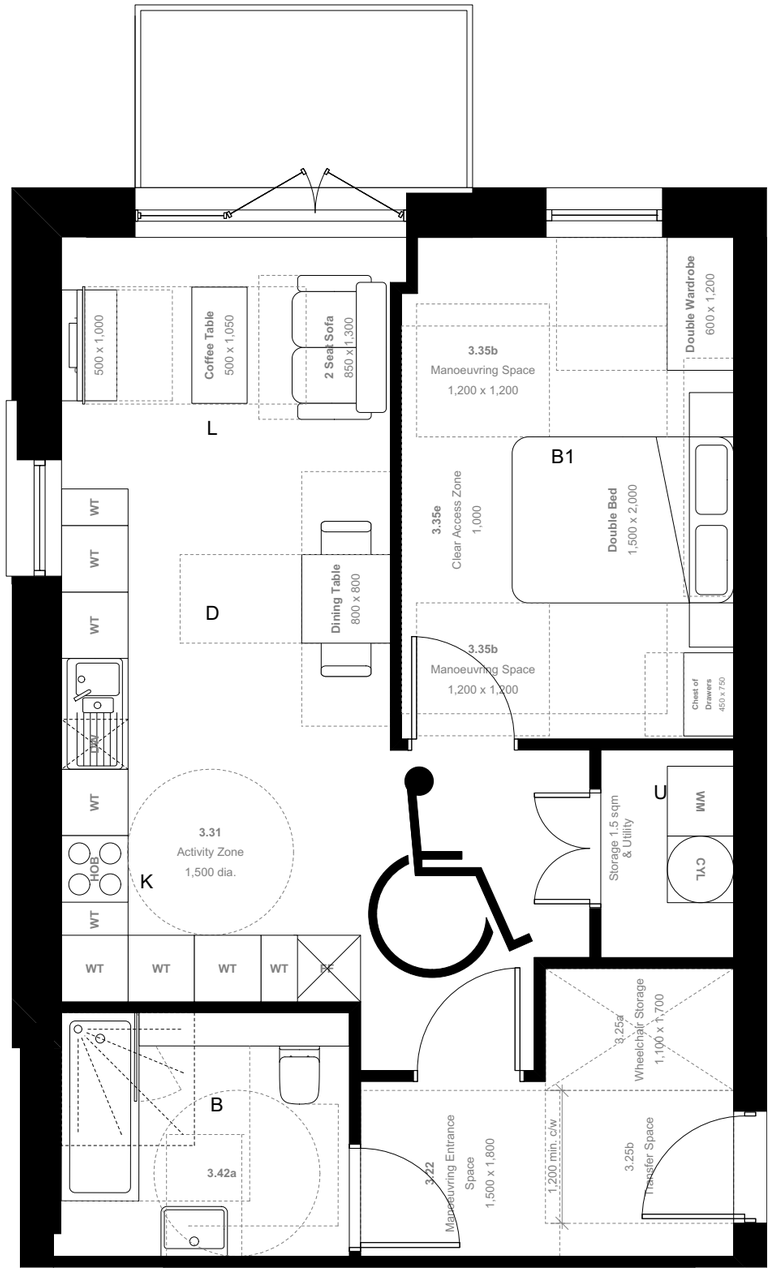
Total Area: 100 sqm / 1076 sqft



Block F key Plan

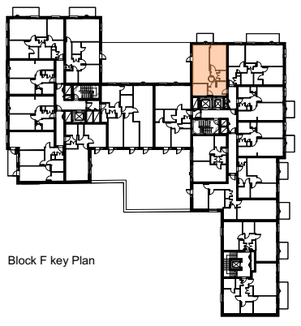
Part M(4)3 Adaptable - 1 bedroom apartment (multiple floors)

Occurs within Building F

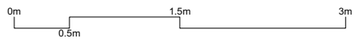


Typical M4(3) Adaptable 1 Bed Apartment

Total Area: 55 sqm / 592 sqft



Block F key Plan

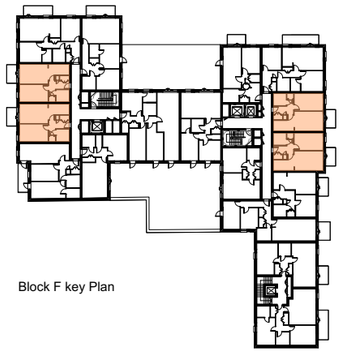


7.13 Part M4(2) compliance - 1 bedroom apartment

Occurs within Building F

Typical M4(2) Accessible and Adaptable 1 Bed Apartments

Total Area: 50 sqm / 538 sqft



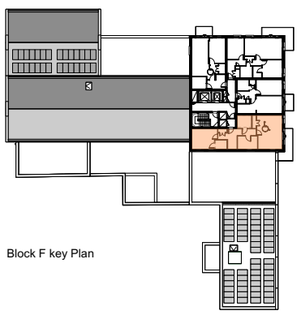
Block F key Plan

Part M(4) 3 Adaptable - 2 bedroom apartment (fourth floor)

