9.0 TECHNICAL DESIGN ISSUES

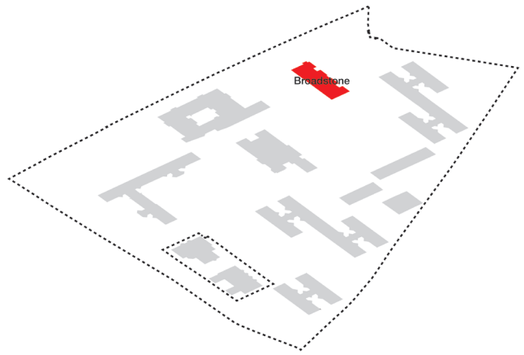
9.1 Phasing and Decant Strategy

One of the principle objectives of the proposed redevelopment of Agar Grove is to provide a single decant for the existing residents who wish to be rehoused within the new scheme.

All existing residents have completed a Housing Need survey identifying requirements including size of residential unit and wheel chair requirements. This in turn has informed the unit type and mix of the proposals on a block by block basis in order to deliver a single decant.

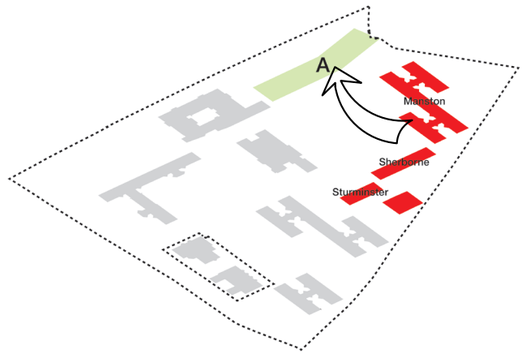
KEY:

- Social Rent
- Intermediate
- Market



Phase 0

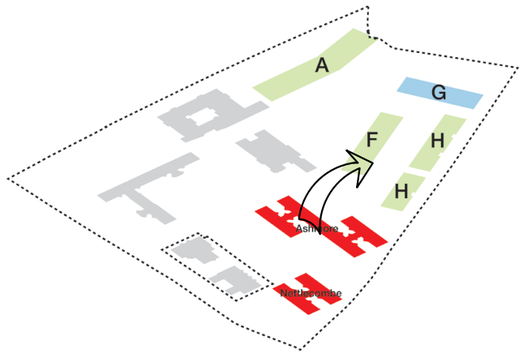
Demolition of Broadstone



Phase 1

Re-housing Camden Residents of **Manston, Sherborne and Sturminster** to **Plot A**

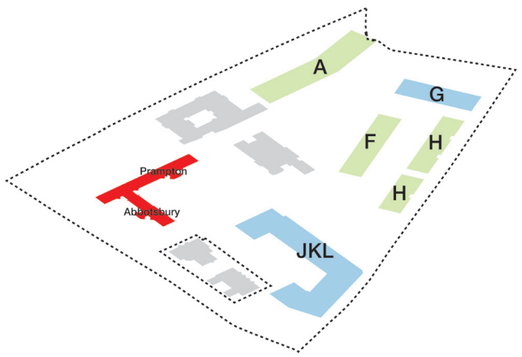
Demolition of **Manston, Sherborne and Sturminster**



Phase 2

Re-housing Camden Residents of **Nettlecombe, Ashmore, Frampton and Abbotsbury** to **Plots F and H**

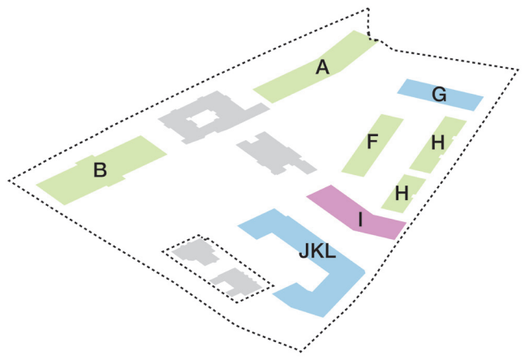
Demolition of **Nettlecombe and Ashmore**



Phase 3

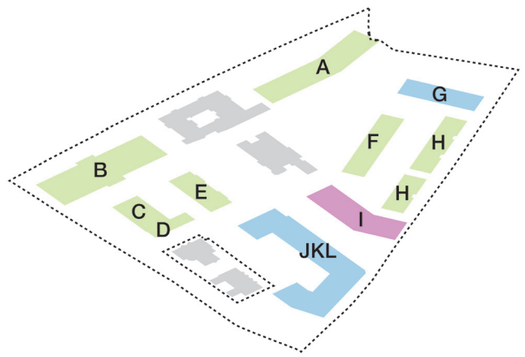
Construction of **Plots JKL**

Demolition of **Frampton and Abbotsbury**



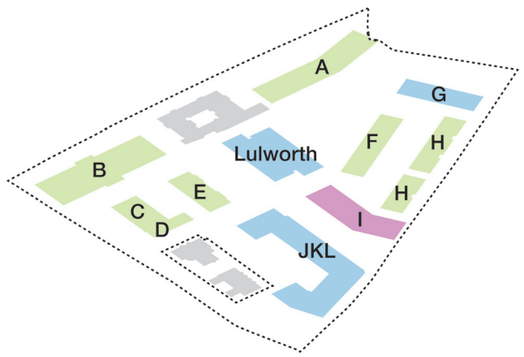
Phase 4

Construction of **Plots I and B**



Phase 5

Construction of CDE
Re-housing Camden Residents of **Lulworth** to **Plot B + CDE**



