







## 7.0 DAYLIGHT AND SUNLIGHT

### 7.1 Daylight and Sunlight and Percentage of Daylight Hours

Delva Patman Redler LLP have been instructed to assess the effect the proposed development may have on the neighbouring residential properties in daylight, sunlight and overshadowing terms. As well as considering the light levels to the new habitable rooms and amenity within the proposed scheme.

The study has been carried out in accordance with the recommendations of the Building Research Establishment report "Site Layout Planning for Daylight & Sunlight 2011". This is the standard specifically identified in the London Borough of Barnet planning policy by which daylight, sunlight and overshadowing should be assessed. The BRE Report advises that daylight levels should be assessed for the main habitable rooms of neighbouring residential properties. Habitable rooms in residential properties are defined as kitchens, living rooms and dining rooms. Bedrooms are less important as they are mainly occupied at night time.

The guidance is intended for building designers and their clients, consultants and planning officials. The advice given is not mandatory and the guide should not be seen as an instrument of planning policy, it's aim is to help rather than constrain the designer.

The daylight, sunlight and overshadowing assessment indicates that the relevant neighbouring residential properties are situated quite far away from the development site and are likely to comply with the relevant daylight, sunlight and overshadowing target values outlined in the BRE. Based on the proposed massing provided by the design team in August 2016, the proposed scheme will only have a negligible impact to the relevant neighbouring properties in daylight, sunlight and overshadowing terms.

The BRE advises that amenity spaces such as gardens, parks and children's playgrounds should be considered for overshadowing assessments. It recommends that at least half of the amenity areas should receive at least two hours of direct sunlight on 21st March. Drawing SHD/515 shows the areas within the proposed scheme considered for assessment, overall the proposed scheme will fully comply with the BRE target values in overshadowing terms.

The design team have revised the massing to ensure that acceptable levels of daylight and sunlight will be achieved to the relevant habitable rooms where possible, while providing private amenity space to each individual apartment.

### CONCLUSIONS

The site is currently used as a retail park with the main bulk of the massing situated to the north of the development site, with the southern part used for car parking.

The site is bound by the M1 to the west and the A1 to the east, as a result of this, there are limited residential properties and amenity area situated close to the development site.

To assess the potential impact of the Development on daylight and sunlight on neighbouring properties a baseline assessment was undertaken. Overall the neighbouring daylight analysis illustrates that despite 9 isolated infringements of daylight in daylight distribution (No Sky Line) analysis, generally the quality, quantity and distribution of light within the neighbouring rooms will remain fully BRE compliant.

The sunlight analysis demonstrates that overall the amount of sunlight received by the neighbouring properties will remain fully BRE compliant. The internal daylight adequacy analysis of the scheme demonstrates that 70.8% of all rooms within the ground and first floor levels of the 18 blocks will comply with the BRE target values.

The overshadowing results show that the proposed amenity areas will comply with the guidance outlined in the BRE.

Overall, the analysis undertaken demonstrates that given the approach recommended by the BRE guidelines, that the proposed development will have a negligible impact on the residential amenity

Amenity Area (m <sup>2</sup> )		BRE Recommendations (At least 50% of Amenity Area)	Proposed Area	Proposed %age of Area
Mill Hill Ground A1	270.82	135.41	245.29	91%
Mill Hill Ground A2	160.96	80.48	160.96	100%
Mill Hill Ground A3	496.50	248.25	379.98	77%
Mill Hill Ground A4	309.55	154.77	309.55	100%
Mill Hill Ground A5	265.89	132.95	112.26	42%
Mill Hill Ground A6	197.85	98.94	0.00	0%
Mill Hill Ground A7	131.67	65.84	0.00	0%
Mill Hill Ground A8	156.56	77.78	0.00	0%
Mill Hill Ground A9	134.40	67.20	1.80	1%
Mill Hill Ground A10	106.49	53.25	31.18	30%
Mill Hill Ground A11	235.22	117.61	0.00	0%
Mill Hill Ground A12	115.30	57.65	47.02	41%
Mill Hill Ground A13	377.56	188.78	0.00	0%
Mill Hill Ground A14	106.12	53.06	108.06	100%
Mill Hill Ground A16	99.07	49.54	97.71	98%
Mill Hill Ground A15	205.62	102.81	85.41	42%
Mill Hill Ground A17	143.97	71.99	3.11	2%
Mill Hill Ground A18	222.62	111.31	6.66	3%
Block P Roof A1	130.16	65.08	64.72	50%
Block P Roof A2	178.63	89.31	178.39	100%
Block M Roof A1	268.69	133.35	231.20	87%
Block M Roof A2	271.27	135.64	266.49	98%
Block K Roof A1	235.15	117.57	234.64	100%
Block H Roof A1	272.24	136.12	269.14	99%
Block H Roof A2	227.12	113.56	212.82	94%
Block F Roof A1	271.99	135.99	269.94	99%
Block F Roof A2	227.12	113.56	211.75	93%
Block D Roof A1	272.22	136.11	270.08	99%
Block D Roof A2	227.12	113.56	213.60	94%
Block I Roof A1	150.31	75.15	150.23	100%
Block J Roof A2	163.17	81.58	137.36	84%
Block J Roof A1	156.00	78.00	156.64	99%
Block N Roof A1	163.00	81.50	163.00	100%
Block O Roof A2	163.17	81.58	136.83	84%
Block O Roof A1	148.97	74.48	146.34	98%

SHADOW ANALYSIS



8.0 SECURE BY DESIGN CONSULTATION

8.1 Secure-by-Design Consultation

A secure by design meeting were held on 13th November 2017 with the London Borough of Barnet Secure-by-Design officer to review the principles of the new masterplan.

Previous meetings were held in 2016, the first on the 29th April and the more recent on the 23rd of August, on the previous scheme which the basic principles remain the same for the new masterplan.

The table on the opposite page was issued following this meeting to summarise the issues discussed and to note the Secure-by-Design principles integrated into the proposals. A further meeting we held to make sure all issues have been incorporated in the design.

There are three general desires of any design out crime officer (DOCO) when looking at any development and they are to:-

**1. Reduce Permeability.** No route between buildings, associated car parks and roof spaces/gardens or multiple ways in to a development that reduce activity making them isolated and vulnerable.

**2. Increase Surveillance.** Where possible utilise both natural and formal surveillance (CCTV), with uniform levels of lighting and flat unobstructed landscaping to increase levels of surveillance, where at all possible.

**3. Increase Territoriality.** Providing a perimeter treatment around aspects of the development to project out from the building line and define use of the land. Design well balanced access control systems to empower the legitimate user and frustrate the uninvited guest.

The notes below highlight some of the issues that were raised and have been considered include:

- Public space lighting to be designed to enable view of approaching faces.
- Entrance lobbies to be designed to be separated from stair/lift core by a secure door.
- If no secondary doors to corridors are installed at upper levels of lift cores, CCTV to be installed in lifts and lift lobbies.
- Ground floor windows and doors to be designed to secure by design standards.
- Stacked and offset balconies to be designed to avoid climbable elements. Placement of balconies on higher level making it difficult to climb.
- Residential windows to overlook any amenity space for passive surveillance.
- Bin stores to include secure by design doors at entrance to core.
- Access to/from carpark to be controlled to ensure access is only given to identified users.
- CCTV required at each core in basement and at bicycle store.
- Bicycle racks to ensure bikes can be locked at both wheels and frame in units of 10 bikes.
- Vehicular and pedestrian gates to car park to ensure no gap between the opening and gate that would allow a person to climb over and into the car park.
- Defensible planting to be installed to all ground floor facades with windows facing onto public realm.

No.	ITEM	RESPONSE	Conformity
1.0	Reduce crime / anti-social behaviour	Reduce permeability - no route between buildings, associated car parks and roof spaces/ garden	Yes
		Increase surveillance - utilise CCTV, uniform lighting & flat unobstructed land	Yes
		Increase territoriality - Providing railings around aspects of the development to define use of land. Design well balanced access control systems to empower the legitimate user	Yes
2.0	Refer to Secure by Design New Homes 2016 Design Guide for detailed requirements of the SBD scheme	Recessed or undercroft areas should be minimised to prevent loitering, with vertical surfaces resistant to attack or graffiti, for example vertical planting	Yes
		Lower ground car parking should have secure Security certificated doors/gates/roller shutters fitted ( LPS 1175 sr2 a minimum) to the building envelope. Access to this level should only be by encrypted fob, with no visual/audio entry panel. The car parks are to be further compartmentalised in to smaller sections with a clearly marked routes in and out. CCTV and uniform levels of lighting will assist to deter criminal activity further	Yes
		Cycle storage should be located in a secure area with surveillance and constructed incorporating LPS 1175 products. Accessed with a encrypted fob with doors that are self locking and closing, with a capacity of no more that 25 bikes per store.	Yes
		Pedestrian walk ways to be clear, wide and unobstructed with legible signage indicating residential and commercial aspects with flooring treatment to emphasize the change of use.	Yes
		Uniform levels of lighting as per BS 5489 with No bollard lighting. LED lamp post with down lighter and wall lighting is preferred. All exterior light fittings to be fitted with a commando style power socket to assist with sighting of microwave CCTV cameras when/if ever needed.	Yes
		All Duplex units on the ground floor were possible are to be offered with a garden/defensible space, with 1.2 m railings and gate. Each entrance would also have added lighting covering the front door.	Yes
		Active Play area should be defined. For example if it is used as a skate board park, then the skateboarders should be consulted as to what design is most appropriate. Likewise if this space is intended for family use then the same rule would apply.	Yes
		All doors of the building envelope will be to an acceptable security certification.	Yes
		All opening and accessible windows will be to a security certification as above with laminated glass to P1a standard.	Yes
		Perimeter around the development should be to a height of at least 1.8m high, where not protected by the raised podium construction of the site.	Yes
		Asset rooms/ commercial units. These are units/rooms within the development which will require higher levels of security. This will be achieved by fitting of a security certificated door.	Yes
		Stud partition will be supported with 9mm plywood or expanded metal mesh. Then a security cabinet to LPS 1175 will be fitted to store assets within this unit or room.	Yes
		CCTV if used will be registered and comply with the information commissioners office guidelines and areas of capture should include: Main pedestrian routes in and out of the development, all communal lobbies, bin rooms, cycles storage and car park access control points	Yes
		Communal Reception areas on Deck level must have audio/visual access control system with encrypted fobs and data storage facility. A secondary security certificated access controlled door will be fitted to provide a secure location for mail delivery (air lock/draft lobby).	Yes
		All lifts are to be access/ fob controlled (Entrotec style system)	Yes
All communal doors leading to stair cores must be to an acceptable security certification. Controlled on the exit aspect by a green mushroom fire button (fire route out) and on entry to a floor from the stair well these must be fob access controlled.	Yes		

SECURE BY DESIGN MATRIX



## 9.0 TRANSPORT AND PARKING

### 9.1 Introduction

The proposals will transform Pentavia Retail Park into a thriving and sustainable neighbourhood with green public parks and local amenities; a destination for people to live, work and enjoy. It will help to address Barnet's housing need by delivering high quality Build to Rent, Private Sale and Affordable residential units, which will be offset at various rent levels homes.

The proposals will unlock this constrained site with new pedestrian routes and cycle links. This will create economic benefits to the local area as the development will help to increase footfall and spending on Mill Hill Broadway.

### Highway Network Description

Based on site visit observations and discussions with Highway Officers in Barnet, the roads likely to be impacted by the development are the following:

- i. A1 Watford Way / Great North Way;
- ii. Bunns Lane;
- iii. Flower Lane;
- iv. Page Street; and
- v. The Broadway.

### 9.2 Accessibility by Non-Car Modes

#### Walking

Pedestrian access to the site is possible from the western side of the A1 (Watford Way) via the existing footway. Connectivity to the west of the site is achieved via a pedestrian bridge over the M1, approximately 200m south of the site, and via a subway under the railway line at the southern end of the site.

There is no direct access to the site from Bunns Lane. Pedestrians that intend to approach the site from this point are required to walk up a staircase that connects to the western footway of the A1. The staircase is located approximately 230m north of the main access to the site, where Bunns Lane passes beneath the A1.

A pedestrian underpass links the western footway of the A1 to Tith Walk, and is located approximately 350m south-east from the site. The underpass enables pedestrians to access bus stops for buses that are travelling southbound.

A new pedestrian link is proposed between the site and Bunns Lane that unlocks what was a barrier to the site. The link is proposed to have a positive impact on both the sites accessibility, permeability, and resident's ability to access key services located north of the development. It is intended that the link will open up access to bus routes 221 on Bunns Lane, and 113 on the A1, as well as significantly improve connections to Mill Hill Broadway station.

An accessible route linking Bunns Lane with the development is also proposed. This includes a 1:21 gradient ramp that zig-zags up the embankment with more direct stepped access either side. The route will be landscaped with trees and ground covers to balance surveillance with a buffering from surrounding traffic.

Dual core access is proposed to the blocks located on the east side of the site, adjacent the A1. This facilitates direct access / egress to the A1, and is provided in conjunction with some defensible space to the ground floor units by way of terraces.

The provision of access to the cores will activate this edge of the site and will assist in providing a further level of natural surveillance to the landscape buffer between the site and the A1. It is also proposed to allow access through the blocks on the east side of the site for those residents in blocks to the east. Thus removing the eastern buildings as a barrier to A1, and increasing permeability whilst reducing walking distance to the wider highway network.

Access, activation and surveillance of the A1 edge has been further enhanced by relocation of a site concierge / reception to face the A1 within Block H. Access between the A1 and the central area of the site will also be facilitated through a tunnel adjacent the concierge for both residents and visitors.

A linear park is proposed to provide a buffer between the site and the A1 which can also be used as a secondary route to connect to Bunns Lane rather than the footpath on the A1.

