

# Design & Access Statement

Proposal to submit minor material amendments and addition of outbuilding

Location: Land adjoining 1a Nicholls Avenue UB8 3JL

*The purpose of a Design & Access Statement is to explain how the proposal has evolved, and its suitability for a particular site. The DAS provides an opportunity for the applicant to demonstrate their commitment to achieving integrated, safe and accessible design. It is not acceptable to state simply that the development complies with the various standards.*

		Associated drawing
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<b>9.0</b>	<b>General design, detailing &amp; building notes</b>	

## Accompanying drawings:

Document	Ref:	Type:	Issue / Date
Street plan (Location Plan)	NA02-01a	A0 Drawing PDF	Revised 01-08-24
Existing site plan (Block Plan)	NA03-01a	A3 Drawing PDF	Revised 01-08-24
Proposed site plan	NA04-01a	A3 Drawing PDF	Revised 01-08-24
Proposed elevations	NA05-01a	A3 Drawing PDF	Revised 01-08-24
Proposed street view	NA05-02a	A3 Drawing PDF	Revised 01-08-24
Building shadow	NA05-03	A3 Drawing PDF	No changes 01-04-22
Car-port elevations	NA05-04a	A3 Drawing PDF	Revised 01-08-24
Outbuilding elevations	NA05-05	A3 Drawing PDF	New addition 01-08-24
Ground floor layout	NA06-01	A3 Drawing PDF	No changes 01-04-22
First floor layout	NA07-01a	A3 Drawing PDF	Revised 01-08-24
Longitudinal section	NA08-01	A3 Drawing PDF	No changes 01-04-22

## 1.0 Introduction

This Design & Access Statement has been prepared to accompany an amended planning application for the development of a vacant plot of land with new residential dwellings, associated car parking, amenity outbuilding and private gardens.

Nicholls Avenue is a quiet, suburban residential street, about 2.2 miles South East of Uxbridge town centre and runs between the A4020 Uxbridge Road and the A347 Harlington Road. The site is situated on the North side of the road close to the intersection with Bourn Avenue, and covers approximately 581 Sqm. The site is not located within a conservation area.

The plot was originally purchased by the occupiers of 95 Harlington Road, from the owners of the land forming Nicholls Avenue, with a long-term intention to build two houses, but it was used for many years as a private garden and small-holding. In the 1950's the site and surrounding properties were restricted by an intended compulsory purchase orders from the MoT, to construct a trunk road between Stockley Road and Long Lane, directly linking the A4 and A40. However, in the late 1970's the scheme was abandoned releasing the land again for development. Originally this site would have been the most westerly building plot in Nicholls Avenue but over the years development of corner properties in adjacent roads has created surrounding buildings with individual designs and layouts.

The local area is characterised as 'plotland' from its historical development as defined by the LBH Townscape Character Study.

*Plotland development differs significantly in that, unlike the large estates, which were built to a relatively high degree of conformity by major public or private developers, these areas of development were built piecemeal. Streets were laid out and individual plots constructed to the wishes of a builder working speculatively on one or two plots or by a purchaser commissioning a house to suit their wishes.*

*As with other areas of development, gradual modifications to properties by successive owners has continued to change the character of these buildings from their original design. However, whereas planned estates could be said to have a clear identity or collective design, which is worthy of protection, plotland development has always enjoyed a more diverse and fragmented character.*

### Development proposal

*A variety of approaches to housing typologies and layout of buildings should be explored to make the best use of land and create high quality, comfortable and attractive homes. Wherever practicable a mix of housing units of different sizes should be provided in schemes of residential development including, in particular units of one or two bedrooms. Developments to be of high quality design and provide adequately sized rooms with comfortable and functional layouts, which are fit for purpose.*

Sustainability, occupant comfort and inclusion have driven this proposal to develop a quality living environment, providing generous interior space with positive light and ventilation, creating an attractive home and a comfortable place of retreat, in dwellings located in an established residential community.

Today considerable emphasis is placed on new-builds to make the best use of the finite supply of well-located and serviced land, with design and construction focused on sustainability. Criteria of the guidelines respecting location, PTAL, u/ha & hr/ha were considered to determine the site capability to which this planned scheme easily complies.

The objective of this proposal is to produce a building that endeavors to meet requirements of the applicant whilst considering all aspects of a sustainable development, amenity of neighbours and longevity of the design. Two previous planning applications have been approved on this site for the erection of four one-bedroom flats, and a four-bedroom detached house, with a footprint and garages similar to this current proposal.

Local geology and added ground conditions combine to necessitate expensive below-ground construction, so a thoughtful, above ground scheme is needed to give building efficiency and not out-value any development in this location. From ground surveys and trial-pits, initial calculations indicate 250mm friction/end bearing piles approaching 14 metres in depth, will be required for any practical development.

*Single occupancy living is on the increase whilst family groupings are becoming more varied and intergenerational, as economic pressures are tending to make both the younger and older generations more reliant on the family home for support. We need to understand more clearly our housing needs for the 21<sup>st</sup> century. More single person's households, more flexibility to support alternative family patterns; the need to strengthen community bonds and encourage good neighbourliness. Appreciating there is a need to maintain a mix of communities and therefore a mix of housing types, providing flexibility within any particular typology format.*

**This design-led proposal is to erect a single building with associated access, covered parking, amenity outbuilding and landscaping, encompassing three self-contained, independent dwellings over two levels; two 1 bedroom ground floor units and a second floor two bedroom unit.**

This is not a commercial development but a private application and planned as a community-build between individual family members. It is the applicant's intention to enjoy the benefit of simple well-designed, quality homes, while being able to assist other close family members and extend their ability to continue living a longer independent life, knowing reliable help is close at hand. There can be no future guarantees these properties will always remain in associated ownership but it is considered this type of arrangement will offer a much needed form of assistance and general support to older residents, creating a micro-community.

*Small sites (below 0.25 hectares in size) should play a much greater role in housing delivery to achieve the ten-year housing targets. Boroughs should pro-actively support well-designed new homes on small sites through both planning decisions and plan-making in order to:*

- *Support small and medium-sized house builders.*
- *Support those wishing to bring forward custom, self-build and community-led housing projects.*
- *Recognise in their Development Plans that local character evolves over time and will need to change in appropriate locations to accommodate additional housing on small sites*

## **2.0 Local street plan and services (Location Plan) - See drawing NA02-01**

The accompanying Ordinance Survey map shows crossovers, dropped kerbs and the general building-line of Nicholls Avenue on the North side.

Nicholls Avenue consists of several housing types: -

- 1 Detached house
- 6 Pairs of semi-detached houses
- 1 Block containing 6 studio flats & bedsits
- 1 Chalet style house
- 19 Converted two level bungalows
- 11 Single level bungalows, some of which are currently in conversion.