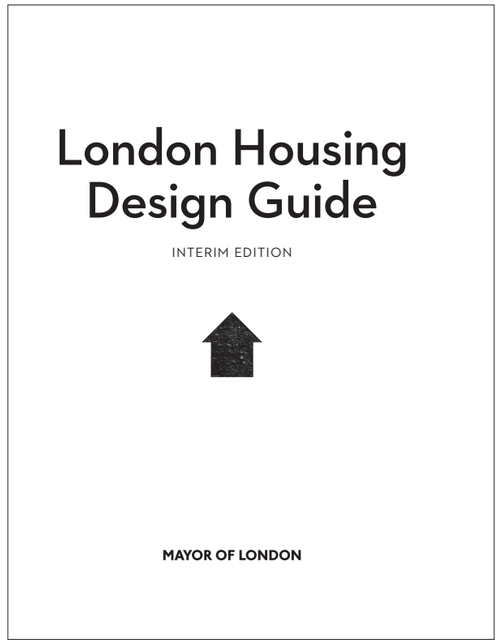
Phase 6

Retrofit Lulworth House

9.2 London Housing Design Guide

London Housing Design Guide Audit Overview

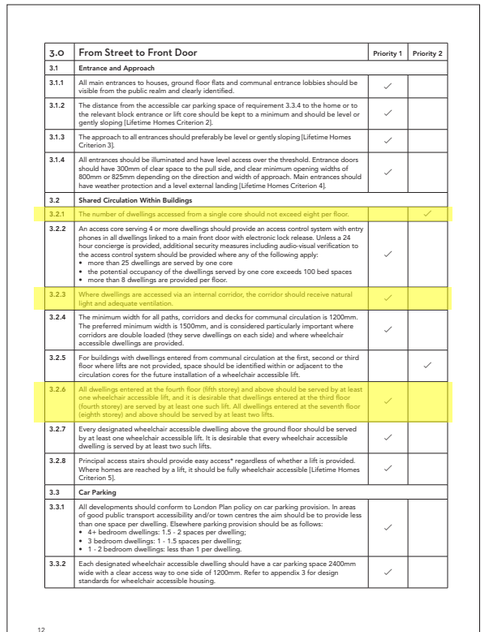
The scheme is being designed to be compliant with the London Housing Design Guide (LHDG). An audit of the scheme against the highlighted criteria has been undertaken, the findings of which follow.



London Housing Design Guide

INTERIM EDITION

MAYOR OF LONDON



3.0	From Street to Front Door	Priority 1	Priority 2
3.1	**Entrance and Approach**		
3.1.1	All main entrances to houses, ground floor flats and communal entrance lobbies should be visible from the public realm and clearly identified.	✓	
3.1.2	The distance from the accessible car parking space of requirement 3.3.4 to the home or to the relevant block entrance or lift core should be kept to a minimum and should be level or gently sloping [Lifetime Homes Criterion 2].	✓	
3.1.3	The approach to all entrances should preferably be level or gently sloping [Lifetime Homes Criterion 3].	✓	
3.1.4	All entrances should be illuminated and have level access over the threshold. Entrance doors should have 300mm of clear space to the pull side, and clear minimum opening widths of 800mm or 825mm depending on the direction and width of approach. Main entrances should have weather protection and a level external landing [Lifetime Homes Criterion 4].	✓	
3.2	**Shared Circulation Within Buildings**		
3.2.1	The number of dwellings accessed from a single core should not exceed eight per floor.		✓
3.2.2	An access core serving 4 or more dwellings should provide an access control system with entry phones in all dwellings linked to a main front door with electronic lock release. Unless a 24 hour concierge is provided, additional security measures including audio-visual verification to the access control system should be provided where any of the following apply: • more than 25 dwellings are served by one core • the potential occupancy of the dwellings served by one core exceeds 100 bed spaces • more than 8 dwellings are provided per floor.	✓	
3.2.3	Where dwellings are accessed via an internal corridor, the corridor should receive natural light and adequate ventilation.	✓	
3.2.4	The minimum width for all paths, corridors and decks for communal circulation is 1200mm. The preferred minimum width is 1500mm, and is considered particularly important where corridors are double loaded (they serve dwellings on each side) and where wheelchair accessible dwellings are provided.	✓	
3.2.5	For buildings with dwellings entered from communal circulation at the first, second or third floor where lifts are not provided, space should be identified within or adjacent to the circulation cores for the future installation of a wheelchair accessible lift.		✓
3.2.6	All dwellings entered at the fourth floor (fifth storey) and above should be served by at least one wheelchair accessible lift, and it is desirable that dwellings entered at the third floor (fourth storey) are served by at least one such lift. All dwellings entered at the seventh floor (eighth storey) and above should be served by at least two lifts.	✓	
3.2.7	Every designated wheelchair accessible dwelling above the ground floor should be served by at least one wheelchair accessible lift. It is desirable that every wheelchair accessible dwelling is served by at least two such lifts.	✓	
3.2.8	Principal access stairs should provide easy access* regardless of whether a lift is provided. Where homes are reached by a lift, it should be fully wheelchair accessible [Lifetime Homes Criterion 5].	✓	
3.3	**Car Parking**		
3.3.1	All developments should conform to London Plan policy on car parking provision. In areas of good public transport accessibility and/or town centres the aim should be to provide less than one space per dwelling. Elsewhere parking provision should be as follows: • 4+ bedroom dwellings: 1.5 - 2 spaces per dwelling; • 3 bedroom dwellings: 1 - 1.5 spaces per dwelling; • 1 - 2 bedroom dwellings: less than 1 per dwelling.	✓	
3.3.2	Each designated wheelchair accessible dwelling should have a car parking space 2400mm wide with a clear access way to one side of 1200mm. Refer to appendix 3 for design standards for wheelchair accessible housing.	✓	

