In addition to the Energy Statement created as part of the planning submission, details of these proposals have been included throughout this document. The following is a list of some of the measures that have been incorporated into the development proposals to address Camden's objectives to reduce the impact of the development on climate change as well as adapt to climate change.

- An energy hierarchy of lean, clean and green has been followed to reduce energy use in running the development.
- Passive design has been prioritised with enhanced solar control integrated in the facades to reduce solar gains in summer and thereby reduce the energy consumed to cool the building.
- Advanced building services systems like Combined Heat and Power plant linked to Absorption cooling has been proposed to ensure reduced energy consumption to service the building whilst adapting to any increase in cooling requirements due to affect of climate change.
- By reusing the existing building structure, usage of significant amount of new construction materials has been avoided. At the same time it will result in reduction in demolition waste.
- Creation of green spaces and gardens on the building envelope will reduce urban heat island effect and will assist in storm water attenuation, in addition to adding biodiversity to the area.
- The proposal will achieve BREEAM 'Very Good' with the aspiration to achieve 'Excellent' for non-residential areas, Code for Sustainable Homes Level 3 for new dwellings and Ecohomes 'Very Good' for refurbished dwellings.

Waste & recycling

A Site Waste Management Plan (SWMP) will be developed and implemented. This will enable reduction and effective management of construction site waste. Secondary aggregates will be used in construction, thereby reducing the demand for virgin material. An adequate dedicated storage space for recyclable waste will be provided in the development. This will enable efficient waste sorting and storage during building's operation.

Energy

The building will be designed to minimise the CO2 emissions associated with its operational energy consumption. Energy-efficient light fittings will be specified for internal and external areas of the building. Internal light fittings will be controlled through daylight and occupancy sensors according to the space type. External light fittings will be controlled through a time switch and daylight sensor to prevent operation during daylight hours.

Energy-efficient lifts will be installed to reduce transport-related energy consumption. Separate accessible energy sub-meters will be installed to facilitate the monitoring of substantial energy uses and highly energy demanding function areas within the building.

A feasibility study has been carried out by Atelier Ten to establish the most appropriate on-site low or zero carbon (LZC) energy sources for the building. Further details of all the energy calculations and conditions for modelling are given in the Energy Statement.

Conclusion

The proposals for the Residential and Commercial development to 150 Holborn, London respond to the environmental sustainability and energy requirements of the Camden Council and Greater London Authority (GL A).

The design of this project will ensure that the requirements of the sustainable planning policies discussed, and the principles they underpin, will be achieved and exceeded wherever it is technically, functionally and economically feasible.

Energy

A number of measures have been incorporated into the proposals to maximise the energy efficiency of the development and minimise the associated carbon emissions. A hierarchy of measures have been followed which broadly equates to the following:

1. Passive Design Prioritisation
2. Active Systems Optimisation
3. Use of Combined Heat And Power
4. Renewable Energy Measures
5. Additional Carbon Reduction Measures

The following sections outline the key proposals under each of the levels of the hierarchy noted above.

Passive design prioritisation

A number of passive energy savings are proposed for the new build elements of the building. These include the use of:

- High levels of insulation to achieve low U-values to limit the effects of heat loss from the building
- Balancing the areas of opaque and transparent within the façade to balance daylight against excessive solar gains
- Detailing the building envelope and penetrations to minimise the risk of uncontrolled infiltration
- Use of extensive solar shading to further limit excessive solar gains. The shading levels have been studied and will be optimised against annual solar exposure studies of the facades to ensure that the façade design responds to the solar radiation exposure.
- Deep window reveals are proposed, in addition to external shading, to the east, west and south facing facades. The deep window reveals will help to shade the windows and reduce solar glare while at the same time assist in controlling privacy and light spillage to neighbouring properties.

Thermal performance improvement to the existing facade

It is proposed to spend 10% of the budget for the new works to improve the façade of the existing building that is being renovated to the standards of the new extensions.

The improvements will take the form of replacing the glazing and applying an insulated rain screen on top of the existing brickwork, thus providing the best benefits of increasing thermal standards while at the same time re-using the existing wall materials.

This is expected to result in a significant energy and carbon savings within the overall building.

Active energy savings

A number of measures are proposed to minimise the energy consumption and consequential carbon emissions of the new areas being constructed as part of the works. For the new accommodation these measures include the following:

- Use of energy efficient lighting within both the office and residential accommodation throughout.
- The lighting is to be fully zonally controlled within the office areas to allow flexibility of usage and minimise consumption.
- Daylight dimming will be installed in the perimeter areas to maximise the ability of the occupants to use daylight when it is available.
- Occupancy sensing will be used in appropriate areas, for instance WC's, within the office accommodation to ensure that lights are turned off when these spaces are not occupied.
- Variable Air Volume multi-service chilled Beams are proposed for the office accommodation. These provide significant energy savings as compared to conventional fan coil units.
- Central power factor correction for the development.
- Within the residential units high efficiency condensing combination boilers are proposed.
- Solar hot water collectors will be installed on the roof of the residential development.

CHP and district energy systems

Investigations are underway to fully evaluate the feasibility of connection to the University College District Heating system. At present as the site is at a significant distance from the University College District Heating Network (approximately 1km) it is not felt that a connection would be viable to the development.

It is proposed to install CHP equipment combined with absorption chillers to provide both heating and cooling to the office accommodation within the development. The system is expected to result in significant carbon savings to the development.

The CHP system will incorporate flanged connections to enable a future connection to a district energy system if one should be brought into the area at a later date.

Carbon reduction strategy

Rather than investing in renewable technologies that have low cost benefit for carbon reduction, and which would only act to make the new development have slightly less impact to the environment, the applicant wishes to have an alternative approach considered for policy compliance by the council. The alternative carbon abatement strategy to the use of renewable on the site would be by delivering greater reduction in carbon emissions through improving the performance of the existing accommodation that is to be renovated as part of the proposals. The building was originally designed in the 1980's with poor quality fan coil units and lighting installation.

It is proposed to adopt the same highly energy efficient design measures incorporated to the new accommodation within the existing accommodation. This would include the use of VAV Chilled Beams, low energy lighting and controls and the use of CHP. Significant further carbon savings will be achieved by the incorporation of these measures that are over and above the savings that are to be received from the improvements to the façade.

It is predicted that the savings from these measures rescue emissions of 145,792 kgCO 2 per annum below that of the existing accommodation once the façade improvement measures have been taken into account. This is approximately 5.9 times the remaining carbon savings that would be delivered from a 20% policy compliant installation, or to put it another way, approximately equivalent to the carbon emissions of the proposed development to the site resulting in a net reduction in carbon emissions for the site.