Access to the site for pedestrians and cyclists is proposed to be further improved by the provision of a footpath that connects directly to the bottom of the existing ramp to bridge over the M1 and access Grahame Park Way.

The proposed route connecting the development to the M1 footbridge will involve substantial landscape improvements, including the creation of the new footpath together with attractive and robust planting adjacent to this path and up to the connection to the bridge ramp.

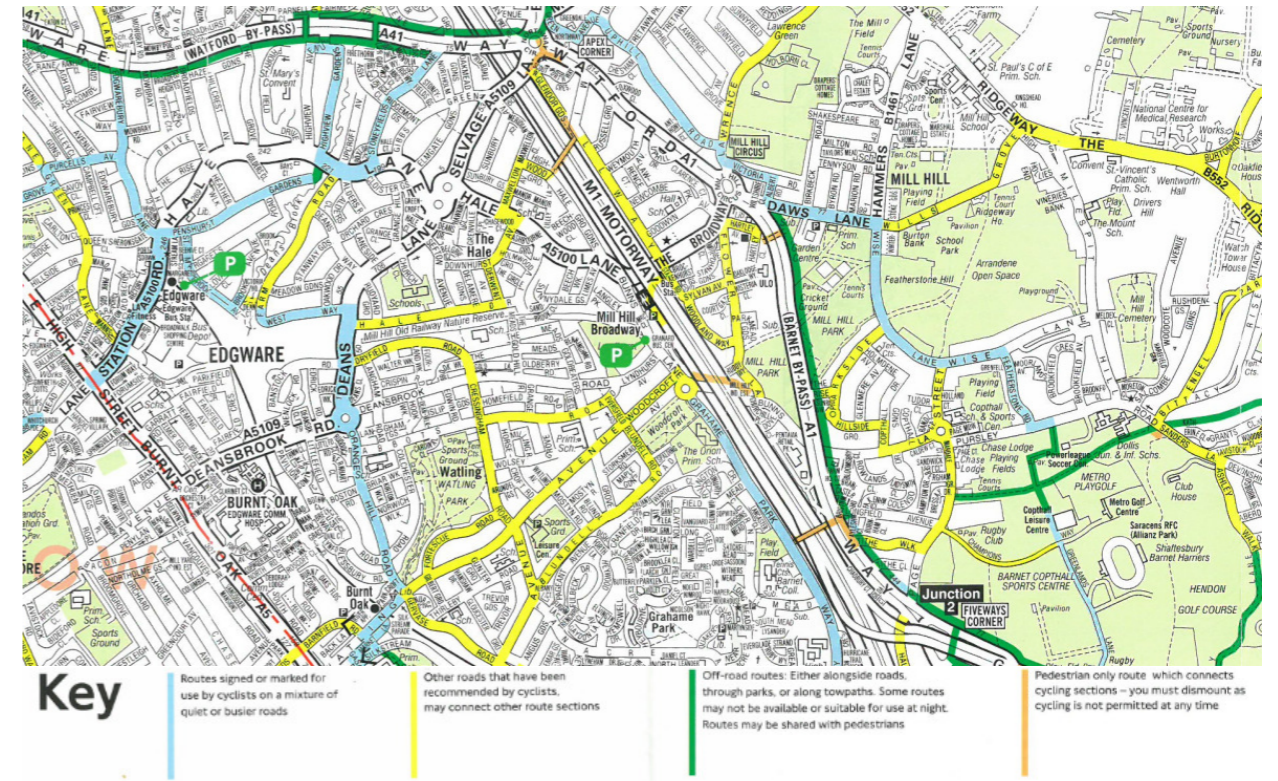
These combined enhancements will ensure that these present key routes across the major infrastructures will become more popular and attract regular usage. This in turn will provide a feeling of greater safety and security through surveillance.

The development will fund an improvement scheme to the railway underpass to Grahame Park Way inclusive of the M1 footbridge. It is understood that both of these assets are owned by third parties (e.g Highways England), and therefore it has been discussed and agreed with LBB that the exact nature and details of the improvements will be determined post determination and secured by planning condition.

Although the details of the improvements are not defined, it is proposed that they will broadly consist of stone and masonry refurbishment, improved landscaping, and additional lighting and surveillance.

#### Cycling

The diagram illustrates off-road cycle route extending south to Hendon and on to Brent Cross. Grahame Park Way that runs parallel to the M1 is also signed for cyclists.



LOCAL CYCLE MAP (OBTAINED FROM TFL CYCLE MAPS)



BUS STOPS SURROUNDING THE SITE



## 9.0 TRANSPORT AND PARKING

It is proposed to provide a new cycle route to Bunns Lane, which both connects to the site and the A1. The route is proposed as a shared cycle footpath (3.0m wide), to extend the existing shared cycle footpath on the A1 and provide a connection not currently available.

Interaction with vehicular traffic is minimised within the site for north-south movements due to the provision of the peripheral road located on the western side of the site which will cater for the majority of vehicle movements.

The surface treatment to the shared, traffic surfaces within the inner circus are less intrusive than the peripheral road and highlight that the space is for shared use by pedestrian and cyclists also. The route connects to both the north and the south and facilitates permeability across the site for both pedestrians and cyclists.

To further assist the connections across the site, a pedestrian / cycle route extends from 'Mill Hill Walk' across the southern entry square. This allows connection to the crossing point on the egress slip road to the A1, which gives access to the A1's footpath and bus stops for route 113; or to Grahame Park Way via the new connection to the base of the existing bridge over the M1.

A combination of all the proposed accessibility improvements assists in making the site highly permeable for both pedestrians and cyclists. The proposal creates new cycle links between the A1 and Bunns Lane which currently do not exist. The proposal also allows for varied route choice and route choice characteristics in order to make the new connection, which widens the appeal of the cycling connections to a wider cohort of cyclists with varying degrees of experience and confidence.

New connections are made to Bunns Lane (which currently do not exist other than via a very steep & narrow connection on the north side of Bunns Lane), which facilitates the opening up of access to Mill Hill Town Centre via either Flower Lane or Bunns Lane.

As with Mill Hill Town Centre, the new cycle connections facilitate access to Flower Lane & Mill Hill Park by creation of a new cycle link between the Site / A1 and Bunns Lane.

The proposed new 3.0m wide cycle connection to Bunns Lane adjacent the M1 / Rail Bridge facilitates access to the northern end of Grahame Park Way and its associate cycle lane. This is a new and direct (as direct as possible given the site is bound by the M1 and Rail lines to the west) access towards Collindale. Direct access to the ramps associated with the M1 bridge at the southern end of the site can also be gained by cyclists via the new proposed path which would otherwise require circulation around the east side of the BP Petrol Station (and associated crossing movements with the on & off slip roads). This connects to Grahame Park Way via the rail underpass which is subject to improvements as described in this Section of the TA.

### Bus Routes

The closest bus stop to the site is on the northbound carriageway of the A1 adjacent the existing petrol station at the southern end of the site and serves the northbound bus route. The bus stop is located within a five-minute walking distance from the centre of Pentavia Retail Park.

Access to southbound bus stops is available via two routes. Pedestrians can head north on the western footway of the A1 and take steps down onto Bunns Lane, walk under the A1 and up steps on the eastern side to gain access to the footpath adjacent southbound traffic. It is noted that an 11-minute walk is required to access the southbound bus stop from the centre of the retail park.

Alternatively, pedestrians can walk south on the western side of the A1 to access an underpass which links to Tithe Walk to the east, and bus stop just south of this point. The bus stops are served by bus route 113 which provides services between Edgware and Marble Arch. This would require an eight-minute walk from the site.

Bus route 221 operates frequent service between Edgware and Turnpike Lane and provides a direct service from the Site to Mill Hill Station. Bus stops are located on Bunns Lane and are accessed via the steps on the A1.

More bus services are available within the residential streets to the west of the M1, (303,302, 251, 114, and 186) and are accessible via the existing subway / footbridge (mention moving the bus stops on Bunns Lane and A1).

To further enhance the accessibility of public transport services to the site, and rationalise existing spacing of bus stops on Bunns Lane, it is proposed to relocate existing east and westbound bus stops currently located to the west of the A1's bridge over Bunns Lane.

Bus Stops are currently located to the eastern extents of Bunns Lane, near its junction with Page Street. These are approximately 320m east of the bus stops located to the east of the A1 bridge over Bunns lane. The next pair of bus stops on route 221 are located approximately 600m further north-west on Flower Lane. As a result there is scope to rationalise the spacing of these stops such that the space between all stops is more consistent; approximately 450m.

The proposed relocation would reduce the connection to the bus stops by approximately 165m (2 minute walking time), and offers the opportunity to integrate the bus stop infrastructure directly with the developments connection to Bunns Lane. It is anticipated that the design and treatment of this area will promote the use of the bus service due to both its actual and perceived ease of access.

In response to a request from TfL, the development will commit funding of £95k per year for a period of 5 years (a total of £475k) to add a return journey to bus route 221. It is recognised that the increased frequency in conjunction with the relocation and direct connection to Bunns Lane offers an excellent and convenient connection to the public transport network.

As a further enhancement to public transport infrastructure and connectivity it is proposed to relocate the existing bus stop of route 113, currently located just north of the A1's bridge over Bunns Lane, to a position immediately adjacent the site.

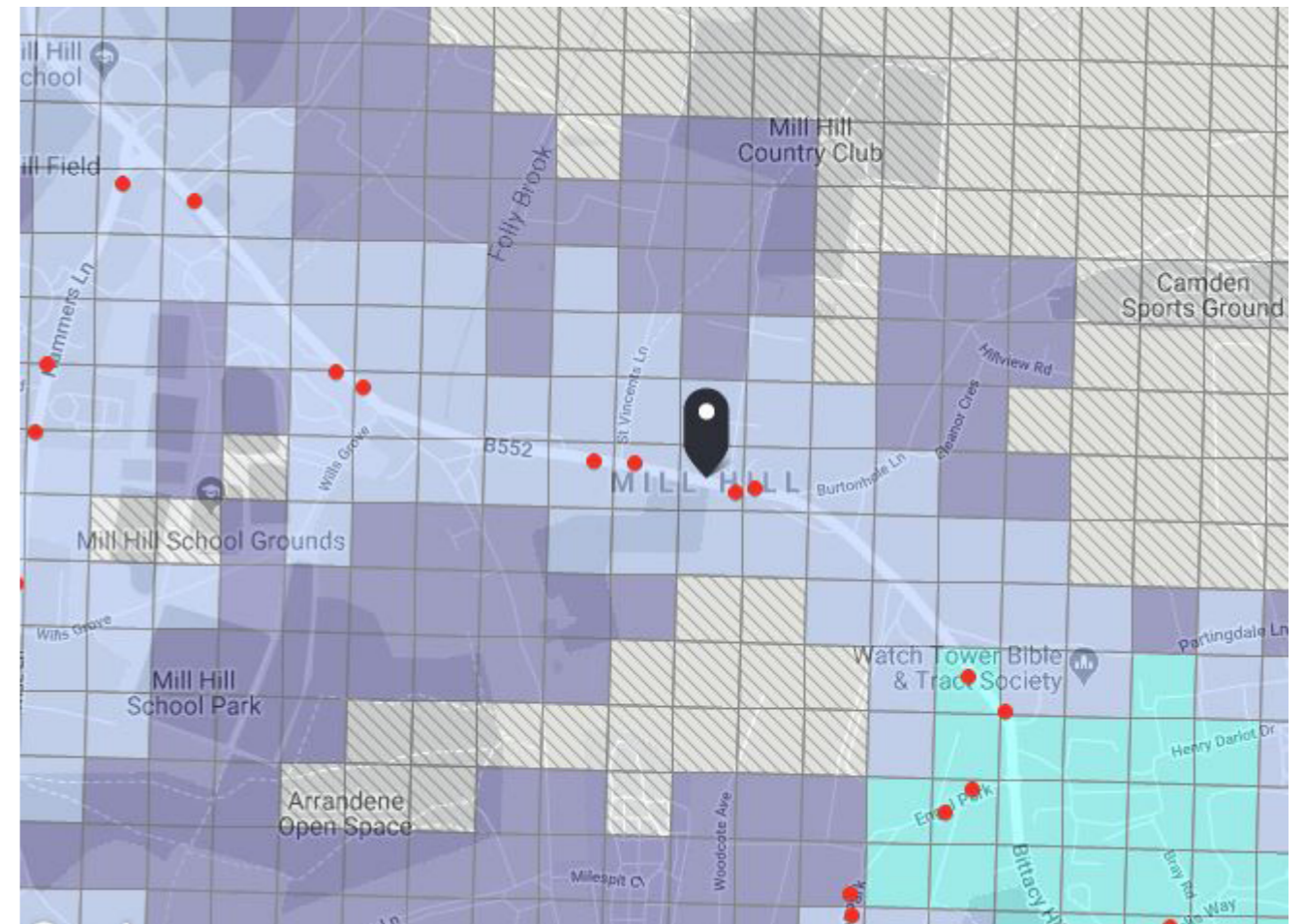
### Rail/Underground

The nearest railway station is Mill Hill Broadway, located approximately 750m north-west to the site and within a 17-minute walking distance. It is served by First Capital Connect running Thameslink services. The typical daytime service from the station is four trains per hour to central London, Wimbledon and Sutton, of which two terminate at St Albans and two at Luton.

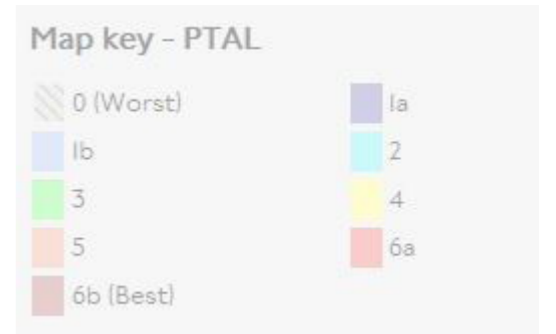
The nearest underground station is Burnt Oak, located 1.6km west to the site and within a 29-minute walking distance. The station is served by the Northern Line.

