Saving St. Raphael's Estate

ASH
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The Alternative to Demolition

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Finally, our thanks to the community and residents resisting the demolition of St. Raphael's estate.

Our thanks

The two years of work that went into producing this report was done *pro bono publico* by the architects, architectural assistants, engineers, environmental engineers, quantity surveyors and other professionals who wish to defend council housing estates and the communities that live on them from the economic forces driving and profiting from London's crisis of housing affordability. Most of them have worked with ASH before, and we thank them all for their generosity, their expertise and their commitment to this project.

In particular, ASH would like to draw attention here to the contributions of the young architectural assistants who, under the most difficult circumstances and pressing demands on their time, gave their labour and skills to this project, often snatched from their free evenings and weekends. Much of the 3D-modelling and representation of ASH's design proposals is their work. As the reader of this report can see, this is of the highest calibre. ASH would like to thank them for their unswerving commitment to this project, and recommends all of them to any future employer. We hope they have enjoyed collaborating with us as much as we have enjoyed collaborating with them. It is our hope that these future architects will reclaim the temporarily abnegated duties of the profession to the social, environmental and political dimensions of architectural practice in the UK.

Geraldine Dening, July 2021

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Preface

The Future of St. Raphael's Estate

The choice facing the residents of St. Raphael's estate is a clear one. To vote for their homes to be demolished and replaced primarily by market-sale and shared-ownership properties that will sell for between half a million and 1.5 million pounds, or to demand their homes are refurbished up to contemporary performance standards, with additional homes and improvements to the landscape and community facilities. A vote for demolition will lead to the eviction from their homes of the vast majority of the residents — council tenants, leaseholders and freeholders; refurbishment and infill, on the other hand, will allow the continuation and regeneration of the community, with additional homes for social rent in which future residents of St. Raphael's estate can afford to live.

To allow residents to compare the consequences of their choice, Architects for Social Housing (ASH) has spent the last two years working with residents to develop proposals for the refurbishment of the existing homes, with options for infill housing and roof extensions, and the improvement of the estate's communal amenities. At the same time, we have studied the consequences of residents voting to demolish their homes, and of the cleared land being divided between commercial property developers and housing associations.

Since 2015, ASH has worked on design alternatives to the demolition of 6 council estates across London, including Knight's Walk, Central Hill, West Kensington, Gibbs Green, Northwold and Patmore estates. None of these estates have been demolished, and thousands of council homes that would otherwise have been replaced by properties for sale far beyond the reach of council tenants are still being lived in by them. However, although residents are now permitted to vote on the future of their homes in council-run ballots, demolition is still overwhelmingly the preferred choice of councils undertaking the regeneration of estates under their management. This is because residents aren't being informed beforehand about the financial consequences — for them and their neighbourhoods — of voting for the demolition and redevelopment of their homes that is inaccurately and misleadingly referred to as 'estate regeneration'.

As a consequence of this lack of information, of the 14 housing estates that have been offered a resident ballot so far, only 1 has opposed demolition. Yet on hundreds of estates across London, 'regeneration' has in practice meant the eviction and dispersal of estate communities, the loss of thousands of council homes, and their replacement with market-sale and shared-ownership properties, and a variety of so-called 'affordable' housing whose rents in the London Borough of Brent are between 1.5- and 4-times social rent. Informed consent about its consequences is a principle of any choice, and especially one affecting the lives of thousands of residents. Without this information, how are the residents of St. Raphael's estate expected to make the right decision, not only for them but also for the housing needs of the borough of Brent?

The research undertaken by ASH over the past two years provides some of the crucial information that has been withheld from the residents of St. Raphael's estate by Brent Council and its consultants. We shared some of this information with residents in our presentation in St. Patrick's Church in February 2020; and in our analysis and criticisms of the masterplans for the redevelopment of St. Raphael's estate by the council's consultants, Karakusevic Carsen Architects, in March 2020.

At the first of these presentations, ASH received a unanimous vote from the more than 80 residents present to develop design alternatives to the demolition of St. Raphael's estate. Subsequently, over 600 residents have signed a petition rejecting demolition and demanding infill housing and the refurbishment of their homes. These proposals will ensure the continuation of the community, refurbish all the existing homes, increase the housing capacity of the estate for both existing and future residents, and improve the existing landscape and community facilities. This report, Saving St. Raphael's Estate, which we are publishing 17 months later, is the fulfilment of our promise to residents. It is our hope that the information and proposals this report contains will enable residents to make an informed decision, individually and collectively, about the best future for St. Raphael's estate.

The Costs of Estate Demolition and Redevelopment

After 16 months of 'lockdown' restrictions, the crisis of housing affordability in the UK has grown even worse, and nowhere more so than in London. In June 2020, the number of households living in temporary accommodation had increased by 14% from the previous year. By December 2020, those living in overcrowded accommodation in the private-rental sector had doubled from 7% the previous year to 15%, an estimated 570,000 renters. In January 2021, over 750,000 families were behind with their housing payments, 300,000 of which had dependent children. That's double the numbers before lockdown. And the costs of lockdown on UK housing have been unevenly borne, with 9% of all households in the social-rented sector and 6% in the private-rented sector in arrears, compared to just 2% of mortgagors. Clearly, demolishing its already-diminished stock of council homes for social-rent, and replacing them with residential properties for sale at upwards of half-a-million-pounds, is not the way for Brent Council to address either present or future housing needs in the borough.

There is also growing concern about the environmental costs of demolishing homes in good condition in order to increase land values for buyers and investors in the new properties. When Brent Council launched its 'Climate and Ecology Emergency Strategy' this year, it appeared to acknowledge the environmental and climate crisis. However, ASH has commissioned the environmental engineers, Model Environments, to produce an estimation of the carbon costs of demolishing St. Raphael's estate. Their report (included in Appendix B), proves conclusively that demolishing and disposing of the 760 homes, numerous community facilities and hundreds of trees on the estate, then replacing them with between 2,000 and 2,250 new properties, is totally incompatible with Brent Council's declared intention to reduce carbon emissions, sustain existing ecosystems, and reduce waste and pollution. Residents should remember that any demolition and redevelopment will be phased over many years and even decades, with the families waiting to be rehoused forced to live and raise their children on a highly toxic building site.
In addition, our report also contributes to the current debate within the architectural profession regarding its responsibilities towards the 'climate and ecological emergency'. Like the rest of the building industry, architects are facing a dilemma. How does an industry based on the production of new buildings adapt to an increasingly pressing need for de-growth? We believe that, in a time of dwindling resources and environmental change, the building industry must make the retrofitting and refurbishment of existing housing estates the default option in any regeneration scheme, with demolition and redevelopment only allowed in exceptional circumstances, and when no other option is possible. As we have shown in this report, that is not the case with St. Raphael's estate.

In addition to these environmental concerns, there is also the financial viability of demolishing and redeveloping such a large estate, the risks of which have been increased by the uncertain economic climate as a result of the ongoing lockdown of the UK. Property developers are unlikely to make investments on which they do not have a guaranteed return. And as part of his Affordable Homes Programme 2021-26, the London Mayor has recently announced that there will be no funding for the replacement of homes demolished as part of an estate regeneration scheme.

To date, Brent council has not provided a viability assessment for any of their proposed redevelopment options; but this absence of funding will have one of two consequences for St. Raphael's estate. Either Brent Council will take demolition off the ballot options as financially unviable; or — in the event that residents vote for demolition — the new development will have to include more properties for market sale, less for shared ownership, with a greatly reduced number of so-called 'affordable-rent' housing, and no homes for social rent.

This report, therefore, is also for Brent Council, offering a financially viable, environmentally sustainable and socially beneficial alternative to the demolition of St. Raphael's estate. ASH's proposals (costed in Appendix A) will increase the number of homes for social rent, retain the existing estate in council hands, avoid the huge costs of demolition and disposal, enable the council to build homes that meet housing need in the borough, and refurbish and improve the housing, community facilities and landscape for both existing and future residents of this thriving housing estate.

The Estate Regeneration Ballot

Brent Council has recently announced that the estate regeneration ballot will only be held once they have established whether their proposals are financially viable. It is vital, therefore, that this assessment is made public, so that residents can see the estimated tenure mix and assumed prices of the proposed properties. However, Brent Council has repeatedly refused to answer residents' legitimate questions about what their demolished social-rent and leaseholder homes can and will be replaced with. Every Freedom of Information request to the council has been rejected on the grounds the information is 'commercially confidential', and that its publication may compromise the property developers and housing associations competing for the council's contracts. This alone shows that Brent Council is placing the profit-margins of its financial partners above the housing needs of the residents. It is unlikely, therefore, that this crucial information will be given to residents prior to the ballot; and yet, without it, no vote on the regeneration of the estate can be considered as 'informed'.

For this reason, ASH has conducted extensive research, based on previous estate redevelopment schemes in Brent and across London, into the consequences for existing residents if they vote to demolish their own homes. This includes 1) reports on the actual levels of poverty, deprivation, crime and anti-social behaviour on the estate, all of which are below the London average; 2) the condition and estimated life-span of the existing housing stock, which is reasonable and capable of being extended for 30 years with minimum investment; 3) the compensation for leaseholders, which is less than half the price of the new properties on the redeveloped South Kilburn estate; 4) the huge reduction in the numbers of homes for social rent required by the lack of funding for their replacement and cost of demolition and redevelopment; 5) the enormous increase in rents for existing council tenants, which range from 60% for London Affordable Rent to 260% for Affordable Rent; 6) the loss of secure tenancy and increase in service charges if their tenure is transferred to a housing association; 7) the reduction in the quality of poorly-built 'affordable' housing blocks, of which there are numerous examples across London, compared to the existing council homes; and 8) the segregation of space, access and facilities on the redevelopment according to tenure type, compared to the integrated housing and mixed community currently living on the existing estate.

As with all estate regeneration schemes, there are no guarantees, and no legal requirement, that Brent Council will keep any of their 'promises' to residents about the future of St. Raphael's estate. Everything the council has promised so far is subject to 'financial viability'. This means that if the developer argues the project cannot afford sufficient homes for social rent — or even 'affordable rent' — to rehouse all the existing residents, then the council is under no legal obligation to re-provide them. Is Brent Council acting honestly by asking residents to vote on something as serious as the future of their homes and community, when the information they have received from the council is at best inadequate, and at worst inaccurate and misleading, and whose consequences for them they will have no control over following that vote? We believe that this cannot be fair, and our report is our attempt to give residents a better chance to make the right decision for them.

The estate 'regeneration' programme is facilitating some of the largest, most destructive and unnecessary demolition of council housing in London and across the UK at the moment, and must be stopped. This report is aimed at providing clear and factual evidence in support of the retention and refurbishment of St. Raphael's estate. It shows, conclusively and with extensive designs, costings, estimations and documentation, that there is a design alternative to the demolition and redevelopment of St.Raphael's estate, one that is socially beneficial for existing and future residents, environmentally sustainable for the neighbourhood and its ecosystem, and economically viable for both residents and Brent Council.

We hope that residents will vote 'no' to demolition, and 'yes' for the future of St. Raphael's estate.

1. Executive Summary

The architectural designs and research contained in this report demonstrate:

- That the existing homes are structurally sound and in reasonable condition, and there are no structural, design or maintenance failings that justify their demolition;

- That the existing landscape is well-used and home to a rich ecosystem, and should only be improved where it is possible to do so, not destroyed and redeveloped;

- That it is possible to add up to 608 new homes to St. Raphael's estate without demolishing a single existing home or evicting a single resident;

- That the cost of constructing these new homes, refurbishing all the existing homes, and improving the landscape and community facilities, can all be covered by a combination of Government and Greater London Authority grants, and the sale of no more than 50% of the new-build properties;

- That the costs of demolishing and redeveloping the 760 existing homes is highly risky in the current economic climate, if not actually financially unviable following recent changes to GLA funding on estate demolition;

- That the prohibitive and unnecessary financial costs of demolishing and redeveloping St. Raphael's estate will require its replacement with properties for market-sale, shared ownership and 'affordable' rents well beyond the means of existing leaseholders and tenants, resulting in the eviction and dispersal of the existing community;

- That these new properties are deliberately targeted at professional couples with joint incomes in excess of £150,000 per annum, wealthy families buying a home for their children, buy-to-rent overseas investors, and commercial investors looking to profit from the escalation in land prices in London, and in no respect meet housing need in Brent or London;

- That ASH's refurbishment and infill proposals increase the number of council homes for social rent that local residents can afford, providing homes for those on Brent Council's housing waiting list, or currently living in overcrowded or temporary accommodation both on and off the estate;

- That refurbishing the existing homes, landscape and community facilities would improve the quality of life for existing residents, reduce their living costs and extend the lifespan of the existing buildings;

- That the cost of demolishing and redeveloping St. Raphael's estate is 3 times the cost per home of ASH's proposals for refurbishing the existing homes and constructing 608 new homes;

- That the embodied carbon cost per home for a demolition and construction scheme is 400% that of a refurbishment and infill scheme, and must, therefore, be rejected in the current 'climate emergency';

- That St. Raphael's estate is much-loved by its residents, who want to see it improved, not demolished;

- That infill and refurbishment is the most socially beneficial, environmentally sustainable and financially viable future for St. Raphael's estate.

2. What ASH Has Done

In the Spring of 2019, ASH was contacted by residents of St. Raphael's estate, who requested our help in opposing the demolition of their homes by Brent Council. We sent them our introductory film, The Costs of Estate Regeneration, and in July we received a petition, signed by 48 residents, asking for our help. With this mandate, ASH agreed to support their campaign to save St. Raphael's estate from demolition.

Over the following months we gave the residents' campaign advice, and in February 2020 ASH gave a presentation to around 80 residents at the local church. At this meeting, the residents voted by an overwhelming show of hands for ASH to look at an alternative to the demolition of the estate, including the refurbishment of the existing homes and the improvement of the landscape and community facilities, focussed in what we called the Case-Study Area.

Part 1 summarises the findings of this report.

Part 3 of the report gives an overview of the existing estate and its community. Produced with the support and collaboration of the residents, it includes comments from residents about what they like about living here, and what they are worried about losing if the council demolishes their homes.

Part 4 contains ASH's architectural design proposals for new infill housing, the refurbishment of existing homes, and the improvements to the existing landscape and community facilities across the estate.

Part 5 focuses on the Case-Study Area, with detailed designs of ASH's proposals for a new civic space and public square, refurbishment of shops and roof extensions.

Parts 6 and 7 contain ASH's detailed designs for refurbishment, extension and infill housing according to the different existing and proposed housing types.

Part 8 contains the costings of ASH's proposals by our quantity surveyors, Robert Martell and Partners, with input from modular and prefabrication contractors, OneNinety.

Part 9 looks at the environmental costs of Brent Council's demolition scheme compared with ASH's infill and refurbishment scheme, based on the carbon estimation report by our environmental engineers, Model Environments.

Part 10 exposes the lack of transparency in Brent Council's consultation with residents about the future of St. Raphael's estate, the huge financial investment in manufacturing consent for the demolition and redevelopment of their homes, and the systemic failings in the estate regeneration ballot process.

We conclude the report with some housing policy recommendations on the estate regeneration programme that will stop its current use as an instrument of social cleansing and privatisation, and make it a means for maintaining, refurbishing, improving and extending existing council and social housing estates.

These design proposals are options, intended to demonstrate the capability to create the maximum appropriate amount of infill housing in order to fund the maximum amount of new homes for social rent, while simultaneously generating the funds to refurbish the existing homes, and improve the existing landscape and community facilities.

3. The Existing Estate and Community

'I love where I live and would hate to see St. Raph's knocked down.'

'I have lived on St. Raphael's estate for 15 years and get on well with my neighbours. I live in one of the townhouses which I love, as it is very spacious and has access to lots of greenery and open space. It's like being in the country, plus my own garden, which we enjoy all year around.'

'The childhood we all had was the best. We played out from morning till the street lamps came on. Our parents didn't have to worry, because we were safe - every mum was our mum and so on. And to this day it's the same: our children and their children. We are now the elders who protect and watch over, as this isn't just an estate, this is St. Raphael's, and you can ask anyone, there really is no other place like it. I love living here and can't imagine anywhere else being home.'

'We moved as a family to St. Raphael's when I was 9 years old, we had moved from a first floor flat on the A406 so our new home was amazing and we had a garden which my sister and myself were very happy with. I'm approaching 50 now and I can honestly say I grew up on the best estate ever, you didn't have friends and neighbours you had family.'

'One of the things that kept me in the estate for so long is the location. It has easy links to central London. I couldn't have done my degree without Stonebridge station. I want the same for my kids who are starting to go to university in a very short period'.

'The children's centre, which used to be St. Raph's' community centre, has been great for me. I have met some great residents through the many activites that used to be held for St. Raph's residents, and I am still friends with those people today.'

'We used to have a neighbour who played music out of his garage. Every so often on a Saturday we used to gather outside, neighbours would bring their BBQ out, their chairs, sit, chat. People in the area would be walking by, stop, chat, move on, like a mini block party. On occasions we still do something similar in the hot summer days. Summertime we used to have outdoor events by the community centre. Children's face painting, music, performances, selling food, drinks, games, fireworks displays.'

'I love the openness of the park & the sense of community given by the ability to share green space, play facilities and communal spaces. Families are well-established here, some for many years. With good care & maintenance, quality of life on the estate would be well supported & much improved, without requiring excessive expenditure or drastic, divisive interventions.'

'The school runs could be tiring. If you live in the estate you will have neighbours to share that responsibility. I have never put them in breakfast/afterschool club, so we can save money to do trips together.'

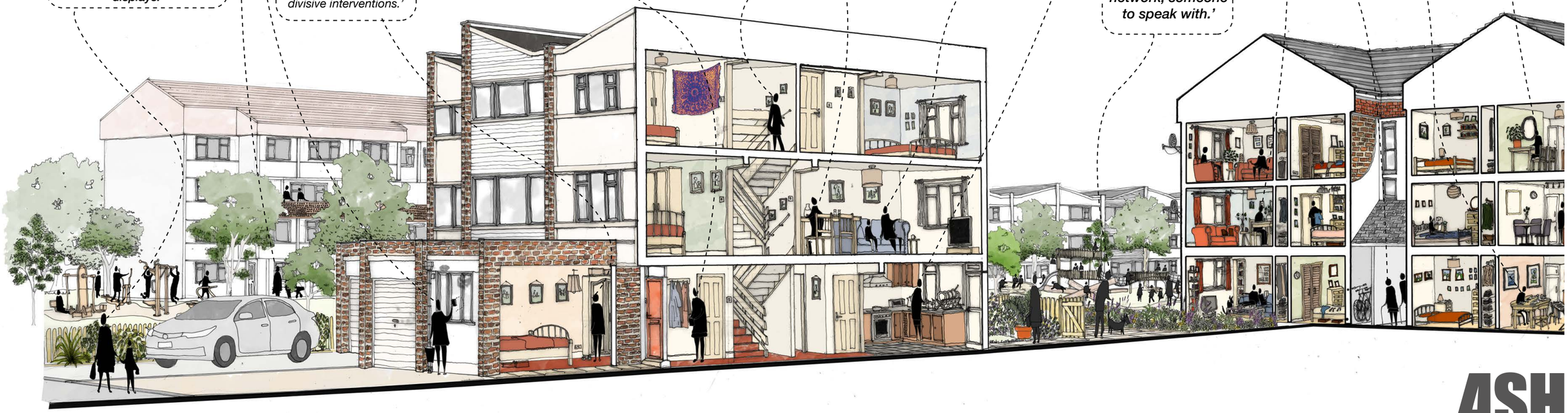
'Children play together. My neighbours have helped me out with writing letters and telephone calls as English is not my first language.'

'We used to be able to rent the community centre out for christenings, birthday parties wedding receptions. They had keep-fit classes and educational classes. They had a youth centre there: the main loss is not having use of the community centre. Never been the same without it.'

'It's the greenery, open space, spacious rooms, cheap rent, secure tenancy, and good neighbours. Your relationship with your neighbours. Helping each other out, shopping, school run, taking parcels in, kids playing together, support network, someone to speak with.'

'The support of each other is great. I myself have gone shopping for neighbours, or to collect kids from school. We support each other in illness, help out with housing/council tax matters. That is the beauty of St. Raph's - people coming together from all ethnicities and walks of life to form a support network.'

'It's an amazing place to live!'



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'We are like a family here. We look after each other. My neighbour here is from Pakistan. Next, Jamaica. Next, Nigeria. Next, Jamaica. Next, Lebanese. Next, Indian, seriously, I like it. I like it like that. I have nothing to complain for the moment except that they want to do demolition. This is an insult to us.'

The green space is another reason. I like the relationship we have with our neighbours. We don't let each other miss their parcels. I enjoy seeing my wife having chit-chat with her neighbours through the garden fence, laughing out loud. There's plenty of space for the kids to play, just outside the rear garden. I don't watch them at all which is a boost to their confidence and development.

'When my wife had a child in 2011, my neighbour helped us on the school run. She asked her teenage daughter, who I remember as a baby, to drop my kids to and from school, free of charge. That kind of neighbour is irreplacable. I have my senior citizen neighbour, who I will always ask for advice in many situations.'

'This estate is a great place for everyone of different nationalities and we all help each other out. We celebrate the different religions here as well. I enjoy Eid with my Muslim friends and they enjoy diwali with me. We keep an eye on each others' houses.'

'Our relationship with our neighbours is very good, helping each other with shopping, the school run, taking parcels in. Kids play together at each other's flats. Supporting each other in English-speaking problems.'

'My neighbours have become my family and I can call on them day and night for many things - maybe a cup of sugar or just a chat. We support each other in many ways. It is good to know that you have good people around you that you can rely on. That is the essence of St. Raph's, people of all ethnicities helping each other.'

'We used the green space and parks more than ever during the lockdown. It was an opportunity to bond with my boy, go for bike ride, take walks, play football. I even started jogging with the fam, had picnics, played games, music. Tell you from now we were lucky to have all that space. I have some friends in East London were stuck in their flats with no parks nearby.'

'My neighbours are great and I can call on them for support at anytime. They would not hesitate to help me with my shopping if my kids are not around.'

'When I had child care issues my husband was working aboard at the time, I was working nights, and my neighbour stepped in to baby-sit my kids. This actually saved my job.'

'I moved to the estate in 1992 as a young adult. I grew up here, bought my maisonette flat, got married and had all my kids. I call this estate my home, my only home. I know everyone in the estate, literally everyone. I can remember most of them as primary-school age or sometimes as toddlers.'

'When I was sick, my neighbour brought me food and helped with cleaning my home until I was on my feet again.'

'As a group we go for a walk all the time, it can be morning or evening before dark. We sit down on the grass in summer time, we babysit for each other. When my neighbour is having a barbecue, she invites me, and on birthdays we invite each other.'