Summary

Recycle existing building

- 150 Holborn Prudential, 1986, Gordon Collis Architects

Sustainability = quality + flexibility

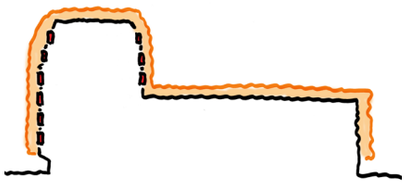
- The building has been designed to provide a degree of flexibility enabling it to evolve with user requirements
- High quality materials and design give the building longevity

Balance = solid + glass

- Moorhouse, 2005, Foster and Partners
- Cappadocia, Turkey, early 1st century rock dwellings

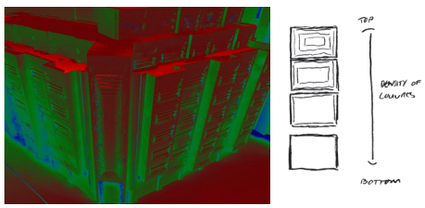
New high performance facade

- Puffer jacket of insulation wrapped around existing building
- Replace existing windows



Use solar modelling to target facade 'hot spots'

- Insulation
- Solar shading



Materials

- Priority given to European procurement to provide a stronger link to the vernacular and reduce the embodied carbon.
- Terracotta sourced from France and Portugal.
- Copper sourced from Cumbria, Wales, Devon, Cornwall and northern Europe.
- Ceramics are made from 100% natural and plentiful raw materials.
- Copper 100% recyclable.
- About 80% of all the copper ever extracted is still in use today and has already been processed several times.
- A minimum of 50% of the entire European production of copper comes from recycled material.

Variable Air Volume multi-service chilled beams

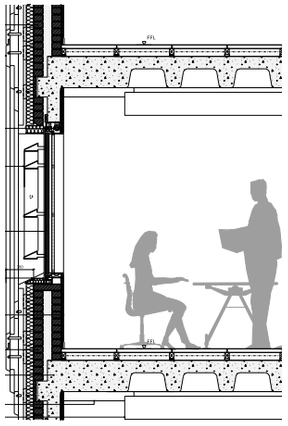
- Energy efficient.
- Run fewer air circulation fans and at lower speeds.
- Noiseless.
- Little maintenance required.
- Integrates lighting, CCTV, cabling and sprinklers

Energy

- Energy-efficient lifts.
- Energy sub-meters to monitor energy uses
- Central power factor correction for the development.
- High efficiency condensing boilers, (Residential)

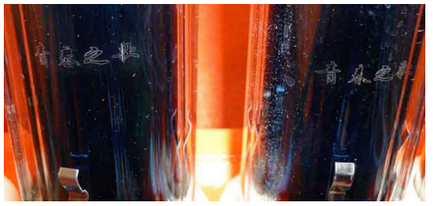
Solar gain, privacy and light spillage

- Recessed windows reduce visibility of the glass, inherently addressing solar control, light pollution and privacy.
- Lighting will be subject to occupancy sensor switching, zone control and daylight sensors.
- It is important to note that older buildings in the area have base light levels in excess of 450-500 lux, creating over-lit spaces that consume large amounts of energy. In accordance with Best Practice Guidance, 150 Holborn is designed in the range of 250 lux, with supplementary task lighting.



Solar water heating

- To be located on the roof of the residential development.



External amenity (wellbeing)

- Communal garden deck.
- Residential balconies and roof gardens.
- Office balconies and roof terraces.

Waste & recycling

- A Site Waste Management Plan (SWMP) will be developed and implemented.
- Reduction and effective management of construction waste.
- Covered service yard includes areas for recyclable waste.

Ecology

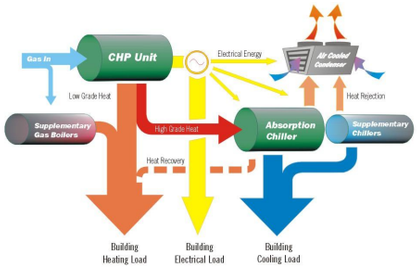
- Adjacent trees protected during construction.
- Ecological (non-accessible) roofs to all plant rooms, cores and maintenance access roofs.

Reduced water consumption

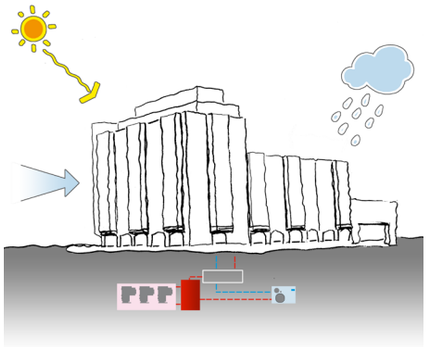
- Low water use fittings to WC's, bathrooms, kitchens and showers.
- Dual flush toilets.
- Rainwater collection for irrigation of garden deck.
- Storm water attenuation.

CHP and district energy systems

- Combined Heat & Power, (CHP), combined with absorption chillers. Flanged connections enable future connection to a district heating system.



- BREEAM, 'Very Good' with the aspiration to achieve 'Excellent' (non-residential)
- Code for Sustainable Homes, Level 3
- Ecohomes, 'Very Good'
- Passive and active measures used to greatly reduce carbon emissions



This section looks at how all members of society will be able to use the site and how this is reflected in the development proposals.

This section contains information on movement to and through the site, focusing on vehicles and transport.

08
Access

Access

Site access
The site at 150 Holborn is accessible from multiple entrances fronting Gray's Inn Road, High Holborn and Brooke Street. There is no significant change in level across the site and each entrance has step-free access, including the vehicle entrance to the north of the site.

Transport
Gray's Inn Road and High Holborn are major thoroughfares, with single yellow lines on both sides, bus lanes and pedestrian crossing points.
Brooke Street is a quieter street, with single yellow lines on both sides and a loading area to the west of the Prudential building.
Bus services along Gray's Inn Road and High Holborn serve north, south, east and west.
London Underground services (Central Line) are available at Chancery Lane station, directly to the south of the site. Holborn station is to the west (Central and Piccadilly Lines).

On-site parking
One Blue Badge parking bay is proposed at the ground floor within a secured enclosure (service yard) including a 'help point' such as a telephone or an alarm, and will be monitored via CCTV.
Parking spaces for 84 cycles are provided at ground floor level within secured enclosure (service yard), segregated into use types.

Pedestrian routes
Most pedestrians are expected to arrive by public transport either by bus or via London Underground.

Planning and design standards
The requirements of the London Borough of Camden are clarified in their letter titled 'Planning Pre-application advice meeting ref.2011/0596/NEW. LB Camden's requirements are broadly in line with the GLA standards, stating that;

'All new housing (including changes of use and conversions) needs to be accessible to all. All new housing needs to be built to Lifetime Homes standards and 10% of all new housing should be designed to be Wheelchair Accessible or easily adaptable for residents who are wheelchair users'.

The proposals are for all of the six flats to be built to Lifetime Homes standards, one of which will be Wheelchair Accessible or easily adaptable.

Building design proposals

Office entrance
Step-free entry from Gray's Inn Road/High Holborn, with revolving entrance doors and passing door (power-assisted) and operated by an Approved Document Part M (AD M)-compliant push button system.
A reception desk in front of main staircase and lifts.
Reception area to have desk heights at two levels, knee space for wheelchair users, good illumination and induction loop.