### Existing PTAL

The site specific PTAL assessment shows that the majority of the site scores PTAL 1b with a small portion of the site scoring PTAL 2 near a break in the site boundary which provides access to the footpath on the A1.



EXISTING PTAL





## 9.0 TRANSPORT AND PARKING

Further investigation into the PTAL across the site has been undertaken to provide further insight into the sites access to public transport services. It demonstrates that large parts of the site are very close to scoring a PTAL of 2, which is not unsurprising giving that a portion of the site currently meets this score.

It is recognised that the PTAL methodology is a tool to better understand accessibility to services, but is limited in its ability to allow interpretation of actual accessibility of a site that is located on the periphery of the parameters set.

The impact of the proposed amendments to bus service frequency, stop locations, and in conjunction with the accessible design adopted, has been assessed to determine the improvement from the site being predominantly 1b, with a small are of 1a and 2.

A site specific PTAL assessment has been undertake based on the proposed access improvements, bus stop relocations, and increase in frequency of route 221. A total of 25 Points of Interest (POI's) have been established across the site, predominantly at door thresholds into the various building blocks. The assessment demonstrates that in combination, the proposals to improve connectivity to public transport services has significantly increased areas of PTAL 3 and 2 across the site. There is also no longer any part of the site that scores PTAL 1a.

### Summary

The site has a good level of accessibility by public transport with numerous well serviced bus stops located in the wider area. The presence of a local London Underground and Railway Stations indicates a good level of accessibility.

The findings indicate that the footways within the area are wide in relation to pedestrian flow levels. The area is also well lit and provides a high number of crossing facilities that improve pedestrian permeability. The presence of a local cycle network indicates that the site can be reached by cyclists with relative ease.

### Residents Parking

It is proposed to provide a total of 366 car parking spaces for the use of residents within a lower ground level car park, 85 of which will be available for disabled users. A further 10 visitor parking spaces, and five car club vehicle spaces will be accessible on the ground floor level. Across the 366 residential spaces proposed 20% (74) of spaces will have electrical charging facilities, with a further 80% (207) being future proofed by way of passive provision.

There will be an allocation of 1,544 cycle spaces provided in relation to the residential use, 8 cycles spaces will enable parking for visitors. Cycle parking is located on the lower ground floor in secure stores and also within external areas. Residential cycle storage areas have been designed with additional capacity to enable further parking to be installed and to enable oversized cycle storage.

It is proposed to provide 9 car parking spaces for activity associated with the retail and community uses. The parking will be located at the southern end of the site, immediately accessible from the A1. This enables control of the site to prevent vehicle movements occurring internally within the site to facilitate a more permeable environment for pedestrian and cyclists. The spaces provided will be Pay & Display to ensure that long stay parking is discouraged and that there is a turn-over of parking spaces

A further 21 cycle parking spaces will be provided in relation to the retail and community uses.

### Delivery and Servicing Access

It is proposed that access to the site will be achieved from the A1 access. Entry control measures will be in place to prevent unauthorised access but a trade button will allow contact to a site management representative to facilitate access to the site.

Refuse collection will take place from various designated collection points where the on-site management team will consolidate refuse from the development for collection.

### Emergency Access

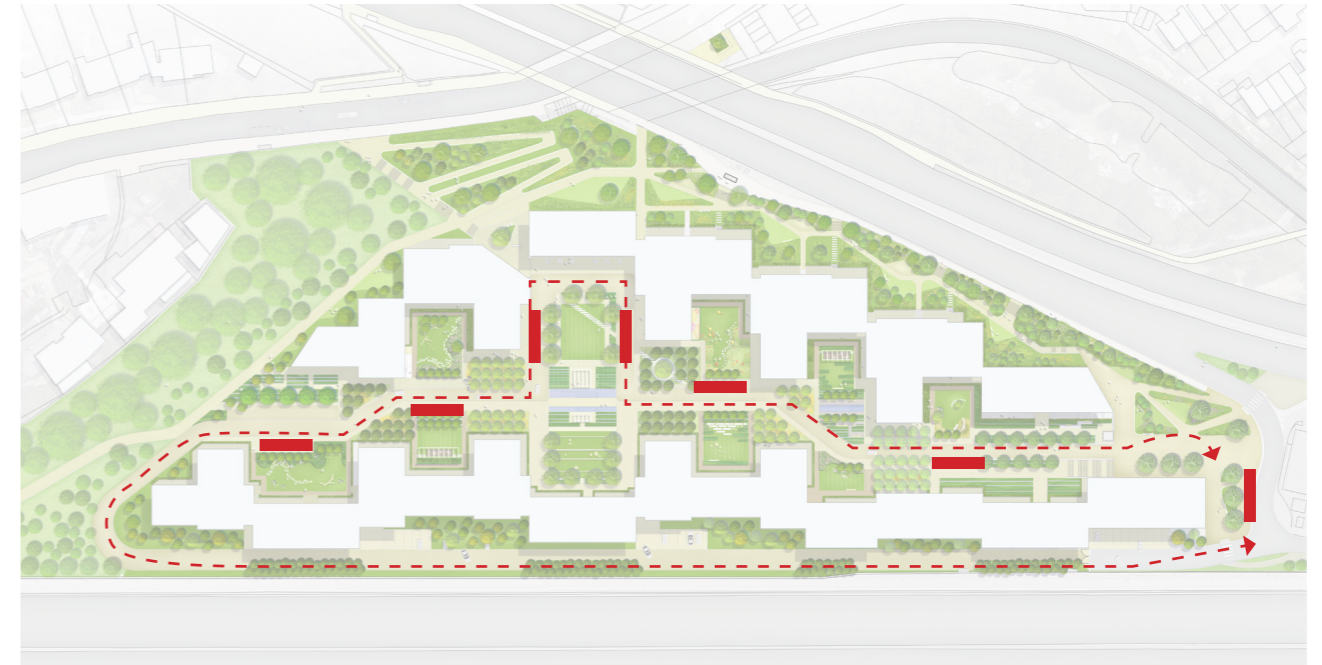
Emergency access is will be achieved throughout the development, via the A1, the internal periphery road, and also internally within the inner central courtyard of the site.

### Improving Access to Transport Services

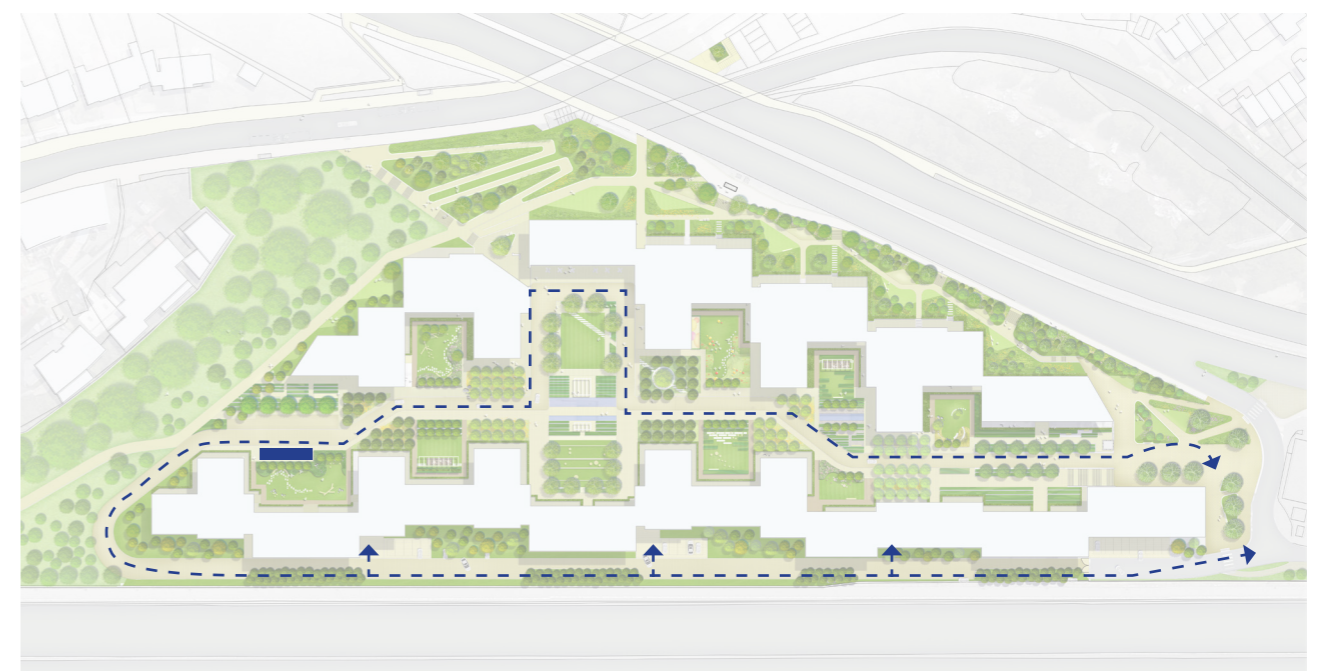
It is proposed to dedicated shuttle bus services to and from desirable connections to public transport.

The service will be of significant benefit for the mobility impaired residents, and for those who do not own a car. It is intended that the service will also be of benefit given the current PTAL rating of the site is low.

By provision of the access to Bunns Lane, the shortest route to access either rail or underground services is achieved at Mill Hill Broadway and Burnt Oak stations.



DELIVERY / SERVING / DROP OFFS



MAIN SERVING AND CAR PARK ACCESS



## 10.0 REFUSE AND WASTE STRATEGY

### 10.1 Refuse and Servicing Strategy

#### Overview

The Waste Management Strategy has been compiled in consultation with the Collection Services at the London Borough of Barnet and in accordance with the best practice guidance requirements set out within the documents listed below.

#### Demolition and Construction Phase

The developer is committed to the minimisation of waste and will employ methods such as the acquisition of a Site Waste Inventory prior to the site clearance which will identify any hazardous wastes and the opportunity for the recycling of materials within the construction process.

A Waste Management Strategy will include an Outline Construction Waste Management Plan which will require:

- Management of the construction site in order to provide opportunities to segregate materials for ease of reuse and recycling in order to minimise waste to landfill;
- Where possible, material to be processed at sites as close as possible the scheme site; and
- The use of resources such as water, diesel and timber will be recorded and managed in a sustainable manner.

The scheme itself has been considered in a manner to design out waste (material optimisation) and the design team has embedded resource efficiency within the overall scheme design with specific reference to WRAP's Designing out Waste principles.

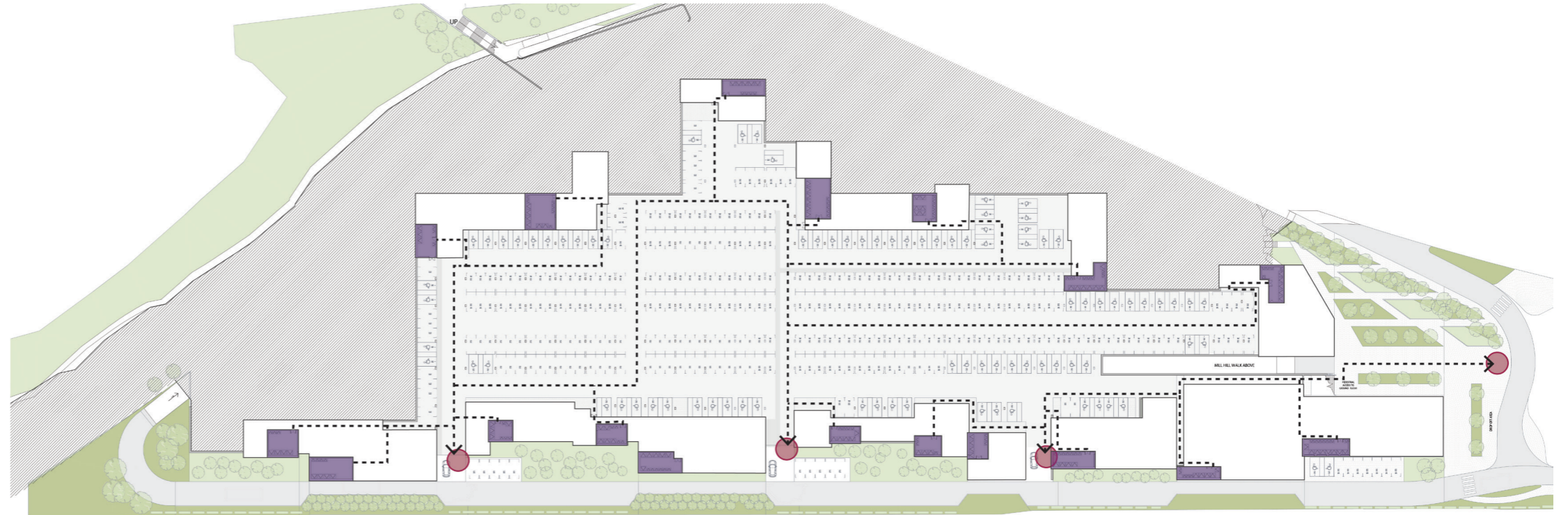
#### Operational Waste Management Phase

The scheme has been designed to adhere, in the first instance, with the capacity requirements set out with the Building Regulations Drainage and Waste Disposal Approved Document H6. This requires that adequate provision shall be made for the storage of solid waste and that adequate access shall be provided:

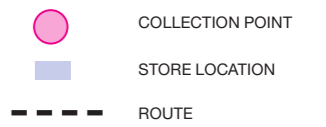
- For people in the building to the place of storage; and
- From the place of storage to a collection point.