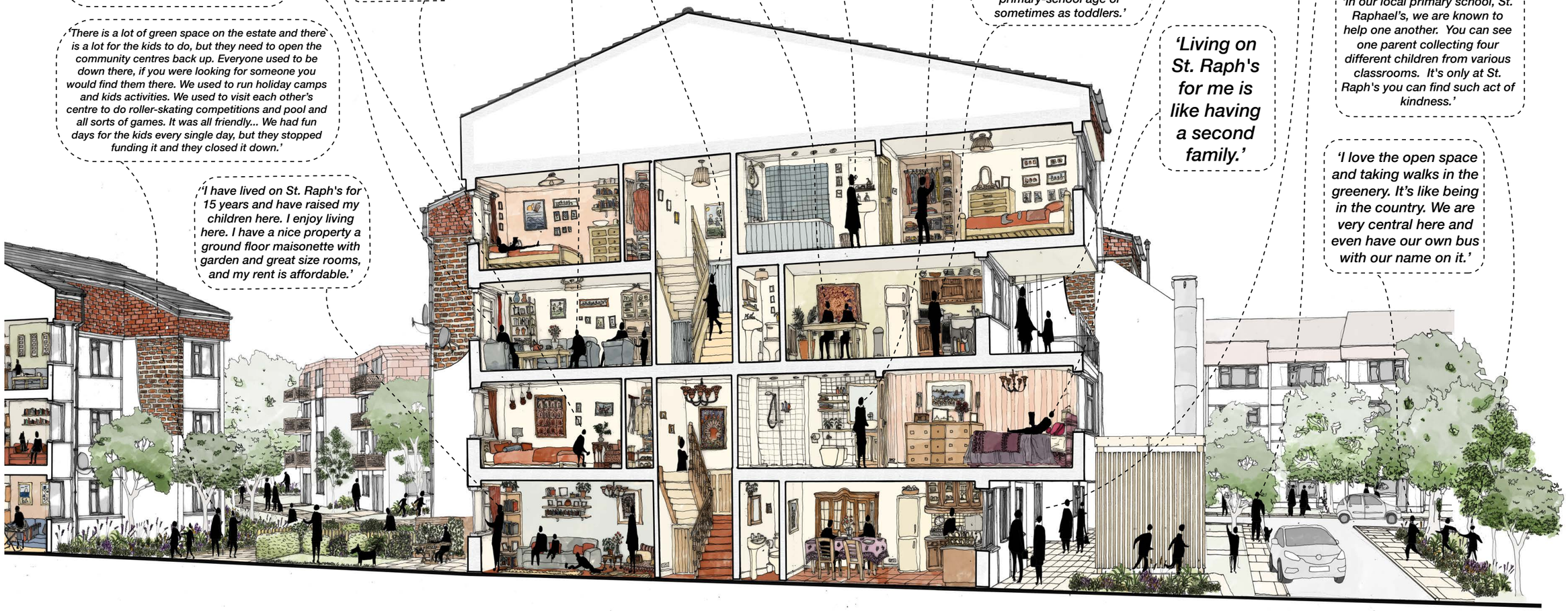
'There is a lot of green space on the estate and there is a lot for the kids to do, but they need to open the community centres back up. Everyone used to be down there, if you were looking for someone you would find them there. We used to run holiday camps and kids activities. We used to visit each other's centre to do roller-skating competitions and pool and all sorts of games. It was all friendly... We had fun days for the kids every single day, but they stopped funding it and they closed it down.'

'Living on St. Raph's for me is like having a second family.'

'In our local primary school, St. Raphael's, we are known to help one another. You can see one parent collecting four different children from various classrooms. It's only at St. Raph's you can find such act of kindness.'

'I have lived on St. Raph's for 15 years and have raised my children here. I enjoy living here. I have a nice property a ground floor maisonette with garden and great size rooms, and my rent is affordable.'

'I love the open space and taking walks in the greenery. It's like being in the country. We are very central here and even have our own bus with our name on it.'




Wembley Stadium
Oakington Manor Primary School
Brent River Park
Monks Park Health Centre
Stonebridge Park Overground Station
Bridge Park Community Centre
Brent River
North Circular
St. Patrick's Church
Neasden Underground Station
Brentfield Medical Centre
St. Raphael's Estate
Mitchell Brook Primary School
BAPS Shri Swaminarayan Mandir
Brentfield Primary School

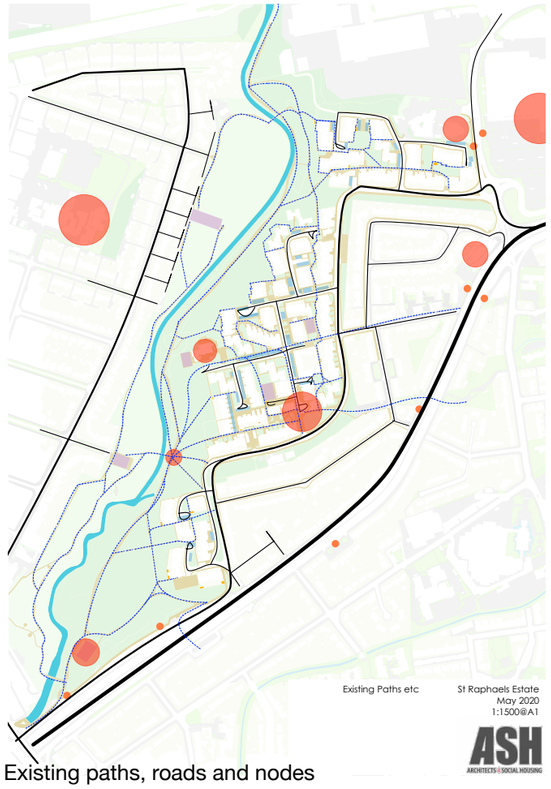
3.1 The Existing Estate

St. Raphael's estate is composed of three distinct areas. Area A, built between 1967 and 1982, is bordered to the west by Brent River and the strip of parkland that runs alongside it, and to the east by Areas B and C, which were built earlier, between 1918 and 1938. Areas B and C were initially considered for demolition by Brent Council, but were subsequently removed. Two factors drove this decision: the costs of reimbursing the large number of leaseholders on this older part of the estate, and the proximity of the North Circular to the east, which would reduce the possible sale prices of the replacement properties, and with it the profit margins of the redevelopers. In contrast, Area A, which has a view of Wembley Stadium to the north-west, and borders the river, will command far higher sale prices and profits for developers, investors and buyers.

Image produced by KCA for Brent council outlining the areas A, B, C

3.2 The Existing Landscape

The landscape of St. Raphael's estate is characterised by its attractive riverside location, the many mature trees in Brent River Park, and by the numerous grass lawns dotted between the buildings. Movement around the estate is divided between roads for cars and well-used pedestrian routes that meander between the blocks, connecting and leading residents to each other and out towards the park and river. There are a number of children's play areas around the estate, including a skateboard park and other outdoor play facilities, with plentiful green spaces on the western edge.



Existing paths, roads and nodes

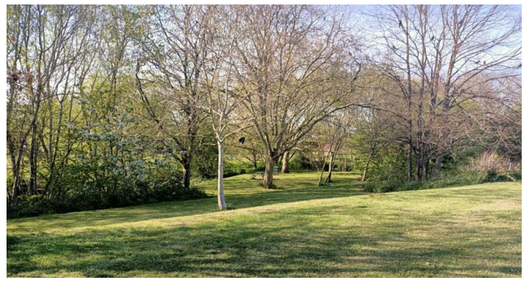
3.3 The Existing Green Public Space

The large expanse of grass- and tree-grown open space along the Brent River is a crucial community resource, both for residents on the estate and from adjoining neighbourhoods. It is very well used for walking, exercise, dog-walking, recreation and games, as well as providing a green corridor for wildlife. The Brent River Park in Ealing is a conservation area. The green corridor provided by this park is an oasis for people and wildlife and is designated by the Greater London Authority as a Grade 1 Site of Borough Importance for Nature Conservation for its flora and fauna.

> 'The Brent River Park consists of a mosaic of different wildlife habitats and amenity open spaces, providing a home to a wide range of bird, insect, mammal and amphibious species.'

ASH proposes that these existing green areas should be protected, enhanced and revitalised, increasing the biodiversity and habitat for birds, bees and other wildlife, not destroyed by redevelopment with high-rise blocks of market-sale properties sold for in excess of a million pounds on the basis of their river-front location and elevated views of Wembley Stadium.

Some of the less well-used spaces adjacent to the existing buildings has been identified by residents as possible sites of new development, and this is where ASH has proposed infill housing could be built. But in our proposals, the vast majority of the green spaces along the river will not be built on, but instead protected from development and improved by landscaping.



3.4 The Existing Community Facilities

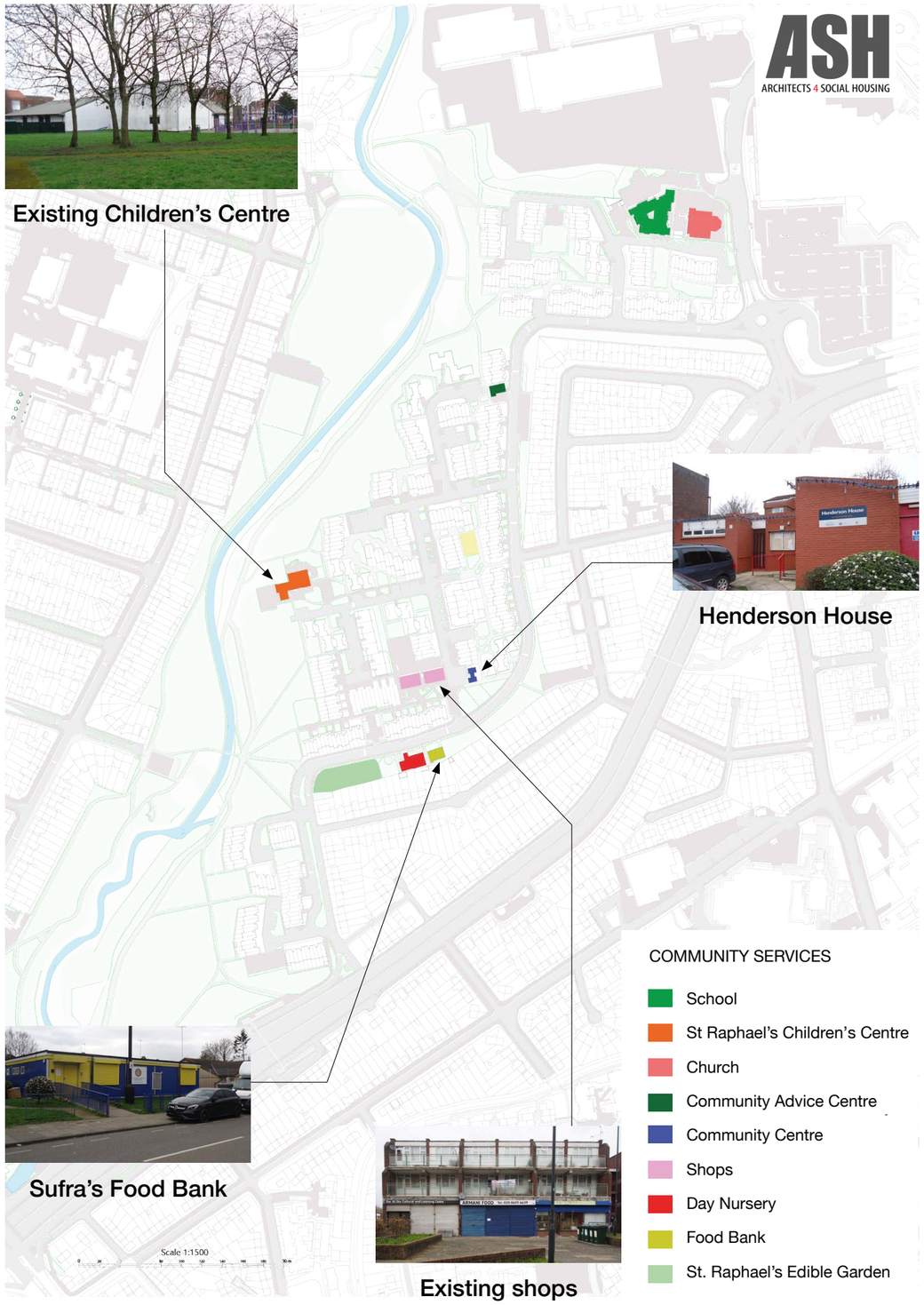
The existing community facilities on the estate have been gradually removed by the council or allowed to fall into disrepair over the years, and are sorely missed by the residents.

The estate's community centre was on a great location near the river, and used to be a hive of activity, with regularly organised estate-wide events. However, since Brent Council handed it over to the charity Barnardos, who use it as a children's centre, It is now not accessible to the residents as a community centre in any form.

Henderson House currently provides a number of community functions but is very small, and does not have the capacity to serve as an adequate community hall for the estate's thousands of residents. It sits in a prominent position in the centre of the estate, and the land could be put to better use.

St. Raphael's Edible Garden is well used and should be supported and maintained. Similarly, Sufra's food bank and kitchen, currently housed in a temporary building, and Hephizibar children's day nursery, a single-story building, could be better located in a more central part of the estate, where they would contribute to the daily social life of the estate's residents.

The shops in the central part of the estate are run down in what can only be described as a process of 'managed decline' by Brent Council. This has brought the visual appearance of the estate down, reinforcing negative stereotypes and encouraging anti-social behaviour, and urgently needs to be refurbished and the facilities reopened to residents.



3.5 The Existing Housing Types

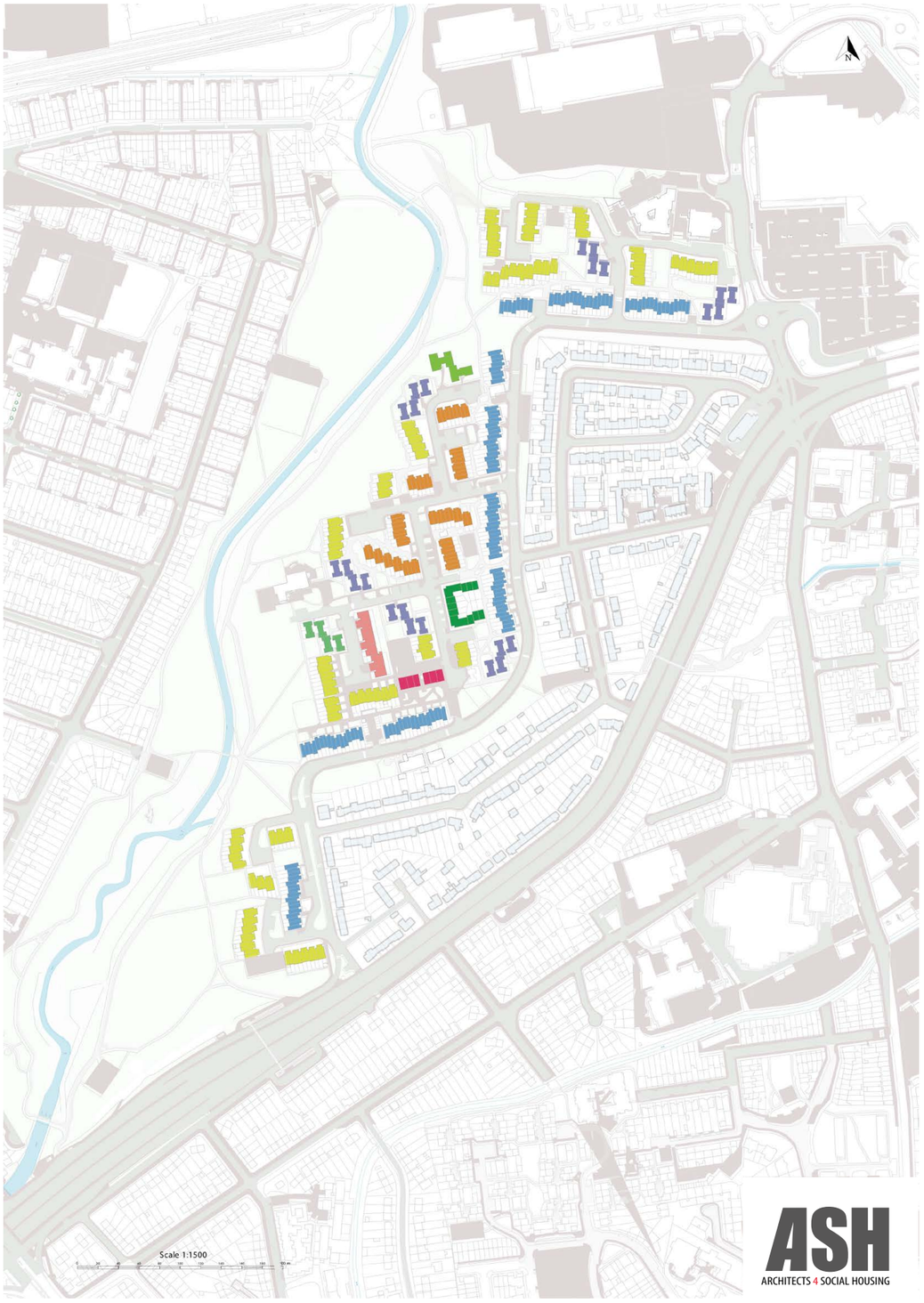
St. Raphael's estate is composed of five housing typologies, including 4-storey blocks of two-bed maisonettes (Type 1); 1-bedroom flats over shops (Type 2); three- and four-bedroom town-houses (Type 3); 3-bedroom bungalows (Type 4) and one-bedroom flats in 3 story blocks (Type 5).

In addition, there is a block of recently-constructed, housing-association flats (Type 6), which we have not included in our calculations for refurbishment, as they are not council owned and may already meet current building standards. They would however be included - and demolished - as part of the full redevelopment scheme.

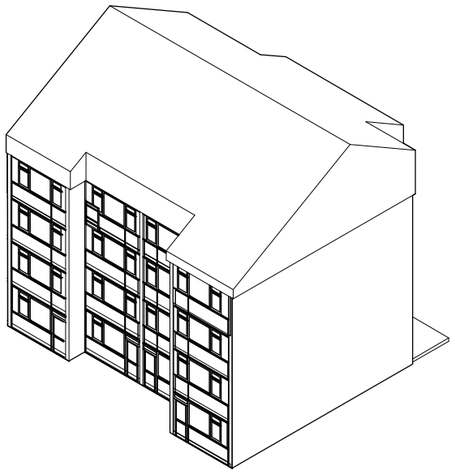
This range of housing types supports a range of housing needs, from single occupants to large families of several generations under one roof. According to the council's own surveyor, all the homes are in good condition.

Existing Housing Types

Type 1	4-storey blocks with 2-bedroom maisonettes	288
Type 2	1-bedroom flats over shops	18
Type 3A	3-bedroom town-houses	180
Type 3B	4-bedroom town-houses	60
Type 4	3-bedroom Bungalows	6
Type 5A	3-storey 1-bedroom flats	168
Type 5B	3-storey 1-bedroom flats	21
Total	**Excluding Network Homes**	**741**
Type 6	Network Homes (mixed)	19
Total	**Including Network Homes**	**760**
Of which:	Flats	226
	Maisonettes	288
	Houses	246
Of which:	Leaseholders and freeholders	219
	Council	522
	Other (Network Homes Housing Association)	19

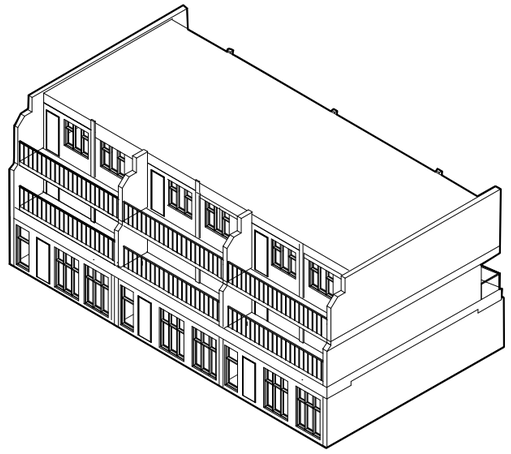


3.5 The Existing Housing Types



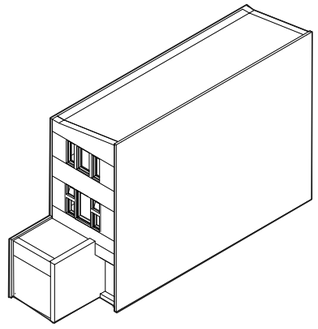
Building Type 1

4 storey blocks with two-bedroom maisonettes



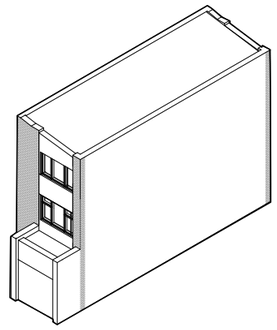
Building Type 2

Shops with one-bedroom flats over



Building Type 3A

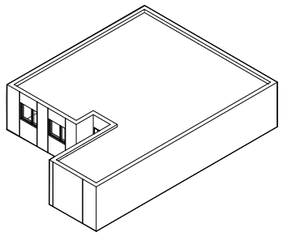
3-bedroom town-house



Building Type 3B

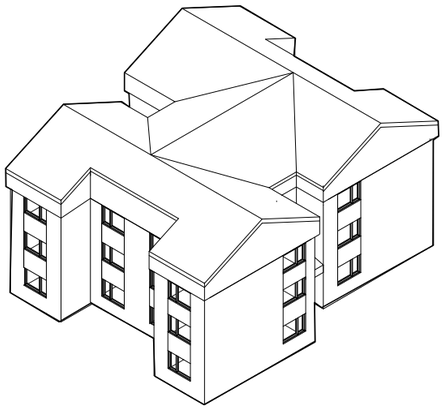
4-bedroom town-house

3.5 The Existing Housing Types



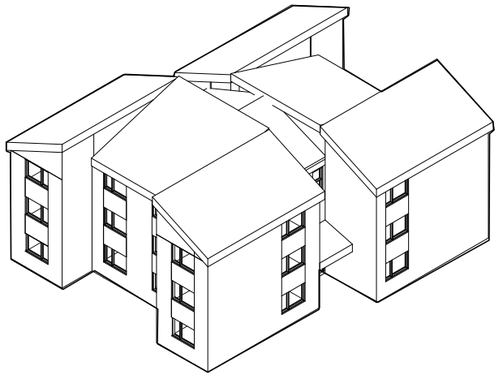
Building Type 4

Bungalows



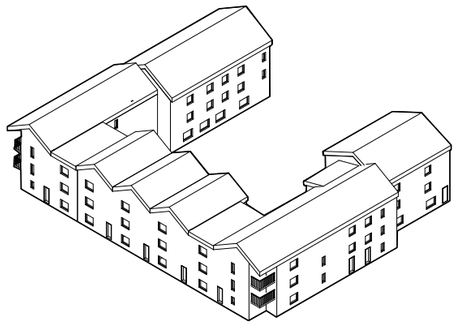
Building Type 5a

One-bedroom flats in 3-storey flat block



Building Type 5b

One-bedroom flats in 3-storey flat block



Building type 6 (NTS)

Various flats (Housing association

4. The Alternative to Demolition

4.1. Infill and Refurbishment

Improved River Access and Landscape
Retain and improve Brent River Park with increased biodiversity, low-maintenance planting with native wild flowers to encourage wildlife, and new picnic, exercise and play areas.

New Residents' Social Club (in blue)
Located on the ground floor on the site of the existing children's centre, adjacent to the river, and to existing cycling and walking routes. New sports, youth, social and play spaces provided, with new housing above.