3no. lifts (size 1,100 x 1,400mm) adjacent to the main stairs, giving direct access to the office floors above.
1no. Blue Badge parking space with step-free access to the lift (shared with residential/retail users).
This will continue to be developed in accordance with the recommendations set out in Approved Document Part M and BS 8300.

Residential entrance
Step-free entry from Brooke Street, with entrance door with leaf having a clear opening width of 1,000mm in accordance with AP M entrance requirements.
1no. lift (sized 1,100 x 1,400mm) adjacent to the main stairs, giving direct access to the residential floors.
1no. Blue Badge parking space with step-free access to the lift (shared with office/retail users).

This will continue to be developed in accordance with the recommendations set out in Approved Document Part M and BS 8300.

Retail
The existing retail units are generally to remain in their existing condition and have not been considered in any detail within this statement.

Office uses - floors 01 to 07
Each level of office accommodation will be accessed by means of the circulation cores, including lifts and stair. All horizontal and vertical access within the building will be designed to the recommendations set out in Approved Document Part M and BS 8300.

All office areas will be level and will be designed to take account of BS 8300 Section 11, which sets out additional requirements for assembly areas.
Consideration will be given to the installation of hearing enhancement systems within all office and meeting areas, to assist those with hearing impairments.

Sanitation is to include separate male and female WCs plus one unisex Accessible WC, designed to the recommendations set out in Approved Document Part M and BS 8300.

Residential use – floors 01 to 05
Floors 01 to 05 will consist of private residential accommodation, comprising a total of six units.
Each level of office accommodation will be accessed by means of the circulation cores, including lift and stair. All horizontal and vertical access within the building will be designed to the recommendations set out in Approved Document Part M and BS 8300.

It is proposed that 100% of residential units will be Lifetime Homes compliant. Additionally, it is proposed that 10% will be spatially designed to be converted to Wheelchair Accessible.

Enclosed service yard
The enclosed service yard is accessed via a level threshold. Each of the three main uses on site (office,

residential and retail) has access via dedicated safe pedestrian routes, clearly marked with manifestations and suitable lighting.

Communal garden
The communal garden can be accessed via the principal office lift and stair core and via an ambulant disabled external (covered) stair.

Horizontal circulation (communal)
The proposals for 150 Holborn will be designed to the recommendations set out in Approved Document M and BS 8300 for horizontal access.

Internal doors
All internal doors will have a minimum clear opening of not less than 800mm or 825mm, depending on approach, and will accommodate an unobstructed 300mm to the side of the door adjacent to the leading edge, in accordance with Approved Document M and BS 8300.

The pushing force required for opening doors should not exceed 30N from 0° (the door in the closed position) to 30° open, and not more than 22.5N from 30° to 60° of the opening cycle, as recommended in Approved Document M and BS 8300. Where this is not achieved, doors should be held open on hold-open devices during normal operation. In areas where this is the case, an assisted evacuation system is required in an emergency situation.

Internal corridors and corridor doors
All internal corridors will be designed to the recommendations set out in Approved Document M and BS 8300, and have a minimum width of 1,200mm with 1,800mm passing places, or 1,800mm without passing places.

All corridor doors will have vision panels except in instances of privacy or security. Vision panels should be towards the leading edge of the door and between 500-1,500mm from the floor, as recommended in BS 8300 and Approved Document M. The vision panels should have the same fire resistance as the fire rating of the doors.

Vertical circulation (communal)
The proposals for 150 Holborn will be designed to the recommendations set out in Approved Document M and BS 8300 for horizontal access.

Graded routes
There are no significant gradients across the site.

Stairs
The existing escape stairs are largely to remain in their current condition. The new office escape stair, located within the main core, the new residential stair, located at the north end of the Brooke Street wing, and external stairs of the communal garden will be designed to the recommendations set out in Approved Document Part M and BS 8300, as follows:

Risers will be set uniformly throughout the building.
All treads will be 250mm or greater and will have a rise of between 150mm and 170mm, as recommended in Approved Document Part M and BS 8300.
Each stair will have no more than 12 risers in each flight.
Handrails will be placed along both sides of all stairs and will have a 300mm overhang at landings.
Where a stair has two or more flights the handrail will be continuous around the half landings.
A slip-resistant, tactile nosing is proposed to the nose of each tread, which will also provide colour contrast.
The landings will have a similar slip-resistant, tactile finish to denote the top of flights.
Stair landings will have visual and tactile level indicators and circulation route signage in accordance with the recommendations set out in Approved Document M and BS 8300.

Passenger lifts
The passenger lifts throughout the development will have an internal dimension of no less than of 1,100mm x 1,400mm, in accordance with BS 8300 and Approved Document M. Where the lifts require a wheelchair user to reverse out (ie where it is not a through-lift), a mirror will be provided on the rear wall of each lift car to assist with this.

Internally the lift cars will be designed to the recommendations set out in Approved Document Part M, BS EN 81-70 and BS EN 81-1. All lift call buttons will be made distinct by an illuminated coloured disk, which surrounds each button. The call buttons will have tactile relief selectors. It is proposed the lifts will have audible announcements at each floor, and lift lobbies will have visual and tactile level indicators and circulation route signage at each floor.

Wherever possible, two lifts have been provided within each core to accommodate redundancy (eg in the case of lift breakdown). In some instances, secondary lifts have not been possible. This includes the residential accommodation at the north end of Brooke Street. This is due to the small number of residential units that the lift serves per floor.

A high maintenance strategy will be employed throughout the development to ensure that the lifts are in working order. Consideration will be given to the installation of Remote Monitoring Systems, which keep track of the status of the whole lift portfolio, allowing proactive visits to rectify intermittent faults before critical failures occur.

Escape stairs
The existing escape stairs are largely to remain in their current condition. The new office escape stair, located within the main core, the new residential stair, located at the north end of the Brooke Street wing and the covered external escape stair from the communal garden will be designed to the parameters set out in Approved Document Parts B and K. The width will be dependant on the expected occupancy of the building and flow rate of escape. Escape stairs will, however,

include Part M features where possible, to assist ambulant disabled people, ie:

Handrails will be placed along both sides of all stairs and will have a 300mm overhang at landings.
Where a stair has two or more flights, the handrail will be continuous around the half landings.
A slip-resistant, tactile nosing is proposed to the nose of each stair to the recommendations set out in Approved Document M, which will also provides colour contrast.
The landings will have a slip-resistant, tactile finish to denote the bottom of flights.
Stair landings will have visual and tactile level indicators (in the form of an embossed or sunken sign on the wall adjacent to the stair) and circulation route signage in accordance with the recommendations set out in Approved Document M and BS 8300.

Finishes
Finishes have not yet been decided for 150 Holborn. However, the following principles will be considered.

Visual contrast
Visual contrast should be provided within confined areas such as small lobby areas, where a person with a visual impairment may be too close to the surrounding walls to differentiate between different surfaces and finishes. This may include visual contrast of the junction between the wall and floor and the wall and ceiling, by means of a contrasting coving and skirting.