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3.3.3	Careful consideration should be given to the siting and organisation of car parking within an overall design for open space so that car parking does not negatively affect the use and appearance of open spaces.	✓	
3.3.4	Where car parking is within the dwelling plot, at least one car parking space should be capable of enlargement to a width of 3300mm. Where parking is provided in communal bays, at least one space with a width of 3300mm should be provided per block entrance or access core in addition to spaces designated for wheelchair user dwellings [Lifetime Homes Criterion 1].	✓	
3.4	**Cycle Storage**		
3.4.1	All developments should provide dedicated storage space for cycles at the following levels: • 1 per 1 or 2 bedroom dwelling; or • 2 per 3 or more bedroom dwelling	✓	
3.4.2	Individual or communal cycle storage outside the home should be secure, sheltered and adequately lit, with convenient access to the street. Where cycle storage is provided within the home, it should be in addition to the minimum GIA and minimum storage and circulation space requirements. Cycle storage identified in habitable rooms or on balconies will not be considered acceptable.		✓
3.5	**Refuse, Post and Deliveries**		
3.5.1	Communal refuse and recycling containers, communal bin enclosures and refuse stores should be accessible to all residents including children and wheelchair users, and located on a hard, level surface. The location should satisfy local requirements for waste collection and should achieve full credits under the Code for Sustainable Homes Technical Guide. Refuse stores within buildings should be located to limit the nuisance caused by noise and smells and provided with means for cleaning.	✓	
3.5.2	Storage facilities for waste and recycling containers should be provided in accordance with the Code for Sustainable Homes Technical Guide and local authority requirements.	✓	

4.0	Dwelling Space Standards	Priority 1	Priority 2
4.1	**Internal Floor Area**		
4.1.1	All developments should meet the following minimum space standards.	✓	

	Dwelling type (bedroom/ persons)	Essential GIA (sq.m)
Single storey dwelling	1b2p	50
	2b3p	61
	2b4p	70
	3b4p	74
	3b5p	86
	3b6p	95
	4b5p	90
	4b6p	99
Two storey dwelling	2b4p	83
	3b4p	87
	3b5p	96
	4b5p	100
	4b6p	107
Three storey dwelling	3b5p	102
	4b5p	106
	4b6p	113

For dwellings designed for more than 6 people, at least 10 sq m gross internal area should be added for each additional person.

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5.0	Home as a Place of Retreat	Priority 1	Priority 2
5.1	**Privacy**		
5.1.1	Design proposals should demonstrate how habitable rooms within each dwelling are provided with an adequate level of privacy in relation to neighbouring property and the street and other public spaces.	✓	
5.2	**Dual Aspect**		
5.2.1	Developments should avoid single aspect dwellings that are north facing, exposed to noise exposure categories C or D, or contain three or more bedrooms.	✓	
5.2.2	Where single aspect dwellings are proposed, the designer should demonstrate how good levels of ventilation, daylight and privacy will be provided to each habitable room and the kitchen.	✓	
5.3	**Noise**		
5.3.1	The layout of adjacent dwellings and the location of lifts and circulation spaces should seek to limit the transmission of noise to sound sensitive rooms within dwellings.	✓	
5.4	**Floor to Ceiling Heights**		
5.4.1	The minimum floor to ceiling height in habitable rooms is 2.5m between finished floor level and finished ceiling level. A minimum floor to ceiling height of 2.6m in habitable rooms is considered desirable and taller ceiling heights are encouraged in ground floor dwellings.	✓	
5.5	**Daylight and Sunlight**		
5.5.1	Glazing to all habitable rooms should be not less than 20% of the internal floor area of the room.		✓
5.5.2	All homes should provide for direct sunlight to enter at least one habitable room for part of the day. Living areas and kitchen dining spaces should preferably receive direct sunlight.		✓

6.0	Climate Change Mitigation and Adaptation	Priority 1	Priority 2
6.1	**Environmental Performance**		
6.1.1	Designers should seek to achieve a minimum of Level 4 of the Code for Sustainable Homes in all new developments.		✓
6.1.2	All homes should satisfy London Plan policy on sustainable design and construction and make the fullest contribution to the mitigation of and adaptation to climate change.	✓	
6.2	**Energy and CO2**		
6.2.1	Development proposals should be designed in accordance with the London Plan energy hierarchy, and should meet the following minimum targets for carbon dioxide emissions reduction.	✓	

Year	Improvement on 2006 Building Regulations
2010 - 2013	44 per cent
2013 - 2016	55 per cent
2016 - 2031	Zero carbon

6.3	**Overheating**		
6.3.1	Development proposals should demonstrate how the design of dwellings will avoid overheating during summer months without reliance on energy intensive mechanical cooling systems.	✓	
6.4	**Water**		
6.4.1	New dwellings should be designed to ensure that a maximum of 105 litres of water is consumed per person per day.	✓	

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9.2 London Housing Design Guide

London Housing Design Guide 3.2.1

Number of Units Per Core

Criteria:

The number of dwellings accessed from a single core should not exceed eight per floor.
(Priority 2)

The design team have looked carefully at the number and type of units accessed from each core, in order that each core does not become overloaded.

'In terms of the number of homes per floor, groups of 2-8 dwellings are usually desirable,in these smaller groups, residents tend to enjoy a greater sense of privacy, security and ownership and may be more likely to take an active interest in the upkeep of shared spaces'. - LHDG

Key

Stair or lift core

9.2 London Housing Design Guide

London Housing Design Guide 3.2.3

Natural Light Provision in Internal Corridors

Criteria:

Where dwellings are accessed via an internal corridor, the corridor should receive natural light and adequate ventilation.
(Priority 1).

A range of circulation approaches have been used in the scheme, access decks have been kept to a limited length, while natural light and ventilation are provided within communal cores.

'Shared circulation spaces need to be robust and convenient to use. Natural light, ventilation and views out are highly desirable, and the quality and durability of materials and fixtures should be as high as possible, especially door entry systems, floor finishes, and lighting.'