When entering Nicholls Avenue, from either the North or South, all properties present a sizeable visual presence in frontage and scale; mid-way dwellings are primarily of single level bungalows in appearance, but many now have two level accommodation. At the North end is a primary school, principally located on the Uxbridge Road, and several industrial buildings, two of which have undergone conversion into residential flats.



*Golf House. NW corner of Nicholls Avenue (Floors 2&3 residential)*



*14, 12 & 10*

Originally all of simple block form and uncomplicated appearance, over the years some have undergone individual alterations and sizeable rear extensions, which has produced some large and unique exteriors.

Typically, the houses and bungalows in Nicholls Avenue are of brick and rendered construction with tiled roofs. The majority have gable end frontages, but there are hipped roof variants dispersed along the road.



*33 & 35*





28/26, 24, 22

Many bungalows now have upper floor accommodation with various window arrangements and exterior room boxing under a variety of pitches.

Some properties were built with side or rear garages but have now undergone enlargement, extending to the majority of their plot width.

*Proposals for new homes, which are inspired by good design, can deliver places that are desirable to live in and can improve the quality of the existing environment.*



99 Harlington Road. SE corner of Nicholls Avenue

## 2.1 Road traffic & parking

Part of Nicholls Avenue has a direction-controlled traffic flow, which creates a re-circulatory route for vehicles, so it cannot be considered a cut-through; likewise, this restriction influences Bourn Avenue, and with both roads having parking restriction periods throughout the day, there is only ever very minor traffic in comparison with the surrounding roads.



18, 16, 14, 12 & 10

Every property in Nicholls Avenue has its own vehicle crossover or a continuous lowered kerb, in some places extending fully across three properties. Each property has at least two off-street vehicle parking spaces within their respective frontage but many have capacity for multiple parking.

All of Bourn Avenue and parts of Nicholls Avenue have full or timed yellow-line regulated parking and a large section of Nicholls Avenue is also very restricted by lowered kerb margins; despite this there are times when there are many parked cars in the North section of the road, with householders choosing to park across their own cross-overs.

Two small sections of the road have unrestricted kerb-side parking; the short North section, which is constantly occupied by vehicles from businesses in The Primary Shopping Area, and the South section, adjacent to the proposal site, that is routinely occupied weekdays by staff of local employers and nights by other residents vehicles; occasionally users of Heathrow also park vehicles for extended periods as public transport is very straightforward to the airport from this location.

A benefit of these two quiet roads is the choice to select an exit direction that allows simple merger into much busier traffic, making driving safer and easier during peak periods. These low traffic roads advantage the users of road-legal mobility scooters, allowing direct access to the local shopping areas, and also makes the roads ideal for cyclists to get a route started, connecting onto local alleys, footpaths and other quiet roads allowing for safer cycling around the local area.

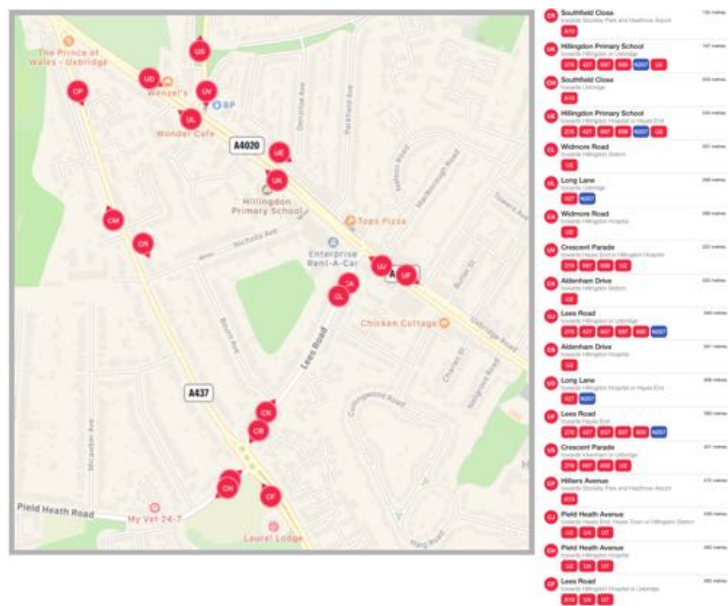
*Five generations of the applicant's family have resided in Hillingdon, some in Nicholls Avenue, hence a history and knowledge of day-to-day life in the surrounding area has been accrued. It is considered by the applicant and other local residents, this development would represent a welcome improvement and have virtually zero effect on the routine local traffic and road parking.*

Although a PTAL rating is usually applied to developments consisting of 10 or more units, it has been noted the site has a low rating of 2.

Within easy walking distance are at least 8 different bus routes with stops allowing travel in either direction, with some busses having a peak frequency of every 4 minutes. Also stopping locally is a night-service bus operating between Central London and Uxbridge.

The A10 bus service operates over 19 hours every day, traveling between Uxbridge and Heathrow bus stations, passing through a major business park on route, allowing transfer onto many other bus, underground, rail and coach connections to numerous places in the South of England, as well as other airports.

Busses to Hayes & Harlington and West Drayton train stations enable direct connection to the new Elizabeth Line.



A map of the Colham Green area in London, showing a network of streets and green spaces. A starting point is marked with a blue dot on the left side of the map. Two concentric dashed circles are drawn around this point: a blue circle labeled '800 Metres' and a red circle labeled '500 Metres'. The map includes labels for various streets such as Gresham Road, Clinton Gardens, Pennywood Road, The Convent, Park Lane, Hillingdon Heath, Colmanwood Road, and Lavender Road. A scale bar in the bottom right corner indicates distances of 100m and 500ft.

The North end of Nicholls Avenue is located within a Primary Shopping Area, which contains an extensive variation of local businesses, including many food and essential supply shops. Within 800 metres there is a further four Local Shopping Parades and additional services and amenities such as Doctors, medical facilities, veterinary care, guest-houses & hotel, several clubs, bars & restaurants, cafés, a hospital and several open greens and play areas, all easily accessible by walking or cycling.

Among other additional local recreation amenities is a comprehensive sports ground, two golf courses and the 'Celandine Walk' of 12 miles, through green spaces, conservation areas and wildlife havens, which can be locally intersected.

A short driving distance from the site, are connections to the M40, M4 and M25 motorways.

Large local employers are also easily accessible via a direct bus route, cycling or walking:

Hillingdon Hospital:	Walking - 15 minutes	Cycling - 7 minutes	Bus - 13 minutes
Stockley Park:	Walking - 28 minutes	Cycling - 11 minutes	Bus - 16 minutes
Brunel University:	Walking - 32 minutes	Cycling - 11 minutes	Bus - 19 minutes
Uxbridge Station:	Walking - 45 minutes	Cycling - 13 minutes	Bus - 18 minutes
Heathrow Airport:		Cycling - 35 minutes	Bus - 21 minutes



### 3.0 **Existing site** (Block Plan) - See drawing NA03-01a



An early history of the site has been explained in section 1.0.