More importantly, colour or luminance contrast is required below 1.2m on the walls and at floor level to assist navigation. Colour contrast of critical surfaces, eg walls, ceilings and floors, makes navigating through a building easier. Highly contrasting colours in irregular, busy or geometric patterns should be avoided, as should highly reflective finishes. Shining surfaces are confusing for visually impaired people and should therefore be avoided. Use matt or mid-sheen finishes to realise the full benefit of colour differentiation.

Manifestations on glazing are important for people with visual impairments; the presence of the door should be apparent not only when it is shut, but also when it is open. Differing manifestation styles on glazed screens and accompanying doors can help to distinguish the location of each.

Special features are small areas which need to be highlighted, such as sanitaryware, handrails, door handles and socket outlets, which should be contrasted against the background against which they will be seen.

A further consideration is how the material will change throughout its life. For example, it may get dirty or change colour, and the surface finish may need change. These changes will affect the lighting properties and will also need to be taken into account at the lighting design stage.

Flooring
Walking surfaces should be slip-resistant, hard wearing, firm, level and easily maintained. The aim will be to create a safe and easy to use environment across the site, affording an inclusive experience for everybody.

Clear floor manifestations will define the safe pedestrian routes through the service yard area.

The external route between the residential core, refuse collection area and access to the communal garden will be treated in a textured finish. Visual contrast will also be used to clearly define these routes.

Internal and external floor surfaces should not impede the movement of wheelchairs, eg coir matting, and changes in materials should be flush, removing the risk of tripping.

Lighting
Light is an important element when providing adequate visual contrast to surfaces within buildings. Large amounts of light on surfaces will increase glare and reflection, which in turn reduces contrast. This is the reason why fluorescent lighting should be avoided whenever possible.

Approved Document Part M and BS 8300 suggest a minimum lux level of 100 lux for public buildings, which should consist of a combination of natural day lighting and artificial lighting sources. The nature of the surface finish will affect how the light is reflected from it, but it will also be affected by the ways the surface is lit.

The combination of light and shade will be effective in enhancing the appearance of the surface texture but it will reduce the average luminance, which can be interpreted as a reduction in its average reflectance.

The designer will need to decide on the primary purpose of the material. If it is for effect then the lighting should complement the surface material to enhance its properties. If, however, the direction and intensity of the light reflected from the surface is important then an appropriate reflection factor or factors will be required.

Hearing enhancement
BS 7594:1993 'Audio-frequency induction-loop systems (AFILS)' gives recommendations and guidance on the design, installation and maintenance of AFILS intended for communicating speech, music and other signals. AFILS provide hearing aid to people with hearing impairments and should be provided for entrances, reception desks and other areas where effective communication is required.

Signage
Signage should be clear, concise and consistent, and suitable for people with visual impairments and learning disabilities such as dyslexia, as described below:

CLEAR: Easy to see and understand, with large print in a clear typeface, with good contrast and low glare. People with learning disabilities would benefit from an

increased use of pictures on signs, in addition to or independent from text.

CONCISE: Simple, short and to the point.

CONSISTENT: Signs meaning the same thing should always appear the same. Signage will be provided across the site showing access points, the different choices available for vertical circulation and the location of facilities and destination points. Legible London is a pedestrian wayfinding system that is helping people walk around London, which ensures that signage is consistent and effective. It has been developed to help both residents and visitors within an area walk to their destination quickly and easily.

Based on extensive research, the easy-to-use system presents information in a range of ways, including on maps and signs, to help people find their way. It is also integrated with other transport modes so when people are leaving the Underground, for example, they can quickly identify the route to their destination. Signage for 150 Holborn will aim to incorporate Legible London requirements and will be developed in subsequent stages.

Internal fit-out

Wherever possible, the number of obstacles protruding into, or located in the walking area should be kept to a minimum. If provided, they should be adequately colour contrasted with the critical surface against which they will be viewed.

General considerations

All floor and wall colour schemes will be considered with recourse to "Colour, contrast and perception – Design guidance for internal built environments," Reading University.
All floor finishes both internally and externally will be slip-resistant and designed with recourse to BS 8300 Annex E.

Tactile and visual circulation route signage will be provided in accordance with the recommendations set out in BS 8300.
There will be an audible and visual alarm system within each building.
Fluorescent lighting will be kept to a minimum where possible.
The lighting strategy will ensure that routes are evenly lit, providing approaches that are safe and accessible to everyone.

The design of the residential units has taken into consideration various recommendations including the following:

- Approved Document Part M
- BS 8300: 2009+A1: 2010
- The London Plan and London Plan Supplementary Planning Guidance (SPG)
- Lifetime Homes / Wheelchair Accessible Homes

Lifetime Homes

The London Plan SPG and LB Camden Planning Guide requires 100% of all new residential accommodation to be designed spatially as Lifetime Homes. Lifetime Homes are not designed specifically for wheelchair users and are in addition to the 10% wheelchair accessible housing requirement. For certain people a Lifetime Home may require adaptation. They are designed to accommodate the majority of adaptations with maximum ease, at minimum cost.

The following illustrates the level of compliancy with each of the 16 Lifetime Homes standards.

NOTE: By meeting the Lifetime Homes standards, it follows that the space requirements of the London Housing Design Guide have also been achieved.

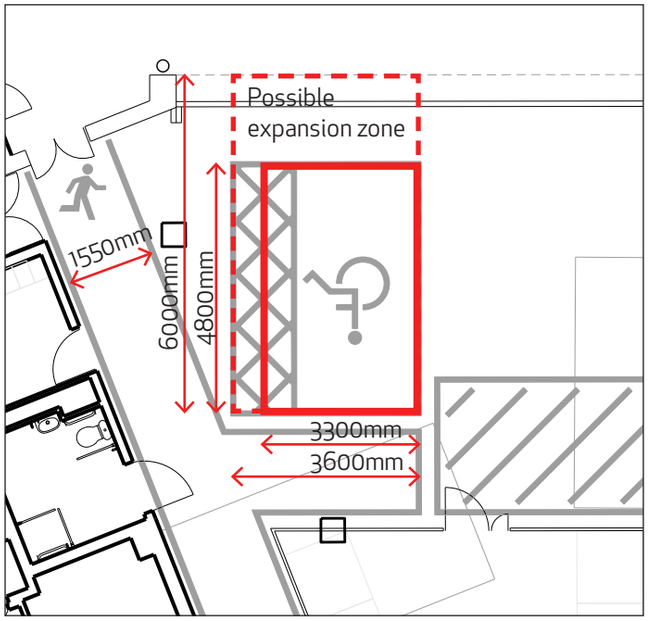
1. Car parking provision

Generally not applicable as the site is proposed to be a car-free development. However, it is proposed that 1no. Blue Badge parking space is provided (shared). The parking bay measures 3,300mm by 4,800mm and is located in a covered garage area within the enclosed service yard. A protected pedestrian route (min. 1,200mm wide) provides access to the residential core.