Key

Stair or lift core with natural light and adequate ventilation

Deck Access

9.2 London Housing Design Guide

London Housing Design Guide 3.2.6-7

Number of Lifts Per Core

Criteria:

All dwellings entered at the fourth floor and above should be served by at least one wheelchair accessible lift and it is desirable that dwellings entered at the third floor should be served by one such lift. All dwellings entered at the seventh floor and above should be served by at least two lifts.
(Priority 1)

Every designated wheelchair accessible dwelling above the ground floor should be served by at least one wheelchair accessible lift. It is desirable that every wheelchair accessible
dwelling is served by at least two such lifts.
(Priority 1)

The provision of appropriate means of accessing upper floors has been carefully considered in the design process, the taller buildings have 2no. lifts, while mansion blocks generally have 1 lift per core, the terraced houses have deck access served by a stair.

Key

Stair or lift core

9.2 London Housing Design Guide

London Housing Design Guide 3.4.1

Cycle Storage

Criteria:

All developments should provide dedicated storage space for cycles at the following levels:
• 1 per 1 or 2 bedroom dwelling; or
• 2 per 3 or more bedroom dwelling
(Priority 1)

The design team has considered cycle storage carefully, this is generally located within the courtyard garden areas, close to communal areas.

'Cycle storage outside the home should be located in a convenient and easily accessible storeroom, private garden or secure common space close to the street.'

Key

Cycle storage

Basement cycle storage

9.2 London Housing Design Guide

London Housing Design Guide 3.5.2

Communal Refuse and Recycling

Criteria:

Storage facilities for waste and recycling containers should be provided in accordance with the Code for Sustainable homes Technical Guide and the local authority requirements.
(Priority 1)

The issue of waste storage has been considered carefully, due to the differing typologies in the scheme a range of approaches have been used dependant upon the block.

In blocks FGHI & CDE communal waste storage is provided, by housing these within brickwork enclosures matching with the building facade & garden wall brickwork, this has been carefully placed & designed in order not to negatively impact on the visual appearance of the communal garden/courtyard.

Key

Communal refuse storage

Bulky waste storage

9.2 London Housing Design Guide

London Housing Design Guide 5.2.1

Single Aspect Dwellings

Criteria:

Developments should avoid single aspect dwellings that are north facing, exposed to noise exposure categories C or D, or contain three or more bedrooms (Priority 1).

The design team have used dual aspect units wherever possible, and in some cases have even been able to incorporate a number of triple aspect units. Through the design process the number of single aspect units has been minimised, and the limited number of single aspect units have been designed carefully in order to reduce plan depth, and to provide privacy and adequate lighting.

'A home with opening windows on at least two sides has many inherent benefits, including better daylight, a greater chance of direct sunlight for longer periods, cross ventilation, a choice of views, access to a quiet side of teh building, and a greater flexibility in the use of rooms. The Mayor believes dual aspect should be the first option that designers explore for all new developments.'

9.3 Lifetime Homes

All new build dwellings must comply, and where possible the dwellings within Lulworth House, with the 16 Lifetime Homes Criteria. The below checklist is tested against each unit (see typical flat):

01. Parking (width or widening capability)
Provide, or enable by cost effective adaptation, parking that makes getting into and out of the vehicle as convenient as possible for the widest range of people (including those with reduced mobility and/or those with children).

02. Approach to dwelling from parking
The distance from the car parking space of Criterion 1 to the dwelling entrance (or relevant block entrance or lift core), should be kept to a minimum and be level or gently sloping. The distance from visitors parking to relevant entrances should be as short as practicable and be level or gently sloping.

03. Approach to all entrances
The approach to all entrances should preferably be level or gently sloping, and in
accordance with the outlined specifications.

04. Entrances
All entrances should be illuminated; have level access over the threshold; have effective clear opening widths and nibs as specified. In addition, main entrances should also have adequate weather protection and have a level external landing.

05. Communal stairs and lifts
Enable access to dwellings above the entrance level to as many people as possible.

06. Internal doorways and hallways
Movement in hallways and through doorways should be as convenient to the widest range of people, including those using mobility aids or wheelchairs, and those moving furniture or other objects. As a general principle, narrower hallways and landings will need wider doorways in their side walls. The width of doorways and hallways should conform to the outlined specifications.

07. Circulation Space
There should be space for turning a wheelchair in dining areas and living rooms and basic circulation space for wheelchair users elsewhere.

08. Entrance level living space
A living room / living space should be provided on the entrance level of every dwelling.

09. Potential for entrance level bed-space
In dwellings with two or more storeys, with no permanent bedroom on the entrance level, there should be space on the entrance level that could be used as a convenient temporary bed-space.

10. Entrance level WC and shower drainage
Where an accessible bathroom, in accordance with Criterion 14, is not provided on the entrance level of a dwelling, the entrance level should have an accessible WC compartment, with potential for a shower to be installed – as detailed in the outlined specifications.

11. WC and bathroom walls
Walls in all bathrooms and WC compartments should be capable of firm fixing and support for adaptations such as grab rails.

12. Stairs and potential though-floor lift in dwellings
The design within a dwelling of two or more storeys should incorporate both potential for stair lift installation and a suitable identified space for a through-the–floor lift from the entrance level to a storey containing a main bedroom and a bathroom satisfying Criterion 14.

13. Potential for future fitting of hoists and bedroom / bathroom relationship
Structure above a main bedroom and bathroom ceilings should be capable of supporting ceiling hoists and the design should provide a reasonable route between this bedroom and the bathroom.