Improved Communal Parks and Play Spaces
Estate-wide play-space improvements.
Option for Skateboard park to be relocated to the centre of the estate.

Alternative location for Residents' Social Club or Children's Day Centre (in blue)
On ground floor with new housing above

New Housing on North Circular
(Brent Council's Phase 1)
4-7 stories. Every flat is dual aspect, and has a view of Wembley and the park. Existing trees and planting retained and increased, while minimising intrusion into the park.

New Play Spaces
As part of estate-wide improvements

Pedestrian Priority Shared Streets
Sustainable drainage and more trees and planting. Improved parking, urban realm and lighting strategy throughout the estate.

Refurbish All Existing Housing and Facilities
All housing and communal facilities Including bin-stores and stair lobbies to be refurbished and improved.

New Infill Housing (in yellow)
Infill housing to be built on underused land around the estate.

Case-Study Area to include:
New public square with options for market and children's play areas; new community facilities (in blue) and refurbished shops and landscape.

Option for new Roof Extensions (in pink)
Roof extensions could be built on top of existing flat blocks, replacing existing pitched roofs so they would not contravene residents' right to light or amenity. Improved lift access and additional refurbishments to all flat blocks for the benefit of new and existing residents.

New Infill Housing
Roof Extensions
Community Facilities

Whole Estate Overview

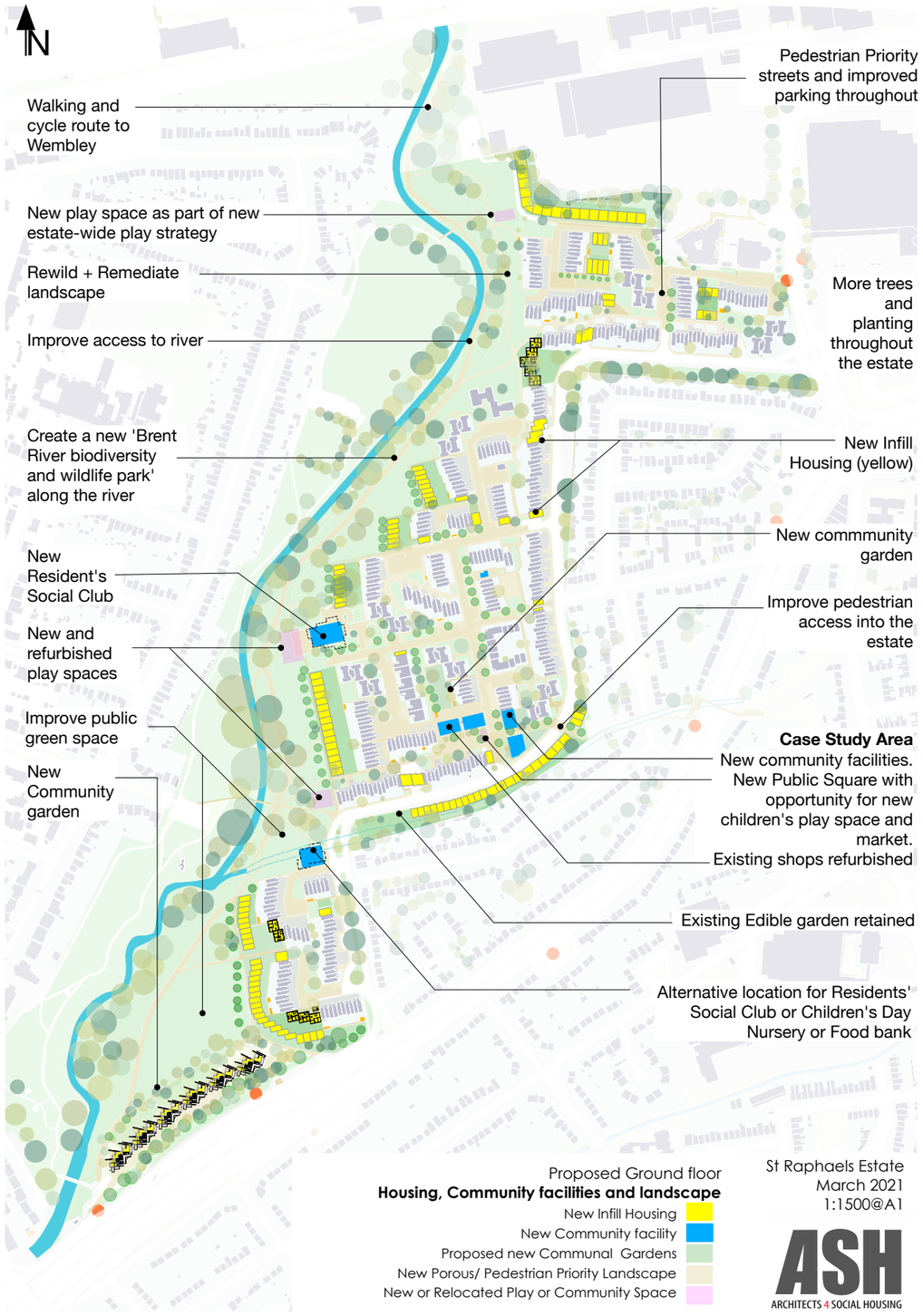
4.2 Improvements to Landscape and Ecology

ASH's design alternative to demolition proposes refurbishing the existing housing and landscape, improving and adding new communal facilities, and adding new housing. Our intention is to demonstrate that refurbishing, improving and extending the housing capacity of existing estate is the most socially, environmentally and economically sustainable future for existing and future residents of St. Raphael's estate.

Our conversations with residents revealed that the existing green space along the Brent River is very well-used and loved, both by residents of the estate and those who use the cycle and walking path to Wembley. We propose improving access to, and areas around, the river, 're-wilding' some of these areas, while providing more facilities, trees and planting in others, to support and increase the existing biodiversity of St. Raphael's estate. Brent River Park plays an important role in the local ecosystem and as a 'green corridor' connecting London's green spaces for wildlife, and must be protected and enhanced accordingly. The environmental history of the existing landscape has lead us to propose using a range of phyto-remediation techniques across the site, which we have addressed in Appendix C of this report.

We would also look to incorporate sustainable urban drainage strategies across the estate. A large amount of the existing estate is given over to the car, and ASH recommends exploring how these road surfaces could be changed to support shared spaces, with pedestrian priority, while simultaneously addressing issues around parking.

A separate investigation would need to be undertaken to look specifically at the existing children's play spaces and how they could be improved across the estate in a site-wide strategy. This could incorporate, for example, outdoor gyms and specific dog-walking areas and other facilities, meeting the needs of residents.



4.3 Improvements to Community and Commercial Facilities

The community facilities on St. Raphael's estate have been reduced significantly over the years, and residents have clearly stated that this is a significant problem. So ASH has proposed new community facilities across the estate.

We have taken as our Case-Study Area the centre of the estate, where the existing shops are located, and which we propose would become a new area for community focus and increased social activity.

Our proposal is for the existing shops and the public spaces to be refurbished and improved, while ensuring rents enable local shops to remain, while also encouraging new local businesses to move onto the site.

To this end, we propose new community facilities on the ground floor of new infill buildings. Residents have suggested a boxing gym, recording studios or other facilities for the estate's youth, rentable shared workspace and workshops, tool libraries, spaces for after-school skills, day-care centre for the elderly and children, a nursery and IT clubs. The final content for these facilities would be decided by a community-led, estate-wide consultation process specifically looking at what community facilities the residents need and want.

In addition, ASH proposes a new Residents' Social Club, located near the river with improved river access and landscaping. This would be located either on the site of the Barnardos Children's Centre, or opposite the community garden on Pitfield Way. It could be combined with sports and other community facilities, becoming a focal-point for residents and neighbours. By making the most of the attractive and re-landscaped riverside location, this facility could become a social and community centre for the wider area, and part of a network of walking and cycle routes through the borough.

Refurbished shops and improved public space with new planting and lighting strategy

For more information on the proposals for new community spaces around Liburne Walk, see the Case-Study Area in part 5 of this report.

4.4 Infill Housing

ASH acknowledges that there is a need to build additional council housing for social rent in the London Borough of Brent. Our argument is that, because of the enormous costs consequent upon demolition and redevelopment, the most financially viable and environmentally sustainable way to do this is to build infill housing on underused parts of the estate. In addition, there is the potential to add roof extensions to the existing blocks, but only where this does not negatively impact on the public or private amenity of existing residents.

ASH believes that the addition of new housing can also improve the conditions on the estate, by addressing any criticisms there may be about the layout of the existing buildings and their putative impact on crime and anti-social behaviour.

New infill Housing (yellow) up to 430 new homes

The infill housing we propose is primarily along the edges of St. Raphael's estate. Admittedly, this will be built on some of the existing green space, but only in areas that are currently not particularly well-used, and we believe that the addition of new housing here will improve the estate overall. The loss of green space is marginal, and far less than that proposed in the masterplan options produced by Brent Council's consultants, Karakusevic Carson Architects, who propose the loss of 3.5 hectares of green space, and far more of the existing eco-system, which cannot be replaced with laid lawns. Some of the new infill housing we propose lies within the main body of the estate, in underused areas where it does not have a negative impact on the existing housing, and will we hope improve the public space through increased activity in those areas. In addition to addressing Brent's need for homes for social rent, this new infill housing will also provide new homes for existing residents who are in overcrowded or under-occupied accommodation, or in need of a new home as a result of a disability or other change of circumstance.

4.5 Roof Extensions

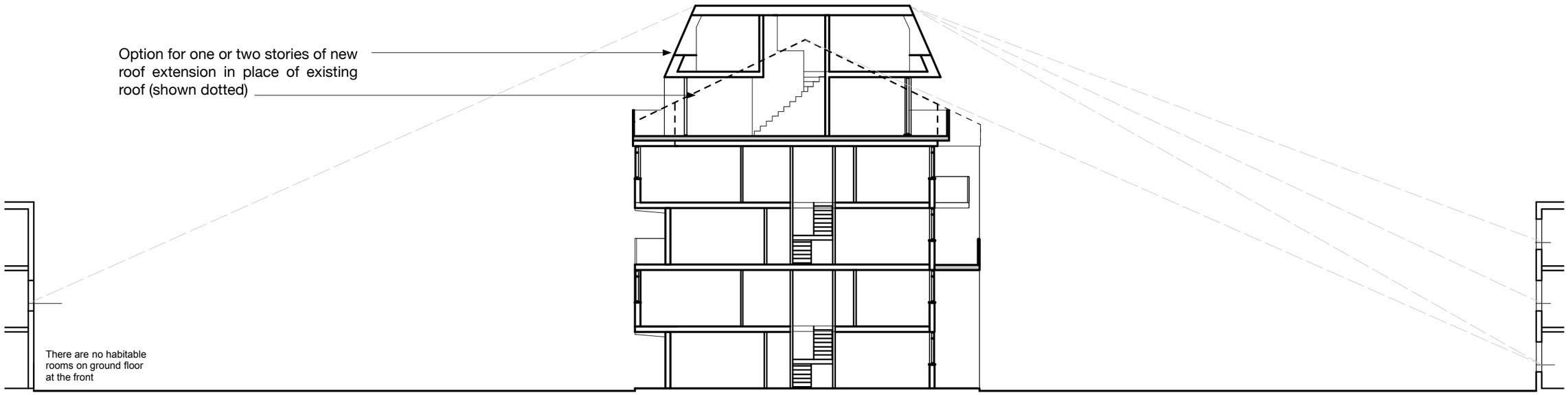
New Roof extensions (pink) up to 178 new homes

Some new housing is proposed on top of some of the existing flat blocks. These are typically along the edges of the estate and do not impinge on residents existing rights to light or amenity. Many of these blocks already have heavy roofs on top, and ASH's structural engineer confirms that - subject to more detailed structural analysis - these proposals should not pose a problem to the existing buildings or foundations.

For hundreds of years, roof extensions have been one of the most common ways to increase housing capacity with the least disruption to the existing city-scape, building as they do on already-developed land, rather than over 'greenfield' land, parks of public land. What ASH is proposing, therefore, is the implementation of a long-standing tradition in UK housing provision.

ASH has made the assessment that the addition of one or two floors of sensitively-designed, additional housing on top of the existing flat and maisonette blocks (Types 1, 2 & 5) — which already have large pitched roofs — would not significantly alter, or have a negative impact on, the existing homes' right-to-light or amenity. This has the potential to increase housing capacity on St. Raphael's estate by up to 178 new homes. This is a considerable addition to the estate's housing provision, and therefore an option worth investigating.

Admittedly, there is inconvenience to existing residents consequent upon such roof extensions. Any construction work will be an inconvenience to residents; but compared to the disastrous consequences for them of demolishing their homes, the inconvenience of infill and roof extensions is negligible. The impact of constructing roof extensions on existing flats can be mitigated through using a prefabricated modular system, which will significantly reduce both the time for work on site and the level of noise and dust.



Existing residents could, in fact, benefit from this work through the addition of lifts, which could easily be designed to enable improved access for the existing flats as well. Moreover, in compensation for the disturbance of construction, residents currently living on the top floors of the existing flats could be given the opportunity to move into these new homes should they wish, with the vacated homes being offered to those on Brent Council's housing waiting list.

Planning permission and delivery

The current permitted development rights allow the addition of up to two new additional stories on existing housing. Although this does not apply to blocks of flats, as would be the case at St. Raphael's estate — for which a planning application, along with all the major building works on the estate, would need to be made — the government acknowledges that, where it is structurally feasible and doesn't impinge on neighbours' right to light or amenity, the sensitive addition of one or more floors on top of existing housing is a sensible mechanism for increasing housing density in existing neighbourhoods.

One Ninety, a manufacturer of off-site modular housing, has costed and assessed ASH's proposals. They have stated that they could complete the new infill and roof extension homes in 12-18 months. This compares with around 10 years using traditional construction methods.

Precedents

Because of these benefits, ASH has been advocating roof extensions on all our design alternatives to demolition for estate communities over the past 6 years. The idea of building on the roofs of residential blocks to increase the amount of council housing on estates has now been taken up by a number of London councils, including Wandsworth, Tower Hamlets and Southwark. This is Southwark Council's offer to residents affected by rooftop development:

- Building the homes off-site so the on-site installation on adapted blocks is as brief as possible;

ASH proposals for roof extensions to the existing maisonette blocks.

Apex Airspace with HTA design proposals for roof extensions to Lambeth and Southwark Housing Association homes in Bermondsey, which have been granted planning permission by Southwark Council.

- First dibs on the new homes to all residents living immediately underneath them (including an offer to leaseholders to 'move their equity upstairs'), with newly vacated homes made available to the wider housing register;
- Accompanying improvements to the existing block, with any new roof, lift or landscaping directly associated with the building of the rooftop homes, non-rechargeable to leaseholders."

There is no reason that we can see that Brent Council could not make the same offer to residents of St. Raphael's estate. The fact that the council is not even proposing roof extensions as part of their infill option has resulted in a significantly lower estimation of the number of new homes that can be built as part of that option. Compared to ASH's proposed infill option of over 600 homes, including roof extensions, Karakusevic Carson Architects has only found space for an additional 323-438 new infill homes. This, presumably, is deliberate, in order to make this option significantly less financially viable for Brent Council, and it is, therefore, important that residents are made aware of the benefits and compensations of this option.

4.6 How Many New Homes Can We Build?

In the current political and economic climate, when there is little grant funding for improvements to landscape and community facilities, cross subsidisation is one of the few options available for building homes for social rent. Our proposals, therefore, need to ensure that, in addition to available grants for retrofitting the existing buildings, the financial costs of all the works to St. Raphael's estate can be paid for by the sale and rent of a percentage of the new-build properties.

There are 760 homes on St. Raphael's estate. ASH proposes 430 new residences through infill-housing, plus 178 residences through roof extensions, a total of 608 new-build residences. This brings the total maximum number of homes on the estate to 1,368.

This is a significant proportion of the total number of homes in the three full-demolition and redevelopment options proposed by Karakusevic Carson Architects, which are, respectively, for 2,000, 2,125 and 2,250 properties. Given that the overwhelming majority of these new-build properties will have to be for market sale, rent and shared ownership, ASH's refurbishment and infill option, in which half the new properties will be for social rent, makes far more sense financially for the council, socially for those on the housing waiting list and for existing residents, who will be able to remain in their refurbished and retrofitted homes, and environmentally for the St. Raphael's community and the surrounding area.

Breakdown of Total Homes by Tenure

Existing homes

522	council homes for social rent
19	housing association homes for social rent
219	leaseholders and freeholders
760	

Proposed homes

304	social rent
304	market sale
608	

Total homes on estate

845	homes for council and social rent
523	leaseholders and freeholders
1368	

5. The Case-Study Area

In order to demonstrate what refurbishment can achieve for residents of St. Raphael's, ASH proposed looking in detail at a particular area of the estate, which we have called the 'Case-Study Area'.

In consultation with residents, we chose the area to the north of Pitfield Way and around the estate shops. This ought to be the centre of the estate, but for some time now it has been neglected and deliberately run down by Brent Council. To remedy this managed decline, ASH has illustrated some improvements that we believe could be achieved very simply, through refurbishment of the landscape, the shops and the existing buildings. In addition to this remedial work, we have proposed some additional infill buildings, adding community facilities that will enhance the social and communal life of the St. Raphael's estate community.

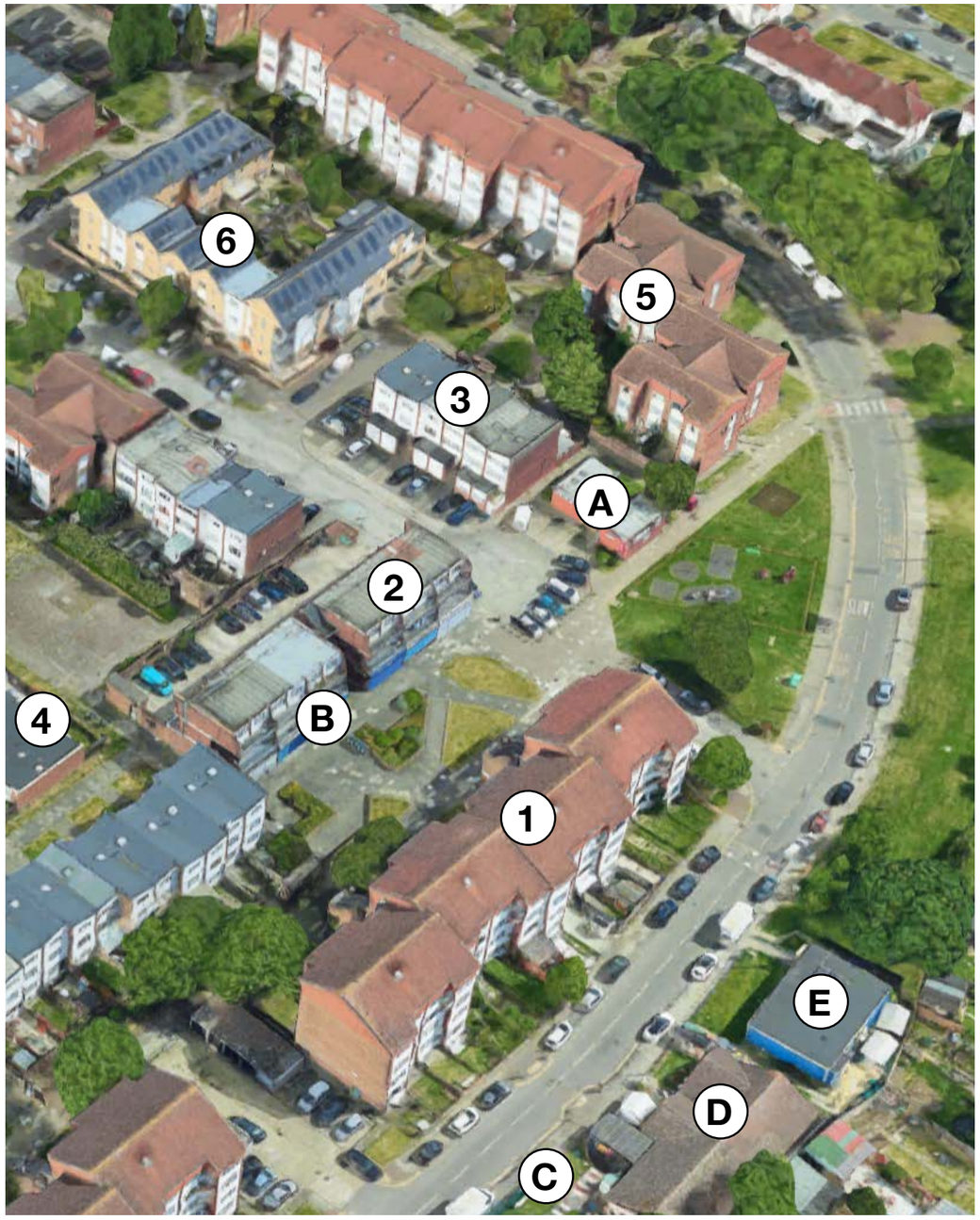
Building types

Housing

Type 1	4-storey blocks of 2-bedroom maisonettes
Type 2	3-storey housing block- flats over shops
Type 3	3-storey town-houses
Type 4	bungalows
Type 5	3-storey block of 1-bedroom flats
Type 6	3-storey block of mixed flats (Network Homes: not included in study)

Community or Commercial Facilities

A	Henderson House
B	Shops
C	St Raphael's Edible Garden
D	Hephzibah Children's Day Nursery
E	Sufra's Food Bank and Community Kitchen



5.1 Design proposals for Infill, Refurbishment and Improvements

A new lighting and public realm strategy
Additional trees planted with a new public realm and lighting strategy throughout. Options to include specific dog-walking areas, outdoor gyms and more.

Option for single-storey roof extensions
Roof extensions to 3-storey flat blocks (existing building type 5) (Type H3).

New pedestrian-priority shared streets
Additional trees, planting and sustainable landscaping throughout.

Refurbish housing and communal facilities
Bin stores to be refurbished and improved throughout.