The management scheme also takes account of the requirements set out by the London Borough of Barnet within its 'Information for developers and architects – 'Provision of Household Waste & Recycling Service' guidance.

The above documents and those set out below, were taken into account within the development of the final operational waste management strategy which is currently being consulted upon.



WASTE MANAGEMENT STRATEGY



#### Proposed Operational Management Strategy – Domestic Dwellings

The following elements are proposed within the current operational waste management strategy which has been development based upon the current guidance and initial consultation with London Borough of Barnet. It sets out the parameters of a pilot study utilising bin storage capacities not currently in operation, combined with management systems accepted in other parts of the borough. This includes the provision of:

- A minimum internal storage capacity of 60 litres per dwelling, which can accommodate containers for the temporary storage of materials to be recycled. Materials will then be transferred to external containers for collection;
- Lower ground storage areas will be provided to accommodate an agreed number of 1110 litre bins.
- An agreed portion of these (approx. ¾) will be for the storage of recyclable waste which will be moved to the agreed collection point on the appropriate day;
- An agreed portion of these (approx. ¼) will be for the storage of non-recyclable waste which will be compacted on site (at the developer's expense) and collected twice a week by Barnet Waste Collection services.

- A Management Company will be set up at the developer's expense, which will facilitate the following:

- The movement of waste material from landings to basement storage areas;
- The movement of 1110 litre bins to the agreed collection location; and
- The compaction and preparation for collection of non-recyclable waste;

#### Proposed Operational Management Strategy – Non-Domestic Dwellings

In line with the requirements of Barnet's SDC SPD, any non-domestic site uses will be associated with the following waste storage:

- A minimum of 10m<sup>2</sup> designated waste storage space for materials for recycling; and
- Appropriately designed facilities for the collection, reuse or recycling of the waste generated.

Commercial waste will be collected every 2 days by a private waste contractor.



## 11.0 ACOUSTICS AND NOISE

### 11.1 Acoustics and Noise

The site borders the M1 to west and the A1 to the east. It is not surprising that the existing site is characterised by high levels of road traffic noise.

Whilst it is possible to provide high levels of sound insulation to dwellings to control noise intrusion from external sources, it is equally important for the occupants of those properties to have access to relatively quiet amenity space. Access to such space is endorsed in national planning practice guidance. The creation of good quality amenity space has therefore been a primary design objective for the Pentavia scheme.

To minimise noise ingress into the main communal amenity space at the heart of development, 'barrier' blocks have been placed along both the M1 and A1 sides of the site, with the block on the A1 side of the site articulating westwards, to further close the site areas towards Bunns Lane.

The site is further protected by living "Green Walls" along the M1 and A1 boundaries of the site.

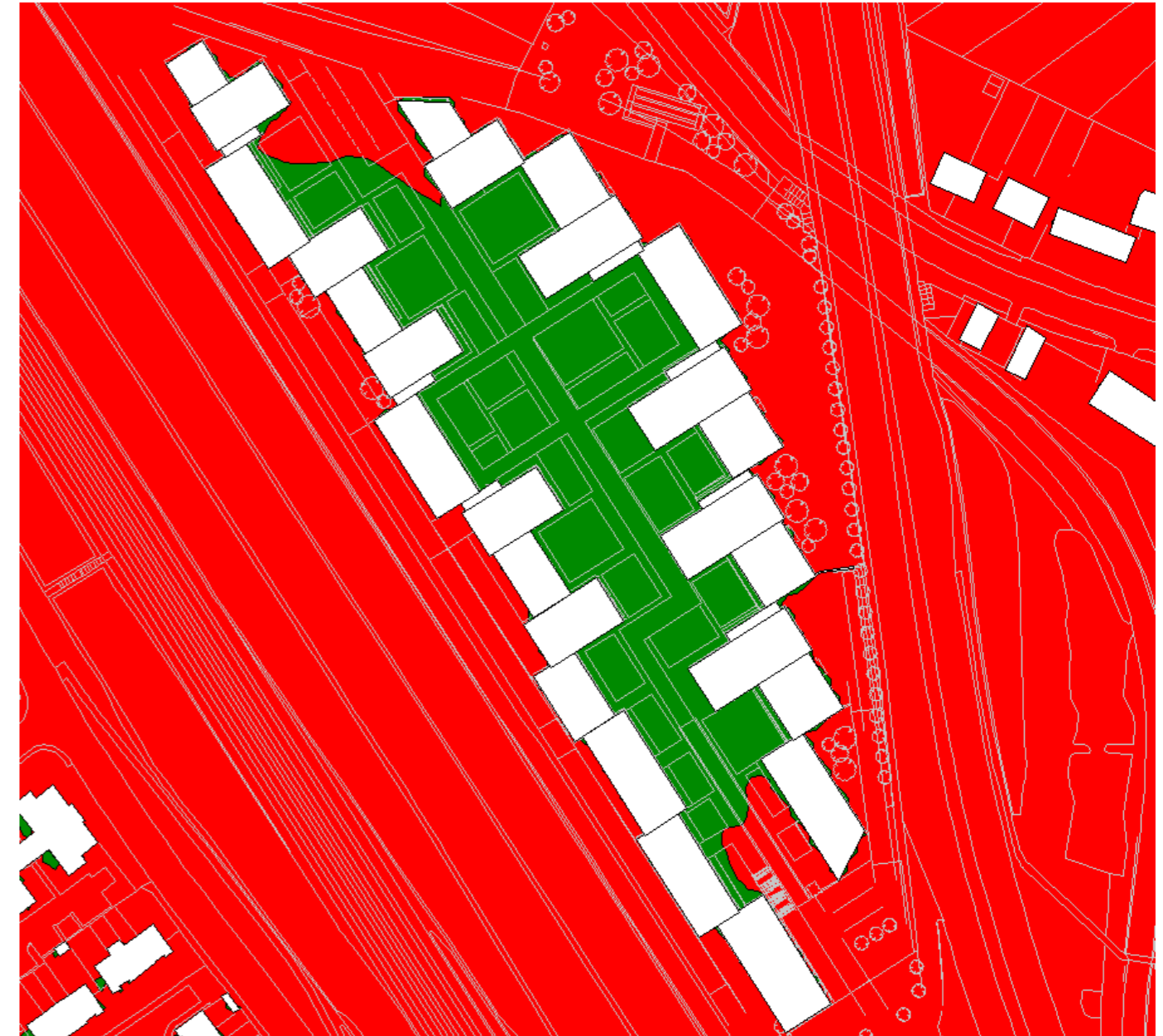
The massing and design of the buildings help create an extensive area of relatively quiet communal amenity space, compliant with the objectives on national planning policy and providing spaces compliant with the World Health Organisation's outdoor amenity guideline value of 55dB(A).

Additional communal amenity areas will also be provided at roof level. The areas will be acoustically protected by 2m high glazed screens around the perimeter of each roof space.

Individual dwellings will also benefit from private amenity spaces (balconies). Noise levels on balconies will be reduced to the lowest practicable level. This is achieved by generally locating balconies on the "quiet" side of each building (i.e. overlooking the "internal" courtyard and amenity spaces) to avoid direct noise from the adjoining motorway and dual carriageway. Where balconies are exposed to higher levels of noise, additional mitigation will be provided in the form of "solid" balustrades and acoustically absorptive treatments (for projecting balconies) and the creation of winter gardens where balconies are inset.

Noise intrusion into the proposed flats will be controlled through the use of a carefully designed sound insulation scheme. This will include:

- The use of pre-cast concrete panels with internal metal stud wall lining system to optimise the sound insulation of solid wall elements.
- High performance "acoustic" glazing
- The use of whole house mechanical ventilation systems (MVHR) to provide alternative means of ventilation and thermal control without the need for occupants to open windows.



ACOUSTIC MODEL FOR PROPOSED DESIGN



## 12.0 AIR QUALITY

### 12.1 Air Quality

The Pentavia site is located between the heavily trafficked M1 and A1 Watford Way. Therefore, air quality is of concern at the site and in particular for the health and amenity of new residents. As a result, the protection of future residents has been a primary driver within the design of the buildings and external layout ( refer to Figure 1 – Baseline Site Air Quality Pre-Development ).

From the outset, the scheme layout was required to incorporate shielding elements in order to protect central amenity areas for future residents, from both noise and air pollution. This was primarily secured by the articulated wall, which protects internal areas from pollution from the M1. Protection from the A1 Watford Way was afforded by the positioning of the deep central courtyard, an internal protected space. Further protection has been provided by the positioning of Block type 2, which face the central courtyard.

Detailed air quality dispersion modelling has then been undertaken to examine the effect of the design and this has indeed demonstrated that the scheme layout results in an demonstrable improvement in external air quality so that ground and balcony levels are well within the health guidelines provided within the UK Air Quality Strategy Regulations ( refer to Figure 2 – Anticipated Site Air Quality Post Development ).

The detailed modelling has also confirmed that air quality on the facades facing the internal spaces is acceptable for the positioning of the Mechanical Ventilation and Heat Recovery (MVHR) inlets. These are required in order to protect residents from poor external air quality incident on the facades adjacent to the M1 and A1 Watford Way.

With regards to building emissions, it should be noted that the borough of Barnet as a whole has been declared an Air Quality Management Area. As a result of this and the requirements of the London Plan, all building emissions have been designed to conform to the requirements of the London Sustainable Design and Construction SPG. This is being achieved by the incorporation of sustainable technologies which incorporate efficient power consumption and lowest practical emissions.