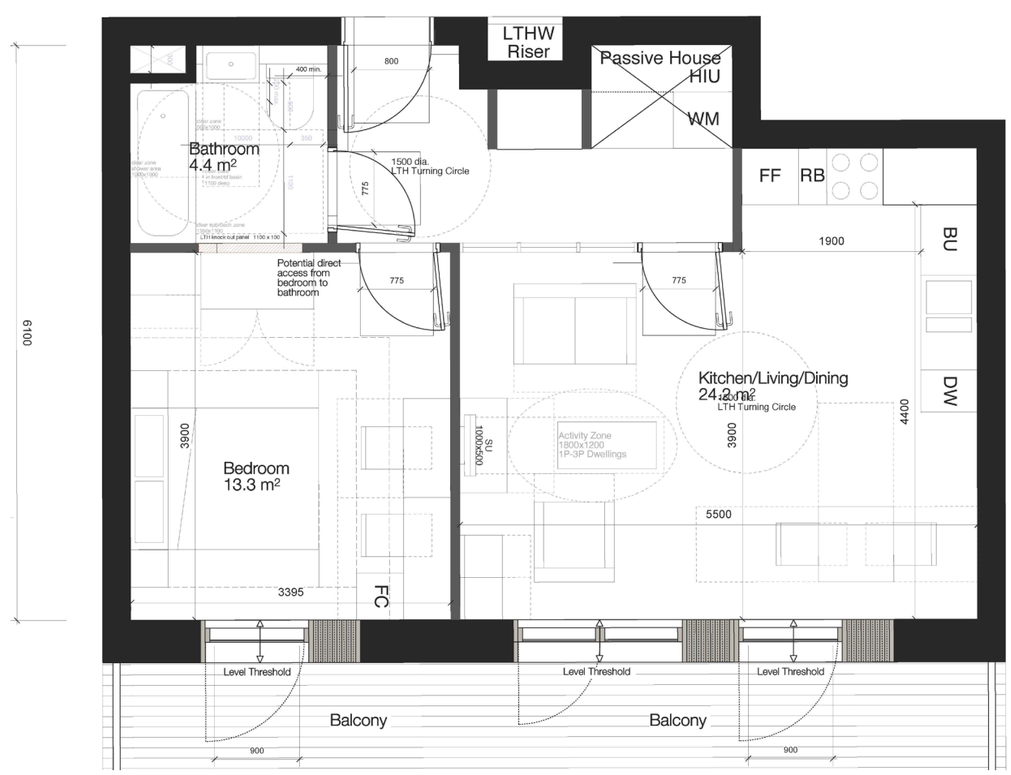
14. Bathrooms
An accessible bathroom, providing ease of access in accordance with the specification below, should be provided in every dwelling on the same storey as a main bedroom.

15. Glazing and window handle heights
Windows in the principal living space (typically the living room), should allow people to see out when seated. In addition, at least one opening light in each habitable room should be approachable and usable by a wide range of people – including those with restricted movement and reach.

16. Location of service controls
Service controls should be within a height band of 450mm to 1200mm from the floor and at least 300mm away from any internal room corner.

	LIFETIME HOMES CHECKLIST	
1	Parking	N/A
2	Approach to dwelling from parking	N/A
3	Approach to all entrances	N/A
4	Entrances	N/A
5	Communal stairs and lifts	N/A
6	Internal doorways and hallways	✓
7	Circulation space	✓
8	Entrance level living space	✓
9	Potential for entrance level bed space	✓
10	Entrance level WC and shower drainage	✓
11	WC and bathroom walls	✓
12	Stairs and potential through floor lift in dwelling	✓
13	A potential for fitting hoists and bedroom / bathroom	✓
14	Bathrooms	✓
15	Glazing and window handle heights	N/A
16	Location of service controls	N/A

NOTE:
Checklist applies to information shown on drawing only.



Typical 1 Bed 2 Person - Plot A with Lifetime Homes checklist

9.4 Environmental Mitigation - Acoustics, Air Quality and Overshadowing

Acoustics and Vibration

Below is a brief summary of the Noise and Vibration Report, please refer to the report for full details.

Noise surveys were undertaken between 29 and 30 August, on 25 September and on 4 October 2013 to determine the current climate at the site and validate the noise model.

Calculations were undertaken to determine the mitigation required to meet the BS 8233 good internal noise criteria of 30 dB during both the daytime and night-time period.

The assessment demonstrates that all external noise levels would meet the council's limits. Noise levels at amenity spaces would meet the BS 8233 external noise levels of 55 dB.

With the advised glazing, the internal noise criteria would also be met.

The vibration survey undertaken between 29 and 30 August and the subsequent assessment show that the vibration levels on site would be well below the Council's limit.

It is therefore considered that the proposed development meets the policy requirements and the site is considered suitable for the proposed development.

Air Quality

Below is a brief summary of the Air Quality Report, please refer to the report for full details.

The air quality impacts associated with the construction and operation of the proposed redevelopment at Agar Grove, Camden have been assessed. The site lies within the borough wide AQMA declared by the London Borough of Camden for exceedences of the nitrogen dioxide and PM10 objectives.

The construction works have the potential to create dust. During construction it will therefore be necessary to apply a package of mitigation measures to minimise the risk of elevated PM10 concentrations and dust nuisance in the surrounding area. With the proposed measures in place, construction impacts are judged to be insignificant. Construction traffic is unlikely to significantly affect air quality within the surrounding area.

Concentrations of nitrogen dioxide and PM10 have been predicted for a number of worst-case locations representing proposed properties adjacent to the road and rail network. Predicted concentrations are below the relevant objectives and air quality is thus considered acceptable for all future residents of the site.

Overshadowing

Below is a brief summary of the Overshadowing Report, please refer to the report for full details.

Section 3.3 of the BRE guide makes recommendations concerning sunlight to open spaces between buildings. It notes that sunlight into these open spaces "is valuable for a number of reasons, to:

- provide attractive sunlit views (all year)
- make outdoor activities like sitting out and children's play more pleasant (mainly warmer months)
- encourage plant growth (mainly spring and summer)
- dry out the ground, reducing moss and slime (mainly in colder months).
- melt frost, ice and snow (in winter)
- dry clothes (all year)."