Occurs within Building F

Typical M4(3) Adaptable 2 Bed Apartment

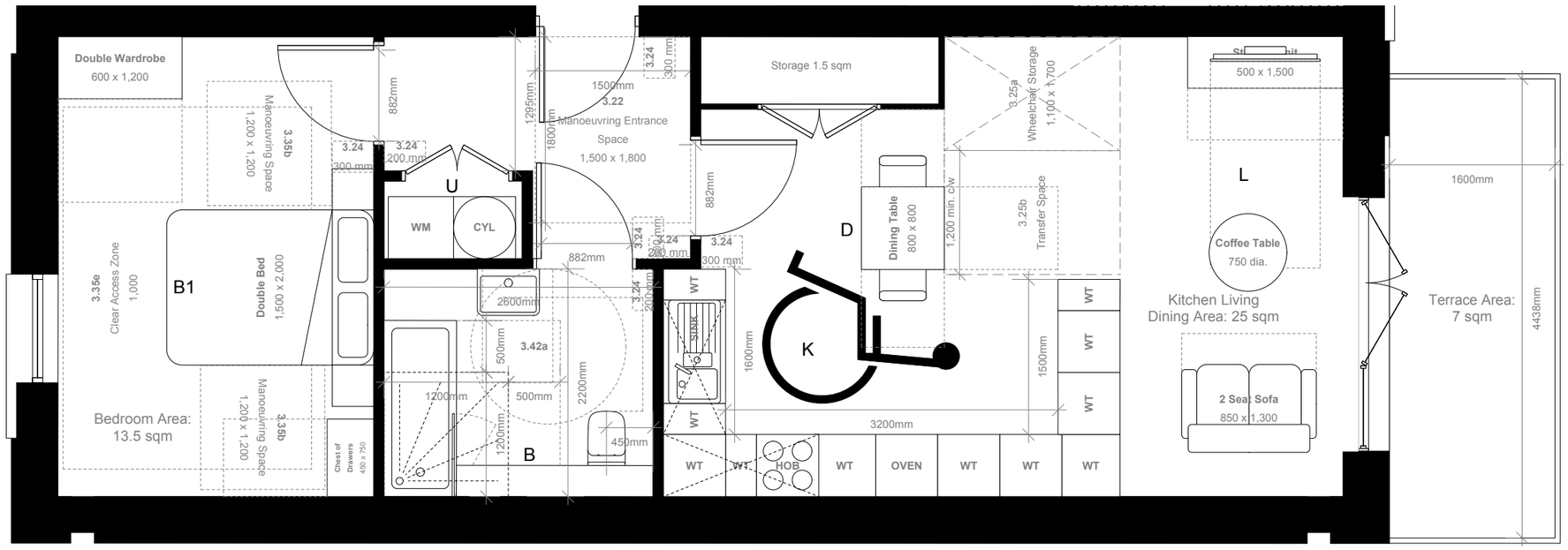
Total Area: 80 sqm / 861 sqft



Block F key Plan

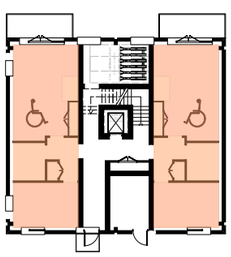
Part M(4) 3 Adaptable - 1 bedroom apartment (ground floor)