The freehold of the entire area shown above is owned by the applicant and will be retained to legally form part of the leasehold arrangements for these proposed properties, which will be necessary for vehicle access, drainage, heating\*, and future maintenance etc. (\*Ground source heat).

Across the site there is a slight ground-fall in two directions with the North East corner being the high point; it generally replicates the natural gradients of the adjacent roads descending from Hillingdon Hill. Harlington Road continues to fall extensively to the South, making any possibility of serious flooding on the site very unlikely.

The plot is bordered to the North by the ends-of-gardens of properties in Southfield Close, and likewise to the West, by Harlington Road; these boundary fences and walls have all been replaced in recent years by individual property owners, and constructed in various materials as noted on drawing NA03-01.

On the West edge of the plot is an existing access drive, over which a vehicular right-of-way exists to the garages of 93 & 95 Harlington Road; this generates a total combined parking of 3 vehicles at the bottom of their rear gardens. The access route is entirely owned by the applicant but must legally remain; it has not however been used by either occupiers of Harlington Road for the last 16 years as the houses have alternative off-street parking in their frontage, which is currently being upgraded, and in recent years the houses have existed as rental properties.

A surface-water drain, from low-lying Southfield Close, passes through the site adjacent to the West boundary under the existing garage service road.

Only one mature tree is present on site, which is a variety of Yew; small aged Hawthorn trees and bushes form the North boundary. There are no significant trees adjacent to the boundary in the gardens of any adjoining properties.

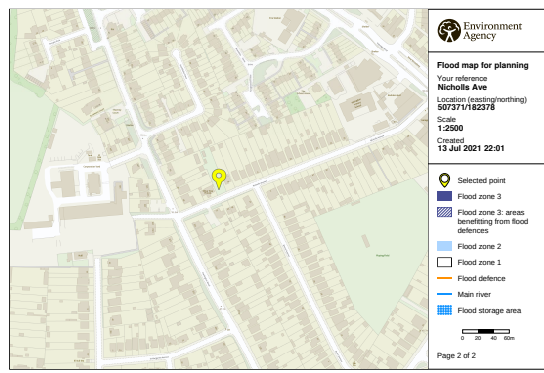
The proposed new building will be flanked to the East by a 1980's four bedroom detached house and to the West by a three bedroom chalet style house, built in the former rear garden of 99 Harlington Road, approved at a time when planning 54817 was active.

#### 3.1 **Previous planning applications**

1982	Pair 2 bed Semi & one 2 bed bungalow	Refused	29993/B/82/0989
1984	Block of four x1 bedroom flats	Approved	29993/C/82/1659
2000	4 bed detached house	Approved	54817/APP/2000/443
2017	4 bed detached house	Refused	73146/APP/2017/3154
2020	Block of two x1 bed & one x2 bed flats	Refused	73146/APP/2018/4476

### 3.2 Flooding assessment

The site is shown as having a very low risk of flooding by HM Land Registry and the Environment Agency



#### Flood map for planning

Your reference: Nicholls Ave Location (eastings/northings): 507371/182378 Created: 13 Jul 2021 22:01

Your selected location is in flood zone 1, an area with a low probability of flooding.

#### This means:

- you don't need to do a flood risk assessment if your development is smaller than 1 hectare and not affected by other sources of flooding
- you may need to do a flood risk assessment if your development is larger than 1 hectare or affected by other sources of flooding or in an area with critical drainage problems

#### Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. <https://www.naturalresources.gov.uk/about/open-government-licence/version/2/>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2021 OS 100024198. <https://flood-map-for-planning.service.gov.uk/os-terms>

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#### HM Land Registry



In association with the Environment Agency



#### Flood Risk Indicator

Title number and property description  
NGL413054  
1, Nicholls Avenue, Uxbridge, UB8 3JL

#### Flood risk

The land registered under the above title number does not fall within a river or sea floodplain and is more than 500 metres from the nearest river or sea floodplain.

The land is in an area that has a very low chance of flooding from rivers or the sea which means that it is unlikely to flood except in extreme conditions. The chance of flooding each year is less than 0.1 percent (1 in 1000). This takes into account the effect of any flood defences that may be in this area.

This result was produced on 27 October 2019 based on Environment Agency and Natural Resources Wales flood risk data that was current as of July 2018 and Land Registry data that was current as of 28 October 2019. The Flood Risk Indicator is based on the most up to date Environment Agency and Natural Resources Wales flood data available at the date and time of your search.

### 4.0 Proposed site plan – See drawing NA04-01

The topology or existing street pattern suggests any new building at this location should be sited in a conventional street aligned format. The immense depth of the site suggests the layout needs to be planned to make best use of the ground available, for modern living standards in urban Greater London.

This design-led concept has been dimensioned to make a proportional benefit of the site capacity available with the building positioned to acknowledge the rule-of-thumb light restrictions, protecting neighbouring properties, hence optimising the sites potential and making efficient use of the land, thus maximising sustainability. On the West elevation of house 1a there is an upper floor bathroom window and obscure glazed utility room door and toilet window; Olive Tree House has no windows or doors on its East elevation.

House 1a was constructed behind the original street building line, whilst Little Olive Tree House was built considerably in front of the line and much closer to the road. This proposed building is placed in an attempt to blend the existing uncharacteristic setting by creating an intermediate stepping of change, but still in most part remains behind the original building line. The front structure projection replicates the forward section of Olive Tree House and also helps relieve the current abrupt deviation; planning guidance advises that varied buildings lines can achieve diversity and interest.

Some properties in the street have been modified over the years to consume the majority of their full plot width; this development has generous spacing between both bordering properties, allowing adequate daylight and sunlight to penetrate into and between each property, safeguarding the existing amenities of neighboring houses and avoiding any appearance of enclosed passages.

The new building, by its shape and siting, also preserves sufficient external area to protect the privacy of the inhabitants and occupants of the surrounding buildings. It does not result in any significant loss of residential amenity but creates a safe and attractive development with private outdoor space, adequate car parking, and internal living space standards greater than policy minimums.

The distance between facing habitable room windows of other local dwellings is approximately 61.2m to the rear and 28.4m to the front.

The covered parking bays and replacement amenity outbuilding have been positioned to produce a logical layout, due to the necessity for the existing drive to remain in its original location. Layout, landscaping and area allocation has been methodically planned to produce a combination of quality, consideration and making the best use of the land available, for the benefit of the residents and surrounding neighbours.