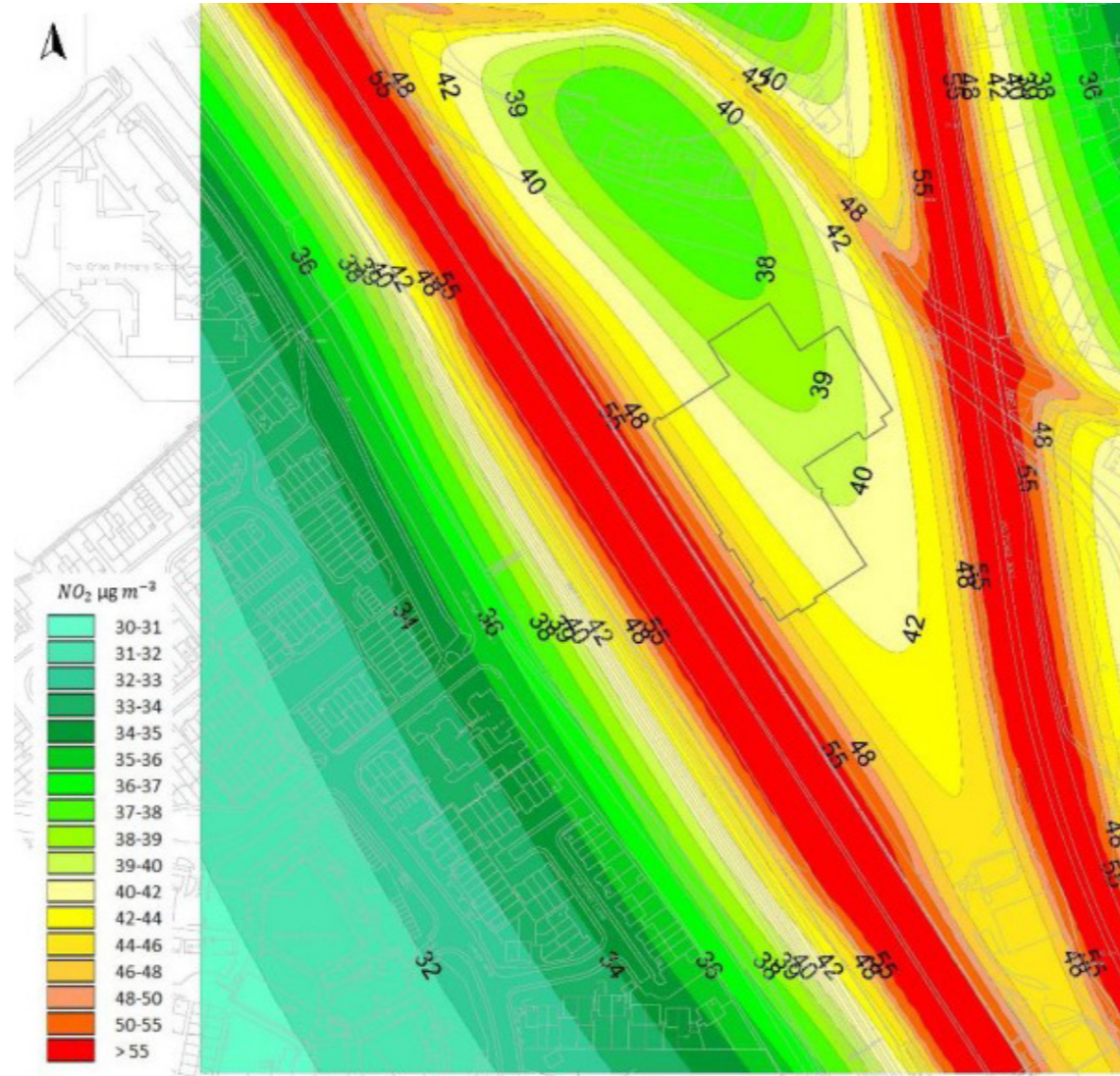


FIGURE 1 – BASELINE SITE AIR QUALITY PRE-DEVELOPMENT

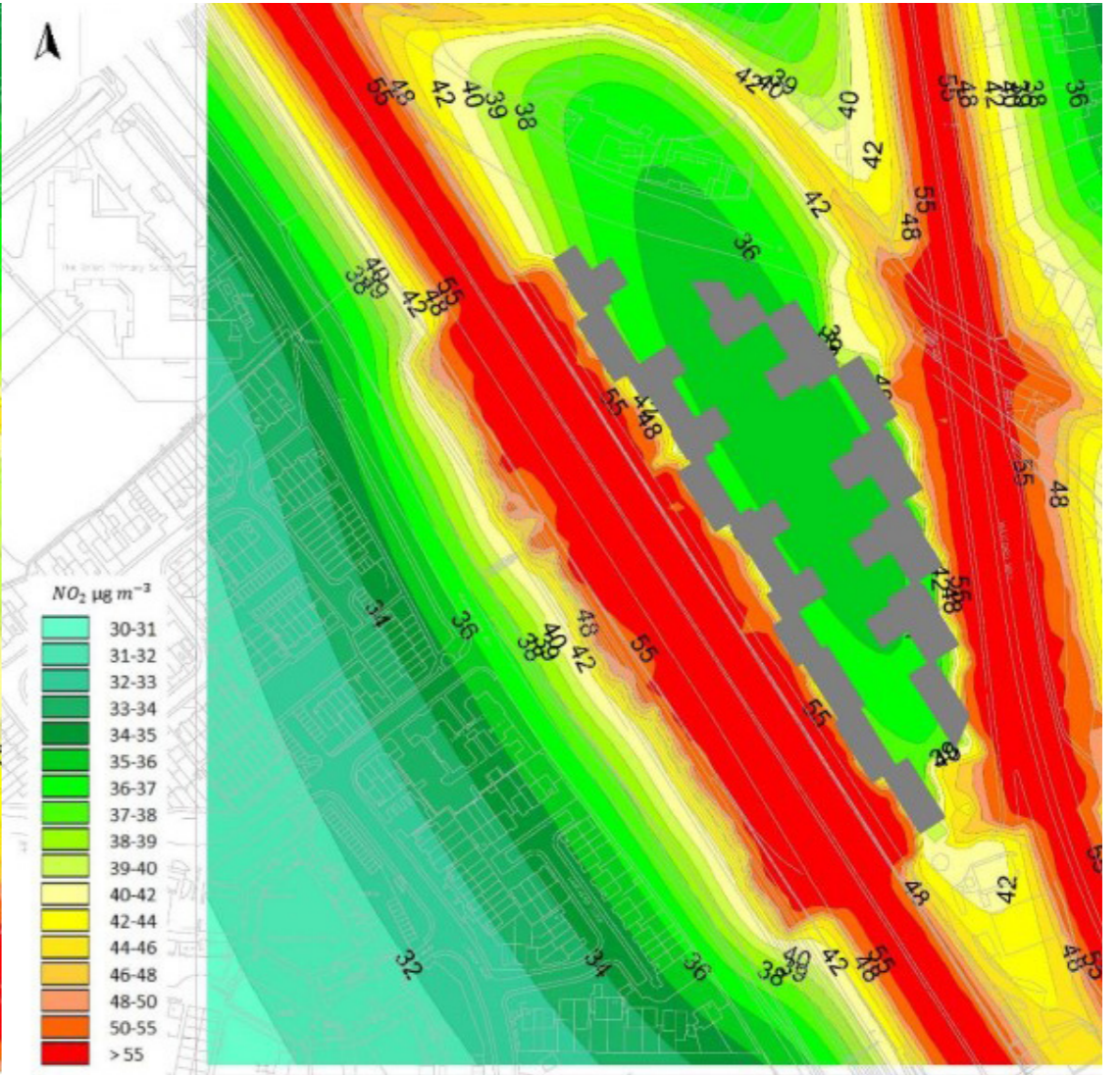


FIGURE 2 – ANTICIPATED SITE AIR QUALITY POST DEVELOPMENT



## 13.0 ENERGY STRATEGY

### 13.1 Energy Strategy

This Energy Statement has been prepared by ChapmanBDSP to support the planning application for the Pentavia, Mill Hill development in Barnet.

The energy strategy for this mixed-use development focuses on providing high quality dwellings and non-domestic spaces that are comfortable throughout the year, but with minimal energy consumption and carbon emissions. The design approach for Pentavia, Mill Hill follows the energy hierarchy i.e. being 'lean, clean and green' to achieve the following targets:

- 35% reduction in regulated carbon emissions against Part L 2013;
- Building emissions compliant with Part L 2013 with demand reduction/energy efficiency measures alone (at 'be lean' stage of the energy hierarchy);

These targets are in line with the GLA's Sustainable Design and Construction SPG, Barnet's SPD on Sustainable Design and Construction, Barnet's Development Plan Document as well as the London Plan 2015 and the London Borough of Barnet Core Strategy.

The design approach for Pentavia, Mill Hill has targeted demand reduction measures first, giving priority to the optimisation of the building fabric in order to reduce the need for both heating and cooling. The objective was to have a building as energy efficient (i.e. 'lean') as possible and not relying on overly complicated systems or technologies to deliver a low carbon performance. The aim was to achieve a low-energy building without relying on carbon offsetting technologies only.

The design of the buildings together with the MEP systems and sustainability features have been optimised so that demand for energy was minimised. High level of envelope insulation and optimised solid-to-glazing ratios are applied to the façade design to ensure heating demand is minimised and in response to the site's surroundings; whilst window and door openings are provided for passive ventilation to reduce the need for cooling. Efficient low energy lighting (with LED lighting where appropriate) and mechanical ventilation with high rate of heat recovery are implemented throughout to further reduce energy demand.

In the absence of district energy networks in close proximity to Pentavia, Mill Hill's site, the current centralised water-based servicing strategy also allows for future connection to district heating scheme by providing a space for heat exchanger in the communal plantroom and a single capped of pipework connection point should one become available.

The development will include a low carbon highly efficient communal heating network serving all domestic and non-domestic areas. A single energy centre will be comprised of communal gas-fired cogeneration scheme with back-up natural gas fired boilers for space heating and domestic hot water. A PV array located on unshaded roofs will further reduce the scheme's electricity demand.

The design of Mill Hill was primarily focused on reducing energy demand ("be lean") and implementation of very low carbon energy generation ("be clean") that includes the use of a good quality CHP that is based on high and stable domestic hot water demand all year round to operate for most of the year and generate significant carbon savings.

Reduced demand achieved by a 'fabric first' approach, with good performing fabric combined with efficient and low carbon system has ensured that the development achieves the target carbon emission reduction against Part L 2013 of 35%.

Domestic energy hierarchy and targets  
Regulated CO<sub>2</sub> emissions (tonnes /annum)

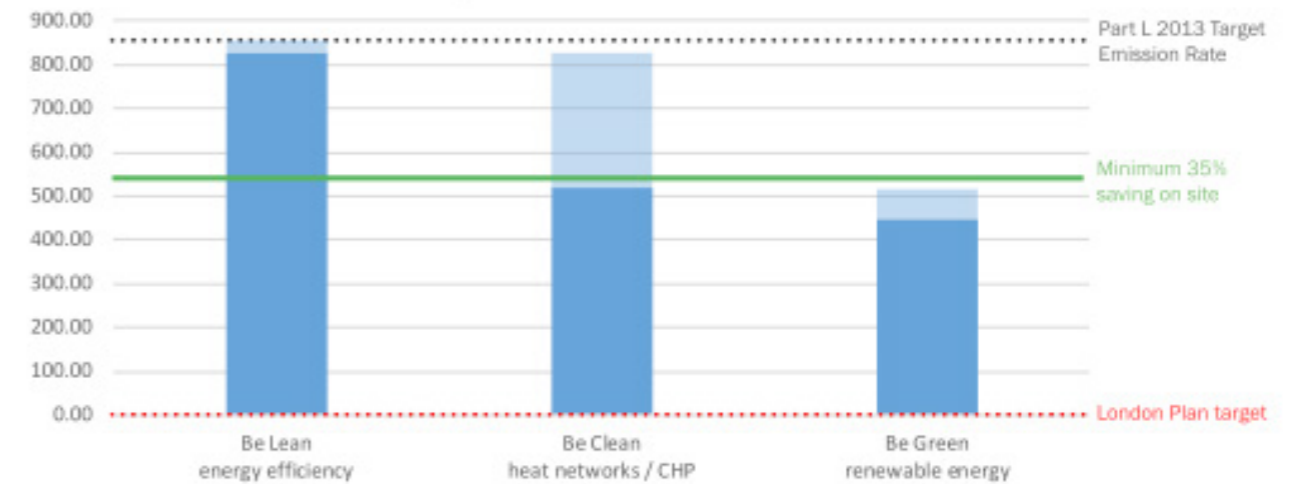


Figure 1 - Regulated CO<sub>2</sub> emissions for the Domestic Energy Hierarchy

Non-domestic energy hierarchy and targets  
Regulated CO<sub>2</sub> emissions (tonnes /annum)

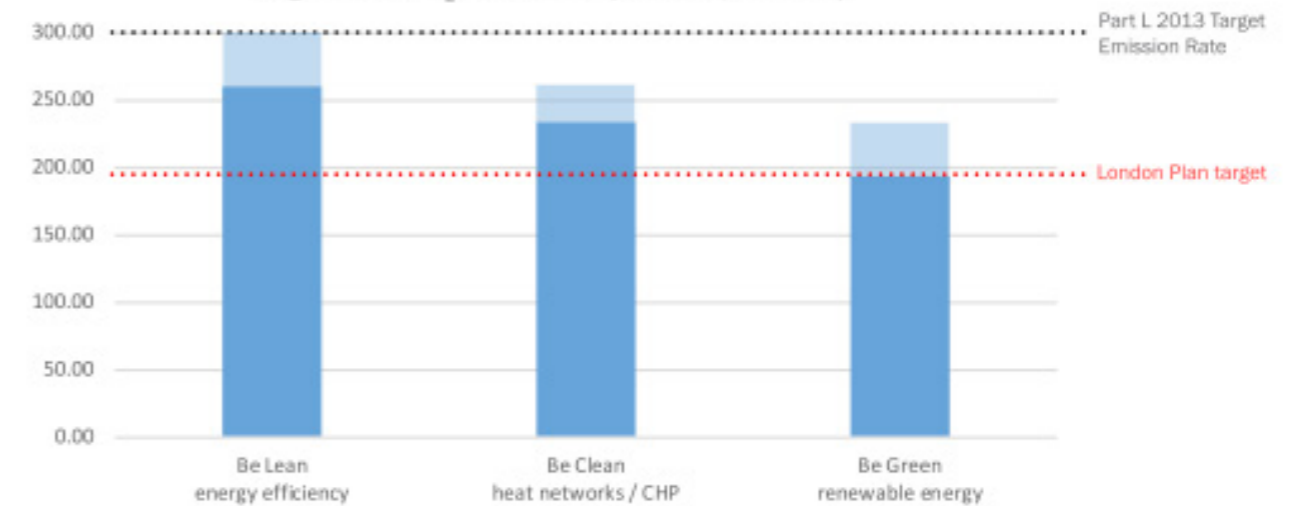


Figure 2 - Regulated CO<sub>2</sub> emissions for the Non-Domestic Energy Hierarchy



14.0 SUSTAINABILITY STRATEGY

14.1 Sustainability Strategy

The BREEAM New Construction 2014 Assessment tool and the London Borough of Barnet SPD – Sustainable Design and Construction have been reviewed and used to optimise the environmental strategy of the development and to demonstrate the sustainability credentials of the scheme. This is in line with the London Borough of Barnet SPD on Sustainable Design and Construction Section 2.20 and Barnet - Development Management Plan (2012) Policy DM-02.

Each of the BREEAM and Barnet’s SPD – Sustainable Design and Construction criteria was fully discussed at a Sustainability workshop led by a BREEAM Assessor/Accredited Professional within ChapmanBDSP environmental team and attended by the project team on 12 July 2016 and 19 August 2016. These meetings have ensured that all members of the development team have a full understanding of the successful integration of the SPD requirements and BREEAM credits and process into their design. An additional workshop was held on 7 November 2017 and 12 March 2019 to review aforementioned documents in line with design changes.

The pre-assessment shows that a BREEAM ‘Excellent’ rating is robustly targeted for the retail and for the ‘D1 use’ part of the scheme.

A formal assessment will take place once the tender Documentation is produced and will require submission of a full evidence bundle from the client and the design team to show compliance with the credits. The BREEAM assessor has been and will continue to form an integral part of the design team and a consistent point for reference, review and questions. This approach is proven through experience to offer the surest route to successful BREEAM certification and holistic sustainable design.

The Sustainability Statement for Mill Hill development demonstrates that the design will holistically incorporate sustainable principles into the full range of sustainability aspects covered by BREEAM and the London Borough of Barnet SPD on Sustainable Design and Construction: Energy, Climate Change, Water, Flood Risk & Drainage, Transport, Materials, Waste & Recycling, Pollution, Landscaping & Ecology.