Occurs within Building E



Typical M4(3) Accessible 1 Bed Apartment

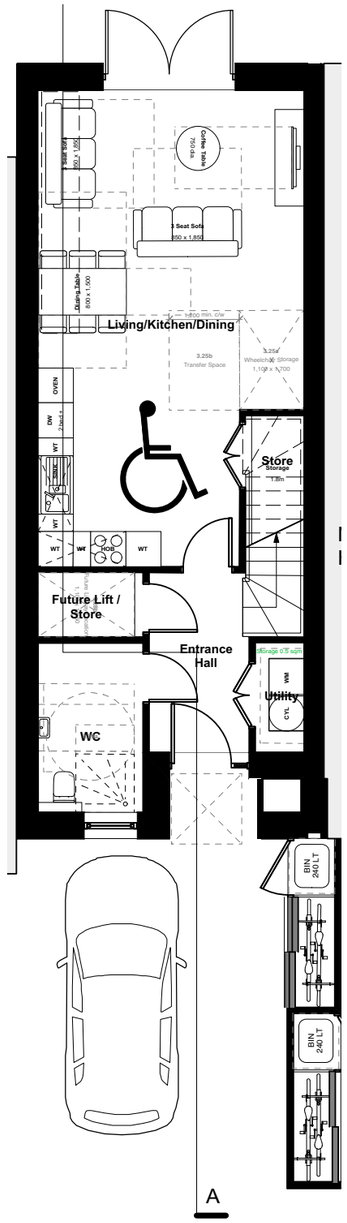
Total Area: 55 sqm / 592 sqft

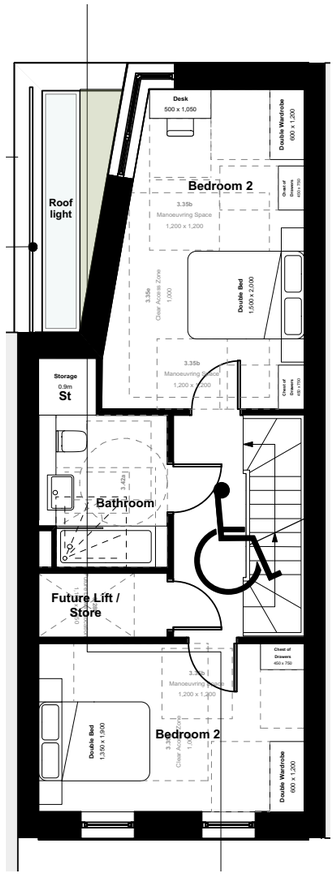


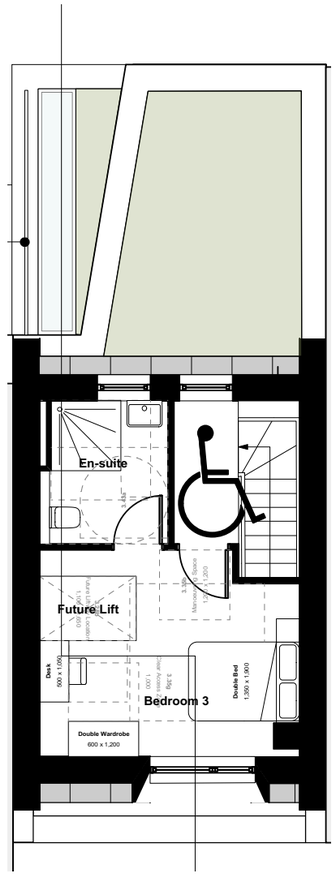
Block E key Plan

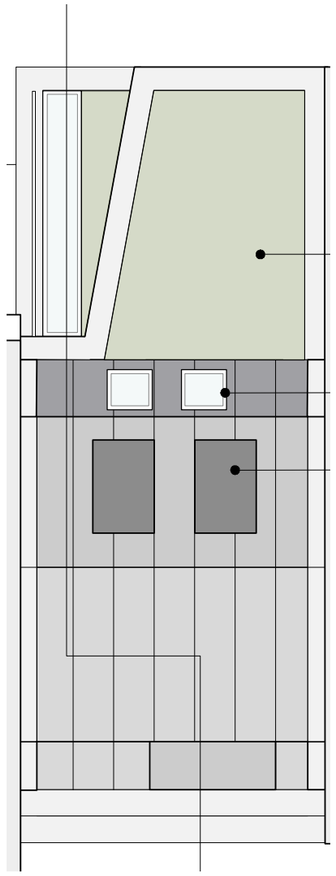
House type 4 (M4(3) 3B6P)