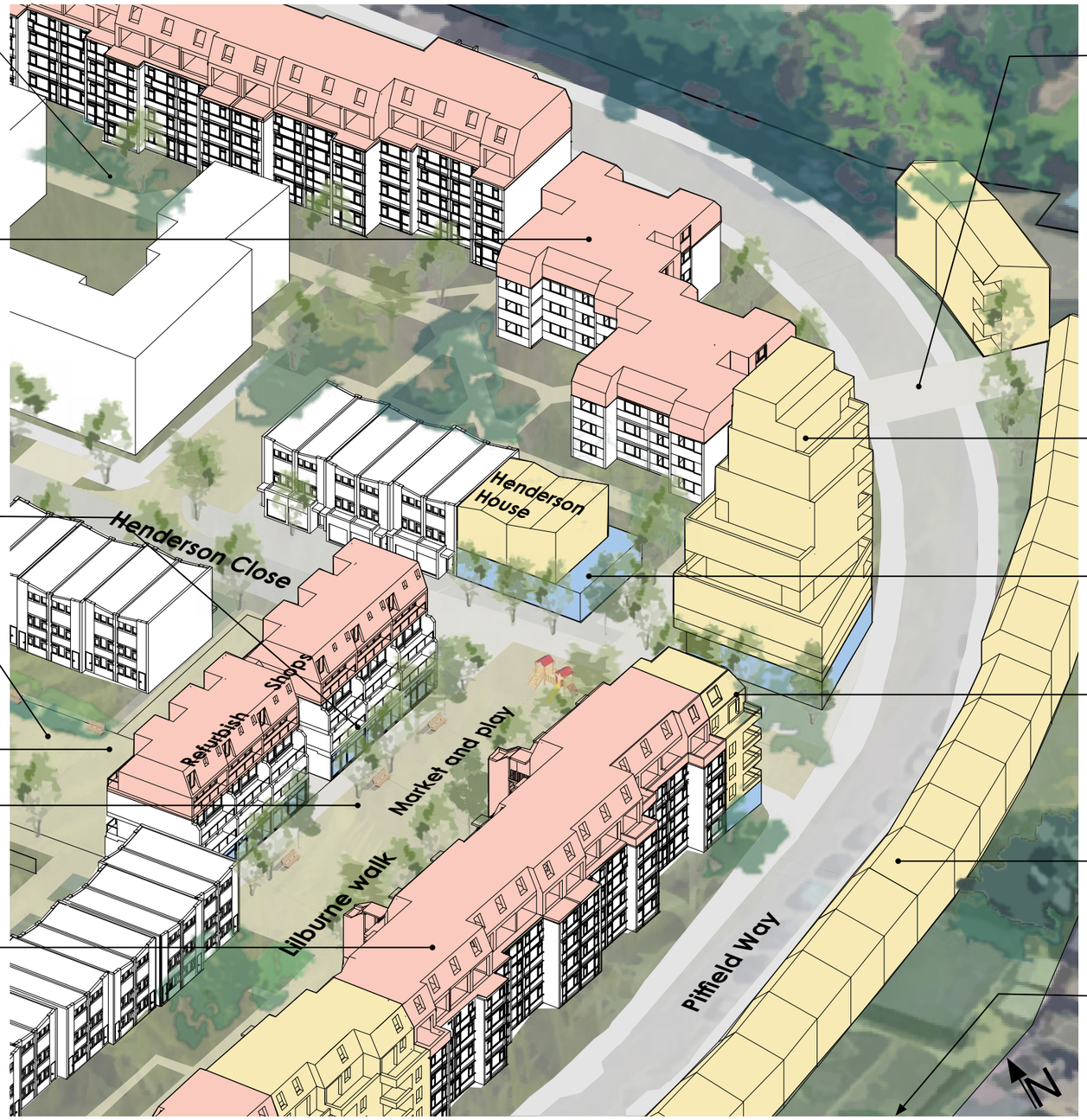
Refurbishment of shops
Shops to be refurbished. Flats above to be refurbished (Type 2). Option for two-storey housing roof extension (Type H2).

New community garden and play-space
Options to be co-designed with residents.

Improve delivery area to rear of shops

New town square
New seating, trees, planting and lighting strategy. Possibility for a market and children's play spaces.

Option for 2-storey roof extension
Roof extension to existing building Type 1 (Type H1)



Improved pedestrian-priority route
Crossing Pitfield Way from North Circular. The landscape throughout the estate is currently dominated by tarmac. Some roads and pavements could be replaced with more porous materials. More trees and plants would improve the area for pedestrians and cyclists, and increase biodiversity for wildlife.

New civic building
Providing new community space on the ground floor with housing above. New facilities, such as low-cost shared workspace, and for young people and the elderly, such as a community kitchen. Existing children's play space to be re-provided.

Site of Henderson House
New community space provided on the ground floor, with 2 floors of housing above. Options for shared office facilities, workshops, youth centre, boxing or martial arts club, recording studios and more on the ground floor.

New infill buildings
Incorporating new lift access to new roof extensions, as well as to existing flats, with an option for community or commercial space on the ground floor. (Type F1)

New infill terraced housing
Located along the edge of the site (type G). These are designed to have no impact on neighbours' light or privacy.

Existing Food bank and community kitchen and Children's day nursery would be re-provided and the Edible Garden would be retained.

View from South East

5.2 View towards New Civic Space Crossing Pitfield Way

The improved pedestrian approach from North Circular and Mead Plat, looking towards the new 'Civic' space with the refurbished shops in the background.

New community spaces provided at the ground floor of all new blocks with residents to decide what amenities should be provided.

New trees and low-maintenance meadow grasses and wild-flowers to be planted throughout to improve biodiversity.

Pedestrian priority landscape and road surface. New public realm and lighting strategy making a safer and more enjoyable place for children and the elderly.

Refurbishment of all existing homes including external insulation and cladding will improve their thermal performance and bring them up to current standards.

New lightweight prefabricated roof extensions providing new housing on top of existing flats and replacing the existing pitched roofs.

New lifts installed to serve both the new roof-extension flats and the existing refurbished homes.

Opportunities to add balconies to existing flats overlooking the public realm, as part of an estate-wide retrofit strategy.

Bin stores refurbished as part of a new waste strategy for the estate.

No private amenity, such as right-to-right of neighbouring properties, will be contravened by the roof extensions. Prefabrication will ensure a shorter period of on-site construction and less noise and disruption than traditional construction.

5.3 A New Public Square and Refurbishment of Shops and Flats with Roof Extensions

We propose creating a new town square with improved landscape, new trees and planting, floor surfaces and public realm and a new lighting strategy. This will create opportunities for a new market and children's play spaces.

Existing shops to be refurbished to improve their layouts. There must be no increase of rent to encourage local business and enterprise.

Existing flats above to be refurbished, including external insulation and cladding, new doors and windows, and improvements to the existing balconies and deck access.

Rents to remain at current levels to enable all existing occupants to remain.

Bin stores refurbished throughout.

New lightweight prefabricated roof extensions providing new housing on top of existing flats.

No private amenity, such as right-to-light of neighbouring properties, to be contravened.

Prefabrication will ensure a shorter period of on-site construction and less noise and disruption than traditional construction.

New lifts to be installed to serve the new flats as well as the existing refurbished homes.

Refurbished shops on the ground floor, potential market space to the front, and new housing on top

6. Refurbishment and Extension of Existing Homes

Existing Housing

ASH has identified the different existing housing types on the estate, and propose that all the existing homes are retrofitted using a whole house approach. Separate detailed studies need to take place exploring the range of refurbishment necessary and specific for each housing type.

Refurbishment

Brent Council's own surveyor, following a survey conducted in August-September 2018, has stated that the homes on St. Raphael's estate are 'in a reasonable state of repair'; that the spending on repairs over the past 5 years was on average £624 per property per year; that no major investments will be required over the next 5 years; that over the next 30 years a total of £32.7 million investment is likely to be required for the 806 council properties (both tenants and leaseholders); and that the level of investment per property (£1,353 per annum) is considered to be 'in line with expectations with respect to an estate that is maintained and meets the Decent Homes Standard'.

The demolition of housing that is in good condition, that only requires basic maintenance, and which will last a further 30 years before requiring replacement of their component parts to extend their lifespan further, is unacceptable in the current economic, housing and environmental situation in the UK.

The costs for this ongoing maintenance have therefore not been factored into this exercise, as it is already covered by residents' service charges. However, the costs of retrofitting of the existing housing, in order to improve its environmental performance and reduce energy use and costs, would be in addition to this maintenance. For this purpose, ASH has identified 5 different housing types on the estate, and for each type we have specified a retrofit strategy.

In general, ASH's proposals include ensuring all council-rented homes meet the Decent Homes Standard for bathrooms and kitchen; improving ventilation strategies to all flat blocks; and upgrading all doors and windows where necessary. The application of external insulation would reduce cold bridging and condensation, and improve the thermal performance of the external walls to reduce heating and energy costs, altogether bringing the homes up to Energy Performance Certificate (EPC) band C or higher.

The proposed alteration and refurbishment works will thus improve the quality of the buildings particularly from the perspective of the occupants, and our quantity surveyor estimates that it would be reasonable to forecast a lifespan extension of at least 60 years. The extensions at roof levels will also result in improvements in construction materials, insulation and lowered maintenance which will provide benefits in lifespan and reduce the need for further works for a considerable period.

Refurbishment of existing housing to include:

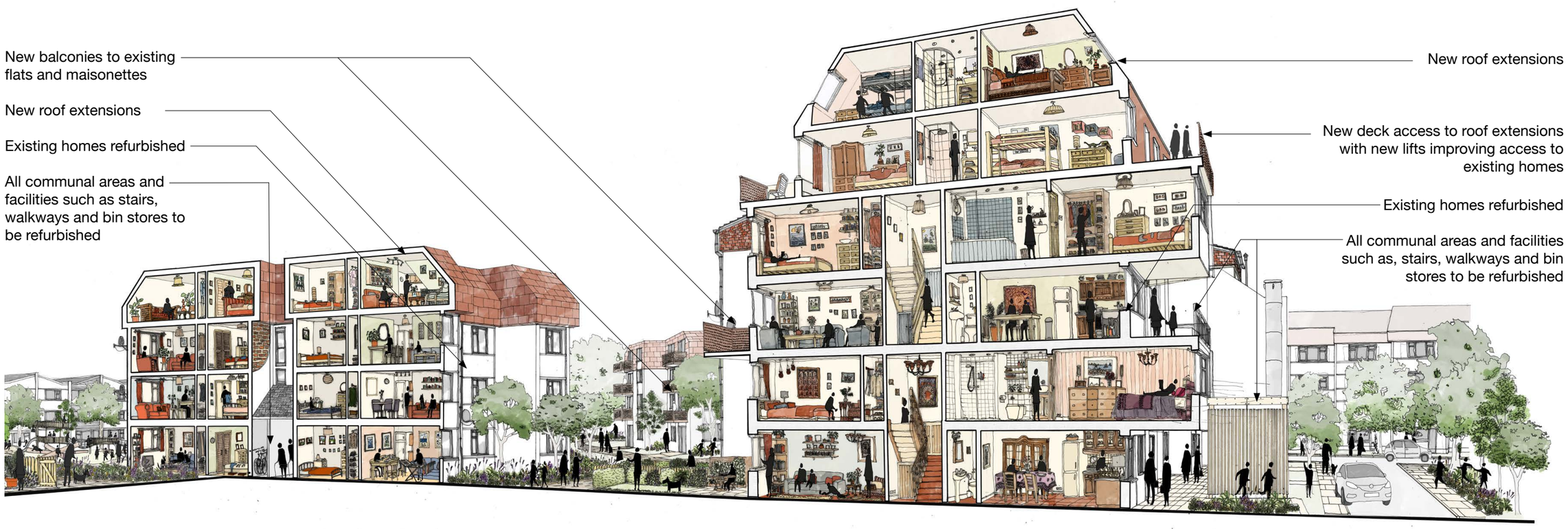
- The application of external insulation and cladding to improve the thermal performance of the home, and reduce condensation through minimising cold-bridging;
- Overhauling the services including electrics, plumbing, heating, and ventilation;
- Installing renewable energy sources;
- Garages in town-houses can be converted, if desired by residents, into bedrooms, studies, workshops or offices;
- Communal bin stores and all other shared and communal areas, such as lobbies, walkways, stairs and other facilities will be refurbished;
- Balconies could be added to existing flat and maisonette blocks, to provide these homes with additional private outdoor space;
- Additional facilities such as cycle and other storage would be incorporated into a full refurbishment-and-infill scheme, benefiting both existing and new residents;

- In some cases, these proposals would be combined with the new infill works, such as where roof extensions are proposed, and in relation to renewable energy provision and services.

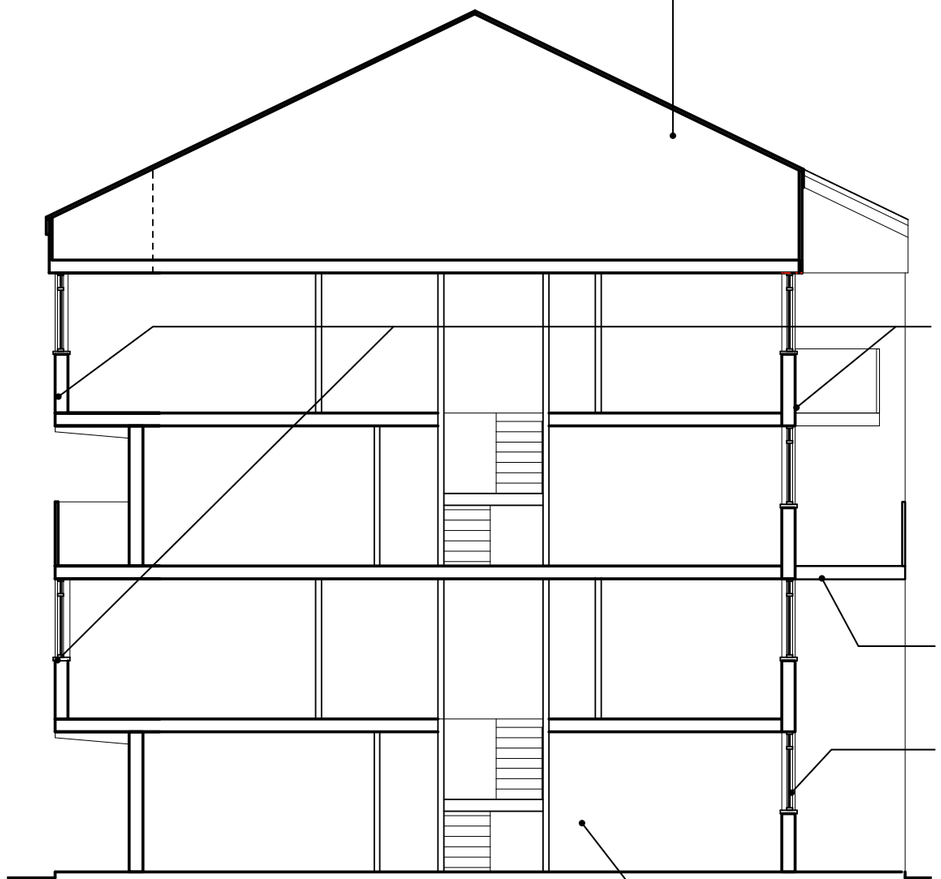
Funding

As part of the 2019 Conservative Manifesto, the current UK Government promised £3.8 bn for a Social Housing Decarbonisation fund. Applications for funding will open in Autumn 2021, but in the pilot scheme, launched in 2020, an average of £39,000 per home was awarded to London councils. With additional match-funding for leaseholders and freeholders such as the Green Home Grant Scheme, Brent Council could use this to fund the refurbishment and retrofitting of all the housing on St. Raphael's estate.

In the unlikely eventuality that Brent Council fails to win this Government funding, it would be necessary to recoup the cost of refurbishments through the sale or rent of a larger proportion of the proposed new-build homes. For this reason, we have currently identified the maximum number of new homes that would need to be constructed in order to cover all these costs. However, if funding for refurbishment is available, it will be possible to make more of the proposed new homes available for social rent.



6.1 Refurbishment of Type 1: 4-storey maisonette blocks



Roof extensions or refurbishment
The existing roofs are so large, they could easily accommodate one or two floors of additional housing without a significant impact on the neighbouring buildings or existing residents. Such roof extensions could also accommodate the installation of lifts, which would allow access to the new homes in the roof extensions, but also to the existing homes.

Alternatively existing roofs could simply be refurbished with new insulation and finishes where necessary.

New external insulation
The existing cladding to front and back of the blocks is a panel system which could easily be upgraded to improve thermal performance. This would reduce heating bills and address condensation through eliminating cold bridging.

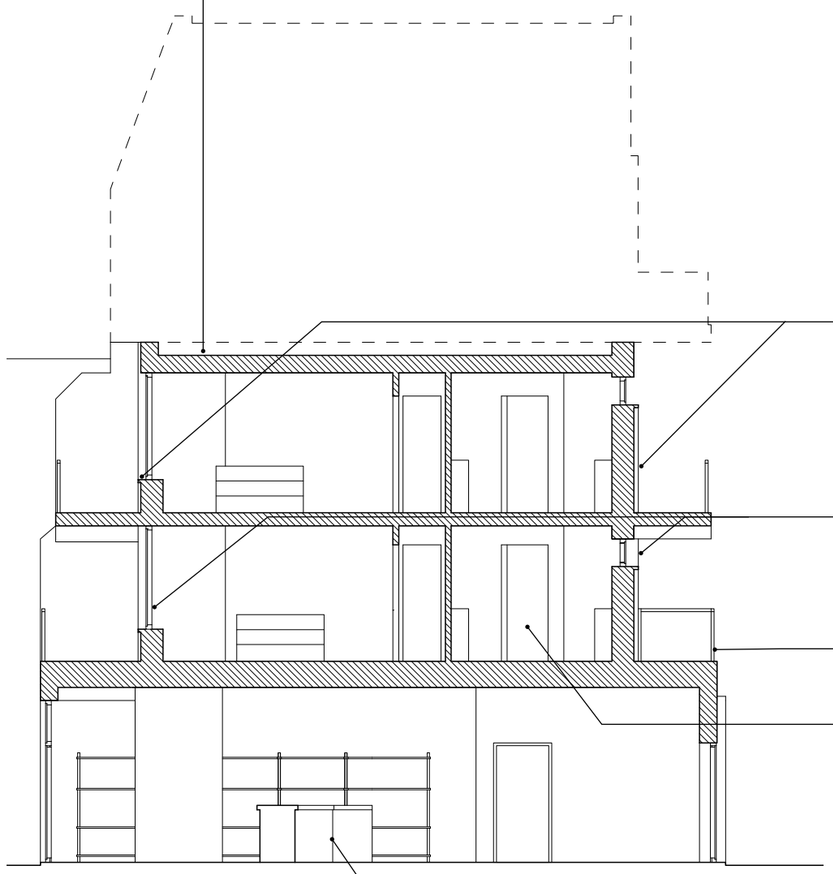
New balconies
New balconies could be installed to provide the upper-floor maisonettes with private outdoor space.

New doors and windows
These would reduce draughts and improve thermal performance.

Internal improvements
According to Brent Council's survey, homes should already meet the Decent Homes Standard. However, additional work could include upgrading the ventilation, heating and electrical services where necessary.

Communal bin-stores, lighting and all other shared facilities such as walkways and stairs to be refurbished.

6.2 Refurbishment of Type 2: Shops and 1-bedroom flats above



Roof extensions refurbishment
The buildings housing the shops can accommodate one or two floors of additional housing without a significant impact on the neighbouring buildings or existing residents. Again, the installation of lifts would allow access to the new homes in the roof extensions, but also to the existing homes.

Alternatively existing roofs could simply be refurbished with new insulation and finishes where necessary.

New external insulation
External insulation and cladding could be replaced to improve thermal performance which would reduce heating bills and address condensation through eliminating cold bridging.

New front and balcony doors and windows
These would reduce draughts and improve thermal performance.

Refurbish balconies and deck access

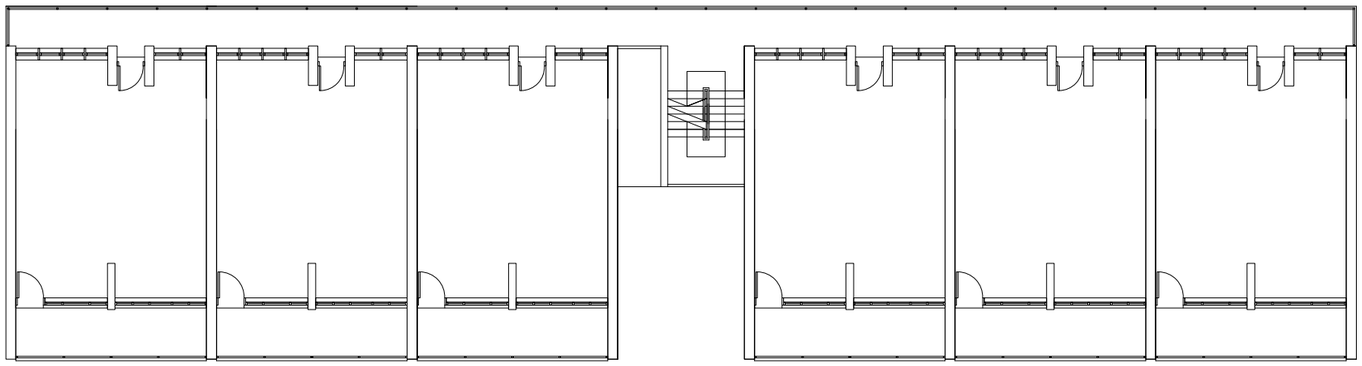
Internal flat improvements
According to Brent Council's survey, the homes should already meet the Decent Homes Standard. However, additional work could include upgrading the ventilation, heating and electrical services where necessary.