### 4.1 Garden area

In Nicholls Avenue the immediate visual topography of properties, in respect of frontage, is parking for at least two cars or vans in every property; out of 45 properties, 33 have very little or zero planting in their front paved parking areas. This proposal offers a new front boundary wall constructed 0.6m high in double-sided brickwork, and allocates 64.3% of the area in front of the building to soft and hard landscaping, which will consist of paving, grass, shrubs and a single new tree from the Birch family, increasing the avenue total to 4 trees.

Block paving, with permeable joints, is shown to the pedestrian footpaths and vehicle drive fronting Nicholls Avenue, with the existing clinker vehicle access route, being re-surfaced using compressed 20mm chippings\* set in recycled plastic stabilisers, 'Henderson Geogrid' or similar. This finish is proposed not only to create a very pervious surface but also for reasons of assisting security; waste or recycled aggregates will be used where possible. (\*see notes on Heat Source Ground Pumps).

The pedestrian path and vehicle route to the rear of the property, will be secured with manually operated gates, which are set back to allow vehicles to stop off-road for gate operation. Gates are to be of an open 'wrought-iron' design, 1.8m high, and finished satin black; no closing stops or hinges will be fitted directly onto the building. Remote electrical operation of the pedestrian gate will be added if required for use by a mobility scooter.

The minimum area of communal amenity space to be provided for a one bedroom flat is 20sqm, and 25sqm for a two bedroom (or three bedroom 30sqm), therefore the total minimum required is 70sqm, which this proposed layout considerably exceeds, and without space lost to cycle sheds, refuse bins, water butts, etc. There is more than sufficient area to enable segregated private gardens allocated to each individual dwellings, but this approach defeats part of the objective of the proposal.

The ground floor private patio areas are to be surfaced by 600mm square concrete pavers, with permeable joints, set level with door thresholds; each area is to be secured with 1.8m high close-boarded fence and light steel security trellis with lockable gates, opening into the open communal garden area.

The first floor private outdoor terrace area will be secured by a 1.4m high light steel trellis, or obscure glass screens, on a low parapet wall to the East & West edges, and a 1.6m ornate steel railings to the North edge. Inside the trellis movable stainless steel planters will have inbuilt over-flow water reservoirs fed directly from the DWP's, and contain 1.6m high evergreen climbing plants formed around an acoustic foam core to produce a 'living wall', which will create privacy and prevent over-looking on neighbouring gardens and the private patios below. The deck surface area will have similar paving to the ground floor areas to ensure a fireproof surface finish.

The only mature tree on site is a variety of Yew, but with a reputation for toxins, and owing to its proximity to house 1a and the new development, it is proposed for replacement by, one or two, different species of trees more suitable to domestic gardens, and less overbearing.

Communal areas of the front and rear garden will be planted with low maintenance flowering shrubs, types TBC, but will include Pyracantha or Sea Buckthorn; any new proposed trees will be of the Birch family (*Betula pendula*) so as not to totally exclude sunlight or become dominating.

A raised pond, with solar powered water feature, and stoned landscaped flower beds along with lodgings for various types of wild-life, will be installed to help support an interesting amount of bio-diversity in the communal garden area.

Landscaping of the private area adjacent to the outbuilding will be of similar planting but it is intended to included raised beds for vegetable and fruit planting.

#### **4.2 Surface & stormwater and foul drainage.**

Combined 5000 litre underground storage tanks will collect clean rainwater from a majority of the new building roof, the car canopy and the outbuilding, thereby significantly containing the runoff from the development and not adding to potential local flooding. Stored water will be used for automatic garden irrigation, fishpond etc., thereby slowly releasing water back into the ground and atmosphere to help ameliorate the consequences of climate change, and help reduce the negative environmental impact of the new building. An extra water feed will be available for use in WC systems when volumes allow. The underground storage tanks are sensibly positioned to permit easy replacement or enlargement if volumes necessitate. Further assessment will be made with regard to another storage facility installed to the front of the new building. Foul drainage details for the site are included in section 8.0 - *Longitudinal section NA 08-01 drawing*

#### **An excerpt from the soil investigation report concluded: -**

*The Council express concerns with "critical drainage issues" – the Geological Survey map shows that this part of Hillingdon has an extensive covering of Gravel. The area around this Site is established houses with gardens, hence rainwater will naturally disperse into the ground. The new outbuilding involves an increase of concrete surfacing, in relation to the size of the Plot and surrounding land, this increase is negligible. The ground elevation along Nicholls Avenue is about 51m OD, and the topography rises gently to the north attaining 55m OD. It is evident that the proposed development will have minimal influence on the ground water regime.*

*Simon Quarrell  
Eur Ing, BSC, MSc(Soils), CEng, MICE, FGS  
Geotechnical Consultant*



#### 4.3 Vehicles on site.

*Electric powered cars are rapidly increasing in acceptance, particularly in towns, so off-street parking is essential to permit safe overnight recharging; a common anti-argument is "there will never be enough convenient or sufficient roadside charging facilities". Off-peak charging with new 'smart' technology will allow power-exporting from parked vehicles during periods when renewable energy is low, helping balance out intervals of high demand on the National Grid. As these new dwellings will hopefully survive for the conceivable future it will be beneficial to include parking provision for this new generation of vehicles.*

Vehicles parking on the rear of the site have been grouped in four individual bays, in large part screened from the public realm, and positioned to preserve a suitable maneuvering area allowing large cars to easily turn and pass, thus always allowing exit onto Nicholls Avenue in the forward direction. There is also adequate width at the road frontage for two large vehicles to pass in the unlikely event that traffic volumes create this situation. CCTV with motion detection lighting will illuminate and secure the maneuvering and parking areas.

To be Secured By Design, it is intended manual gates on the vehicle access drive and the pedestrian footpath will remain locked at all times, hence a front vehicle parking bay is proposed for short term parking of visitors, home visits or possibly those with restricted mobility. The new proposed vehicle bay and pedestrian entrance path will be segregated by three 1.2m high solar powered bollards, providing both path and bay illumination. Access to the bay will require a 2.7m extension to the existing single vehicle crossover of house 1a.

Currently in front of the site there is insufficient kerb, between existing cross-overs, for parking two small cars bumper-to-bumper, such as Fiesta's or Micra's; this causes local arguments when two cars attempt to park in this location resulting in obstructing one or other property entrances. After installation of a new extended cross-over there will still remain more than sufficient level kerb for a single, above average length car to park, and subsequently make it much less likely two-car parking will be attempted, and therefore reduce local friction. Owing to the road width it will also improve vehicle entry/exit into house 1a and the current garage service route. Nicholls Avenue is not on the LBH list of Classified Roads; LBH Highways department has been consulted on this new extended cross-over and do not consider it will cause any significant issues to neighbours, pedestrians, road parking or other vehicles using Nicholls Avenue, but must comply with policy DMT6.