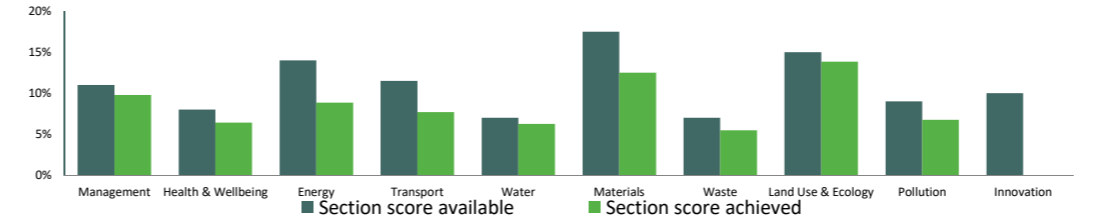
BREEAM UK New Construction 2018 Assessment Report: Rating & Key Performance Indicators

**BREEAM® UK**  
delivered by bre

Overall Building Performance

Building name	Pentavia, Mill Hill (Other Buildings)
BREEAM rating	Excellent
Total Score	77.40%
Min. standards level achieved	Excellent level

Building Performance by Environment Section



Environmental Section	No. credits available	No. credits Achieved	% credits achieved	Section Weighting	Section Score
Management	18	16	88.89%	11.00%	9.77%
Health & Wellbeing	10	8	80.00%	8.00%	6.40%
Energy	19	12	63.16%	14.00%	8.84%
Transport	12	8	66.67%	11.50%	7.66%
Water	9	8	88.89%	7.00%	6.22%
Materials	14	10	71.43%	17.50%	12.50%
Waste	9	7	77.78%	7.00%	5.44%
Land Use & Ecology	13	12	92.31%	15.00%	13.84%
Pollution	12	9	75.00%	9.00%	6.75%
Innovation	10	0	0.00%	10.00%	0.00%

Pre-assessment scoring tool (Other Buildings)

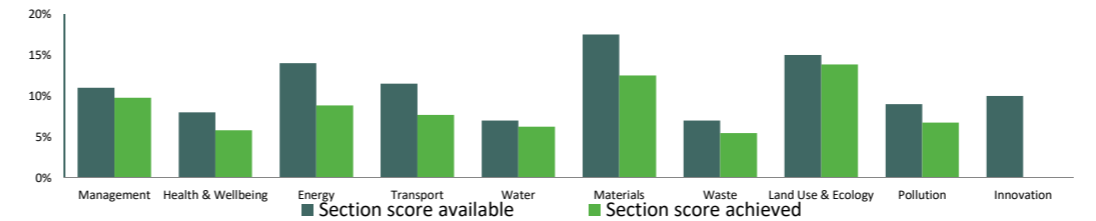
BREEAM UK New Construction 2018 Assessment Report: Rating & Key Performance Indicators

**BREEAM® UK**  
delivered by bre

Overall Building Performance

Building name	Pentavia, Mill Hill (Retail)
BREEAM rating	Excellent
Total Score	76.80%
Min. standards level achieved	Excellent level

Building Performance by Environment Section



Environmental Section	No. credits available	No. credits Achieved	% credits achieved	Section Weighting	Section Score
Management	18	16	88.89%	11.00%	9.77%
Health & Wellbeing	11	8	72.73%	8.00%	5.81%
Energy	19	12	63.16%	14.00%	8.84%
Transport	12	8	66.67%	11.50%	7.66%
Water	9	8	88.89%	7.00%	6.22%
Materials	14	10	71.43%	17.50%	12.50%
Waste	9	7	77.78%	7.00%	5.44%
Land Use & Ecology	13	12	92.31%	15.00%	13.84%
Pollution	12	9	75.00%	9.00%	6.75%
Innovation	10	0	0.00%	10.00%	0.00%

Pre-assessment scoring tool (Retail)



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## 15.0 SERVICES STRATEGY

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### 15.1 Services Strategy

#### Common Area Riser Strategy

- On a typical floor the following risers will be provided:
- Communications riser;
- Landlord and tenant electrical riser;
- Heating riser;
- Cold water services riser;
- AOV smoke extract shaft;
- Commercial riser where applicable;
- Flue riser for the energy centre.

Dedicated risers within each core will rise through the building. Pipework and electrical containment will branch from the riser onto each floor and run within the ceiling void.

#### Common Area Space Heating

The common areas will be unheated.

#### Common Area Ventilation

It is proposed that the smoke clearance system ventilation shaft necessary for protecting the means of escape within the high-rise buildings, be utilised to provide all or part of this low level of ventilation. It may be necessary to provide a dedicated route for make-up air onto the common areas to prevent unbalanced air pressures between zones.

The lower ground floor car park will be provided with a combination of natural and mechanical ventilation for both exhaust fume control and smoke control.

#### Common Area Lighting & Small Power Services

Luminaries with common areas will be vandal resistant and be complete with LED light sources.

#### Common Area Door Entry System

A door entry and access control system will be provided to each building core. The system is specified as two stage with main entrance panels, landing panels and interfacing with the lifts. The proposed door entry system will be audio and visual.

#### Apartment Metering

Energy consumption from the district heating network will be calculated by a heat meter arrangement within the Heat Interface Unit (HIU) to allow accurate individual billing information to be provided to the occupants. Electric and water meters will be provided in the main common area risers.

#### Apartments

With the exception of the affordable units, which will have radiators, heating will be via an underfloor heating system.

For underfloor heating systems the zone control requirements of the Building Regulations will be met by installing a programmable thermostat within the living area and wall mounted thermostats within all other rooms which are wired, via a wiring centre, to actuators installed on each circuit to provide individual room temperature control. Radiator heating systems will be designed with 2 circuits to separate the living and sleeping zones each with a programmer. Temperature control within each room will be via thermostatic radiator valves.

#### Apartment Ventilation

The system will consist of a whole house ventilation with heat recovery. Where identified within the acoustic report apartments on noise affected facades will be provided with additional purge fans to accommodate additional ventilation, without the need to open windows.

#### Apartment Cold Water

Potable cold water will be provided to each apartment via packaged booster pumps connected to a bulk storage tank at lower ground floor level.

#### Apartment Fire Alarms

Detectors/Sounders will be mains operated with integral battery. A dedicated circuit will be provided in the consumer unit for the fire detector mains circuit.

#### Apartment TV System

Quad TV outlets with facilities for TV/Audio/Sat1/Sat 2 connected to the IRS TV system infrastructure will be provided in each living room and each bedroom.

#### Apartment Door Entry System

Each apartment will be equipped with a door entry system handset/apartment unit to allow the resident to hold a two way conversation and view the visitor at the block main entrance panel and landing panel and to remotely open the main entrance/landing door.



16.0 WIND STRATEGY

16.1 Wind Strategy

This chapter was prepared by BMT and assesses the likely significant effects of the Development on the local wind microclimate within and around the Site. In particular, it considers the potential effects of wind upon pedestrian comfort as well as the potential for occasional strong winds to be generated. The assessment is based upon the findings of wind tunnel assessments undertaken by BMT.

The design of the Development considered the likely wind environment for pedestrians. The Development includes a comprehensive landscape strategy which would act as inherent mitigation and provide shelter for pedestrians. As discussed in Section 11.3.18, the wind tunnel model for the Development was tested with the proposed landscaping (i.e. Configuration 3), which is presented in graphical format in Figure 11.13.

Safety

With the introduction of the proposed soft landscaping and rooftop terrace mitigation options, wind conditions are suitable, both in term of pedestrian safety and comfort, within the Development and in the wider surrounding area.

Comfort - Thoroughfares

With the introduction of the proposed soft landscaping, wind conditions at all thoroughfare locations are rated as suitable, in terms of pedestrian comfort, for intended use. This represents a negligible residual effect.

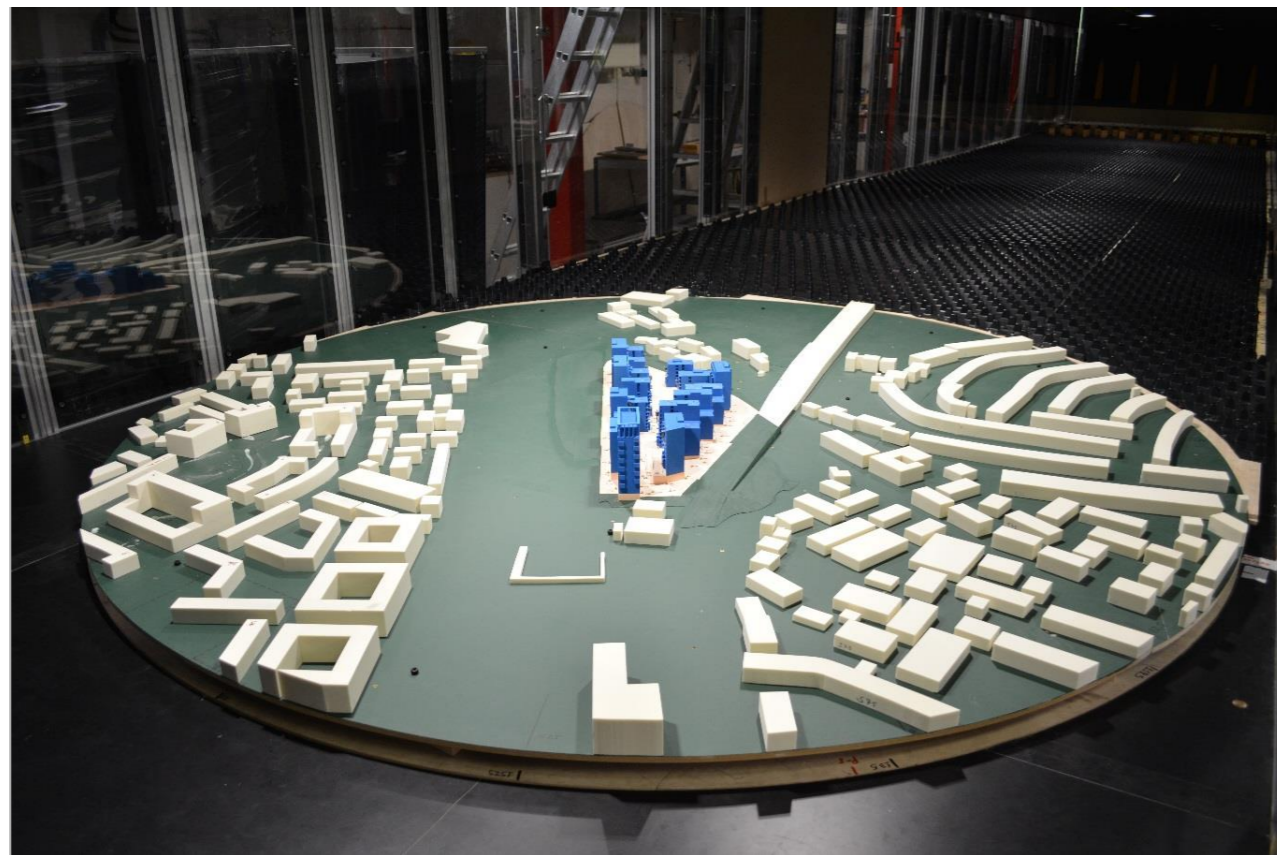
Comfort - Entrances

With the introduction of the proposed soft landscaping, wind conditions at all entrances are rated as suitable, in terms of pedestrian comfort, for intended use. This represents a negligible residual effect. Wind conditions at waiting areas, i.e. bus stops, around the Development are rated as suitable, in terms of pedestrian comfort, for intended use. This represents a negligible residual effect.

Comfort - Recreational Spaces

Wind conditions at recreational and amenity spaces within the Development are rated as suitable, in terms of pedestrian comfort, for intended use. This represents a negligible residual effect.

Overall, inclusion of the cumulative schemes in the assessment was found not to result in any changes to the suitability of the assessed locations. The cumulative wind microclimate residual effects of the Development would therefore be unchanged from the residual effects outlined above for the Completed Development Assessment.



WIND TUNNEL ANALYSIS

Figure 11.13: Wind Microclimate Development + Existing Surrounds with Soft Landscaping – Upper Ground Level

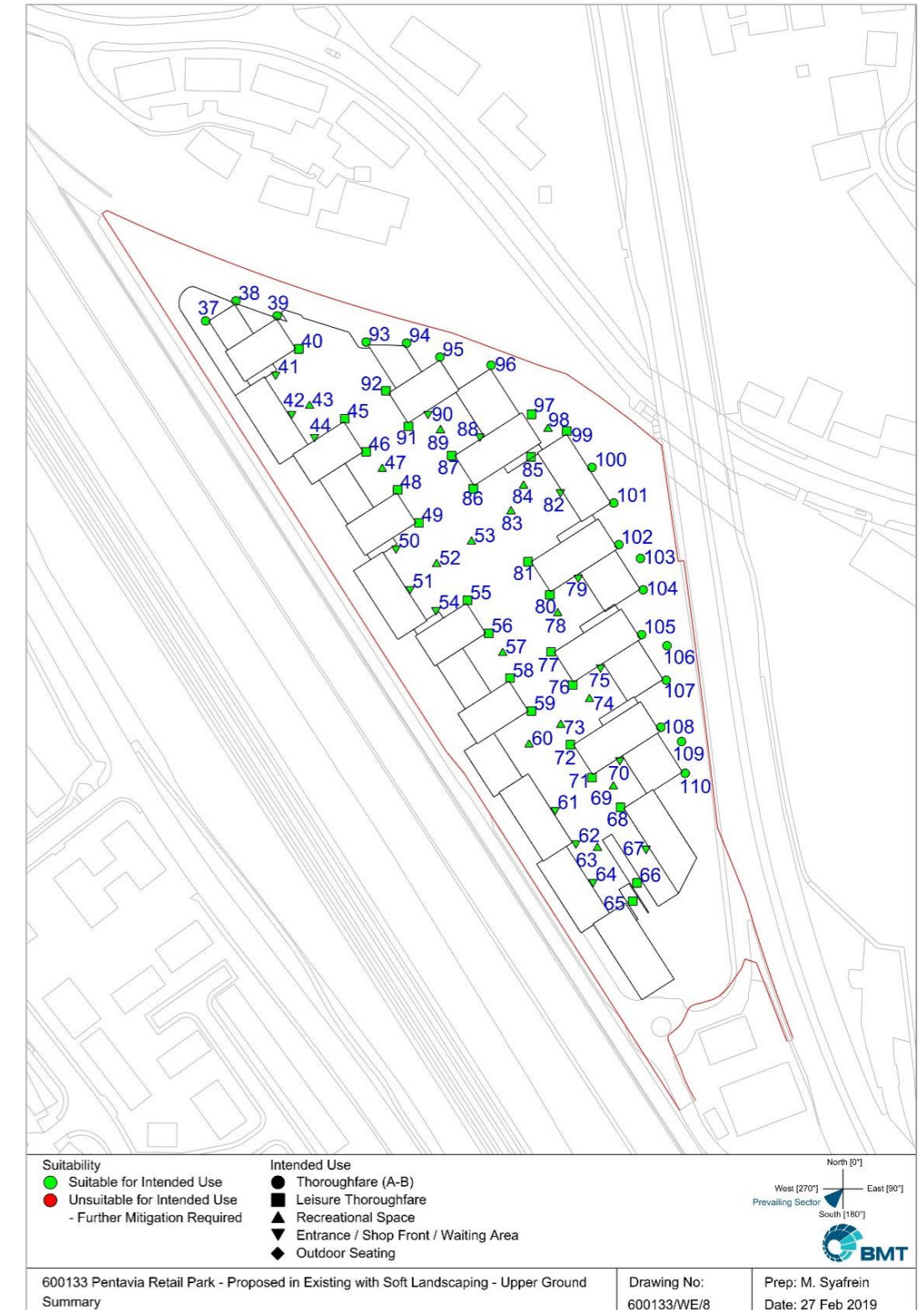


FIGURE 1



## 17.0 ACCESS

### 17.1 Introduction

This Access Statement was prepared by Peter Connell Associates at concept design stage. It satisfies the Town and County Planning (Development Management Procedure) (England) Order 2010, article 8 and The Planning (Listed Buildings and Conservation Areas) Regulations 1990.