Refurbishment of shops
Ensuring that rents do not increase so leases are available to existing and local organisations

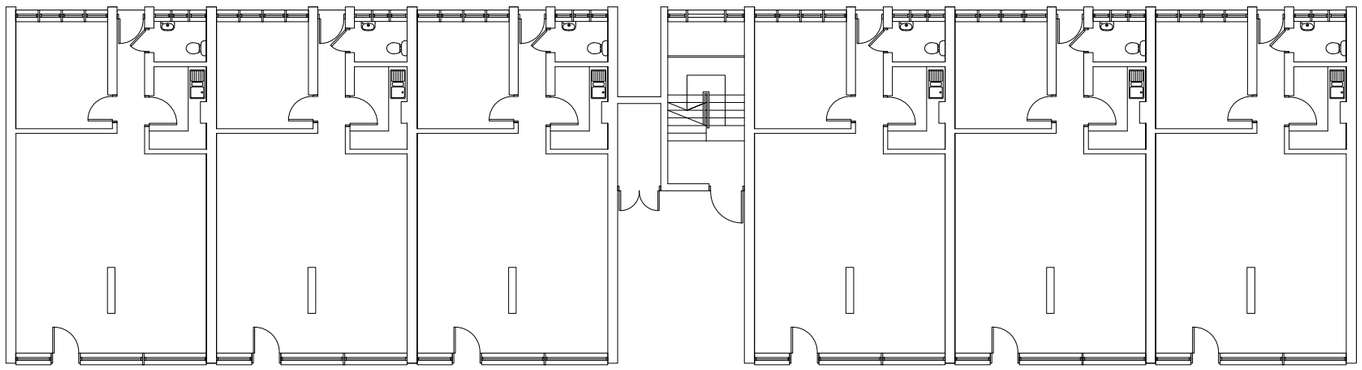
Communal bin-stores, lighting and all other shared facilities such as walkways and stairs to be refurbished

Existing Building Type 2: plans and elevation

Existing front (south) elevation (1:200 @A3)



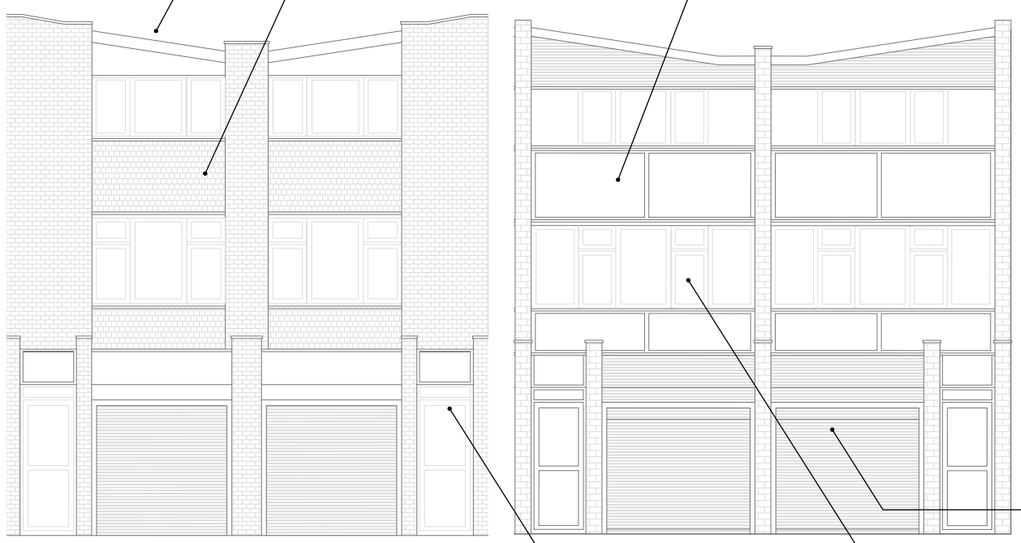
Typical existing one-bedroom flat plans (floors 1 and 2) (1:200 @A3)



Typical existing ground floor shop plans (1:200 @A3)

Proposed refurbished shop layout (1:500@A3)

6.3 Refurbishment of Type 3: 3-storey town-houses



Roof insulation and finishes
To be upgraded where necessary

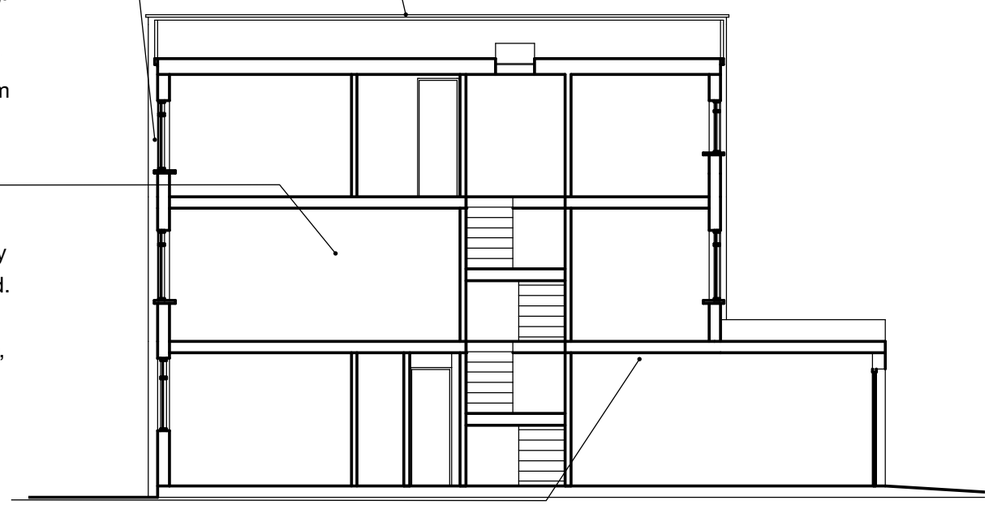
New external insulation
The existing cladding of the town-houses range from brick to an insulated panel system. The panels could easily be upgraded to improve thermal performance which would reduce heating bills and address condensation through eliminating cold bridging. Insulation could also be applied to the brick externally, and either a render or other cladding system could be applied.

Internal improvements
According to Brent Council's survey, the homes should already meet the decent homes standard. However, additional work could include upgrading the ventilation, heating and electrical services where necessary.

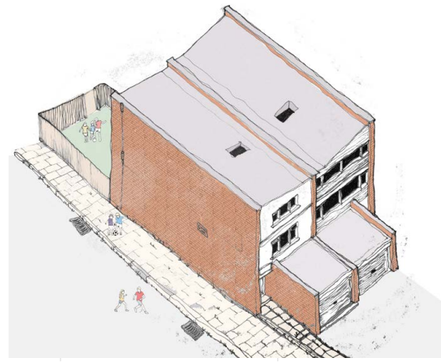
Possible conversions of garages to bedrooms or home offices

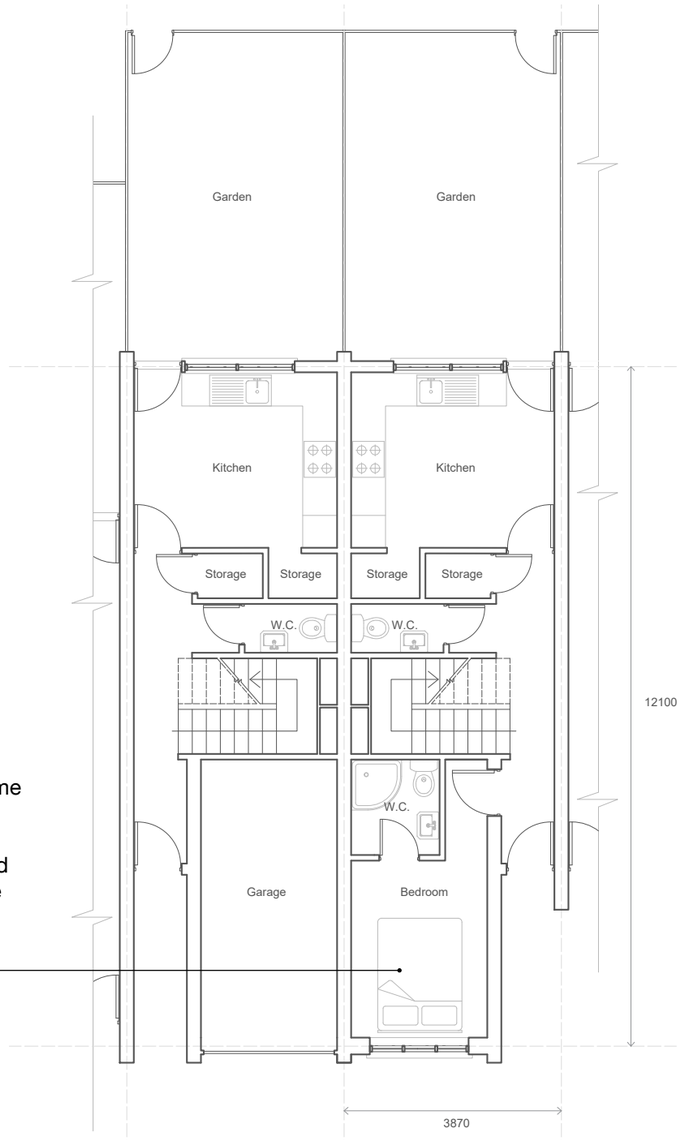
New front doors and windows

Communal bin-stores
to be refurbished



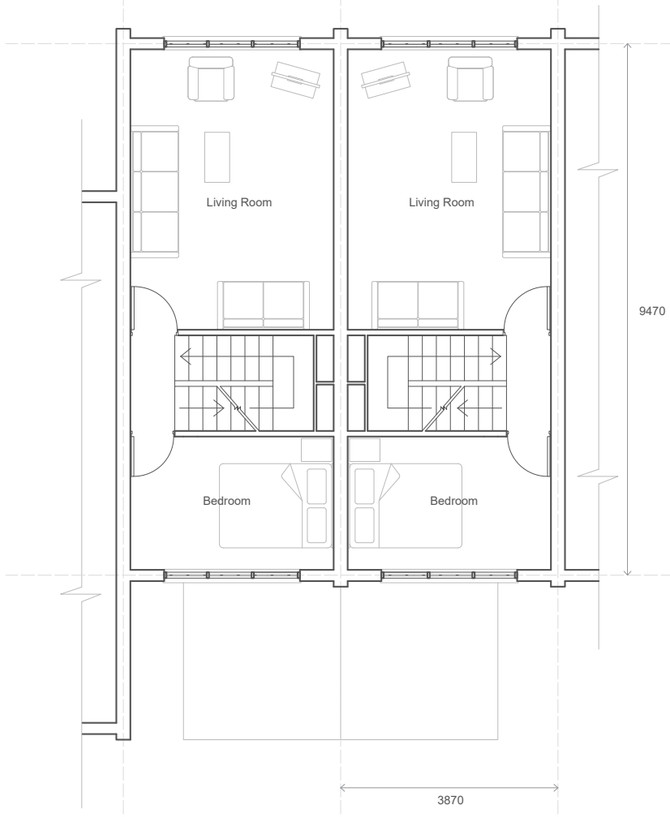
Existing Building Type 3 plans



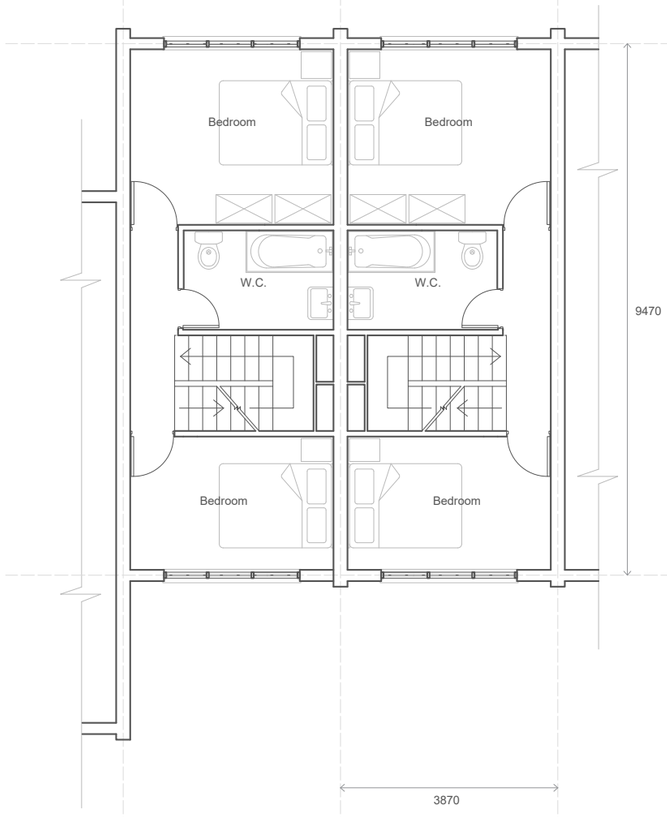


Garages in some town-houses have already been converted into accessible bedrooms, workshops or offices

Ground



First



Second

6.4 Refurbishment of Type 5: One-bedroom flat blocks

Roof extensions or refurbishment
The existing roofs are so large they could easily accommodate one or two floors of additional housing without a significant impact on the neighbouring buildings or existing residents. The works would also accommodate the installation of lifts which would allow access to the new homes in the roof extensions, but also to the existing homes.

Alternatively existing roofs could simply be refurbished with new insulation and finishes where necessary.

New external insulation
External insulation and cladding could be applied to the blocks to improve their thermal performance and reduce heating bills. Cladding could range from rendered insulation to cladding panels which could be similar to the existing appearance.

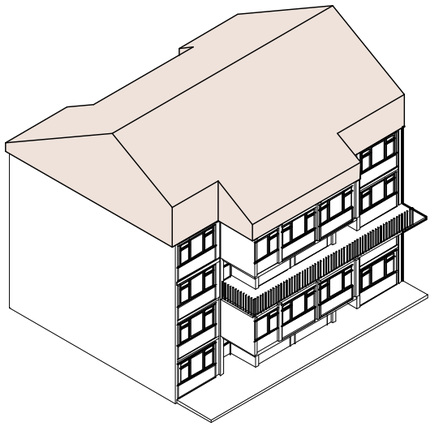
New private outdoor space
New balconies with glass access doors could be installed to provide the upper floor flats with private outdoor space. It is also possible to make alterations to the ground floor flats to grant them access to new private outdoor space but this will depend on the particular landscape context.

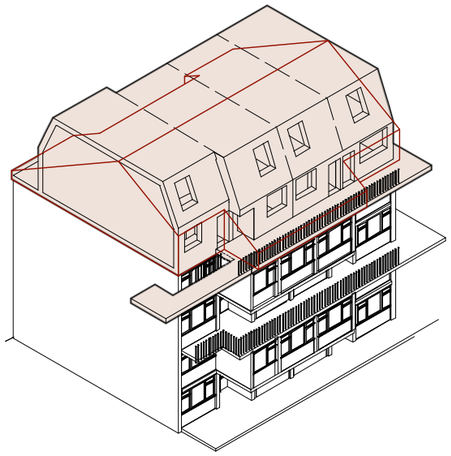
Internal improvements
According to Brent Council's survey, the homes should already meet the Decent Homes Standard. However, additional work could include upgrading the ventilation, heating and electrical services where necessary.

New front doors and windows
To reduce draughts and improve thermal performance.

Communal bin-stores, lighting and all other shared facilities such as walkways, stairs and lobbies will be refurbished.

6.5 Proposed Roof Extension: Building Type 1 (maisonettes)





Existing Building Type 1

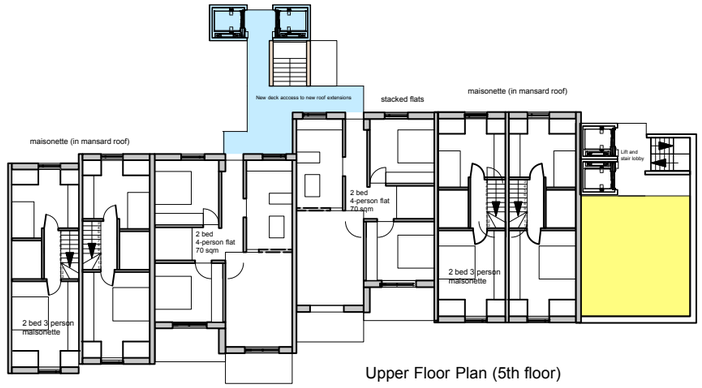
4-storey, 2-bedroom maisonette block

This building type currently has a large pitched roof with heavy tiles and a reinforced concrete frame structure. ASH's structural engineer has assessed that the structure is capable of accommodating an additional 1 or 2 floors of lightweight construction.

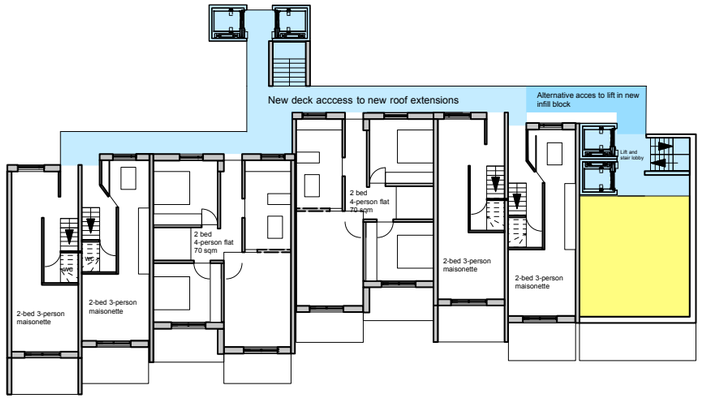
Proposed Roof Extension (H1)

2-storey, 2-bedroom maisonette or flat

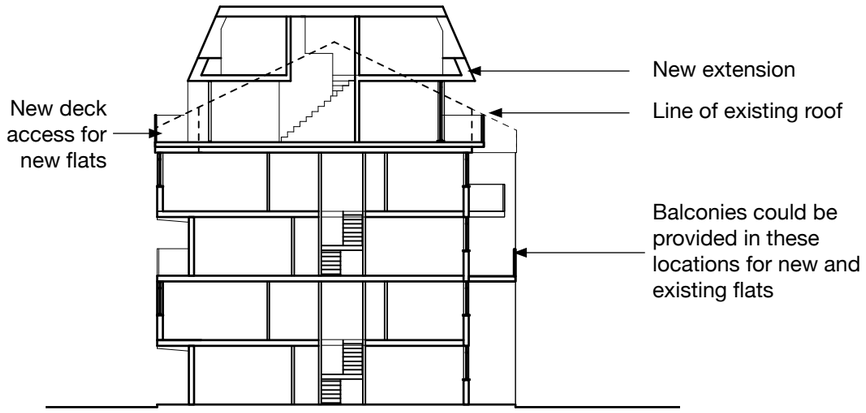
- One 2-bedroom maisonette or stacked flats
- 1 or 2 floors of lightweight prefabricated construction could be installed with minimal disruption to existing residents
- Existing stairs will be extended to allow access
- New infill building adjacent will include new flats as well as lifts and stairs to access new roof extensions
- Potential for adding new balconies to the existing homes



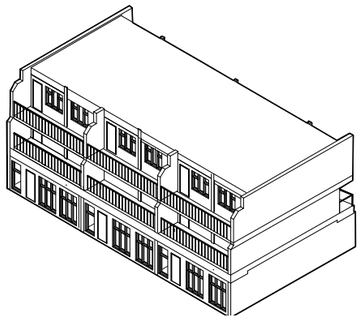
Upper Floor Plan (5th floor)

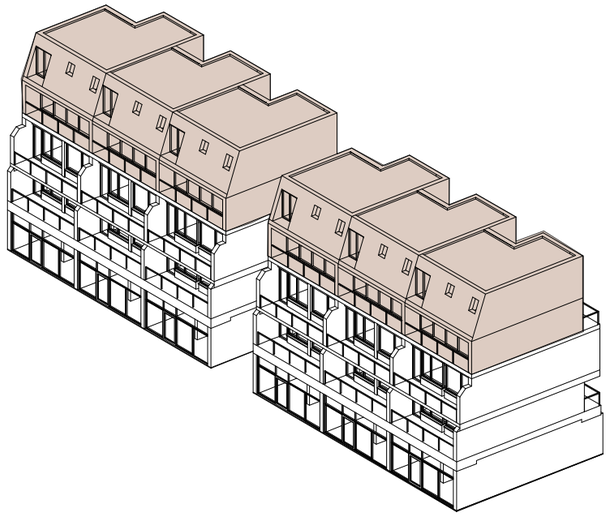


Lower Floor Plan (4th floor)



6.6. Proposed Roof Extensions: Building Type 2 (flat blocks)





Existing Building Type 2

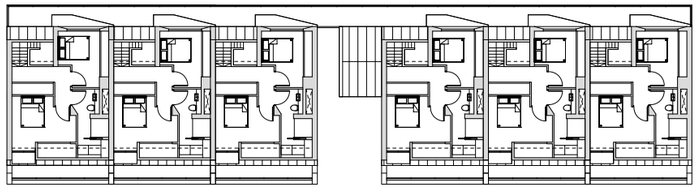
Flats over shops

This building type has a large flat roof and a reinforced concrete frame structure. ASH's structural engineer has assessed that the structure is capable of accommodating an addition 1-2 floors of lightweight construction.

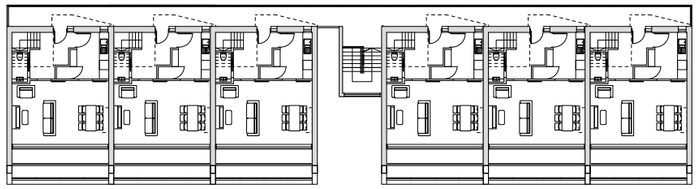
Proposed Roof Extension (H2)

2-storey, 2-bedroom maisonette or flat

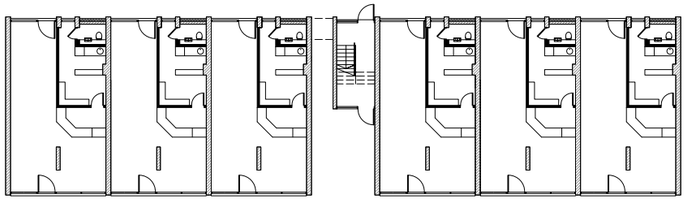
- 1-2 floors of lightweight prefabricated construction could be installed with minimal disruption
- Existing stairs will be extended to allow access
- New lifts to access new roof extensions and existing flats (subject to investigation)
- Existing flats to be refurbished
- Existing shops to be refurbished



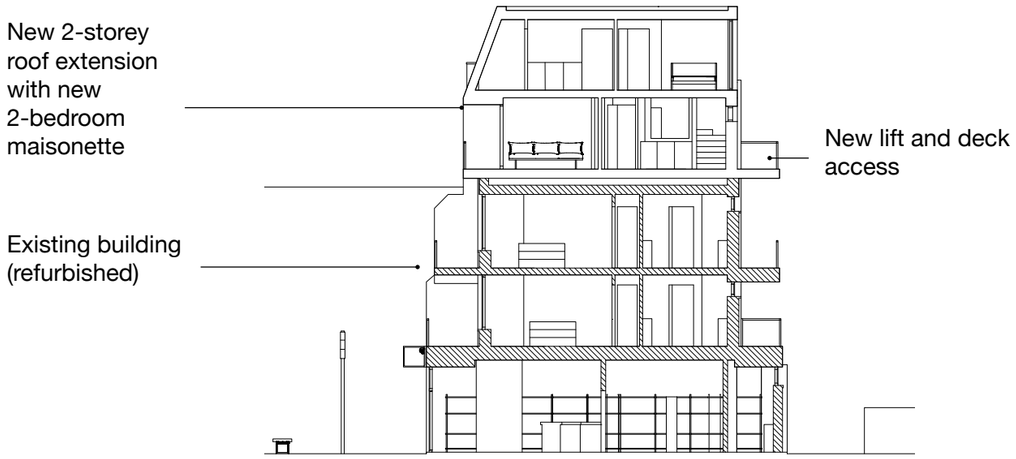
Maisonette: New Upper floor (4th) plan



Maisonette: New Lower floor (3rd) plan



Ground Floor Plan - Reworked shop floor
(1:200)



6.7 Proposed Roof Extensions: Building Type 5 (flat blocks)

Existing Building Type 5

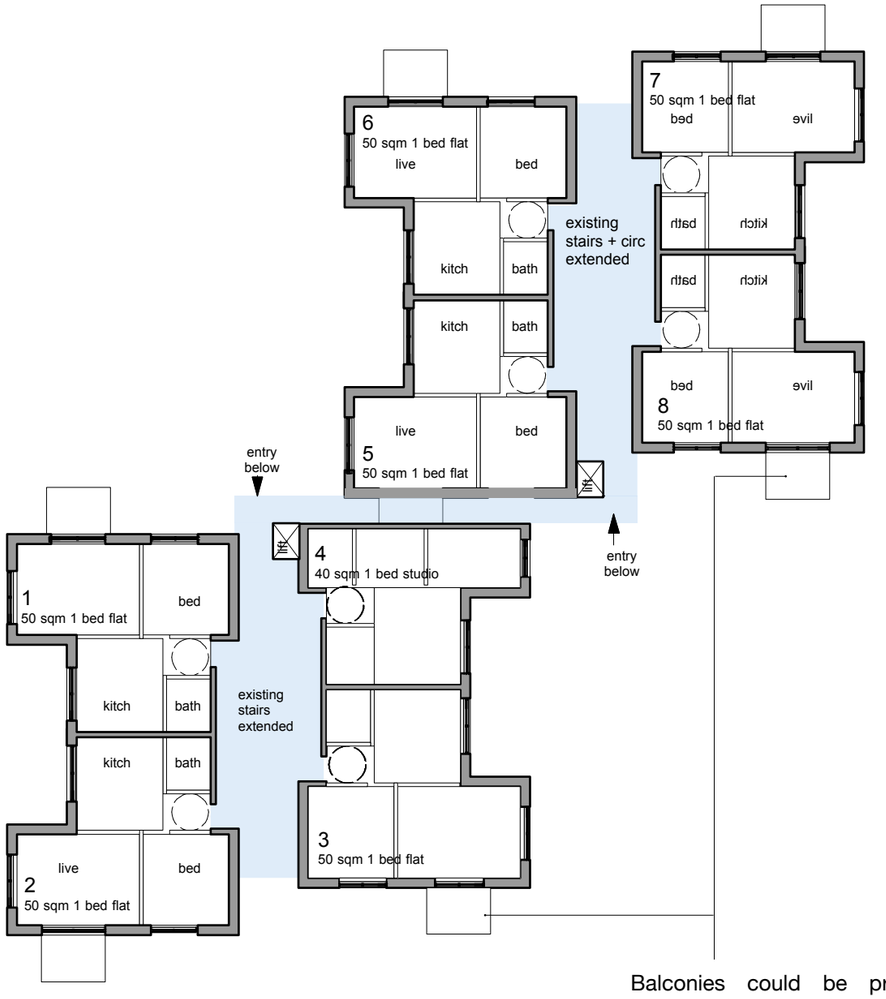
3-storey flat blocks

This building type currently has a large pitched roof with heavy tiles and a reinforced concrete frame structure. ASH's structural engineer has assessed that the structure is capable of accommodating an additional floor of lightweight construction.