*Parking Provision in the Local Plan: Part 2 - Policy DMT 6:*

*A) Development proposals must comply with the parking standards Appendix C Table 1.....The Council may agree to vary these requirements when:*

*i) the variance would not lead to a deleterious impact on street parking provision, congestion or local amenity.*

*If the garage is located to the rear of the garden it should be accessed from a rear service road only. To achieve this, and to allow enough visibility to drivers, the garage must be set back at least 2.4m from the back edge of the roadway.*

#### 4.4 Refuse

A general waste and recycling bin will be provided for each dwelling, stored in an out-of-view, convenient and easily accessible area, and be positioned and retained by a concrete kerb-stone; tidiness will self-police due to the location. Nearby, a sealed and maintained communal 400L organic compostable waste bin will also be provided. A simple and aesthetic fox-proof, black-bag collection point will be allocated in the front garden, adjacent to the entrance footpath, easily reachable from the street pavement for collection.

Although it is recommended waste bins should be screened it is felt that fenced areas often become cluttered by random depositing of unwanted items that are not routinely considered household waste and therefore require constant managing and specialist collection.

#### 4.5 Site security

Generally routes to the rear of the building will be secured by locked gates, set close to the building line, ensuring good natural surveillance with clear sight lines and in full view of neighbours. Decorative but functional steel trellis, between the communal garden and individual patio areas, creates a second level of security and privacy. Owned boundary fences will be of 1.8m close-boarded timber, with concrete posts and gravel boards and have an additional 0.3m trellis above; adjacent foot paths will be inset with a pea-shingle verge. The proximity and mutual interests of all residents should encourage self-policing, although motion detection lighting, illuminating the vehicle and pedestrian access routes, will also be observed by CCTV.

#### 4.6 Site ground condition

It has been highlighted the site is located within a 250metre buffer zone of a known source of contaminated land, namely The London Borough of Hillingdon's Central Council Depot at 128 Harlington Road.

Ground investigations, utilising a percussive borehole rig, collected soil samples which were sent for laboratory analysis. Three samples of the clay fill were analysed for a suite of chemical elements associated with potential harm to humans and plants. The concentrations of Heavy Metals are low, there were only traces of PAHs and TPH values were very minor. The soil can be considered as not contaminated.

#### Conclusion: -

*The ground at the Application site does not appear to contain any significant harmful matter. Migration of any pollutants or ground gas from the filled gravel pit is most unlikely. The pit is 130m distant and the presence of clay soil minimises lateral and vertical flow. The new building will incorporate a concrete floor slab. Hence the ground will be encapsulated and the Pathway for contact by humans will be sealed. The presence of any pollutants is therefore of minor significance. During the construction period, normal PPE clothing should be adequate to protect workers. The proposed larger building will have minimal impact on ground water.*

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Geotechnical Consultant*

#### 5.0 Proposed elevations – See drawing NA05-01a

Whilst appreciating this new building will encompass three new self-contained dwelling, which have not been reduced to minimum internal space standards, it is acknowledged the overall envelope needs to be sympathetic with the adjacent houses and hence has been kept within a reasonable percentage of scale.



46/44, 42/40, 38/36, 34, 32/30

Planning guidance informs that over time rooflines have contributed to the character of the townscape, and a diverse roofline with a variety of pitches is considered to improve the richness of the townscape where this adequately respects the wider street-scene.

It also advises design and elevational treatment of a building should generally be in harmony with its surroundings and should aim to compliment and/or improve an area. The proposed elevations should take into account the lines and openings and the local details and proportions of adjoining properties.

#### 5.1 Neighbouring architecture

Properties either side of the site, and the pair of semi-detached houses directly opposite, have pitched rooves, primarily with gables on their side elevations, with inclines varying between 22 & 50 degrees; the other nearby building, containing small studio flats, has a hip formed roof.



House 1a. right of plot



2a &amp; 2b (opposite plot) &amp; Nicholls Court

*Opportunities for change and transformation, through new building forms and typologies, should be informed by an understanding of a place's distinctive character, recognising that not all elements of a place are special and valued.*



Olive Tree House. Left of site

*As change is a fundamental characteristic of London, respecting character and accommodating change should not be seen as mutually exclusive. Understanding of the character of a place should not seek to preserve things in a static way but should ensure an appropriate balance is struck between existing fabric and any proposed change.*

Understanding the demographic of the occupants, who are likely to spend longer periods inside, has driven this proposal and the design-led approach has produced a high standard of interior quality and satisfactory indoor living space, so the internal layout has in some respects led to the external appearance.

## 5.2. **Appearance & Street View** – See drawings NA05-02

The facade design, of the proposed new building, is of similar appearance to house 1a on the East side, with an additional structure added to balance features of the chalet house on the West side.

Sustainable passive-design, appreciating sun orientation and climate control, has been considered, so as the primary aspect of the proposed new building is essentially South facing, it is ideally positioned to take advantage of solar energy on an efficiently pitched roof. Window placement and operation have been considered to best manage day-lighting and natural ventilation, thereby assisting in reducing energy requirements for the building.



The proposed rooflines are simple, low maintenance and effectively create gable locations to match the adjacent properties. The double duo-pitch design allows for the full fitment of solar tiles on the front pitch, avoiding indiscreet solar panels, whilst the rear pitch can accept standard tiles and incorporate roof windows, extending the hours of sunlight into the rear section of the upper floor; other non-habitable areas will be naturally illuminated by the use of sun-tunnels or skylights set in the central roof section, reducing the need for daytime lighting. It was considered to 'hip' both North end gables but this severely limited positioning and size of roof windows and added to complexity of the roof structure, creating more future maintenance.



The central core pitched roof section will contain, and structurally support, heating and ventilating equipment located above the first floor non-habitable rooms, and allow direct connection to ceilings of all first floor habitable rooms. Solar water heating panels and external air-vents are positioned in the design for minimal operational impact and also to create a safer external access for future windows and equipment maintenance.

The porch is proposed with a duo-pitch roof to suggest similarities with neighboring Olive Tree House and other street properties, many having gable-end front features. Its form will produce periods of solar shading to the South facing windows and walls of each ground floor units for periods during the day. The layout creates suitable privacy between individual entrances and ensures important shelter from precipitation but still allows natural surveillance from the street. Sufficient width inside the porch is provided for a wheelchair user and a simple alteration to the main entrance door is possible to comply with current access regulations if ever needed. Reactive CCTV, video doorbells and PIR lighting become more effective when set in the enclosed area of a porch, and hence strengthen security.

The rear elevation has a ground floor structure formed to place windows to take better advantage of the early and late daily sunlight and creates many advantages to all three dwellings whilst remaining 'invisible' from the street and some neighboring properties.