The BRE guide recognises that different types of amenity space can have different sunlighting requirements and that it is difficult to suggest a hard and fast rule. The equinox (21 March) can be chosen as a date for assessment. The guide recommends that "at least half of the amenity areas … should receive at least two hours of sunlight on 21 March. It is instructive to draw the 'two hours sun contour', which marks this area on plan, because the use of specific parts of a site can be planned with sunlight in mind".

The BRE guide also notes that "where a large building is proposed which may affect a number of gardens or open spaces, it is often illustrative to plot a shadow plan showing the location of shadows at different times of day and year". It suggests that if a space is used all year round, the equinox (21 March) is the best date for which to prepare shadow plots as it gives an indication of average length of shadowing.

The guide also notes that, "as an optional addition, plots for summertime (e.g. 21 June) may be helpful as they will show the reduced shadowing then, although this is the best case. Conversely, if winter shadows (e.g. 21 December) are plotted, even low buildings will cast long shadows. In a built up area, it is common for large areas of the ground to be in shadow in December."

The guide does not set out any significance criteria for assessing transient overshadowing. It does, however, note that "it must be borne in mind that nearly all structures will create areas of new shadow, and some degree of transient overshadowing of a space is to be expected".

The 2 hour sun on ground assessment for the amenity arrears within the new development can be seen on drawing ROL6940_4_300.

We have assessed 9 external amenity areas within the development site. 8 of the amenity areas will receive more than 2 hours of sunlight on March 21st to over 57% of the amenity area. The remaining area R1/405 will receive more than 2 hours sunlight on March 21st to 40% of the amenity area.

9.5 Secure By Design

The proposed development has sought to adhere to ‘Secured By Design’ principles and has been further guided by the documents “Secured By Design - New Homes 2010” and “Secured By Design Guide - Multi-Storey Dwellings”. This has been aided by liaison with the Crime Prevention Design Officer for LB Camden, Adam Lindsay.

The proposal consists of a series of well defined secured urban blocks. The blocks have continuous frontage to the street with residential properties backing onto shared communal gardens. The gardens are for use by residents only who gain access by either from the rear of their property or communal stairwells. Secured gates to the street provide access for maintenance. The continuous secured enclosure allows us to have open aspect over low garden walls from the private ground floor amenity space into the shared communal gardens.

High quality, well maintained public space can minimise crime risk drawing on residents’ ‘ownership’ over spaces. The high quality design that is envisaged with this development seeks to ensure a scheme that is secure for all who visit it.

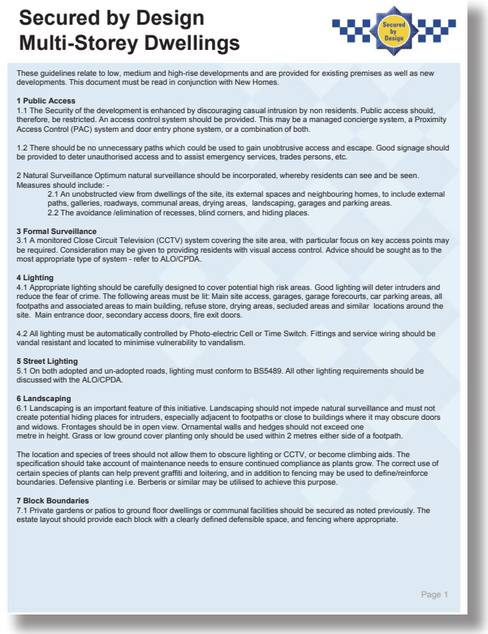
Public spaces are designed with active frontages and overlooking habitable rooms. Natural surveillance and high quality public realm are key. Routes into and across the site are intuitive. Sight lines have been considered and blind corners avoided.

The local community has been consulted extensively in a variety of ways over an extended period of time. Local residents’ and stakeholders’ involvement in the design process contributes to a scheme over which ownership is felt.

The experience of moving around the site have been considered with the aim to provide a sense of identity, privacy and shared ownership. This is partly evidenced by shared surfaces and articulated communal entrances to blocks.

All footpaths and cycle paths are of generous width unless shared with trafficable surfaces, in which case material treatments and road markings encourage slower vehicle speeds and pedestrian priority.

All residential blocks have generous windows from habitable rooms facing onto public realm within the scheme.
Office National Statistics and the Super Output Area, which Agar Grove sits in, identify the area benefits from ow crime rate figures.



Secured by Design
Multi-Storey Dwellings

These guidelines relate to low, medium and high-rise developments and are provided for existing premises as well as new developments. This document must be read in conjunction with New Homes.

1 Public Access
1.1 The Security of the development is enhanced by discouraging casual intrusion by non residents. Public access should, therefore, be restricted. An access control system should be provided. This may be a managed concierge system, a Proximity Access Control (PAC) system and door entry phone system, or a combination of both.

1.2 There should be no unnecessary paths which could be used to gain unobtrusive access and escape. Good signage should be provided to deter unauthorised access and to assist emergency services, trades persons, etc.

2 Natural Surveillance Optimum natural surveillance should be incorporated, whereby residents can see and be seen. Measures should include: -
2.1 An unobstructed view from dwellings of the site, its external spaces and neighbouring homes, to include external paths, galleries, roadways, communal areas, drying areas, landscaping, garages and parking areas.
2.2 The avoidance /elimination of recesses, blind corners, and hiding places.

3 Formal Surveillance
3.1 A monitored Close Circuit Television (CCTV) system covering the site area, with particular focus on key access points may be required. Consideration may be given to providing residents with visual access control. Advice should be sought as to the most appropriate type of system - refer to ALO/CPDA.

4 Lighting
4.1 Appropriate lighting should be carefully designed to cover potential high risk areas. Good lighting will deter intruders and reduce the fear of crime. The following areas must be lit: Main site access, garages, garage forecourts, car parking areas, all footpaths and associated areas to main building, refuse store, drying areas, secluded areas and similar locations around the site. Main entrance door, secondary access doors, fire exit doors.