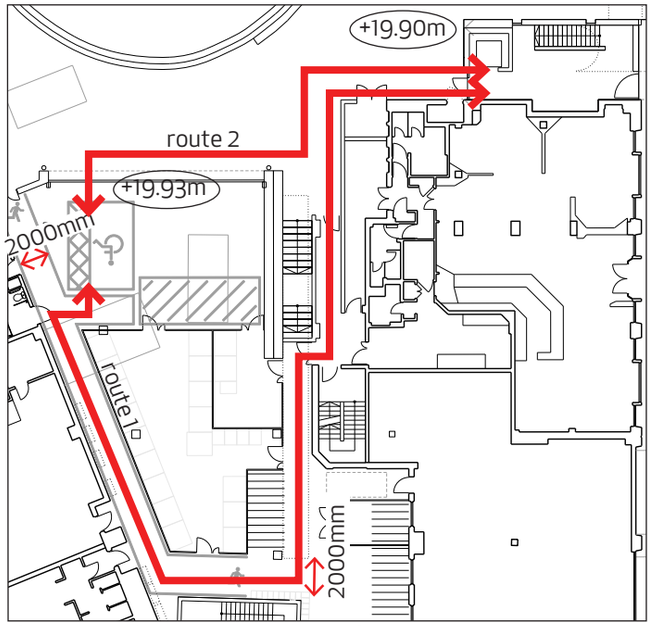
The parking bay has the potential to be adapted to provide;
Increased width from 3,300mm to 3,600mm.
Increased length from 4,800mm to 6,000mm.
Potential for further additional spaces to be widened in the future.

2. Approach to dwelling from parking (distance, gradients and widths)

The distance from the car parking space to the residential core is kept as short as practicable, whilst being generally flat (no steeper than 1:60, crossfall no greater than 1:40). The route is no less than 1,200mm wide (circa 2m) and should be firm, smooth and non-slip.



Criterion 1: Parking



Criterion 2: Approach to dwelling from parking

3. Approach to all entrances

All approaches to entrances at 150 Holborn will be gently sloping, in accordance with BS 8300 Section 5.4: "It is assumed that a gradient of 1:60 or less steep is level; steeper than 1:60 (but less steep than 1:20) is gently sloping and 1:20 or steeper is a ramp. Where an access route has a gradient steeper than 1:60, not as steep as 1:20, it should have a level landing for each 500mm rise of the access route."

4. Entrances

All external entrances will be illuminated and weather protected and will have a level threshold and landing. Communal entrance doors will provide a minimum clear width of 1,000mm and will have a 300mm clear nib to the side of the doors. A level landing is provided, as required by Lifetime Homes standards. Dwelling doors will have a clear opening width of 800mm with a 300mm nib and a level landing, as required by Lifetime Homes. The entrance doors will be developed further in subsequent stages, in accordance with Lifetime Homes requirements.

DWELLING ENTRANCE DOORS

Direction and width of approach	Minimum effective clear width (mm)
All	800

COMMUNAL ENTRANCE DOORS

Direction and width of approach	Minimum effective clear width (mm)
Straight on (without a turn or oblique approach)	800
At right angles to an access route at least 1,500mm wide	800
At right angles to an access route at least 1,200mm wide	825

5. Communal stairs and lifts

All stairs within the residential potion of 150 Holborn are for general circulation and escape. These stairs will be designed to Approved Document Parts B and K and will include Part M

features such as nosings and handrails to assist people (eg ambulant disabled people and blind/partially sighted people). The stairs will have 170mm max rise, 250mm minimum going, handrails 900mm height from nosing with 300mm extension, contrasting nosings and closed risers.

The residential lift provides at least the minimum car dimensions and the level landing areas, as required by Lifetime Homes standards (minimum dimensions of 1.1m x 1.4m, 1.5m square clear landings, lift controls at 900-1,200mm and 400mm from the lift's internal front wall).

The lift controls will be developed further in subsequent stages, in accordance with Lifetime Homes requirements.

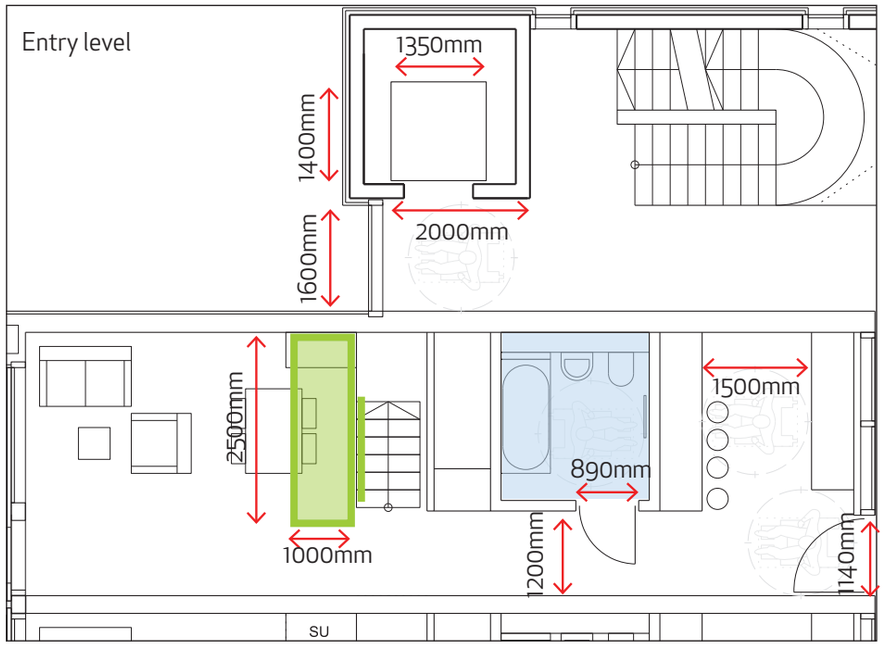
6. Internal doorways and hallways

All internal doors and corridors are compliant with the Lifetime Homes requirements described. All doors will be provided with a 300mm nib to the leading edge, as well as with a 125mm space to the hinge-side of the door. This will allow doors to swing past 90 degrees, thus providing the required clear opening widths clear of the door handles.