In addition this application takes full account of the Mayor of London's London Plan, in particular the Supplementary Planning Guidance (SPG) "Accessible London: Achieving an Inclusive Environment" April 2016.

The design philosophy for this development is to achieve an inclusive environment throughout. Issues relating to access and inclusion have been and will continue to be, considered throughout the design process.

The Access Strategy is based on a social model of inclusion. The design philosophy seeks to achieve an inclusive design that maximises access for all people. This satisfies the General Duty placed upon the London Borough of Barnet under the Equality Act 2010 and the London Plan to promote the interests of Disabled people.

The term "disability" has been viewed in its broadest sense and includes impaired mobility, sight, comprehension and hearing. This approach addresses not only the short-term compliance with the intent of the Equality Act together with the relevant planning policies but also the long-term implications of sustainability. The aim is therefore to provide an inclusive environment throughout.

The principles of an accessible environment contained within this document address the needs of the following user groups:

- Individuals with mobility, sight, comprehension or hearing impairment
- The ageing population
- People with temporary injuries
- People whose movement may be impaired or encumbered in any way i.e. pregnant women, people with young children, or people with baggage.

### 17.2 Inclusive Design Criteria - Standards

The Equality Act has been in force since October 2010, and replaces, amongst other legislation, the Disability Discrimination Act (DDA). However, the same underlying philosophy regarding discrimination on the grounds of disability applies, and the duties placed on the physical design of the built environment remain unchanged.

In summary, the Equality Act 2010 aims to protect the nine identified 'protected characteristics', of which one includes 'Disability'. With regards to Disability, the Equality Act provides legal rights for disabled people in the areas of:

- Employment;
- Education;
- Access to goods, services and facilities;
- Buying and renting land or property;
- Functions of public bodies.

The Equality Act, although not prescriptive, includes an intent to offer disabled people an accessible environment which does not discriminate against them because of their impairment. Statutory regulations and recommendations for the built environment provide parameters for how an accessible environment can be achieved. Compliance with these regulations and recommendations is not proof that Equality Act issues have been addressed. They do though go a long way to ensuring such issues are considered.

In the Act, the term 'disability' includes not only disabled people, but also people who have an association with a disabled person (e.g. carers and parents) and people who are perceived to be disabled.

In order to maximise access for disabled people the following guidance has been used. If there is a departure from the adopted guidance, there will be a reference to this effect in the Access report.

- The Building Regulations 2010
- Access to and Use of Buildings Approved Document Part M 2015 Edition incorporating 2016 amendments
- BS 8300: 2009 + A1:2010 (Design of Buildings and their approaches to meet the needs of disabled people).
- Department for Transport (DfT), 2005, "Inclusive Mobility" (A Guide to Best Practice on Access to Pedestrian and Transport Infrastructure).
- BS 9999:2008 (Code of practice for fire safety in the design, management and use of buildings).
- Barnet Council Local Plan
- The London Plan (and London Plan SPG), Mayor of London, 2015.
- Consideration of Equality Act issues.

### 17.3 Consultation Review

Should there be any departures from the adopted performance indicators, the report will elaborate the reasons for this decision, the details of any adopted alternative, the rationale behind it and notation detailing when any such departure was taken.

To ensure the achievement of inclusive design the following actions have been adopted:

- All design team members have been made aware of inclusive design and understand the principles involved; All design members have been briefed on access/ inclusive design and understand its principles.
- Access will be an agenda item at design team meetings, reporting the reasoning behind any departures from adopted design guide(s) and the rationale behind any alternative adopted solution or compromise, together with the authority or evidence that supports such an approach..

### 17.4 Development Overview

The Design and Access Statement contains a full description of the scheme. Issues that have had an impact on access in the design of the development to date form part of this Access Statement.

Also included are the reasons for the constraint and any alternative solution adopted or proposed including any authority, research or advice that has influenced the decision.

The initial results of the Design review indicate that detriment to disabled people is unlikely or insignificant.

The arrangements for access described in this report reflect the current design. The descriptions in this report have been based on the drawings dated November 2017. Access arrangements will be addressed in further detail as the design develops.

This appraisal is presented as a design guide, which should be used as a reference document during design development. It will demonstrate the intent of the Equality Act and compliance with the statutory regulations, in particular, Approved Document M.



17.0 ACCESS

17.5 Site Wide Issues

Site

The site lies between the A1 Watford Way, which is a dual carriageway, and the M1 motorway. It is situated in the Mill Hill ward of the London Borough of Barnet. Due to acoustic considerations, the majority of the site will be raised 5m above Watford Way and the M1.

Although the site is large, a little under four hectares, the existing buildings are in a poor state of repair and offer limited employment opportunities.

Transport Links and Pedestrian Access

Vehicular access to the site is by means of Watford Way.

The development proposes a new ring road running from the existing roundabout, parallel to the M1 motorway and returning through the site. The ring road provides access to the private internal lower ground parking and the open air public parking to the west and south of the site.

With the exception of taxi and delivery drop off, parking will not be permitted anywhere else on the site. (Refer to the Transport Strategy). The ground level of the site is step free, level or gently sloping and located 5m above the surrounding topography.

Step free pedestrian access from Bunns Lane, to the north of the site, is by means of a series of landscaped walkways. The walkways will have a maximum gradient of 1:21 and will contain level rest areas every 10m.

The existing pavements on Bunns Lane are step free and provide dropped kerbs and tactile paving to assist access.

Step free access from the public car park, located in the south of the site, is by means of a lift on the northern side of Mill Hill Walk and a stair on the southern side of Mill Hill Walk.

The lift car has an internal dimension of 1100mm by 2100mm which is greater than the recommended minimum. The lifts are sized to accommodate family units as well as wheelchair users and will be designed to the recommendations set out in Approved Document M, BS8300 and to BS EN 81-70 and BS EN 81-1.

The stair will be designed to the recommendations set out in Approved Document Part M and K. The lift and stair also provide pedestrian access for residents to the Local Convenience store and bar/restaurant, located at Lower Ground Floor level.

The centre of the site is level and step free and will contain fully accessible dedicated play areas together with open grass areas and planted areas.

Access to the courtyards at podium level, is via a lift, accessible to Wheelchair users.

The development has also been provided with courtyards at podium level. Access to the courtyards is by means of wheelchair accessible lifts. Internally the lift cars will be designed to the recommendations set out in Approved Document M, BS8300 and to BS EN 81-70 and BS EN 81-1.

The area is well served by the London transport system, and is easily accessible from in and around London.

Bus stops are provided within walking distance of the site on Bunns Lane and are accessible to wheelchair users.

Mill Hill Broadway station lies on the Midland Main Line and is served by Thameslink on the cross-London route. The station is accessed by steps only and is therefore not accessible to wheelchair users.

Car Parking and Cycle Storage

Step free Residential/commercial car parking and cycle storage is provided internally at Lower Ground floor level. Additional external car parking is provided at lower Ground floor level, along Mill Hill Walk and to the south of the site serving the convenience store and bar/restaurant.

Access to the internal lower ground car parking, from the upper levels, is by means of wheelchair accessible lifts and stairs contained within each building core.

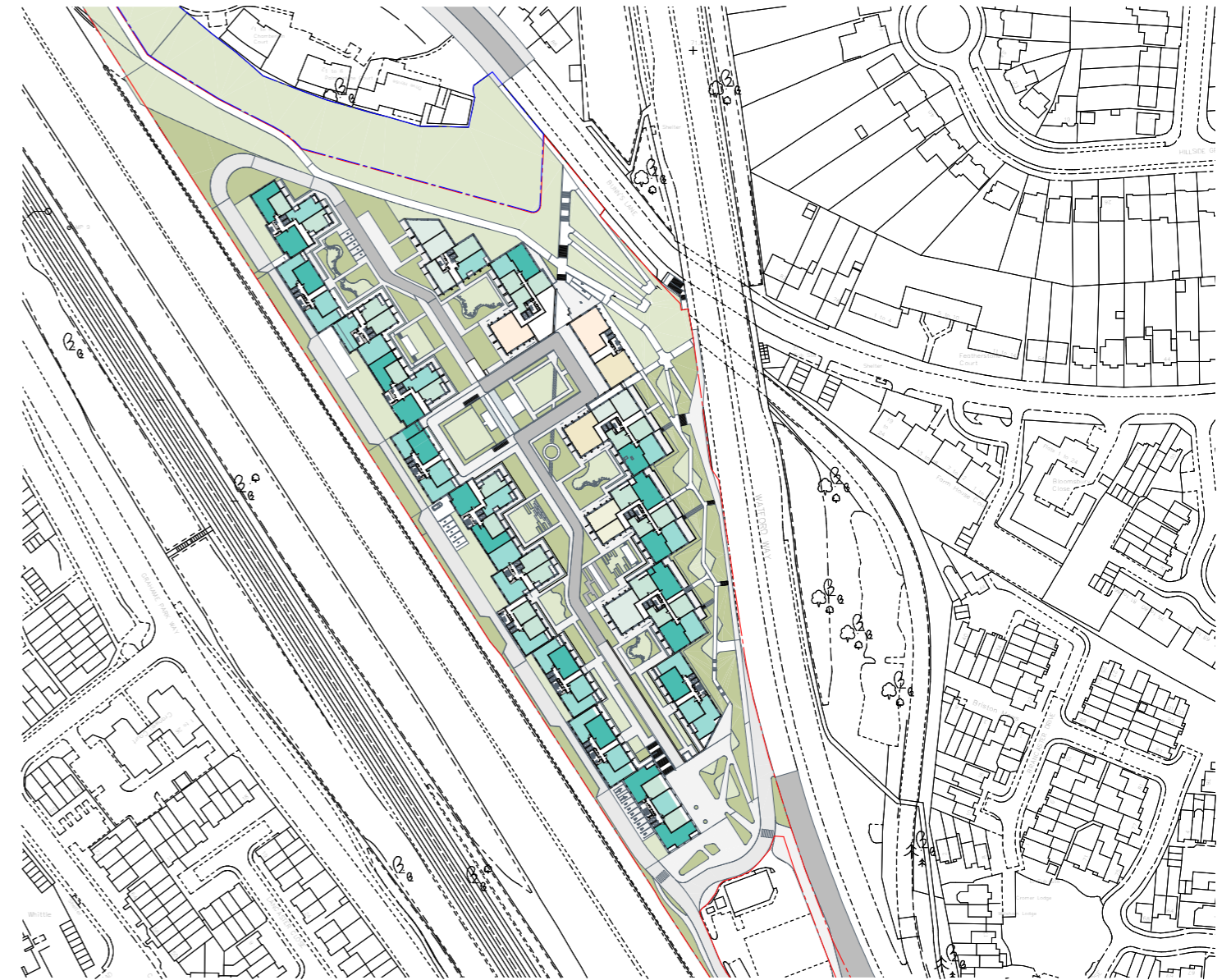
Car parking consists of 366 residential parking bays, 85 of which are designed as wheelchair accessible bays and 9 commercial car parking bays, 2 of which are designed as wheelchair accessible bays.

All residential wheelchair accessible parking bays are dimensioned to the requirements of Approved Document Part M Volume 2.