4.2 All lighting must be automatically controlled by Photo-electric Cell or Time Switch. Fittings and service wiring should be vandal resistant and located to minimise vulnerability to vandalism.

5 Street Lighting
5.1 On both adopted and un-adopted roads, lighting must conform to BS5489. All other lighting requirements should be discussed with the ALO/CPDA.

6 Landscaping
6.1 Landscaping is an important feature of this initiative. Landscaping should not impede natural surveillance and must not create potential hiding places for intruders, especially adjacent to footpaths or close to buildings where it may obscure doors and widows. Frontages should be in open view. Ornamental walls and hedges should not exceed one metre in height. Grass or low ground cover planting only should be used within 2 metres either side of a footpath.

The location and species of trees should not allow them to obscure lighting or CCTV, or become climbing aids. The specification should take account of maintenance needs to ensure continued compliance as plants grow. The correct use of certain species of plants can help prevent graffiti and loitering, and in addition to fencing may be used to define/reinforce boundaries. Defensive planting i.e. Berberis or similar may be utilised to achieve this purpose.

7 Block Boundaries
7.1 Private gardens or patios to ground floor dwellings or communal facilities should be secured as noted previously. The estate layout should provide each block with a clearly defined defensible space, and fencing where appropriate.

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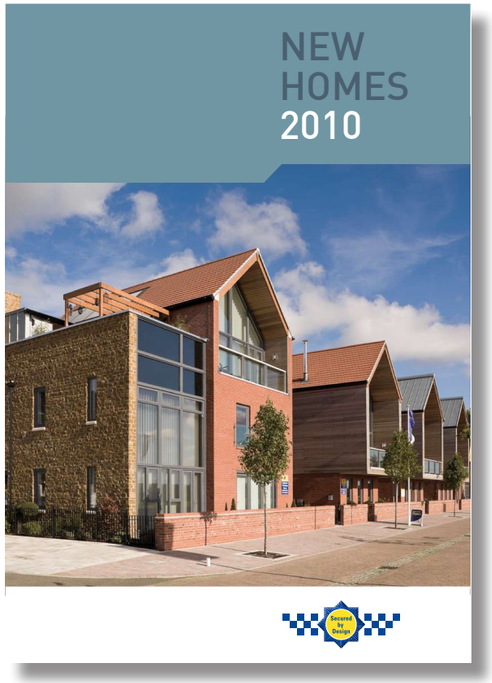
Secure by Design: Multi-storey Dwellings



Secure by Design: New Homes 2010

9.6 Refuse and Recycling Strategy

The refuse and recycling strategy has been developed in line with LB Camden's Waste Storage Requirements Guidance. In addition the design team have met and consulted with Ann Baker, LB Camden Environmental Service.

The below is a block by block summary:

Block A [Social Rent]
- 2 internal bin stores, each bin store provides general waste, recycling and bulky waste storage
- waste to be collected from Wrotham Place

Block B [Social Rent]
- 2 internal bin stores, each bin store provides general waste, recycling and bulky waste storage
- waste to be collected from Wrotham Place [extension]

Plot CDE [Social Rent]
- 1 central external bin stores, provides general waste and recycling storage
- waste to be collected from Plot CDE perimeter circulation route
- AB advised bin stores to include bulky waste storage for social rent tenure units
- JH to include bulky waste storage provision

Plot F [Social Rent]
- 2 external bin stores, provides general waste and recycling storage; independent bin stores provided for maisonettes
- waste to be collected from circulation route to south of Plot F
- AB advised bin stores to include bulky waste storage for social rent tenure units
- JH to include bulky waste storage provision

Plot G [Private]
- 1 external bin stores, provides general waste and recycling storage
- waste to be collected from circulation route to south of Plot F or circulation route west of Plot G.

Plot H [Social Rent]
- 2 external bin stores, provides general waste and recycling storage; independent bin stores provided for maisonettes
- waste to be collected from Agar Grove
- AB advised bin stores to include bulky waste storage for social rent tenure units
- JH to include bulky waste storage provision, potentially combined with Plot F

Plot I [Social Rent and Intermediate]
- 1 external bin stores, provides general waste and recycling storage
- waste to be collected from Lulworth Avenue/ Agar Grove
- AB advised bin stores to include bulky waste storage for social rent tenure units
- JH to include bulky waste storage provision, potentially combined with Plot F

Plot JKL [Private]
- 3 internal bin stores, provides general waste recycling and bulky waste storage
- waste to be collected from Lulworth Avenue/ Agar Grove. Building management strategy to be confirmed.

NB all above bin storage provided at ground floor.

Plot Lulworth [Private]
- 1 shared communal bin store located in basement, provides general waste
recycling and bulky waste storage
- waste to be brought to ground floor by platform lift for collection from
Wrotham Place

All bin storage provision in alignment with Camden Waste Storage Requirements [2005].

LB Camden: Waste Storage Requirements

9.7 Services and Sustainability Strategy

Services strategy
The whole estate will be heated by communal boilers with the capability to connect to district heating in the future. Each block will be heated by gas boilers located in a plant room on the roof. High efficiency condensing gas system boilers will generate low temperature hot water (LTHW). The heat will be distributed to individual apartments via an LTHW distribution system. Highly insulated, carefully detailed and carefully installed flow and return pipes will deliver the heat to a heat interface unit (HIU) in each apartment. A HIU is a wall mounted box which contains heat exchangers, valves, controls and heat meters to deliver the required space heating and hot water to the apartment. At the base of each block will be pipe tees to allow connection to district heating in the future. This meets the London plan requirement for future-proofing.

This block-by-block system allows a lower systems temperature, and shorter pipe runs, hence reduced losses. The systems are installed phase by phase unlike in a site wide scheme, which improves efficiency. It also allows local thermal storage and therefore solar thermal hot water. Solar thermal is a more carbon efficient means of solar energy collection than PV.