Walls on the East and West elevations have been 'broken' by the introduction of an external vertical services duct which has benefits beyond brickwork expansion, it will allow individual external drainage, limit back-flow flooding, conceal venting, restrict sound & fire transmission and permit easy maintenance access, keeping each unit independent. Consequently, any internal alterations or refurbishment of individual units can be undertaken without losses or interruption to the adjoining properties. Removable inset panels, probably Cedar wood, will fully conceal the services duct.

The general external composition of adjacent properties is faced brickwork and concrete pan-tile roof coverings, some with hung-tile or inset rendered panels on the front elevations. Bricks vary with monotone and dapple shades ranging from yellow to orange and dark red to brown so an obvious choice of colour for this new building is not clear, but a lighter shade is proposed; most other houses in the street are rendered and painted in a variety of colours. The proposed new building is shown with a suitably faced brickwork from ground to first floor, and above with a contrasting, light coloured, self-cleaning rendered finish, which will reduce the clay brick requirement, improve insulation in construction details and also create better solar heat reflection.

The pair of semi-detached houses opposite have been heavily personalised with unsympathetic window designs, one in brown with gold leaded glass panes and the other in a more modern dark grey colour with simple framework. House 1a has bare, wide format, 80's style plain aluminum windows with minimal opening lights and Olive Tree House has white mock Georgian style UPVC, some set as projecting bowed bays, so no predominate style has presented.

Doors and windows for this development will be specified to be manufactured in a combination of PPC aluminum and PVC, all generally white in colour, and be thermal and noise efficient, with permanently obscured glass where indicated. Opening lights will be either top or bottom hung and inward opening for ventilation, some with restricted opening if necessary. Side elevation windows are positioned to be functional for additional daylight and cross-ventilation, also reducing expanses of unbroken brickwork; high level window will be set so no glass or opening lights will be below 1700mm. Front corner, dual-aspect, windows were added to allow immediate and longer range views, as a benefit suggested by the use of bay windows in planning guidance. These will also enhance daylight levels and increase direct sunlight for longer periods; they also create a more contemporary appearance to the normal repetition and lessens visual monotony.

House 1a was built with a minimally inclined duo-pitched roof and constructed with lower internal room heights, now recommended to be higher, and obviously has a conventional first floor construction, which all combine to produce the squat exterior. The overall ridge height of this new proposed building has been calculated to be less than 200mm higher than house 1a, but as the ridges do not align and the prospective view will be ultimately from street level, this minimal amount will be difficult to distinguish, particularly as the location only permits minor distant viewing.

*This whole proposal, and the buildings appearance, has been presented, explained and discussed with many local residents in Nicholls Avenue and has always met with a very positive response.*

### 5.3. **Building shadow** – See drawing NA05-03

Most conventionally street aligned housing creates some shadowing to adjoining properties and gardens at stages throughout the day. Drawing NA05-03 illustrates shadows cast by the proposed new development at certain times of the day and year and is not considered to adversely impact on the amenity, daylight and sunlight of adjacent properties. These views also demonstrate the advantage of the shaped rear patio areas, being fully exposed with extended sunlight coverage, which would otherwise be in shadow for longer periods set behind a 'square' formed building. During relevant months the new development will not restrict direct midday sunlight upon the North section of the communal garden or the amenity building and garden area.

### 5.4. **Car-port & cycle store** – See drawing NA05-04

Vehicles parking on the rear of the site have been grouped in four individual bays and visually screened under a slightly pitched cantilever roof canopy, producing a pleasant, simple roofline and avoiding a large expanse of flat roof.

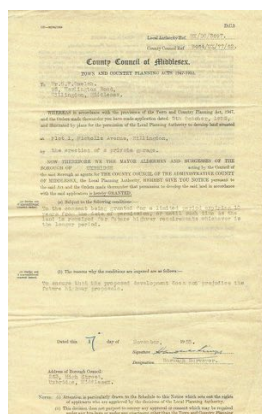
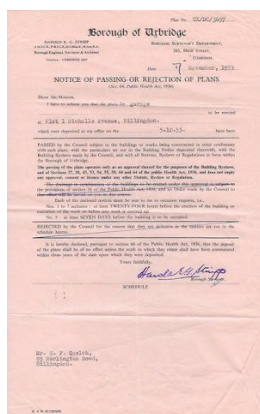
Each parking bay will be 2.4m x 4.8m and set alongside a footpath, protected from the vehicles by illuminated bollards, connecting pedestrians to the housing area. Adjacent to each bay is a private secure bicycle storage shed, 2.4m x 0.9m, with 2.0m high double leaf doors allowing easy access and usage; they will each contain power for individual charging points. One parking bay is positioned to allow simple modification to add extra width for a restricted mobility driver if ever required. Parking bay allocation: 2 x first floor, 1 x each ground floor.

The proposed roof is to be finished in a pan-tile effect, metal cladding system with an insulated core for sound absorption and condensation reduction and serves to provide eco-friendly winter frost protection and summer shade to vehicles; proposed colour, probably graphite. The overhead canopy allows charging leads to extend to the front or rear of vehicles without the need for forward or reverse parking or trailing lead extensions, and consequently removes several hazards; it also encourages daily connection during precipitation.

The main structure will consist of part faced brickwork, with a galvanised cantilever steel-trussed frame, clad with timber fascias and gable end panels. Elevated viewing of this structure is very limited and currently greatly obscured by trees on the site, and within neighboring properties. This roof area will harvest a considerable amount of clean usable rainwater and, due to the location, it is possible to utilise for PV solar panels which will be considered at a later stage. Minor shadowing, from a late setting sun, will be created in the mid-garden of house 1a, above the 1.8m/2.0m high boundary fence.

### 5.5. **Amenity outbuilding, replacement of existing building** – See drawing NA05-05

The proposal is to replace an existing former garage and garden store building, due to its age, condition and asbestos content, with a new sunroom outbuilding containing gym, games, hobby and home office amenities. The building and landscaped area will have a secured direct access via a pedestrian footpath and the access drive, and will be for the sole use by the larger first floor dwelling. The ground floor units are designed around older, single occupants where garden maintenance would create a burden to the occupants, hence the private courtyard and maintained lawn and garden arrangement directly behind the main building.



Set at the North end of the site the existing building was constructed as a vehicle garage and store at the address of No. 1 Nicholls Avenue, Local Authority Ref: UX/DC/3697, County Council Ref: B464/UX77/62 dated 17-11-1955. In recent years it has not been used for general storage, as due to age, vandalism and water ingress and it is now in a state of dilapidation. It is constructed primarily of brick with a concrete raft foundation slab and Big 6 profile roof sheeting. It is intended to dismantle the existing structure and recycle the materials by use in the new construction; asbestos components will be disposed of by a specialist contractor.

The existing 37.5 sqm concrete base will be replaced with an additional 46.5 sqm of a new reinforced concrete raft foundation, raised 100mm above nominal ground level.