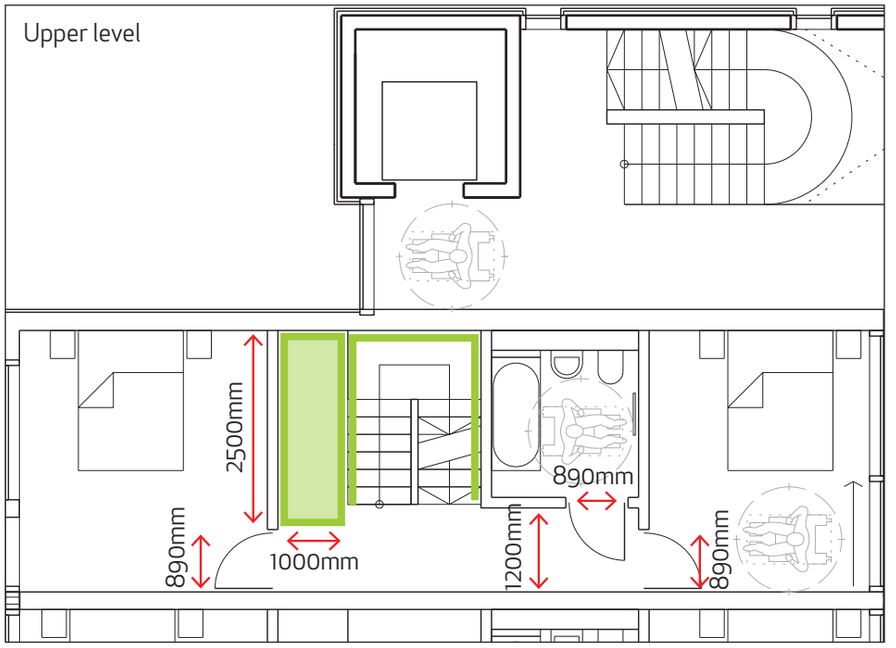
INTERNAL DWELLING

Direction and width of approach	Minimum clear opening width (mm)
Straight on (without a turn or oblique approach)	750
At right angles to a corridor/landing at least 1,200mm wide	750
At right angles to a corridor/landing at least 1,050mm wide	775
At right angles to a corridor/landing less than 1,050mm wide (minimum width 900mm)	900

Entry level WC
Stair lift provision
Through-the- floor lift provision



Criteria 5, 6, 7, 10, 12



Criteria 6, 7, 12

COMMUNAL

Direction and width of approach	Minimum clear opening width (mm)
Straight on (without a turn or oblique approach)	800
At right angles to a corridor/landing at least 1,200mm wide	800
At right angles to a corridor/landing at least 1,050mm wide	825

There should be 300mm to the side of the leading edge of doors.

7. Circulation space

The required turning and transfer spaces, as described within Lifetime Homes, have been achieved within the typical apartment layouts for 150 Holborn.

Dining areas and living rooms (1,500mm turning circle, or 1,400mm x 1.700mm ellipse). Where movement between furniture is necessary, a 750mm clear width is required between items.
Kitchens should have a clear width of 1,200mm between units.
The main bedrooms should have a clear 750mm wide space to both sides and to the foot of the bed; secondary bedrooms should have 750mm to one side and to the foot of the bed.

8. Entrance level living space

The living room and the kitchen within the flats are located at the entrance level.

9. Potential for entrance level bed-space

The living room within the flats are capable of being used as a bed space.

10. Entrance level WC and shower drainage
At the entrance level to all flats a wheelchair accessible WC has been provided, with drainage provision to allow future installation of a shower. The WCs have been designed in accordance with the Lifetime Homes standards (WC should have an overall footprint of 1,450mm by 1,900mm).

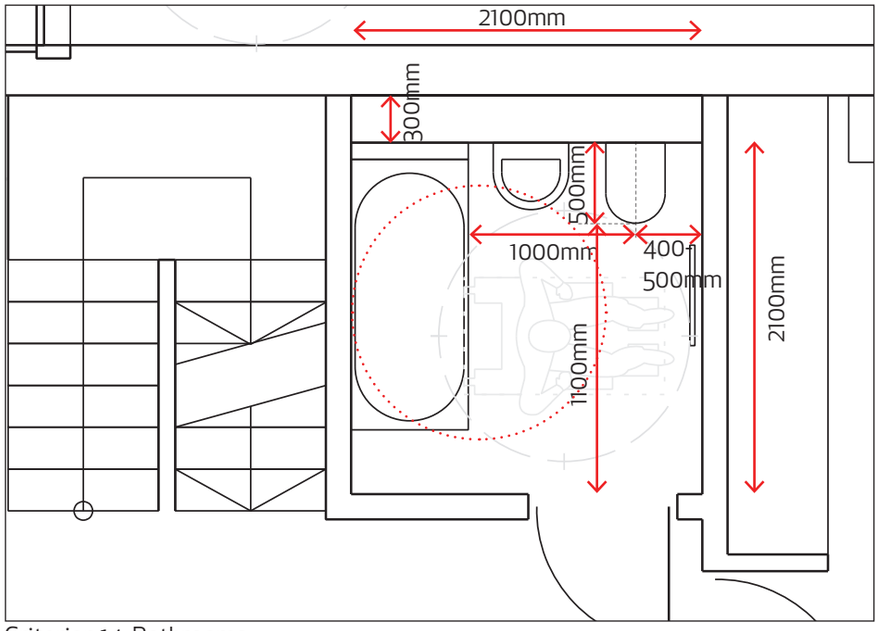
11. WC and bathroom walls
The walls in bathrooms and toilets should be capable of taking adaptations such as handrails and will be developed further in subsequent stages, in accordance with Lifetime Homes requirements.

12. Stairs and potential through-floor lift
The residential units have been designed to accommodate a stair lift (minimum clear width 900mm measured from pitch line) as well as a void area for future installation of a lift (minimum 1,000mm x 1,500mm) in accordance with Lifetime Homes requirements.

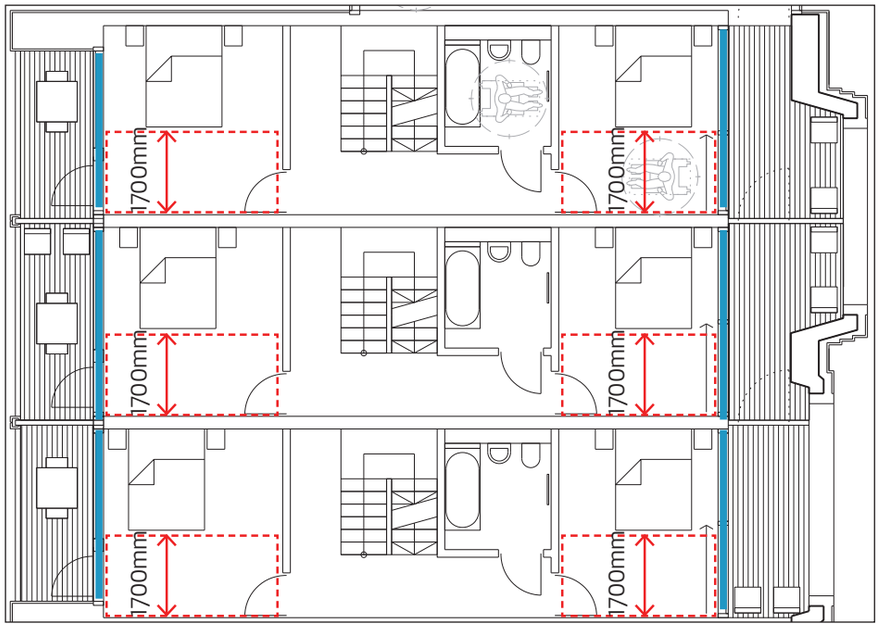
13. Potential for fitting of hoists to bedroom/bathroom
A suitable route for a hoist, from the main bedroom to the bathroom, has been provided for all apartments.