Proposed Roof Extension (H3)

1-storey, 1-bedroom flat

- 1 floor of lightweight prefabricated construction could be installed with minimal disruption
- Existing stairs will be extended to allow access
- New lifts to access new roof extensions and existing flats (subject to investigation)
- New balconies could be added to existing flats as well as the new ones.



Balconies could be provided in these locations for new and existing flats

7. Proposed New Infill Housing

Proposed Infill Housing

Type			average no. of stories	no of blocks	type of new housing	average sqm per unit	flats	houses	maisonettes	total units	total GIFA *
A		New-build flats alongside north circular	5-7	6	3-4-bed maisonettes (3 per block)	120			18	90	6,720
					2-bed flats (8 per block)	70	48				
					1-bed flats (4 per block)	50	24				
B	**1**	New-build houses bordering the park	2	30	2-3 story 3-4-bed houses	100		30		30	3,000
	2	New-build houses bordering the park	2	16	2-3 story 3-bed houses	88		16		16	1,408
	3	New-build houses bordering the park	2	24	2-3 story 3-4-bed houses	100		24		24	2,400
	4	New-build houses along the 'creek'	2	12	3-4-bed houses	100		12		12	1,200
C	**1**	New-build flat block (above possible community space)	5	1	2-bed flats	70	12			12	840
	2	New-build flat block	3	1	2-bed flats	70	8			8	560
	3	New-build (infill) flat blocks	4	1	2-bed flats	70	12			12	840
	4	New-build infill blocks (ground floor)	2	1	4-bed maisonettes	100	5			5	500
	5	New-build flats over	3	1	2-bed flats	70	16			16	1,120
D		New-build flats over Residents Social Club	5	1	2-bed flats	70	28			28	1,960
E		New-build maisonettes along estate Northern edge	2	19	3-bed maissonettes	120			19	19	2,280
E		New-build flats over maisonettes along estate Northern edge	2	19	2-bed flats	85	38			38	3,230
F	**1**	New-build Infill adjacent to and access to Type 1 flat blocks and roof	5	10	flats mixed	80	50			50	4,000
	2	New-build general infill (houses - to imitate existing)	3	20	3-bed 2-storey houses	110		20		20	2,200
G	**1**	New-build flats along the 'creek'	3	10	2-bed flats	70		30		30	2,100
J	**1**	8 storey flats over civic space - in tower	9	1	1, 2, 3-bed flats/ maisonettes	70	17			17	1,190
	2	2 storey maisonettes over civic space	2	1	2-bed maisonettes	83			3	3	249
		total infill homes								**430**	

Proposed Roof Extensions

H	**1**	Roof extensions on type 1	2	144	2-bed maisonettes	83			144	144	11,952
	2	Roof extensions on type 2 (above shops)	2	2	2-bed maisonettes	83			6	6	498
	3	Roof extensions on type 5	1	28	1-bed flats	50	28			28	1,400
		total roof extensions								**178**	

Total new homes	286	132	190	**608**	**49,647**
percentage of total	47%	22%	31%		
Plus existing homes	226	246	288	**760**	
	30%	32%	38%		
Total homes on estate	512	378	478	**1,368**	
percentage of total	37%	28%	35%		

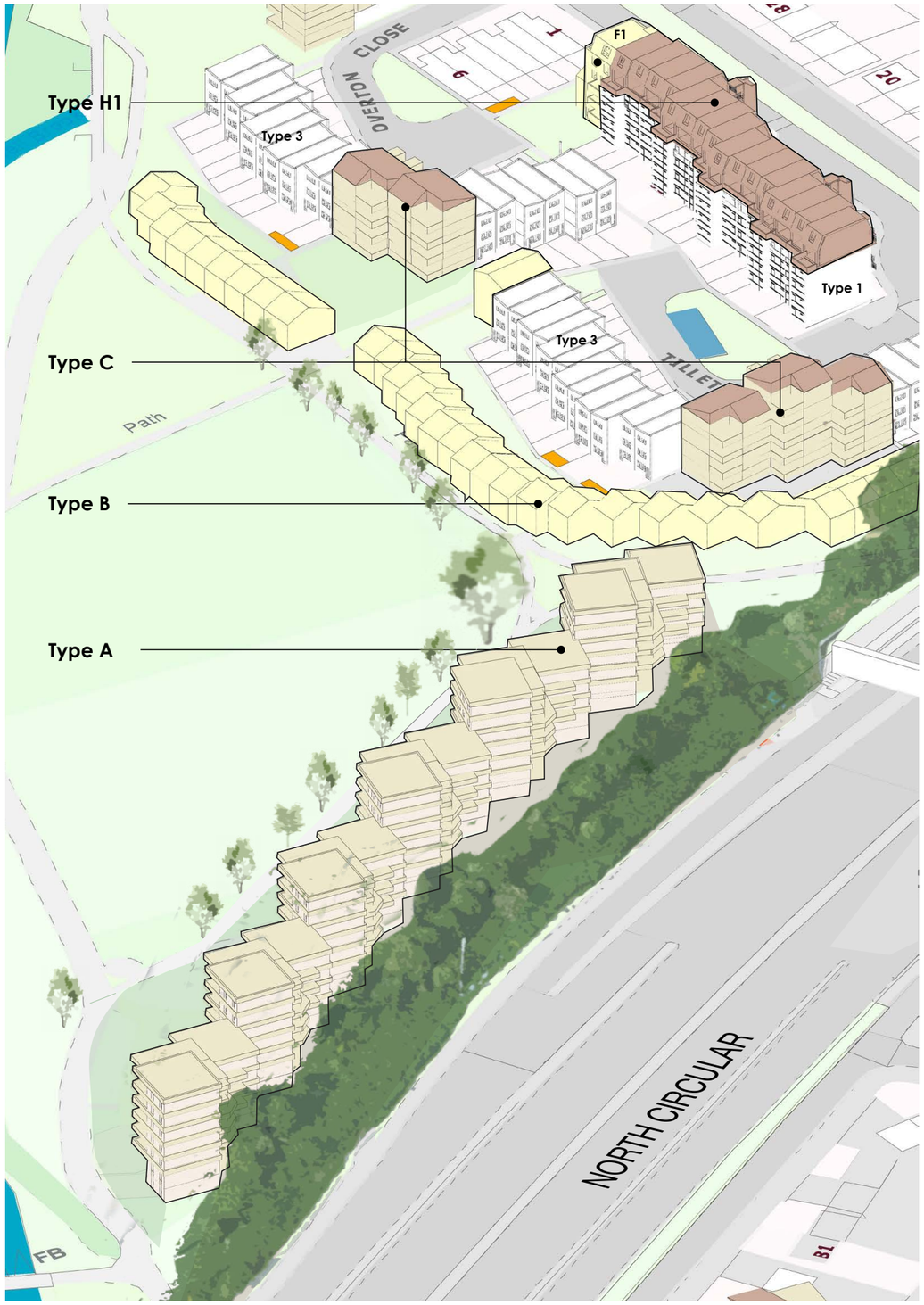
*GIFA = Gross Internal Floor Area

7.1 Infill housing Types A, B, C

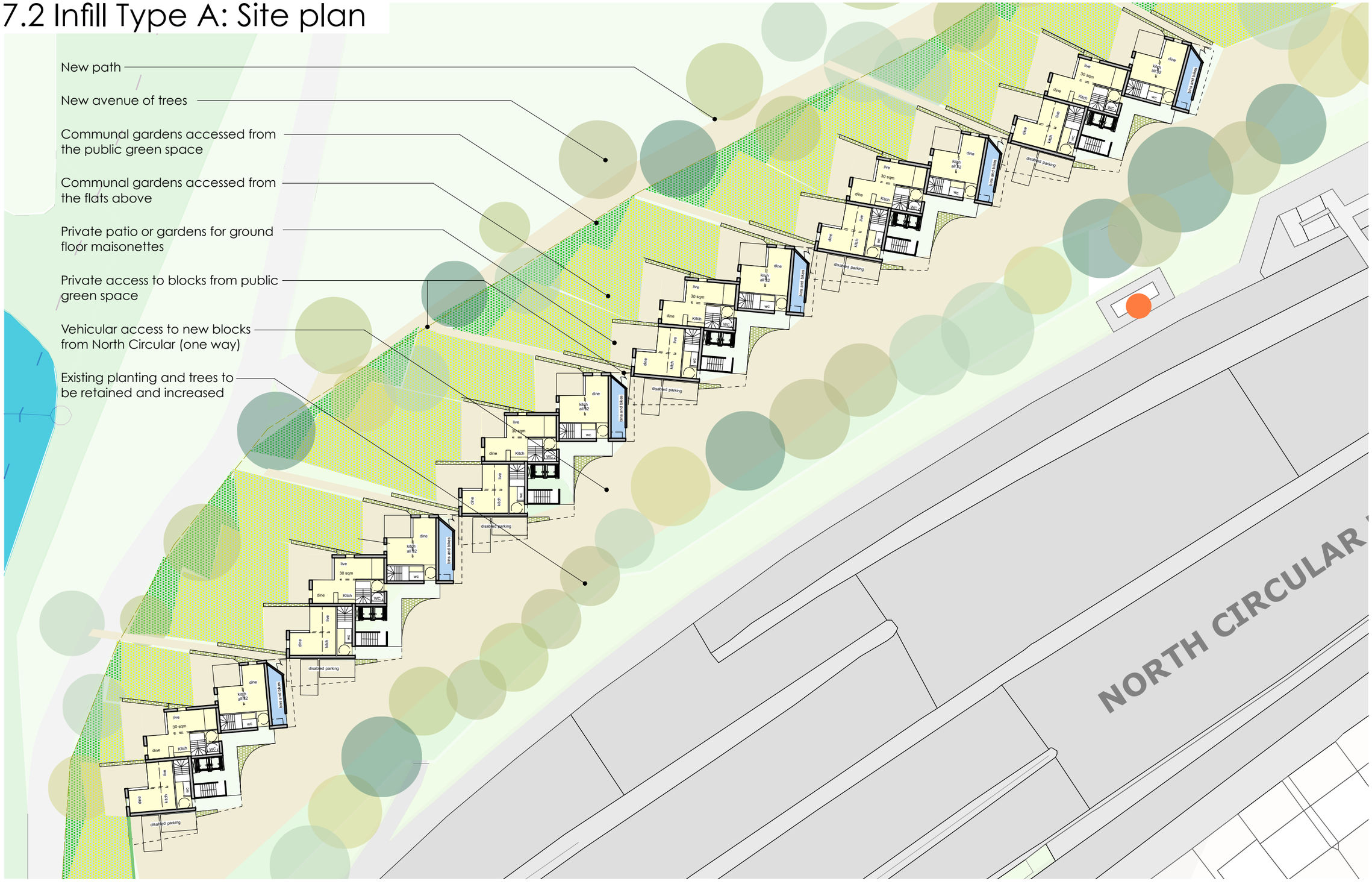
Type A : New-build flats alongside North Circular (Brent Council's 'Phase 1')
The edge of the green space that runs alongside the North Circular offers an opportunity for some additional housing with close access to public transport links and the Brent River Park. Currently, there is some shrub and tree growth along this edge, which should be improved and extended in order to provide an environmental barrier between the busy main road and the new housing. As the new housing is to the south and east of the park, a slim line of 4-7-storey buildings could be built without any significant impact on the quality and use of the park. We propose a staggered roof-line that would allow light to penetrate through a heterogeneous building form, and each block rotates slightly following the curve of the road. The stepped orientation and block layout means that all the homes would be dual or triple aspect, with views across the park and towards Wembley Stadium to the west and north. The south-east side of the blocks, facing the North Circular, would be allocated to vehicle circulation, with some parking for disabled residents, and lifts and stairs located in single-glazed and planted 'winter-gardens'.

Type B: New-build houses bordering the park
Along the eastern edge of the park, backing onto the existing back gardens, ASH proposes a new terrace of 2- or 3-storey family homes, creating a new frontage to Brent River Park. Roofs would be pitched to mitigate any loss of light and views, ensuring no infringement of right-to-light or amenity of existing homes.

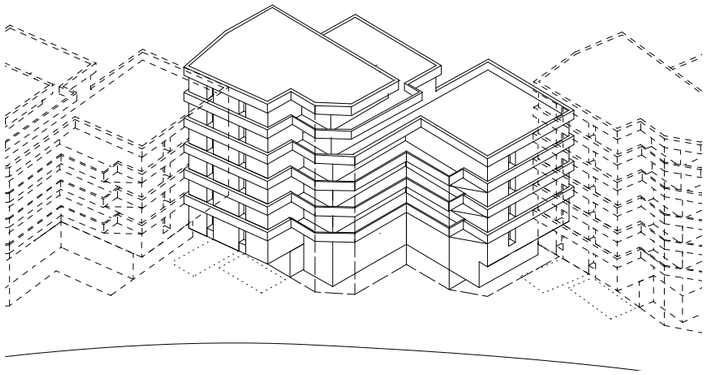
Type C: New-build flat blocks
Type C housing can be replicated in numerous locations across the estate, as either infill sites between buildings or as stand-alone blocks. All flats are dual aspect, with west- or south-facing balconies. The proposed blocks are staggered to enable a wide range of potential configurations. Roofs could match that of the proposed roof extensions to create a homogeneity and identity between the new and refurbished buildings across the estate. For the same reason, Type A housing could employ similar formal and design choices.



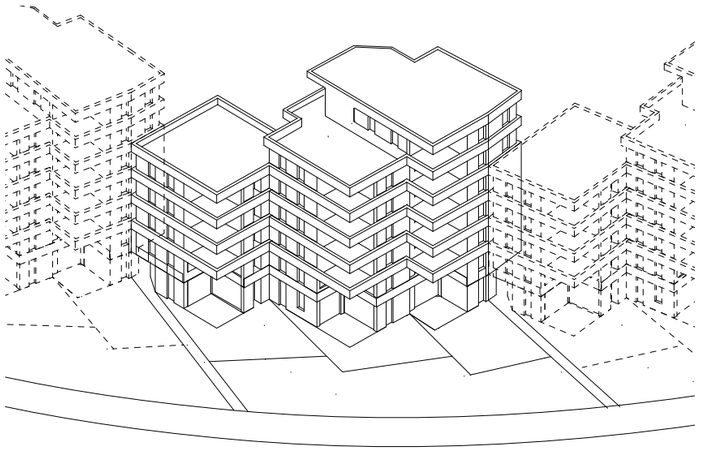
7.2 Infill Type A: Site plan



7.3 Infill Type A: Axonometric and Upper floor plans



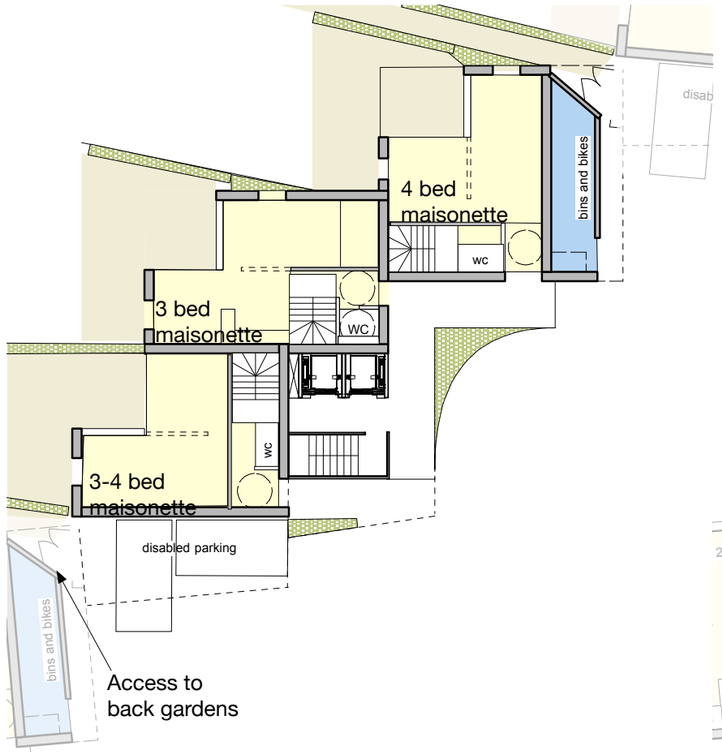
View from South East (North Circular)
Main access, parking, circulation and entrances



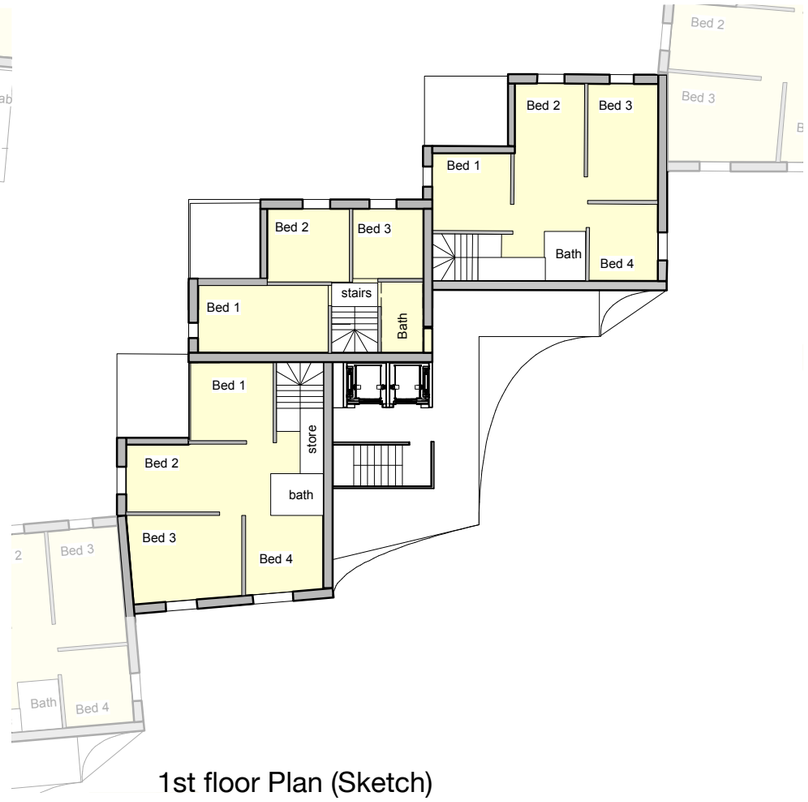
View from North West (Park)
All homes have gardens or balconies overlooking the park

Existing view from the park

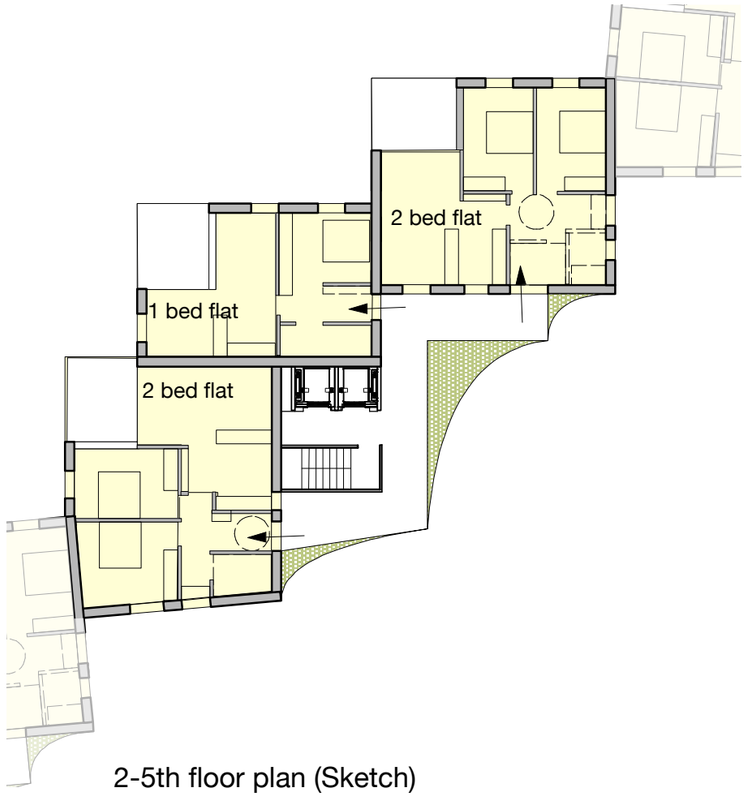
Proposed view from the park



Ground Floor plan (Sketch)



1st floor Plan (Sketch)



2-5th floor plan (Sketch)

7.4 Infill Housing Types D, E, F, G

Type D. New-build flats over new Residents Social Club
These flats, built on top of the new Residents' Social Club, would be similar to Type C housing, with each flat having a corner, balconies, and double-aspect windows.

The new Residents' Social Club (in blue) is located on the ground floor of the site of the existing Barnardos Children's Centre. It will contain a variety of communal and social facilities, making the most of its location on the edge of the estate, bordering the park, and its proximity to the Brent River, with new and improved landscaping and play and leisure facilities throughout.