The new building will consist of a fabricated cold-rolled steel framework, clad with fire rated insulated cladding with a core thickness of 40mm within walls & 45mm within the roof. The vertical walls are proposed to be externally coloured Juniper green (BS12B29) in a ribbed box profile, with the roof Anthracite coloured (RAL7016), with an imitation pantile form to match the neighbouring workshop and adjacent detached garage. The south facing roof will incorporate two double glazed inset roof-lights and solar PV panels supplying a battery storage facility which will eventually be linked to the domestic residential system.

The south facade will include non-structural brick piers, enhancing the only noticeably visible elevation. Doors and windows will consist of a new insulated shutter, high security 900mm wide access door and double-glazed PVC bi-fold doors, all with level thresholds, as shown on drawing NA05-05.

Internal walls will be of steel studwork and plasterboard with mineral wool insulation. All internal doors will be 900mm wide. The WC facility will be accessible by wheelchair users and be connected to the existing main drainage on the site.

Roof rainwater will be directed to a new 2000 litre underground storage tank and be used for toilet flushing, car washing, automatic garden irrigation etc., this will also be linked with other site storage facilities to increase capacity and flexibility.

Motion detection lighting and CCTV cameras will be installed where shown for added security. The area will eventually be landscaped to the approximate scheme with new grass, vegetable gardens, shrubs and trees.

It is noted that sizeable outbuildings are routinely being approved in Hillingdon Borough, such as 43 Hillingdon Hill, Ref:15017/APP/2024/2240, where “*The footprint would measure approximately 100sq m*”, and have a large expanse of flat roof, built with highly insulated walls constructed on boundary limits, and in close proximity to neighbouring dwellings. This replacement outbuilding, with its duo-pitch roof, produces a more attractive building and retains sufficient working space for general maintenance to the external walls and roof, and is located a considerable distance from any dwelling. This proposed building is for recreational use as stated and not suitably designed or constructed for habitational or any primary living use.

## **6.0 Ground floor layout – See drawing NA 06-01**

*Demographics highlight that we are both ageing as a society whilst improvements in healthcare will mean that many of us can expect to live longer. As we get older we become increasingly challenged by mobility issues and sensory impairment. Close attention to the conceptual and detail design of homes can assist older people to remain independent and less reliant on care and support.*

Hillingdon's population above the age of 65 is predicted to increase by 7.1% in the next five years, and the 85 plus group to be higher at 8%, compared with an anticipated 5% rise over the same period for the rest of Hillingdon's population.

The layout objective is based on the requirements of a single, elderly yet able, and determinedly independent occupant, who has reached an age where they desire to down-size, though still require a simple, comfortable independent home of their own, without the anxiety of challenging maintenance or any major upkeep. However, the space and layout of these ground floor units, and being of a readily adaptable design, they could be considered as one bedroom, 2 person dwelling.

The design principle is to create an attractive, inclusive dwelling located in the community, where occupants will have privacy and personal space with their own front door permitting immediate engagement with the street. This development gives opportunities to residents who wish avoid large enclosed housing blocks or a development complex, avoiding communal entrances, lobbies, and corridors etc.

A pragmatic assessment for a wheelchair or other adaptable designs, desired or necessary for legislation or building regulations, has been applied, therefore, most internal walls are non-load-bearing and of studwork construction. Services have been carefully considered to facilitate affordable adaptation in the future by locating individual waste drainage systems and primary services on the outer walls, and with a simple triple zone under-floor heating system, virtually any form of internal layout changes are possible by future occupants, hence readily adaptable to different activities thereby maximising sustainability.

This layout positions the bathrooms against the external walls to benefit from natural light and ventilation and places the internal corridor to create an extra level of sound suppression between bedrooms either side of the party wall. Facility rooms have been grouped to simplify services, drainage and reduce hot water draw-off.



The rear ground floor structure is shaped to place windows to take better advantage of the early and late daily sunlight. Internally the arrangement creates a bedroom with a distinctive character, reducing standardised spaces and visual monotony; it also 'shortens' a straight internal corridor necessary to move through the building and act as a means of escape.

The external building contour forms individual outdoor patio areas for each ground floor dwelling, separated by the building itself to give privacy, which will be enclosed by a decorative but functional metal trellis, adorned with climbing plants, adding another level of security and seclusion. The enclosed 'courtyard garden' creates a comfortable and personal outside space that can be simply maintained and enhanced to the occupiers choice whilst allowing views and direct access into the maintained communal garden. It is also suitably situated as a convenient and self-contained area for the eco-friendly drying of laundry and placement of exercise apparatus.

Ground floor entry will be possible through either the front or rear doors allowing direct access to the parking and refuse area. Top or bottom hinged inward opening windows will be installed on all side elevations and fitted with obscured glass and restricted opening lights where necessary. Entry/exit and all internal doors will be 900mm in width.

Both ground floor homes are to be electrically fueled and operate a wet under-floor heating system with an electric boiler and energy-saving controls. Low water-use toilets, taps, showers and appliances will be installed to conserve water consumption and a WWHR system will be installed on the bath/shower waste drain. Air extraction fans will be activated manually and run on a timed basis; electric towel rails will use a Dimplex FSCW eco-control or similar.

Efficient LED lighting with smart controls will be installed for all internal and external illumination requirements. No switches or plug sockets will be mounted on the main party wall and USB combined sockets will not be universally fitted. Cooking appliances will operate induction and microwave heating technology where possible.

Integrated air handling equipment will be installed in the loft area created above each front porch, which will serve to help improve all indoor air quality and reduce elevated room temperatures in an eco-friendly method by drawing outdoor ambient air from the North side of each dwelling; the isolated positioning of the equipment on the South side of the building should moderate operation noise and avoid any restricted use.

Unlike conventional bungalows, these ground floor homes can never be expanded into two-storey residences or family dwellings.

## **7.0 First floor layout – See drawing NA 07-01**

*Well-designed one and two-bedroom units in suitable locations can attract those wanting to downsize from their existing homes, and this ability to free up existing family stock should be considered when assessing the unit mix of a new build development. The social factors that influence inclusion have a direct impact on wellbeing. Inclusive design creates spaces and places that can facilitate social integration, enabling people to lead more interconnected lives.*

The objective of the first floor layout is based on requirements for an older, semi-retired, household and has been planned to provide a superior quality interior and comfortable environment for 2 to 4 people, especially in terms of light, ventilation and space, with generously proportioned room sizes exceeding minimum space standards, creating a home and a comfortable place of retreat. However, this unit having sufficient floor space and being of a readily adaptable design, has potential to be simply converted and considered as a 3 bedroom dwelling; this ability maximises sustainability.

The main entrance door will be fitted with an entry-video security system to allow remote operation. An isolated pre-cast concrete access stair flight will be installed with a low-rise to assist ascent; the extra width and strengthened sidewalls will allow fitment of a mechanical stair-lift should a future occupants ever wish to install.