14. Bathrooms
The main bathrooms within all apartments have been designed to the requirements of Lifetime Homes, including:

400-500mm from centre of WC to side wall.
1,100mm clear from the front of the WC and front of the wash hand basin to the opposite wall.
750mm clear from the side of the WC to the opposite wall (although the wash hand basin may encroach 200mm into this).
Flush control located between the centre of the WC and the side of the cistern furthest from the adjacent wall.
Where a bath is provided, a clear zone alongside the bath at least 1,100mm by 700mm.
Where a level shower is provided instead of a bath, a clear 1,500mm turning circle or 1,400mm x 1,700mm ellipse is provided (this can be achieved by the removal of a bath, provided that a drainage gully and 750mm clear to the side of the WC has been provided from the outset).



Criterion 14: Bathrooms



Floor-to-ceiling glazing (unrestricted view to the outside)
Criterion 15: Glazing and window handle heights

15. Glazing and window handle heights
The living room has floor-to-ceiling glazing with sliding or side-hung openings to access the balconies.

An approach route measuring 750mm in width is provided to allow access to windows in each habitable room. Window controls will be no higher than 1,200mm from the floor. This is not applicable to kitchen windows, which are situated above the tops of the kitchen units. This will be developed further at subsequent stages, in accordance with Lifetime Homes requirements

16. Location of service controls
Switches, sockets, ventilation and service controls will be at a height usable by all (ie between 450 and 1,200mm from the floor and at least 300mm away from any internal room corner). This will be developed further in subsequent stages, in accordance with Lifetime Homes requirements.

16 out of 16 compliant.

Wheelchair accessible homes

1. Moving around outside
All approaches to entrances at 150 Holborn will be gently sloping, in accordance with BS 8300 Section 5.4:
"It is assumed that a gradient of 1:60 or less steep is level; steeper than 1:60 (but less steep than 1:20) is gently sloping and 1:20 or steeper is a ramp. Where an access route has a gradient steeper than 1:60, not as steep as 1:20, it should have a level landing for each 500mm rise of the access route."

2. Using outdoor spaces
Balconies and roof gardens are accessed via level thresholds, with provision for a 1,500mm minimum turning circle (unobstructed) usable space clear of door swings. The balcony doors provide a clear opening width of at least 900mm.

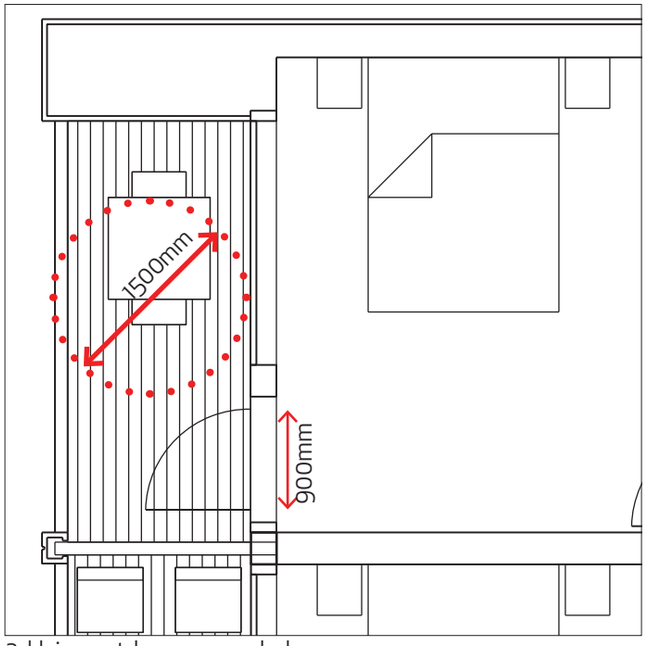
Refuse storage located within the enclosed service yard areas is accessed via the residential lift and a dedicated, level pedestrian route.

Ambulant stairs provide access to the garden deck. No access via lift is provided.

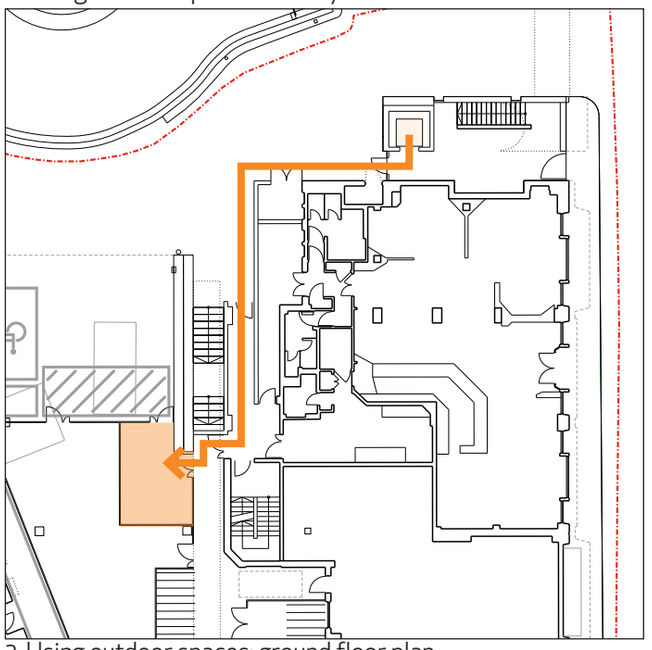
3. Approaching the home
The scheme aims to encourage access to the development by means of walking, cycling and public transport, as per the London Borough of Camden's UDP. Parking provision within the site is therefore limited to 1no. Blue Badge space.

The car parking bays will have dimensions in accordance with the guidance. The bay is enclosed within the service yard, providing weather protection. The vehicle access gates and roller shutter door to the disabled parking bay garage will be activated with a hand held remote control. The lighting between the car parking and entrance should be Passive Infra-Red (PIR) detector and internal switching.

All approaches to the entrances will be as per BS 8300 Section 5.4: "It is assumed that a gradient of 1:60 or less steep is level; steeper than 1:60 (but less steep than 1:20) is gently sloping and 1:20 or steeper is a ramp. Where an access route has a gradient steeper than 1:60, not as steep as 1:20, it should have



2. Using outdoor spaces: balcony


Residential lift
Residential refuse store
2. Using outdoor spaces: ground floor plan

a level landing for each 500mm rise of the access route."

The passenger lifts throughout the development will have an internal dimension of no less than of 1,100mm x 1,400mm, in accordance with BS 8300 and Approved Document M. Where the lifts require a wheelchair user to reverse out (ie where it is not a through lift) a mirror will be provided on the rear wall of each lift car to assist with this.

It is not possible to have a secondary residential lift due to the small number of residential units that the lifts serve per floor. A maintenance strategy will be employed throughout the development to ensure that the lifts are in working order. Consideration will be given to the installation of Remote Monitoring Systems, which keep track of the status of the whole lift portfolio, allowing proactive visits to rectify intermittent faults before critical failures occur.