For the majority of the year ventilation to the new build flats will be provided through Passivhaus certified (high efficiency) mechanical ventilation with heat recovery (MVHR). The refurbished Lulworth House will be ventilated through central mechanical extract ventilation (MEV).

Energy strategy
Agar Grove Regeneration is the largest community investment programme currently being undertaken in the borough and as such should be an exemplar in a number of ways and go beyond the baseline planning requirements.

The development design is 'Be lean' in its approach; Carbon emissions will be reduced primarily by implementing 'passive' energy efficiency measures to reduce the demand for energy rather than meet a larger demand with renewable sources. These include:

- High levels of fabric insulation and Passivhaus certified triple glazed windows to reduce heat loss. Close attention will be paid to detailing to avoid thermal bridging of insulation in the building fabric. Air-tight construction techniques such as a dedicated air barrier in the envelope and post completion air-pressure testing to ensure compliance with design standards.
- Reducing summertime overheating by allowing decent natural ventilation: by providing generous proportioned purge ventilation openings, and acoustic panels where necessary. This avoids requirement for electric cooling.
- Heat recovery ventilation system – efficient mechanical ventilation with heat recovery (MVHR). Higher investment as Passivhaus certified unit, currently centrally located serving many flats to reduce losses and increase efficiencies.
- Provision of a simple user's guide to assist in using the homes in the best way.
- Water saving measures such as spray taps. Water use will be less than 105 l/person/day, as assessed by Code for sustainable homes Wat1 calculator. This will save water and heating fuel.

The roof strategy has been optimised for renewable technology and amenity. As much solar thermal has been installed as is efficient, and the remaining suitable space for PVs has been filled. The 930m2 PV and solar thermal provide a 22% reduction on the Be Lean development.

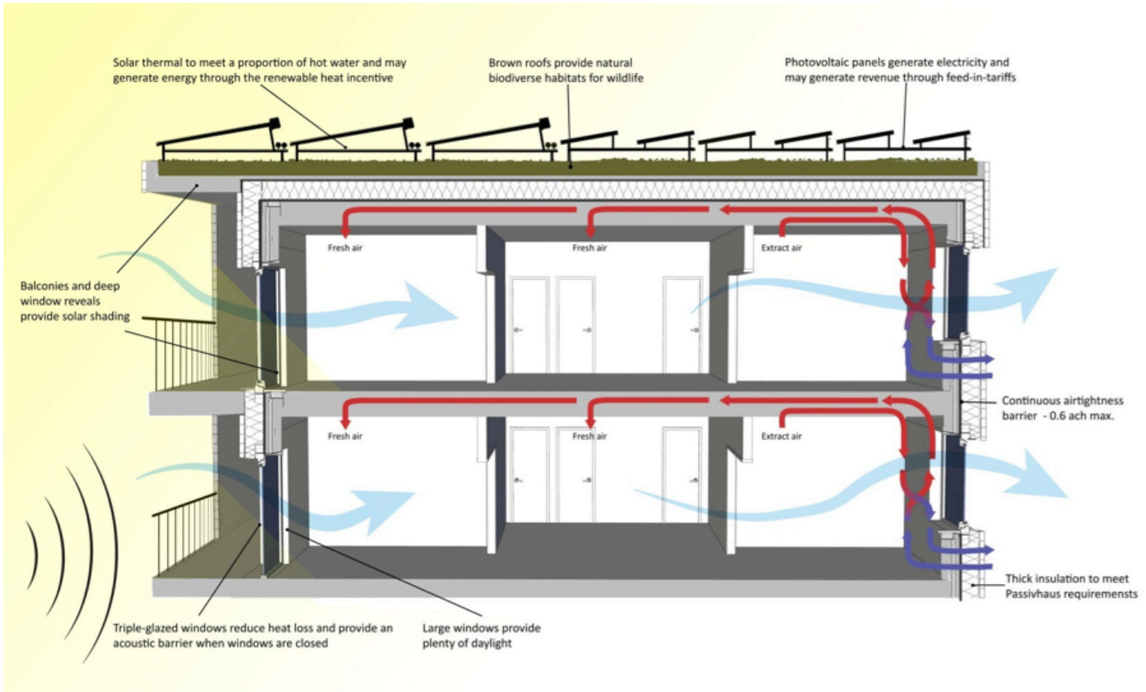
Sustainability strategy
The design team are aiming to achieve Passivhaus Standard and Code for Sustainable Homes Level 4 on all of the new plots, and are aiming for BREEAM Domestic Refurbishment 'Excellent' on the refurbished Lulworth.

Pre-assessments in the Code and BREEAM Domestic Refurbishment have been undertaken and monitored throughout the design to date. All of the mandatory elements for Code 4 are expected to be achieved, and the expected score is currently 72.25%. This produces a 4.25% margin in targeting a Level 4. The BREEAM pre-assessment score is 77.98%, where a minimum of 70% is required for 'Excellent'.

Providing better homes and community regeneration and social sustainability is at the heart of this project. These are difficult to measure and communicate and not well covered by the Code. The sustainability matrix aims to achieve this through setting a number of targets covering a wide range of sustainability criteria from energy and water to materials, waste, management and biodiversity, and health and quality of life.

An initial matrix of issues specific to the Agar Grove Regeneration has been presented. The topics covered include Energy, occupant interaction, environmental design, construction materials, water, waste, transport, management, landscape and biodiversity, health and quality of life. We have indicated in blue the target ranges for the project; the majority are in the innovative level with some moving into Pioneering. The targets apply primarily to new build housing and the overall masterplan.

Some specific targets include investigating the use of a green concierge onsite to help residents make best use of their new homes, including reading and understanding their smart meters to reduce unregulated energy use, and help with encouraging allotment use. Camden would also like to investigate using renewable heat incentive and feed-in-tariff revenues to provide a community investment fund.



Agar Grove environmental principles