Most internal walls are non-load bearing and of studwork construction, consequently modifiable for any alterations desired or necessary for legislation or building regulations. Virtually any form of affordable internal layout change is possible by future occupants, hence readily adaptable to different activities and thereby maximising sustainability. Entry/exit doors will be 900mm in width, all internal doors 800mm.

Bathrooms have been located against outside walls to benefit from natural light and ventilation with other facility rooms grouped as much as possible to simplify services and reduce hot water draw-off. Living-rooms have double aspect windows for enhanced sunlight and cross ventilation. South facing triple glazed roof windows will enable additional sunlight to penetrate into the rear of the building, and being installed complete with remote opening and thermal blind operation, they will greatly assist room temperature control. Windows will be fitted with obscured glass where indicated on the drawings.

*Private outside space should be practical in terms of its shape and utility, and care should be taken to ensure the space offers good amenity. All dwellings should have level access to one or more of the following forms of private outside spaces: a garden, terrace, roof garden, courtyard garden or balcony. The use of roof areas, including podiums, and courtyards for additional private or shared outside space is encouraged.*

As planning guidance recommends dwellings on upper floors should all have access to a private balcony or terrace, the first floor substantially gains from the lower building contour to create an immediate, distinct and individual step-free access onto a secure private outdoor space, made more useable by its shape over a conventional rectangular balcony. The periphery taper and shrub screens, or living walls, on the East and West sides, create privacy by screening the terrace, and the first floor windows, from overlooking the neighbouring gardens and the private patios below, but still allows views over the communal garden and beyond, providing natural surveillance of the vehicle parking area. This concept produces less overlooking of neighbours gardens than a conventional two-storey building.

Further benefits of this elevated terrace allow the convenient and eco-friendly drying of laundry, and placement of exercise apparatus; it can also help facilitate a small pet and simplify access for large furniture. As a safety advantage, this area will permit a partial escape route in the event of any incident blocking the main front entrance stairs and adjustments to North edge railings may be possible to include further means of escape but a greater consideration of regulations will be necessary for specifics.

This home is to be economically fueled by a combined methods of electric and a ground source\* heat pump system if possible, operating a wet under-floor heating system with energy-saving controls. Should a GSHP not be sufficient then an air source unit can be positioned to avoid excessive noise and vibration transmission. (\*To maximise efficiency an alternative vehicle surface finish may be required).

The central loft area, which directly connects to ceilings of all first-floor rooms, has been allocated for air ventilation equipment (MVHR) with heat recovery from kitchen and bathroom areas, reducing ventilation heat loss, in an eco-friendly method. This equipment will also enable reduction of elevated room temperatures, which will serve to improve indoor air quality and reduce overheating. An energy storage battery will also be accommodated, to enhance the efficiency of the roof solar PV tiles; solar roof water-heating panels will directly connect to a loft storage tank facility.

Low water-use toilets, taps, showers and appliances will be installed to conserve water consumption, which will be enhanced by an additional stored rainwater system. Shower wastes will be fitted with a WWHR system. Electric towel rails will use a Dimplex FSCW eco-control or similar

Efficient LED lighting with smart controls will be installed for all internal and external illumination requirements; cooking appliances will operate induction and microwave heating technology where possible. Air extraction fans will be activated manually and run on a timed basis.

## **8.0 Longitudinal section – See drawing NA 09-01**

In 1984 this site obtained approval for the development of four 1 bedroom flats, at the same time as house 1a was completing construction in the adjacent plot. A joint application for foul waste and surface water drainage was approved and the drainage connections completed to inside the boundary on the East side, as shown on drawing NA03-01a.

To ensure simple, efficient and sustainable foul drainage the proposed ground FFL is shown replicated to that of house 1a, which has dictated the final ridge position of the new building. This decision is was intended to avoid excessive ground works and unfriendly logistics of removing waste material from site, however, natural ground fall will accommodate excavation and allow the entire structure to be effectively lowered in relative height to house 1a. This approach, will however, require a pumped drainage system and other works, which will influence environmental efficiency, reliability and cost in the build.

*To address the unique heat island effect of London and the distinct density and flatted nature of most of its residential development, a minimum ceiling height of 2.5m for at least 75% of the gross internal area is strongly encouraged so that new housing is of adequate quality, especially in terms of light, ventilation and sense of space.*

It is also possible to reduce internal ceiling heights to 2.4m thereby producing sufficient savings for the ridge and soffit to reasonably align with house 1a. Ceilings set at 2.4m are above the National Space Standard requirements and consequently will increase winter heating efficiency, reducing energy demand thereby reducing carbon emissions; overheating from the 'London Heat Island' effect can be mitigated by simple high level, eco-friendly air extraction during very warm periods.

## **9.0 General design, detailing & building notes**

A full building regulation and engineering assessment will be undertaken on this development, which will focus on the principles of sustainable design & construction, and where beneficial, exceed the minimum requirements of The Building Regulations. It is intended to engage architecture that pays attention to detail, and gives thorough consideration to the practicality of use and affordable adaptation in the future by ensuring flexibility, safety and building lifespan, through appropriate construction methods using attractive, robust materials and finishes which weather and mature well.

A piled raft foundation system, for residential structures, will be constructed for the ground floor, which will be more environmentally friendly than conventional methods, use less concrete and produce less spoil, reducing vehicle and plant movement to and from site and improving the carbon footprint of the development.

Traditional above ground construction methods will be employed, such as clay brick and thermal efficient aircrete blocks with thin-joint bonding and phenolic high performance cavity wall insulation. These materials all have a proved longevity and considered environmentally friendly as current sustainable building materials. Upper pre-cast concrete floors will be installed with high levels of insulation and isolated dense concrete screed surfaces to reduce air and structure-borne sound transmission, and provide a mass for efficient under-floor heating systems.

The pitched and flat roofs will be designed to contain high performance multi-foil and Polyisocyanurate insulations with durable, low maintenance external tile & stone coverings.

Materials will be sourced from companies that use environmentally responsible manufacturing techniques, recycled elements or materials in manufacture and elements that can be recycled and re-used. Detailed planning will manage the flow of construction materials, machinery and personnel to and from the construction site, whilst ensuring that minimised waste is created or removed.

The engineering assessment will include mechanical and electrical engineering to implement high-efficiency electrical, plumbing, heating and ventilating systems to minimise energy demand, reducing carbon emissions promoting a sustainable lifestyle. Evaluation of other systems such as 'instant' hot water showers and sensor switching taps will be undertaken, and installing the latest, most eco-friendly products, whilst considering easy upgrades to possible future market technology. The use of in-built accessible conduits will be evaluated for electrical wiring and other internal services to assist layout changes for future affordable adaptation.

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