4. Negotiating the entrance door

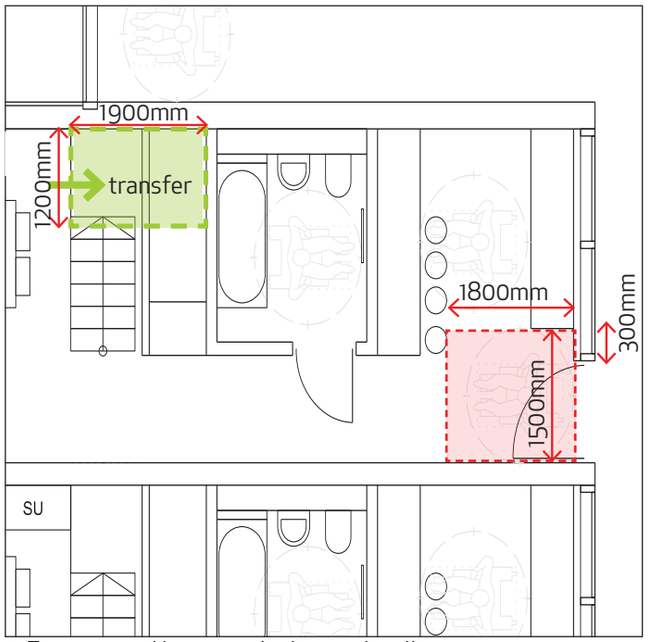
Doors to the wheelchair accessible apartments will be designed as per the guidance, achieving the 900mm clear opening width, with a 300mm nib to the leading edge of the door and sufficient approach space. Details such as locks, door furniture, openers, entry phones, bells and spy holes will be developed further at subsequent design stages in accordance with requirements.

5. Entering and leaving - dealing with callers

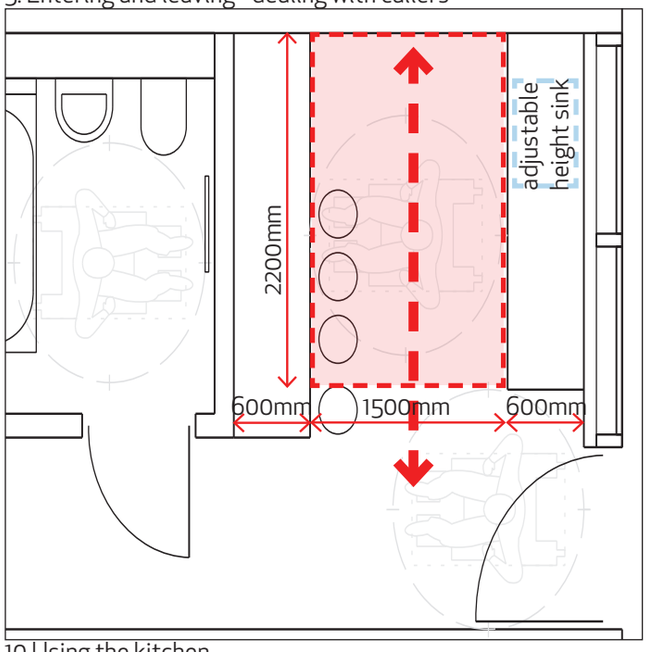
The wheelchair accessible apartments accommodate sufficient space for transfer to a second chair, as described within the requirements (1,500mm x 1,200mm space, with height of 1,500mm). Space to manoeuvre and turn is provided, 1,500mm x 1,800mm clear of fittings and obstacles on a closed door. A storage area with dimensions of 1,500mm x 1,200mm has also been provided within the hallway, for storage of the secondary chair when not in use. The post boxes will be developed further in subsequent stages, in accordance with the requirements.

6. Negotiating the secondary door

Doors to the wheelchair accessible apartments will be designed as per the guidance (secondary doors should have a



5. Entering and leaving - dealing with callers



10.Using the kitchen

minimum clear opening width of 900mm).
For a door opening towards a wheelchair user, the following should be provided;
550mm to both sides of the door.
A landing of 1,500mm x 1,500mm, extends in length by 900mm if the door swings outwards.
The threshold will be accessible and watertight.
French windows – 900mm minimum clear opening on at least one of the double doors. If used, opening and locking to be possible one-handed from a wheelchair. Sliding doors will not be used as these rarely provide a negotiable threshold.

7. Moving around inside; storing things
The width of the doorways and hallways will conform to the following;
Internal doors have a minimum clear opening width of 900mm (840mm only where unavoidable) with space to both sides of 550mm.
Hallways or circulation routes should have minimum clear width of 1,200mm.
Where doors are at angles to one another, ensure that at least 400mm x 400mm has been provided between them.
These requirements are also applicable to storage doors and approaches.
Floor covering to be a material with low friction and low glare, avoiding slippery and polished surfaces.

8. Moving between levels within the dwelling
The residential units have been designed to accommodate the future installation of a private lift, compliant with BS 5900:1999.
1,500mm turning circles are provided on the landings on all levels.
Minimum lift dimension measuring 790mm wide x 1,120mm long.
Powered lift doors and external lift controls are to be accessible for a wheelchair user.

9. Using living spaces
Turning and transfer spaces have been provided, as required.
Radiators do not obstruct access and sockets are not sited within 750mm of an internal room angle and at a height of 800mm to the top of the socket plate.
Full-plate or large rocker light switches will be specified, with a height of 900mm to the top of the switch plate.
Ceilings are horizontal and have structural capacity for future possible hoist installation.
Ceiling heights are around 2,700mm and maximum weight load including equipment should be 250kg.
All rooms have a 1,500mm turning circle clear of (but close to) the door.
1,400mm transfer space is required in front of any furniture.
Operable fitting reaching heights will be between 800-1,000mm.

10. Using the kitchen
There will be adequate circulation space for wheelchair users, as detailed below:

The kitchen should have a clear manoeuvring space not less than 1,800 x 1,500mm.
Windows should be positioned for ease of control and cleaning.
Worktops should be 600mm deep with a clear knee space below, 600mm high; the work surface should be adjustable and tiled behind for heights from 700-900mm. An 800mm wide section of height-adjustable worktop with knee recess alongside the hob/sink section can act as a work station.
Fascia boards and vertical supports are to be avoided.
An adjustable height (between 700-900mm) shallow sink should be provided with clear knee space below, and should have a mixer tap with swivel arm.
Accessible storage should be provided.
Controls and lighting should be located at 600mm-1,000mm from the floor. Switches will be 150mm above maximum worktop level to the top of the socket plate.
A built-in hob should be provided with adjustable height (700-900mm) and knee space below the hob at an accessible height. Minimum 300mm to each side of the hob for pan handles, to be adjustable with the hob. Spaces should also be provided for appliances/white goods with electrical and water services.
A built-in oven should be provided, accessible for a wheelchair user. Heat-resistant pull-out shelf below the oven. 300mm worktop space to the side of the oven on the opening side of the oven door.
300mm worktop space on the opening side of the fridge door.