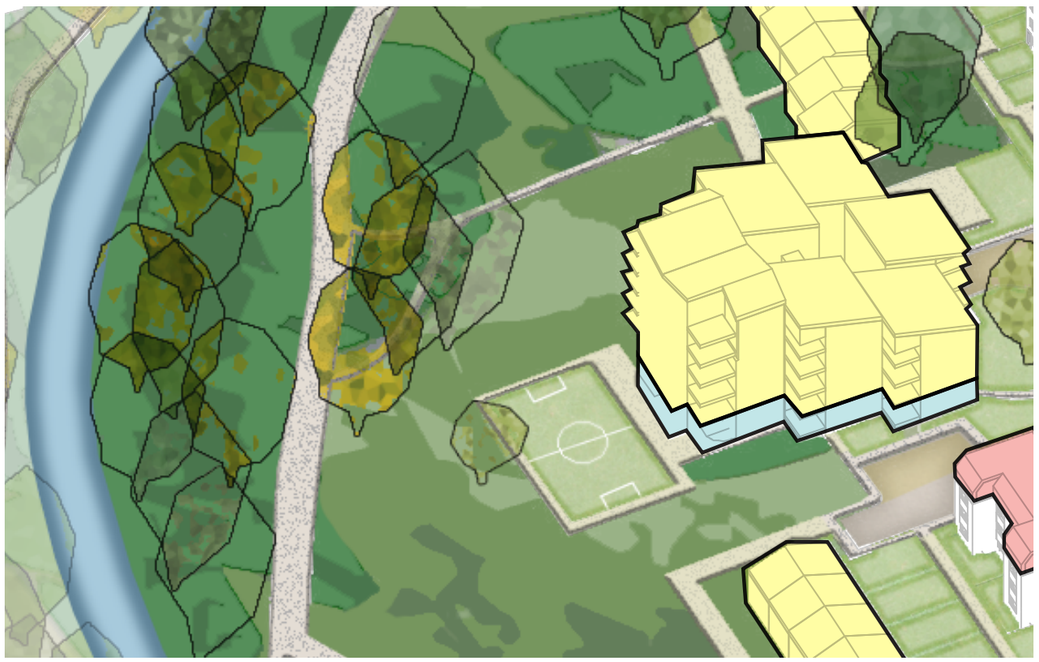
Type E. New-build maisonettes and flats along estate Northern edge
These new maisonettes (E1) would provide 3-bedroom family homes with gardens. Above these maisonettes would be another two floor of flats (E2) with balconies.

Type F1. New-build Infill housing adjacent to Type 1 (maisonette blocks)
This new infill housing could allow access to the roof extensions to Type 1, as well as the potential for communal or commercial facilities in the ground floor.

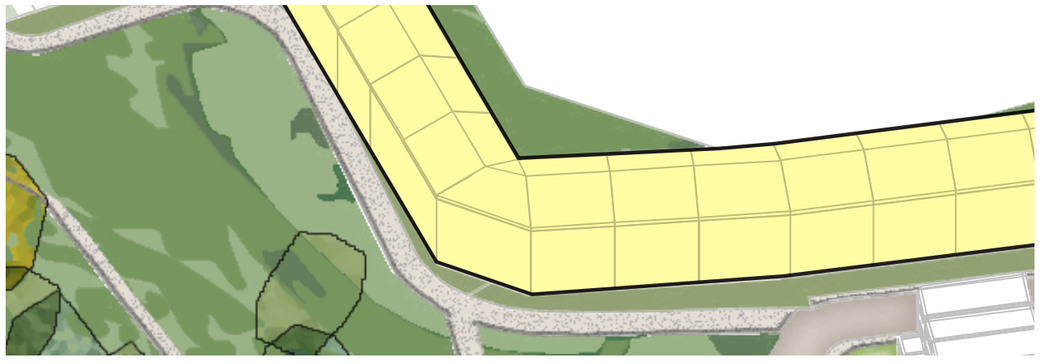
Type F2. New-build Infill housing dotted around the estate
This infill housing type would be situated adjacent to the existing town-houses where there is underused land, and would imitate the form of the existing houses.

Type G. Infill housing along the creek
This housing is designed (as with Type B) with an asymmetrical roof pitch so there is no impact on neighbours right to light, privacy or other amenity. The back gardens of the existing adjacent houses are long and to the south, so impact would be minimal. If flooding is subsequently deemed to be an issue due to proximity of the underground creek, the ground floor can be given over to parking or other uses.

Type D

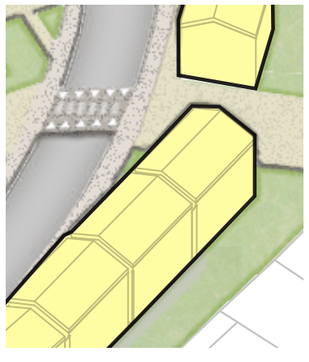


Type E



Type F1 & F2

Type G



8. Construction Cost of ASH's Proposals

Robert Martell and Partners, our quantity surveyors with over 25 years' experience, have costed ASH's infill housing and refurbishment proposals. Their estimate is that the construction cost of 608 new homes, the refurbishment cost of the 741 existing homes (council-owned, leaseholder and freeholder), improvements to the landscape and community facilities, could all be paid for by a combination of Government retrofit grants, GLA affordable-housing funding, and the sale or rent of a proportion of the new homes. Below is a summary of the figures in their report, which can be read in full in Appendix A.

Construction of 608 new homes	£98,010,844
Refurbishment of 741 existing homes	£28,899,000
External works, landscape, communal amenities and services	£20,814,750
Total cost of works:	**£147,724,594**
Contingency sum @5%	£7,386,230
Professional fees @12%	£18,613,299
Subtotal project cost:	**£173,724,123**
Finance, PR and developer costs associated with homes for sale	£18,465,574
Total project cost:	**£192,189,697**
(Cost per home)	£140,489
All of which would be funded through:	
GLA affordable-housing grants (304 new social-rented homes)	£30,400,000
Professional fees associated with grant	£4,560,000
Sale of 50% of the new homes (304) at GLA market price	£165,252,000
Grant for refurbishment of (522) existing social-rented homes	£20,358,000
Professional fees associated with refurbishment grant	£3,053,700
Green Homes Grant Scheme (average)	£1,642,500
Total project funds:	**£190,306,200**

These estimates show that, for a total of 1,368 homes on the completely refurbished estate with the new infill housing, the total cost of ASH's proposal comes to £126,083 per home (or £140,489 if including finance and associated cost of the homes for sale).

Assuming all the grant funding is awarded, and based on the GLA's estimated sale-values of new homes, around 50% of the new-build homes would need to be sold or rented on the private market in order to fund the construction of all the new homes, the refurbishment of the existing homes to Energy Performance Certificate (EPC) band C or higher, and all the additional improvements to the estate's landscape and community facilities.

This means that, of the 608 new homes proposed by ASH, 50% (304) could be made available for social rent. The Housing Needs survey conducted in 2018 by Brent Council identified 286 households living on the estate who are on the council's Housing Register for re-housing, so all of these residents' housing needs could be met, in addition to addressing the pressing need for homes for homes for social rent in the London Borough of Brent. The London Plan has set Brent a target of 29,150 new homes over the period 2020 to 2029, of which the strategic target for 'Affordable Housing' is 50%. 304 new homes for social rent, the most in demand tenure type and rental levels, would go some way to addressing this housing need in Brent.

Current funding mechanisms

As part of its Affordable Homes Programme 2021-26 the London Mayor has recently announced that there will be no funding for the replacement of demolished homes in estate regeneration schemes. To date, Brent Council has not made a viability assessment for any of their proposed schemes public; but according to the GLA's funding requirements, they will not be awarded any funding for the replacement of the demolished homes on St. Raphael's estate. It is likely, therefore, that they

will have to revise their designs to meet this lack of GLA funding, by providing even more properties for market sale and reducing the number of properties for affordable rent (it being unlikely that any of the new properties would be for social rent).

In contrast, all of the proposed 304 social-rented homes on ASH's scheme would comply with GLA funding requirements, and are therefore eligible for grant funding. This would amount to £100,000 per new home for social rent, and £38,000 for each new home for shared-ownership or other 'affordable' tenure.

Funding for Refurbishment

The first round of funding for the £3.8bn Social Housing Decarbonisation fund will open in Autumn 2021. For the pilot scheme conducted in 2020, an average of £39,000 per home was awarded to London councils. Should this be granted — and we can see no reason why it shouldn't — this sum would be sufficient to cover the costs of all the refurbishments we are proposing to the existing social rented homes, amounting to a total of £20.358 million (plus the associated fees). The match-funding from the Green Homes Grant scheme would contribute to the works to the leaseholders' and freeholders' homes, the remainder of which could either be match-funded elsewhere or covered by the sale of some of the new-build homes, as we have proposed above.

However, in the unlikely event that this refurbishment funding is not awarded, Brent Council would simply need to sell a greater percentage of the 608 new homes proposed by ASH in order to cover all the project costs as listed above. It would be preferable, of course, for the council to retain all the homes in council ownership as homes for rent, both as a long-term financial investment as well as socially for future residents; but for the purpose of this demonstration, we have calculated the revenue from the sale of 304 properties.

Estimated cost of full redevelopment: demolition and rebuilding

Despite numerous Freedom of Information requests, ASH has been unable to obtain Brent Council's financial viability assessments for the various proposals for the demolition and redevelopment of St. Raphael's estate. However, using figures for compulsory purchase and home-loss payments published in Brent Council's cabinet report of December 2019, and using the same construction costs as our Quantity Surveyor's calculation, (but with increased costs for landscape, external works and services to accommodate the replacement of all roads and services), the cost of demolition and redevelopment is nearly 3 times the cost of ASH's refurbishment and infill scheme. Demolition costs include clearing the land, disposal of waste and phased demolition working around existing resident families remaining on the estate during the whole construction period.

Demolition of 760 existing homes @ £50,000 per home	£38,000,000
Home-loss and disturbance costs for existing tenants including Housing Association (541 @ £10,000 per home)	£5,410,000
Compulsory Purchase Order of freeholders' and leaseholders' homes	£78,500,000
Home-loss payment (10% of value of privately-owned properties)	£7,850,000
Total costs associated with demolition before any home is rebuilt:	**£129,790,000**
Construction of 760 replacement homes @ £161,202 per home	£122,513,555
Cost to demolish and rebuild the 760 demolished homes:	**£252,273,555**
Construction cost of 608 new homes @ £161,202 per home	£98,010,844
External works, landscape, communal facilities, amenities, new services, roads and all ground works for the whole estate	£41,629,500
Total cost of works:	**£384,313,899**
Contingency sum @5%	£19,215,695
Professional fees @12%	£48,423,551
Project cost (1368 new homes):	**£451,953,145**
Finance, PR, marketing and developer profit on homes for sale (25% of construction costs of 90% of all homes)	£85,750,039
Total project cost	**£537,703,184**
(Total cost per unit)	£393,057
Project income from sale of 1230 homes (to GLA's figures):	**£543,113,100**

In order to pay for all the construction work, with no grants towards the replacement of the demolished homes, Brent council would need to sell around 90% of their new homes, leaving the opportunity for only around 138 homes for 'affordable housing', of which at least half would be shared ownership schemes. This would not be anywhere near enough to rehouse the 760 households whose homes have been demolished, let alone adding any new ones to help those on the council's housing waiting list.

In contrast, of the 1,368 homes in the completed ASH proposal, in addition to the existing 541 council and social rented homes, we could add a further 304 new homes for social rent, producing a total of 845 homes for council and social rent on St. Raphael's estate. This would equate to 62% of the new estate.

Finally, In order to be able to afford to rehouse the 760 households on the existing estate in like-for-like replacements, Brent Council would need to construct significantly more new properties on the cleared land than it is currently proposing to residents, at a density which is unlikely to be granted planning permission because of the scale and height of the required construction.

From this, we can say with certainty that the full demolition and redevelopment of St. Raphael's estate is not financially viable for Brent Council, *if it is to honour its promise to current residents to rehouse them on the new development*. Under current market conditions and funding revenues, it is not possible for Brent Council to deliver what it is currently promising residents of St. Raphael's estate.

9. Comparative Environmental Costs

It is now widely recognised that the built environment contributes to over 40% of the UK's carbon footprint.

Brent council has declared a 'climate emergency' and pledged to 'aim for carbon neutrality by 2030'. It is therefore essential that an investigation into the carbon costs of demolishing St. Raphael's estate is carried out so both the council and the residents are aware of the enormous environmental costs of the embodied carbon in the existing buildings, their demolition, the transportation and disposal of the waste, and the transportation of materials, manufacture and construction of 2,000-plus new properties and accompanying buildings in an area already subject to considerable air pollution from the heavy traffic on the North Circular. Only then can Brent Council and residents of St. Raphael's estate make the right decision for the future of their community — one that is environmentally sustainable for both the residents and the wider community of Brent, who will have to live with all the pollutants from demolition and redevelopment for the next decade and more. The environmental costs of demolition and redevelopment include the carbon cost of the process of demolition, the cost of the replacement properties, as well as the air and water pollution caused by the demolition itself, and the effect on the existing landscapes and the wildlife they support.

Calculating the 'embodied carbon' of a building or development must take into account every stage of its construction, from the extraction of raw materials, to their transformation and processing into a building material, to the construction of the building, the lifespan of its inhabitation and uses, its management and maintenance (operational carbon), and, finally, the energy required to demolish or refurbish the built environment.

If Brent Council is to achieve a significant reduction in carbon emissions in the borough, then addressing the carbon produced by the built environment is essential. This is finally being recognised by all parties in the building industry, most recently through the awarding of the Prizker Prize 2021 to Lacaton and Vassal for their numerous refurbishment and retrofitting schemes, as well as a number of programmes and campaigns such as the Architects Journal's Retrofit First and the Architects Climate Action Network, and much-needed Government grants and policies that we have referred to earlier in this report. Understanding the interrelationship of the economy, the environment, society and politics, as ASH has argued at length in *For a Socialist Architecture: Under Capitalism* is essential to reducing the carbon cost of the built environment, and the project at St. Raphael's estate is no different.

ASH appointed Model Environments (who previously produced the report on the estimated carbon cost of demolishing Central Hill Estate in Lambeth), to investigate the environmental costs of demolishing St. Raphael's estate, and compare the environmental costs of KCA's full-redevelopment scheme against ASH's infill and refurbishment scheme, and their report can be found in Appendix B.

The conclusion from their investigation are clear. Per new-build home, the carbon cost of KCA's full demolition and redevelopment scheme would be 4 times greater than ASH's infill and refurbishment scheme. In addition, Model Environments has estimated that the *'break-even time'* for the new development, when the carbon cost is recouped by the improved thermal performance of modern buildings, would fall well outside the predicted lifespan of 60 years for the new residences. In other words, no matter how 'carbon-neutral' or 'passivhaus' the new properties, they cannot offset the environmental costs of the demolition and redevelopment of the current estate. This is a given, which cannot be ignored by any sincere environmental strategy to reduce carbon emissions.

In conclusion, therefore, to pursue a full demolition and redevelopment scheme would make a mockery of the 'pledges' Brent Council has made to do everything 'reasonable' to aim for 'carbon neutrality by 2030'.

10. Manufacturing Consent for Demolition

Ballots, Consultation and Estate Regeneration

Before we can begin to talk about tools to effect change, we have to understand the conditions we are operating under and the challenges we face. Local authorities, housing associations and property developers collaborating on the demolition of council estates would argue that they are already giving platforms to residents and other supposedly marginalised voices: through consultations, resident ballots and the creation and funding of resident groups. And yet, the amplification of these voices has led, notwithstanding the ballot process, to estates being demolished, the mass loss of homes for social rent during a crisis of housing affordability, and the destruction of long-standing communities.

As of June 2020, a year before we publish this report, Brent Council has spent around £850,000 on what they call 'community-led-masterplanning', in a process which, in February 2020, had engaged with around 84 households out of the 760 who are threatened with the demolition of their homes and community.

The money spent by Brent Council towards the resident ballot (at that point) includes: £306,860 on fees for Karakusevic Carson Architects, £78,431 for the so-called 'independent advisors' PPCR; £71,428 on the viability assessment by SQW; and £42,000 for an event photographer, film-maker, community-engagement intern, four youth-event planners and an apprentice drawn from the residents of St. Raphael's estate. In addition to these enormous sums, undisclosed amounts have been paid to 'community consultants' Beyond the Box, The Glass House and Your Shout. Your Shout is the community consultation arm of Thorncliffe, which is at the centre of the scandal concerning Housing Secretary Robert Jenrick, over accusations of bias around planning approvals and 'cash for favours'.

A further £18,765 has been spent on community events, including £10,000 for ex-estate resident, George the Poet, to record a short film that encourages residents to vote for demolition. An additional project budget of £300,000 has subsequently been agreed by Brent Council to deliver the extended, 'community-led' masterplan through to the resident ballot. It is important to note that, for the majority of estate regeneration masterplans, the consultants will not be appointed for the next stage, so all this work is solely to secure the ballot decision.

Finally, in 2019 an organisation called 'St. Raphael's Voice', composed of a self-elected board of residents and closely overseen by PPCR, was established to give a veneer of resident representation. As members of such 'Steering Groups' on all estates undergoing regeneration will recognise, residents who are members of St. Raphael's Voice are prohibited from publicly saying anything that challenges Brent Council's narrative. Even though one of the ostensible options for consideration in the ballot is for infill development, a residents and member of St. Raphael's Voice who recommended this option was ejected from the board. Moreover, at the presentation ASH gave to the residents in February 2020, in which we discussed the consequences for residents if they vote for demolition, several members of the audience, including the Chair of St. Raphael's Voice, attempted to disrupt the meeting with aggressive interruptions. Afterwards, ASH was told that some of these hecklers were residents being paid by Brent Council as part of the community programs listed above.

The crucial point here, is that although Brent Council will argue that they are giving marginalised voices platforms, in practice all these consultants, and the enormous amount of funding they are receiving, are being used to manufacture consent for the demolition of St. Raphael's estate. With a single exception, all resident ballots on estate demolition conducted thus far have resulted in a vote for demolition. At the same time, every estate redevelopment scheme in London has thus far resulted in the eviction of the community, the mass loss of social housing, and the privatisation of the new properties. Under the current conditions, in which

demolition is aggressively pushed and funded and other alternatives actively suppressed, resident ballot are manufacturing consent for the destruction of estate communities and the loss of council housing.

Proposals for changes to the estate regeneration process

Until there is a level playing field in terms of financial investment in exploring and developing all the options for regenerating a housing estate, transparency about the consequences for residents of voting for one or the other of them, supporting and informing residents, who are subjected to propaganda campaigns lasting years and funded by predatory developers and compliant councils, is extremely difficult to do.

It is not impossible, of course, but even in some of the most successful campaigns to emerge over the past decade, the mechanism of estate regeneration we need to address go beyond involving residents in a ballot, to challenging fundamental legislative processes. Consultations and ballots give an illusion of democracy; but during the consultation process there is no mechanism for holding councils accountable, and once made, challenging ballot decisions is almost impossible. Indeed, it is for this reason that they were introduced by the London Mayor as part of his Good Practice Guide to Estate Regeneration, which is a blueprint for how London councils can push demolition schemes through against increasing resistance and opposition from residents. It is essential, therefore, that local authorities and housing associations are held to account on standards of public scrutiny, transparency and honesty before the ballots take place.

As if this isn't bad enough, the Coronavirus Act 2020 has empowered local authorities to relax requirements for public meetings and transparency over council decisions. As a result, resident consultations on estate regeneration are continuing online, when the majority of residents, as on St. Raphael's estate, have little or no access to adequate or any internet facilities. How can the Greater London Authority support such an abnegation of a London council's duty to residents, on redevelopment projects it will then be asked to fund on the basis of a vote for demolition manufactured on such lack of transparency?

To make the right decision for them and future resident, estate communities need proper transparency and scrutiny of the estate regeneration process. This must include the preparation of environmental and equality impact assessments, and financial viability assessments, for resident scrutiny prior to any ballot; an equal distribution of funds for all regeneration options, and not just for demolition; and support for all resident voices, and not only those which support the council's narrative; and, finally, financial support to enable resident communities to investigate design alternatives to demolition, such as the one ASH has produced for St. Raphael's estate.

11. Conclusion

The refurbishment of the 741 existing homes, the improvement of the landscape and community facilities, and the addition of up to 608 new homes that will meet housing need in the borough, is the most socially beneficial, environmentally sustainable and financially viable future for St. Raphael's estate.

Financially

This report demonstrates that all the works proposed by ASH can be paid for by a combination of Government and GLA grants and cross-subsidisation from the market sale or rent of 50% of the new-build properties. Due to the significantly lower costs of refurbishment compared to demolition and the replacement of the existing homes — for which there is no longer any GLA funding — ASH's infill option is able to build a high number of council-owned homes for social rent, providing the desperately needed new homes that local residents can afford.

Costing approximately three times more than infill and refurbishment per home, full demolition and redevelopment makes no sense financially for either Brent Council or the residents of St. Raphael's estate. To pursue such a scheme, therefore, would be a dereliction of Brent Council's fiduciary duty as manager and trustee of this public resource, which can and should continue to serve the people of Brent for generations to come.

Environmentally

This report shows that the carbon cost of demolishing and redeveloping St. Raphael's estate is four times that of ASH's infill and refurbishment scheme. For Brent Council to proceed on this basis, having signed up to a climate crisis, would be to renege on its commitment and promise to reduce carbon emissions in the borough, and its pastoral care for the health of the residents of St. Raphael's estate.

Socially

Finally, there are no social benefits to either existing or future residents of a full demolition and redevelopment scheme. On the contrary, ASH's studies have shown the likely disastrous consequences for residents of such a scheme, which will do nothing to address housing need in the borough. In contrast, this report has shown that there are demonstrable benefits, for both existing and future residents, in an infill scheme that maximises the numbers of homes for social rent, refurbishes the existing housing, and improves the estate's landscape and community facilities.

Currently refurbishment is not in fact being pursued as part of Brent Council's 'infill' option, as they claim that they cannot afford it. We hope that this document will demonstrate to Brent Council that refurbishment of all the existing homes is not only viable but necessary, and urge them to reconsider their position, and remove the option of demolition altogether.

Conclusion

For these reasons, ASH strongly recommends that, at the forthcoming regeneration ballot, residents of St. Raphael's estate vote against demolition and for redevelopment for the infill and refurbishment of their estate.

Furthermore, we urge the GLA to make a requirement that, for any scheme proposing the potential demolition of any council housing, the local authority or landlord must publish, at each stage of the regeneration process, the various viability assessments of the proposals for the scrutiny of the residents. These should show the possible range and most likely tenure types, rental levels and sale prices of the replacement properties required for the different proposals under consideration to be financially viable.

Finally, prior to any ballot being held on the estate's future, an environmental impact assessment must be produced by independent professionals — i.e. not selected by the council or developer but directly appointed by the residents with funding from the GLA — which will include a comparative study of the carbon costs of

a refurbishment and infill scheme versus demolition and reconstruction, and an assessment of the impact of demolition and redevelopment on the health of both residents and the local ecosystem. Without this information, any decision about the future of residents, their homes and the surrounding neighbourhood is lacking in the information required to make an informed decision, without which the entire consultation process, up to and including the ballot, is systemically flawed, and cannot, in any sense, be taken as a democratic mandate for demolition of a crucial public resource.