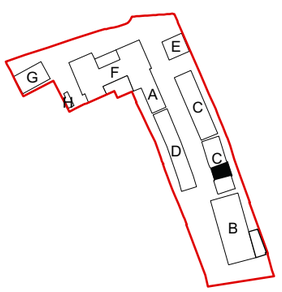
Occurs within Building C





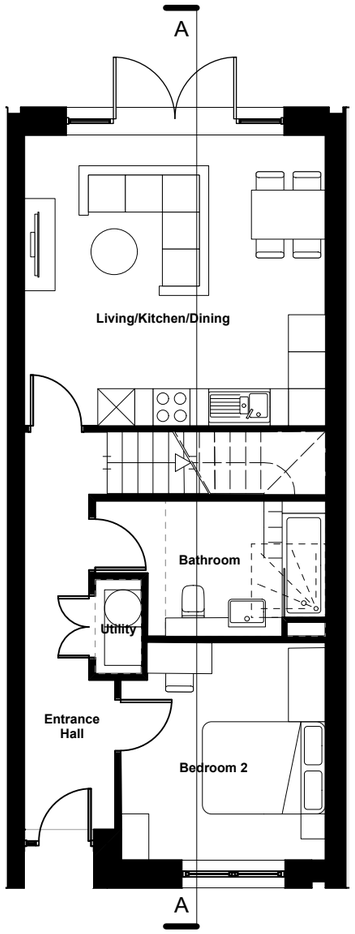


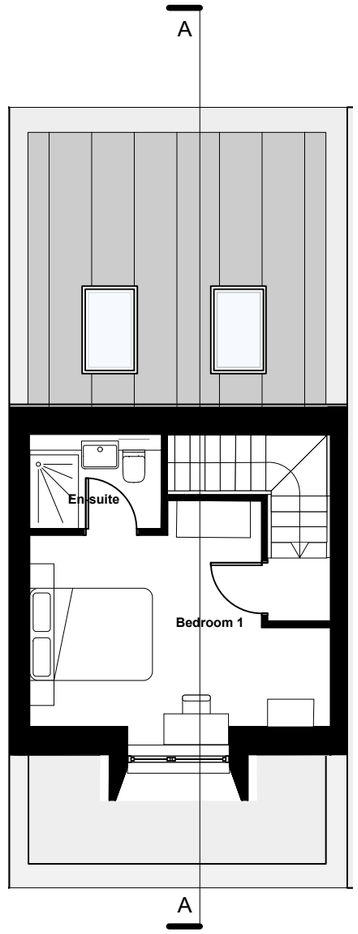


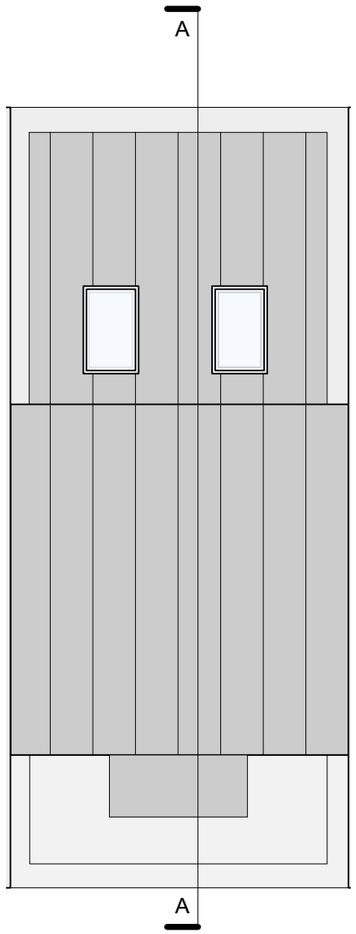


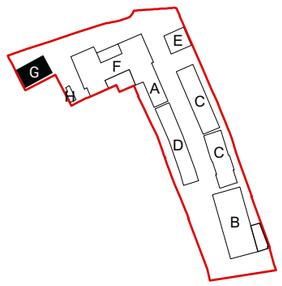
House Type 1 (2B4P) M4(2)

Occurs within Building G



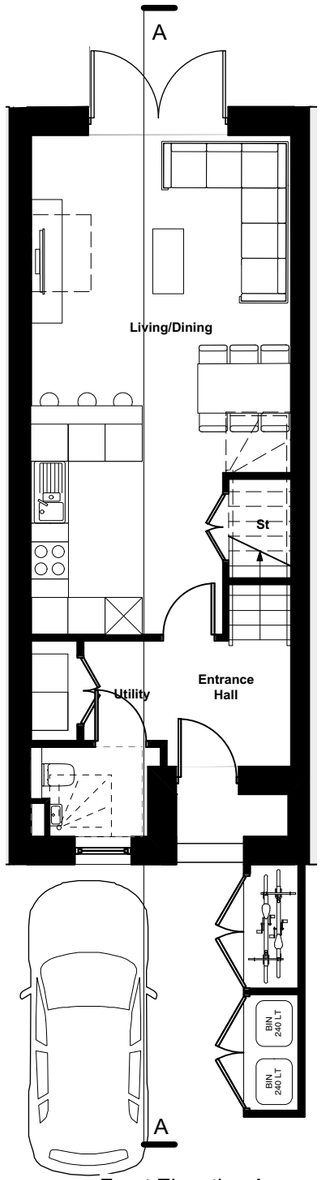






House Type 3 (3B6P) M4(2)

Occurs within Building C



Front Elevation A