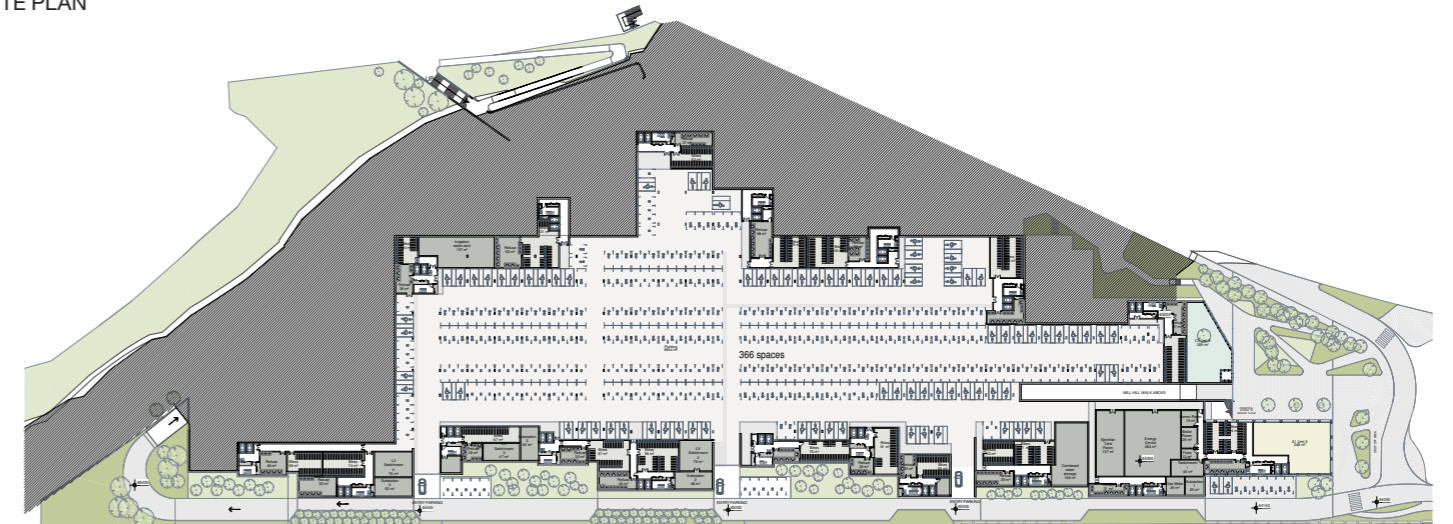
Pedestrian routes will be provided within the internal car park, which will be marked with a coloured surface and will be well lit. Routes will be 1200mm wide indicating a safe route towards the circulation cores.

Bicycle storage for 1603 cycles are also provided within the internal Lower Ground floor car park.

The bicycle storage is step free and accessible. Bicycle spaces for disabled cyclists will be provided as and when required.



SITE PLAN



LOWER GROUND FLOOR PLAN



## 17.0 ACCESS

### Retail and Service Units

Retail and service units have been provided to the west and south of the development at ground and lower ground level. The retail and service units consist of a bar/restaurant, local convenience store, retail units, a fitness centre, work share hub, nursery, concierge, post office and security office.

All unit entrances are step free and accessed directly from the public realm.

Each unit will have fully glazed door sets. Each door will provide a minimum clear opening width of 1000mm, as recommended in Approved Document M and BS 8300.

Any glazed fronts will be required to have either low level applied manifestations or will be located on an upstand of between 200 mm and 400 mm high, dependant on the external ground condition. This distinct upstand or manifestation will provide a visible and physical indication of the spatial location of the glazing plane. The glazing can otherwise be generally left clear to suit the requirements of the retail tenants. Internally all units are step free throughout.

All units are designed as base build, which does not include internal fit out.

The floor finish inside the units will be determined by the tenant during fit-out to comply with the then current regulations and recommendations. After fit-out, all areas within the units should be accessible to all. This will be determined by the tenant to comply with the then current regulations.

### Residential

90% of residential units are designed to Approved Document Part M Volume 1 M4(2) Category 2.

Bed Type	Studio	1 Bed	2 Bed	3 Bed	Total
Total Units Available	4	281	436	123	844
Wheelchair Accessible Units	4	52	33	3	92

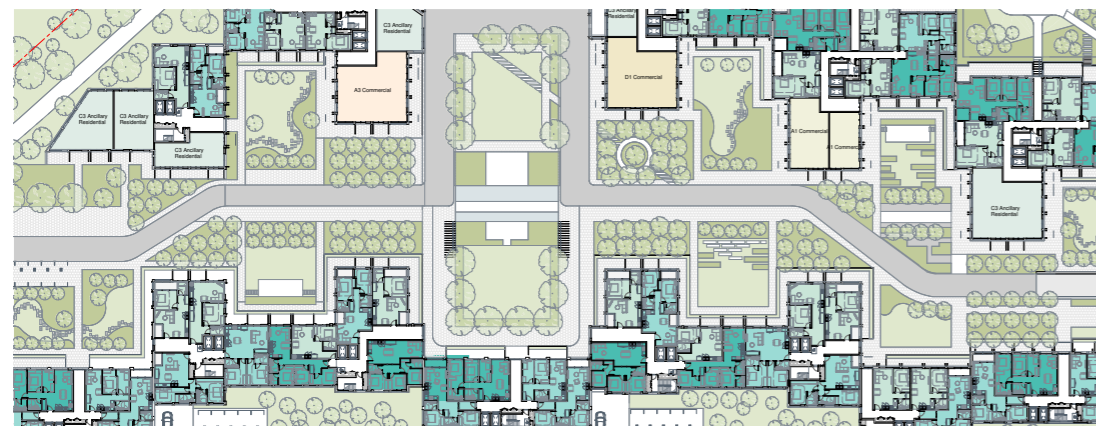
Additionally, 10% of residential units are designed to Approved Document Part M Volume 1 M4(3a) Category 3. These units are spatially designed to be wheelchair adaptable, although will not be fitted out as such. Designated wheelchair adaptable residential units are located so as to provide a variety of views and experiences.

All units will be accessed by means of circulation cores, from ground floor. Balcony areas will be provided for use by residents, and will be designed to be accessible with thresholds no greater than 15mm. Balconies are designed to the recommendations set out in Approved Document M Volume 1 and BS 8300.

The sanitary facilities within 90% of apartment types are designed to the recommendations set out in Approved Document Part M Volume 1 M4(2) Category 2.

The 10% of residences designed as wheelchair adaptable, have an accessible bathroom which contains a level entry shower. All wheelchair adaptable apartments are designed to the recommendations set out in Approved Document Part M Volume 1 M4(3a) Category 3.

Toiletry furniture will be located in prescribed positions for practical reasons and will not vary from the recommendations set out in Approved Document Part M Volume 1 M4(2) Category 2 and Approved Document Part M Volume 1 M4(3a) Category 3.



GROUND FLOOR PLAN

### 16.6 The Buildings

The proposed development provides 844 residential units, lower ground floor level car parking and an assortment of ground level commercial use units.

The residencies are arranged in x blocks ranging from x storeys to x storeys and provide step free access by means of the ground floor level and lower ground floor level.

### Building Entrances

All external communal entrances and private internal/external entrances are level and step free. External communal entrances and accessed directly from the public realm.

Each communal entrance consists of a 2000mm wide glazed double door set. Each glazed door set will have visible and permanent manifestations applied to the surfaces. The entrances will have a slip resistant floor finish. Matwells have been provided at the entrances to aid the removal of moisture and soil upon entry; the surface of the mat will be level with the surface of the adjacent floor finish.

Each internal/external private entrance consists of a 850mm wide doorway with the required 300mm nib and appropriately dimensioned landing outside the door.

All entrances afford level access and have been designed to the recommendations set out in Approved Document M Volume 1 and BS8300.

### Internal Access

Each floor within each building is level, and step free. Access between floors is achieved by means of accessible lifts and stairs.

Each lift has a clear internal dimension of 1100mm x 2100mm. This is above the recommended minimum clear dimension for use by a wheelchair user. A mirror will also be provided on the lift wall opposite the door to assist a wheelchair user to reverse out. The lifts have been designed to the recommendations set out in Approved Document Part M Volume 1, BS8300 and to BS EN 81-70 and BS EN 81-1.

Stairs are designed as access stairs and have been developed to the recommendations set out in Approved Document Part M Volume 2 and BS8300.

Access to the residential apartments, on each level, is by means of circulation corridors from the accessible lifts and stairs.

Levels containing only Category 2 apartments or Category 3 apartments, have a corridor width of 1500mm. Levels containing more than one

Wheelchair accessible apartment have a corridor width of 1500mm with additional passing places of 1800mm x 1800mm where sight lines are obstructed.

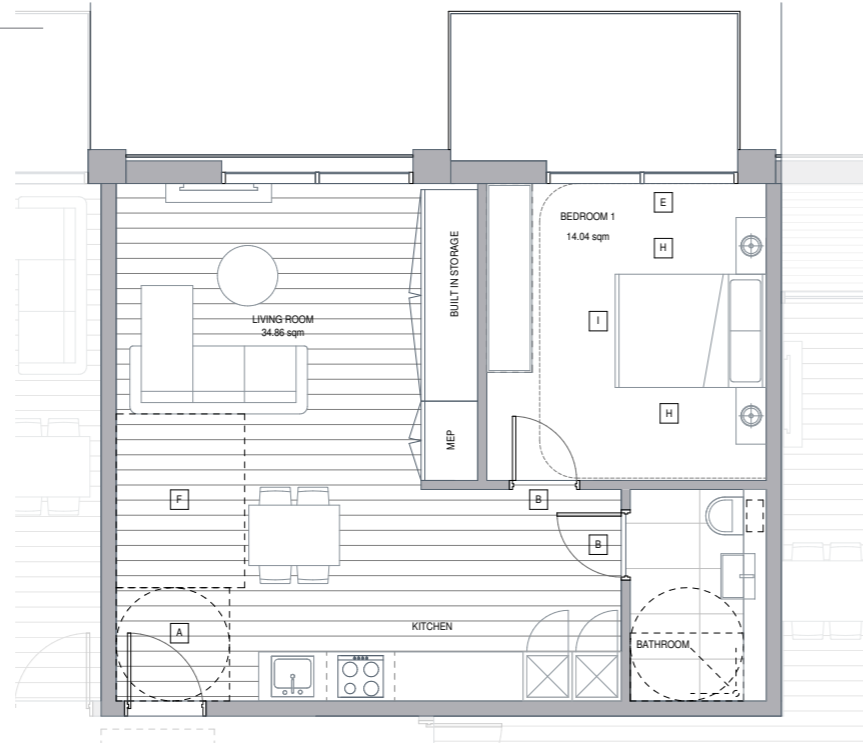
Internal floor finishes are slip resistant, hard wearing, firm, level and easily maintained. The internal floor surfaces will not impede the movement of wheelchairs.



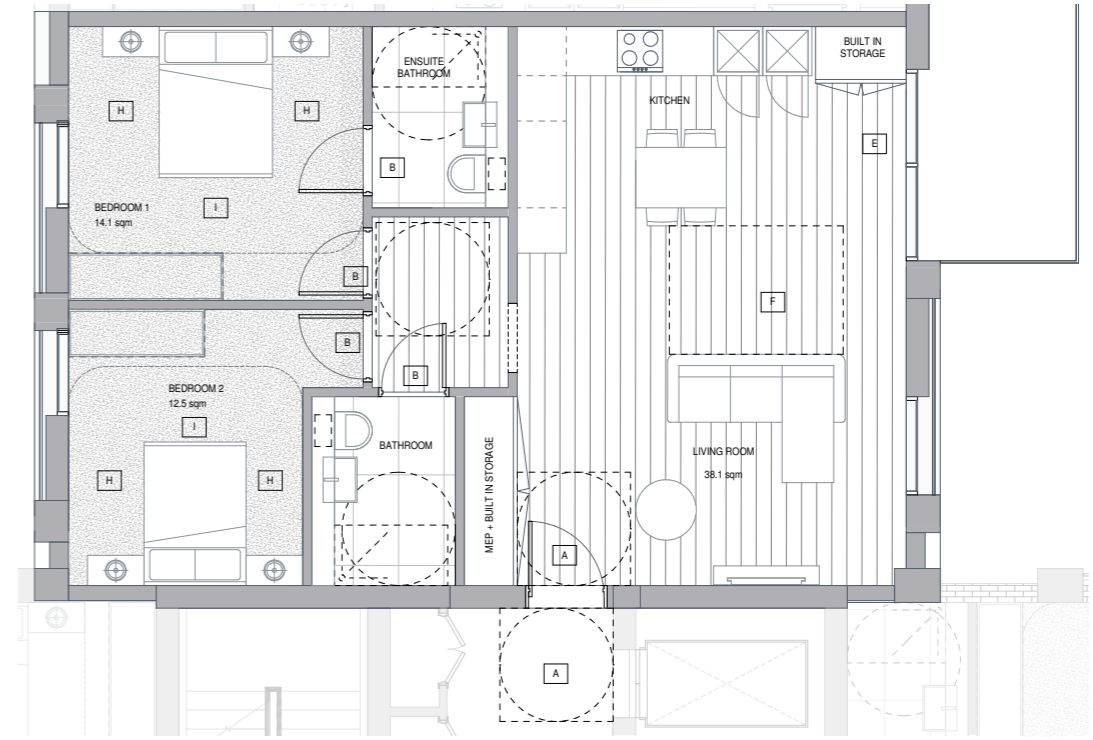
17.0 ACCESS

Typical M4(3) Unit Layouts (11.2% of all apartments)

- A. ENTRANCE LEVEL DOOR 850mm CLEAR OPENING WIDTH WITH CIRCULATION ROUTE TO DOOR 1500mm
- B. INTERNAL CIRCULATION DOORS IN UNITS MIN CLEAR WIDTH 850mm WITH 300mm NIBS
- C. BATH 1700mm X 700mm (WITH 1000mm X 1000mm ACTIVITY SPACE FOR FURNITURE SHOWER PROVISION) & 400mm END TRANSFER SPACE
- D. 1500mm X 1500mm TURNING CIRCLE IN MAIN BATH ROOM
- E. SLIDING DOOR TO BALCONY 800mm MIN CLEAR OPENING WIDTH
- F. 1700mm x 1100mm TRANSFER SPACE
- G. 1800mm x 1500mm MANOEUVRING SPACE
- H. 1200mm x 1200mm ACTIVITY SQUARES IN BEDROOMS
- I. 1000mm TRANSFER SPACE TO SIDE A FOOT OF BED
- J. 1500mm x 1500mm ACTIVITY SPACE IN KITCHEN



1 BED TYPICAL M4(3) UNIT



2 BED TYPICAL M4(3) UNIT



3 BED TYPICAL M4(3) UNIT