Appendix 1. Construction Cost Estimates by Robert Martell and Partners

St Raphaels Estate, Neasden

	Summary of Cost Estimates		**Total**		**No units**	**Ave cost per unit**
1	**New Build Units & Roof Extensions**		98,010,844		608	161,202
2	**Refurbishment of Existing Housing Units**		28,899,000	126,909,844	741	39,000
3	**Community Facilities**		3,123,500			
4	**External Works & Community Spaces**		16,691,250			
5	**Upgrade of Services**		1,000,000	20,814,750		
				147,724,594		
6	**Contingency Sum**	5%		7,386,230		
				155,110,824		
7	**Allowance for Professional Fees**	12%		18,613,299		
				£173,724,123		126,991

Notes

a VAT - not included (zero on new-build, positive on alterations)

b Solar PV panels etc not included

c Prices as 1Q 2021 allowed

d No allowance for s106 fees

e No allowance for planning or building regs. fees

St Raphaels Estate, Neasden

Cost Estimates for New Build Units & Roof Extensions

Type		Description	Housing Types	M2 per unit	maisonettes	flats	Blocks	houses	Cost per block or house	Total	No. units in total
A		New build flats alongside North Circular	3-4 bed maisonettes (3 per block)	120	120		6		2,512,864	15,077,184	18
			8 no 2 bed flats in each block)	70		48			inc		48
			4 no 1 bed flats in each block)	50		50			inc		24
B	1	New build houses along the park	2 story 3-4 bed houses	100				30	163,000	4,890,000	30
	2	New build houses along the park	2 story 3 bed houses	88				16	143,440	2,295,040	16
	3	New build houses along the park	2 story 3-4 bed houses	100				24	163,000	3,912,000	24
	4	New build houses along creek	3-4 bed houses	100				12	163,000	1,956,000	12
C	1	Flat block (above possible community space)	2 bed flats	70		12	1		1,613,400	1,613,400	12
	2	Flat block	2 bed flats	70		8	1		1,230,000	1,230,000	8
	3	infill blocks	2 bed flats	70		12	1		1,699,000	1,699,000	12
	4	infill blocks (ground floor)	3 bed maisonettes	100		5	1		1,070,500	1,070,500	5
	5	flats over	2 bed flats	70		16	1		2,211,000	2,211,000	16
D		flats over residents social club	2 bed flats	70		28	1		3,939,000	3,939,000	28
E	1	maisonettes along estate Northern edge	3 bed maissonettes	120	120		19		521,400	9,906,600	57
	2	flats over maisonettes along estate Northern edge	2 bed flats	85		85			inc		
F	1	Infill adjacent to and access to Type 1 flat blocks and roof extensions	flats mixed	80		80	10		1,038,800	10,388,000	50
	2	general infill (houses - to imitate existing)	3bed 2 storey houses	110				20	179300	3,586,000	20
G	1	along creek	3 storey 2 bed flats	70		30	10		420,000	4,200,000	30
J	1	8 story flats over civic space - in tower	1, 2, 3 bed flats/ maisonettes	70		17	1		2,574,050	2,574,050	17
	2	2 story maisonettes over civic space	2 bed maisonettes	83	83			3	160,190	480,570	3
Proposed Roof Extensions											
H	1	Roof extensions on type 1	2 bed maisonettes	83	144				160,190	23,067,360	144
	2	Roof extensions on type 2 (above shops)	2 bed maisonettes	83	83			6	160,190	961,140	6
	3	Roof extensions on type 5	1 bed flats	50		50		28	105,500	2,954,000	28
		Total								£98,010,844	608

St Raphaels Estate, Neasden

Cost Estimates for New Build Units

Type		Description	Housing Types	M2 per unit	flats	floors	houses	maisonettes	No per Block	GIFA	Rate /m2		Founds	Roof	Lifts, £ 30k/floor/ lift (x2)	Total per block	Total per house
A		New build flats alongside North Circular	3-4 bed maisonettes (3 per block)	120		6		120									
									3	360	1675	603,000	115,584	161,280	360,000	2,512,864	
			8 no 2 bed flats in each block	70	48				8	560	1675	938,000					
			4 no 1 bed flats in each block	50	50				4	200	1675	335,000					
B	1	New build houses along the park	2 story 4 bed houses	100			30			3000	1630	4,890,000	inc	inc	nil		163,000
	2	New build houses along the park	2 story 3 bed houses	88			16			1408	1630	2,295,040					143,440
	3	New build houses along the park	2 story 3 bed houses	100			24			2400	1630	3,912,000					163,000
	4	along creek (same as B?)	3-4 bed houses	100			12			1200	1630	1,956,000					163,000
C	1	Flat block (above community space)	2 bed flats	70	12	2				840	1675	1,407,000	0	86,400	120,000	1,613,400	
	2	Flat block	2 bed flats	70	8	2				560	1675	938,000	100,000	72,000	120,000	1,230,000	
	3	infill blocks	2 bed flats	70	12	2				840	1675	1,407,000	100,000	72,000	120,000	1,699,000	
	4	infill blocks (ground floor)	4 bed maisonettes	100	5	1				500	1625	812,500	150,000	108,000	0	1,070,500	
	5	flats over	2 bed flats	70	16	2				1120	1675	1,876,000	125,000	90,000	120,000	2,211,000	
D		flats over residents social club	2 bed flats	70	28	6				1960	1725	3,381,000	0	198,000	360,000	3,939,000	
E	1	maisonettes along estate Northern edge	3 bed maissonettes	120		2		19									
									1	120	1675	201,000	42,500	30,600	120,000	521,400	
	2	flats over maisonettes along estate Northern edge	2 bed flats	85	38	2											
									2	76	1675	127,300	inc	inc			
F	1	Infill adjacent to and access to Type 1 flat blocks and roof extensions	flats mixed	80	80	5											
									5	400	1675	670,000	40,000	28,800	300,000	1,038,800	
	2	general infill (houses - to imitate existing)	3 bed 2 storey houses	110		3	110										
									3	330	1630	537,900	inc	inc	nil		179300
G	1	along creek	2 bed flats (10 blocks of 3)	70	30	3			3	210	1675	351,750	41,250	27,000	nil	420,000	
J	1	8 storey flats over civic space - in tower	1, 2, 3 bed flats/ maisonettes	70	70												
									17	1190	1675	1,993,250	nil	100,800	480000	2,574,050	

Estimates of costs by types

1 **Flats**

Type A

Foundations	GFA	448	m2	500.00	224,000
Above ground works			m2	1600.00	
allowance for services & drainage connections				75.00	1,675 per m2
Roof		448	m2	360	161,280

Type C1

5 storey flats -above community space

Above Ground works - as above					1,675 per m2
Roof	allow as 3 flats/floor + circulation	240	m2	360	86,400

Type C2

3 storey flats

Foundations	GFA	200	m2	500.00	100,000
Above Ground works - as above					1,675 per m2
Roof	allow as 3 flats/floor + circulation	200	m2	360	72,000

Type C3

4 storey 2bed flats

Foundations	GFA	200	m2	500.00	100,000
Above Ground works - as above			m2	1550	
allowance for services & drainage connections				75	1,625 per m2
Roof	allow as 3 flats/floor + circulation	200	m2	360	72,000

Type C4

Infill block at ground floor

Foundations	GFA	300	m2	500.00	150,000
Above Ground works - as above					1,675 per m2
Roof	allow as 3 flats/floor + circulation	300	m2	360	108,000

Type C5

2 bed flats, 1 x 5 storey block

Foundations	GFA	250	m2	500.00	125,000
Above Ground works - as above					1,675 per m2
Roof	allow as 3 flats/floor + circulation	250	m2	360	90,000

Type D

Flats over social club 7 flats/floor x 5 stories total

Above Ground works - as above			m2	1650	
				75	1,725 per m2
Roof	allow as 7 flats/floor + circulation	550	m2	360	198,000

Type E

Maisonettes with 2 x 2bed flats ov 2 storey maisonettes, 2 storey flats over

Foundations	GFA	85	m2	500.00	42,500
Above Ground works - as above					1,675 per m2
Roof	allow as 3 flats/floor + circulation	85	m2	360	30,600

Type F1

2 bed flats, 1 x 5 storey block

Foundations	GFA	80	m2	500.00	40,000
Above Ground works - as above					1,675 per m2
Roof	allow as 3 flats/floor + circulation	80	m2	360	28,800

Type G1

2 bed flats, 3 stories x 10 blocks

Foundations	GFA	75	m2	500.00	
	allow for piled foundations			50.00	
				550.00	41,250
Above Ground works - as above					1,675 per m2
Roof	allow as 3 flats/floor + circulation	75	m2	360	27,000

Type J1

Flats, 8 stories x 4 per floor. Built over new communal facility

Above ground works as above				1,675	m2
Roof		280	m2	360	100,800

Lifts

Lifts allowed at £ 30,000 per floor/lift

2 **Houses**

Type B 1, 2, 3 & 4

2 storey 3 bed houses	GIFA	88	m2		
	As ASH costs			1504	
	add piled founds			50	
	services & drainage connections etc			76	1630 per m2

St Raphaels Estate, Neasden

Cost Estimates for New Build Roof Extension Units

Type		Description	Housing Types	M2 per unit	flats	houses	maisonettes	No off	GIFA	Rate/m2	Structure	
Proposed Roof Extensions												
H	**1**	Roof extensions on type 1	2 bed maisonettes	83			83	144	11952	1750	20,916,000	180
	2	Roof extensions on type 2 (above shops)	2 bed maisonettes	83			83	6	498	1750	871,500	180
	3	Roof extensions on type 5	1 bed flats	50	50			28	1400	1750	2,450,000	360
J	**2**	2 story maisonettes over civic space	2 bed maisonettes	83			83	3	249	1750	435,750	180

Estimates of Costs by types

Roof extension to maisonettes, 2 storey

Structure	rate per m2 GIFA	1750 m2
Roof structure & covering	rate per m2 roof (GIFA/2) 360 m2	180
		1930 m2

Roof extension to flats; 1 storey	Structure	1750 m2
Roof structure & covering		360
		2110 m2

St Raphaels Estate, Neasden

Cost Estimates for Refurbishment to Existing Dwellings

Description	flats	maisonettes	flat/ maisonette total	houses	total no	Cost per unit	Total
2-3 bed maisonettes		288					
1 bed flats over shops	18						
3 bed townhouses				180			
4 bed ? townhouses				60			
3 bed? Bungalows				6			
flats (1 bed?)	168						
flats (1 bed?)	21						
unknown (not included - Network homes)	19						
	207	**288**	495	**246**	**741**	39,000	**£28,899,000**

Allowance for refurbishments includes:-

Insulation to external walls; render on insulation
Insulation to roof voids
Replacement double glazed windows & doors

St Raphaels Estate, Neasden

	Cost Estimates for External Works		**Allowance**	**Total**
	Landscaping Works			
L1	Pedestrian priority paved areas	26000 m2	120 m2	3,120,000
L2	New Public Square	750 m2	130 m2	97,500
L3	Landscape rebuilding & remediation			300,000
L4	Pedestrian cut through access			15,000
L5	Play Spaces - new & relocated	2000 m2	150 m2	300,000
L6	Improved access to River			200,000
L7	Improved open green parks	86,350 m2	25 m2	2,158,750
	Allowance for planting incl. trees			500,000
	Allowance for phytoremediation			750,000
	Drainage			
	Surface water - including interceptors & filter beds			1,000,000
	Foul water - including sewer connections			1,500,000
	Sundry buildings			
	Bin stores - upgrade & replacement	300 no	8,000	2,400,000
	Bike sheds	360 no	6,500	2,340,000
	Balconies to new & existing buildings allowed as flats x 50%	402 no	5,000 each	2,010,000
	Total			£16,691,250

Cost Estimates for New Build and Refurbished Community Facilities

Type	Description	Description				Total
M1	New civic space	Ground floor space				740,000
M2	New civic space	Ground floor space				444,000
M3	Residents social centre	Ground floor space				1,399,500
M4	Refurbished shops					540,000
	Total					**£3,123,500**
M1	**New Civic Space**					
	Foundations	GFA	250	m2	500.00	125,000
	Above ground works		250	m2	2100.00	525,000
	Roof		250	m2	360.00	90,000
						740,000
M2	**New civic space**					
	Foundations	GFA	150	m2	500.00	75,000
	Above ground works		150	m2	2100.00	315,000
	Roof		150	m2	360.00	54,000
						444,000
M3	**New Residents Social Centre**					
	Foundations	GFA	450	m2	500.00	225,000
	Above ground works		450	m2	2250.00	1,012,500
	Roof		450	m2	360.00	162,000
						1,399,500
M4	**Refurbished shop units**					
	Refurbished retail units inc new services etc excluding fit-out		400	m2	1350.00	540,000
						540,000

Appendix 2. Embodied Carbon Estimate by Model Environments

St Raphael's Estate, London, NW10 0BH
Embodied Carbon Assessment

Rev:	C
Date:	30th June 2021

model environments

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model environments

SCOPE

Model Environments were appointed by Architects for Social Housing (ASH) to estimate the Embodied Carbon (EC) of the existing residential buildings comprising the St Raphael's Estate in Brent, London, and to estimate the EC associated with options to redevelop the site.

Embodied Carbon was assessed with reference to:

1. Royal Institute of Chartered Surveyors (RICS) document *"Whole life carbon assessment for the built environment"* (November 2017).
2. Royal Institute of British Architects document *"RIBA 2030 Climate Challenge"* (2019).
3. The *"Inventory of Carbon and Energy (ICE)"* database (November 2019) authored by Dr. Craig Jones and Professor Geoffrey Hammond. A link to the latest version of ICE is here:

http://www.circularecology.com/embodied-energy-and-carbon-footprint-database.html

4. The Institution of Structural Engineers publication *"How to Calculate Embodied Carbon"* (CEC) (August 2020).

In the absence of detailed information regarding existing and proposed construction materials and building design, a full Whole-Life-Carbon-Assessment has not been attempted. Rather a best estimate of EC has been arrived at using information provided by ASH, contained in the sources above, and from sources referenced in the report below. The scope and limitations of the analysis, including where necessary any assumptions, are made explicit throughout the text.

EXECUTIVE SUMMARY

To completely demolish and redevelop St Raphael's Estate would incur a significant carbon cost, far greater than that of refurbishing the existing buildings and adding new infill housing.

It is estimated that the carbon cost of each new home in a scheme to demolish and redevelop would be around four times that of each home in a scheme to refurbish and infill.

The total Embodied Carbon (EC) cost of demolition plus redevelopment was estimated at approximately 100,000 Tonnes of CO_2; this figure represents both the loss of EC from existing buildings (whose life could be extended), and an EC cost due to redevelopment.

It is our opinion that for this site, due to the scale of the EC cost of demolition/redevelopment, and the potential for improvements to the existing buildings energy performance through refurbishment, that the 'break even time' due to higher expected energy performance of new development homes, compared to that of existing homes, would fall far outside any reasonable (60 year) lifespan of the new buildings.

METHODOLOGY

The RICS document *"Whole life carbon assessment for the built environment"* sets out the carbon emissions associated with the different life cycle stages of a building; from extraction, processing, and transport of building materials; to construction; operational use; and end of life demolition and recycling. The table below from page 12 of the RICS guidance summarises the life cycle stages of a building.

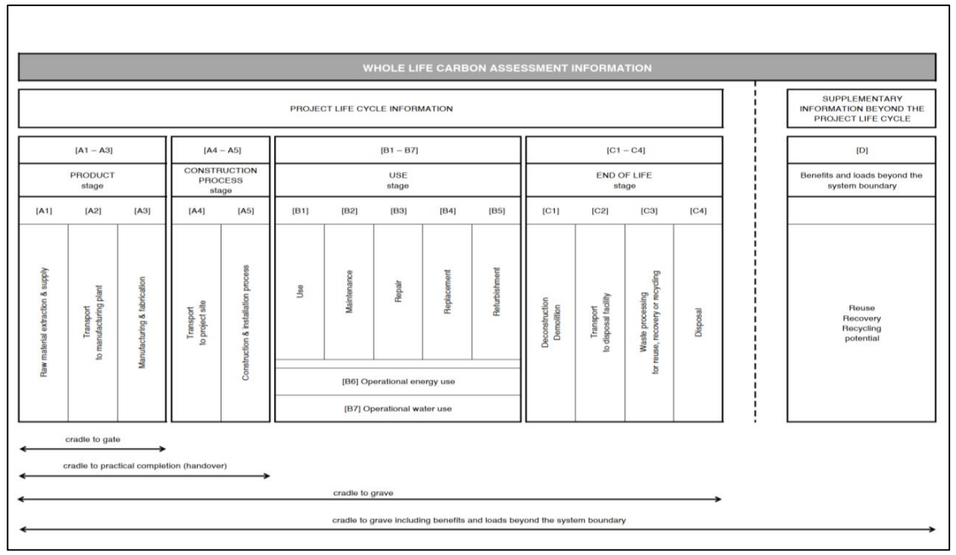

Figure 1: RICS - Life cycle stages of a building

The RIBA document *"RIBA 2030 Climate Challenge"* gives EC benchmarks and targets for buildings covering the stages A1 to C4, or 'cradle to grave' from the RICS document above. The EC benchmarks exclude stages B6 and B7 covering operational energy and water use, which are covered separately. The table below, from page 3 of the RIBA document shows these EC target values.

RIBA 2030 Climate Challenge target metrics for domestic buildings

RIBA Sustainable Outcome Metrics	Current Benchmarks	2020 Targets	2025 Targets	2030 Targets	Notes
Operational Energy kWh/m²/y	146 kWh/m² /y (Ofgem benchmark)	< 105 kWh/m²/y	< 70 kWh/m²/y	< 0 to 35 kWh/m²/y	UKGBC Net Zero Framework 1. Fabric First 2. Efficient services, and low-carbon heat 3. Maximise onsite renewables 4. Minimum offsetting using UK schemes (CCC)
Embodied Carbon $kgCO_2e/m^2$	1000 $kgCO_2e/m^2$ (M4i benchmark)	< 600 $kgCO_2e/m^2$	< 450 $kgCO_2e/m^2$	< 300 $kgCO_2e/m^2$	RICS Whole Life Carbon (A-C) 1. Whole Life Carbon Analysis 2. Using circular economy Strategies 3. Minimum offsetting using UK schemes (CCC)
Potable Water Use Litres/person/day	125 l/p/day (Building Regulations England and Wales)	< 110 l/p/day	< 95 l/p/day	< 75 l/p/day	CIBSE Guide G

Figure 2: RIBA Embodied Carbon targets

Using the RIBA targets above enables a simplified methodology for estimating EC using a buildings total floor area.

An estimate of the principal EC costs due to refurbishment of the existing buildings, was made with reference to EC values for insulation and glazing materials found in the ICE database, and by using Embodied Carbon Factors (ECF) contained in The Institution of Structural Engineers publication, CEC.

RESULTS

1. Existing Residential Buildings

St Raphael's Estate comprises several different residential property types ranging from 1-bed flats to 3/4 bed townhouses, spread across buildings varying in height from one to four storeys. There are a total of 760 existing homes.

It was assumed that the existing St Raphael's buildings, completed approximately 40 to 50 years ago, achieve at a minimum an EC benchmark of 1,000kgCO_2/m^2.

The total internal floor area across all existing residential units was estimated at 57,669m^2.

Using the RIBA current EC benchmark, the total 'cradle to grave' EC across all existing St Raphael's residential buildings was calculated:

EC_{Total} = 57,669 x 1,000 = 57,669,000kgCO_2

EC_{Total} = 57,669 TonnesCO_2

2. Architects for Social Housing (ASH) Infill Proposal

ASH propose infilling various areas of St Raphael's Estate with new residential buildings to create a total of 608 new homes, with a total proposed internal floor area of 48,999m^2.

Assuming that these new homes are built according to the higher low carbon standards suggested by the RIBA Climate Challenge 2030, estimates of the EC associated with this infill proposal were calculated, and the results appear in the table below.

RIBA Embodied Carbon Metric	**Embodied Carbon** ***(Tonnes of CO_2)***
2020 Target: <600kgCO_2/m^2	29,399 TonnesCO_2
2025 Target: <450kgCO_2/m^2	22,049 TonnesCO_2
2030 Target: <300kgCO_2/m^2	14,700 TonnesCO_2

3. Refurbishment

A simplified estimate of the EC costs of refurbishment of the 760 existing homes was made by considering two of the principal aspects of refurbishment: installing upgraded insulation and replacing all the glazing with new units.

EC values in the ICE database were used to give estimates for the EC costs associated with stages A1 – A3 (cradle to factory gate).

Stage A4, the EC cost of transportation of building materials to the construction site, was evaluated using Embodied Carbon Factors (ECF) in the Institution of Structural Engineers publication, CEC.

Stage A5, the EC cost of construction, was evaluated using the simplified method recommended by RICs on p.19 of their guide; this uses a single value of EC per £100k of project value.

Stages B1 – B5 (usage, maintenance, repair, replacement, and refurbishment) were not considered. It may be noted that some of these factors would apply to glazing, but none are likely to apply to insulation fitted inside walls/floors. It may further be noted that B1 – B5 EC costs are likely to be very low compared to overall EC. The Institution of Structural Engineers says, on p.23, section 2.2.5.1 of the CEC:

"Modules B1 -B5 together are likely to account for a very small and sometimes negligible percentage of structural EC over the lifecycle".

Stages B6 and B7 (operational energy and water use) are not applicable to insulation and glazing.

Stages C1 – C4 (end of life) were not considered. It may be noted that CEC states on p.24, section 2.2.5.2 that:

"Modules C1 – C4 are likely to account for a small percentage of structural EC over the lifecycle…"

Hence the EC costs of refurbishment were evaluated for stages A1 – A5; cradle to practical completion of refurbishment works.

a) Insulation

It was assumed that 100mm insulation boards were fitted across the total floor, wall, and roof areas of all homes.

The wall area was estimated by calculating the average internal floor area of each residential unit and assuming wall insulation was installed in all the walls (internal and external) bounding each unit, therefore not fitting insulation to internal walls within each unit. Wall height was taken as 2800mm throughout.

It was assumed that on average the existing buildings are 3-storeys with a flat roof above the 2nd floor; hence the roof area to insulate is one-third of the total internal floor area across the whole estate.

The total area of walls, floors and roof was estimated at: 152,892m^2.

100mm insulation board has an approximate weight per area of: 3kg/m^2.

The ICE database gives an EC figure for general insulation of: 1.86kgCO_2e/kg.

So, the EC cost of insulation for stages A1 – A3 was calculated:

$$EC_{A1\text{-}A3}\ (\text{insulation}) = 152{,}892 \times 3 \times 1.86 = 853{,}137\text{kg}CO_2$$

b) Glazing

It was assumed, for the existing homes, that the ratio of glazed area to floor area was 20%. This is a typical value, for example, The Building Regulations, Part L1A (2013), states on p.16:

"As a general guide, if the area of glazing is much less than 20% of the total floor area, some parts of the dwelling may experience poor levels of daylight…"

Therefore, the total glazed area was estimated at: 11,534m^2.

The glass was assumed to be double glazing with 12mm glass thickness.

The ICE database gives an EC value of 48.8kgCO_2e/m^2 for this material.

So, the EC cost of glazing for stages A1 – A3 was calculated:

$EC_{A1\text{-}A3}$ (glazing) = 11,534 × 48.8 = 562,859kgCO_2

c) Glazing Frames

It was assumed that replacement windows have aluminium frames with a typical weight per metre of 0.7kg/m (see for example http://www.alomextrusions.com/om.pdf p.31-35).

The ICE database gives an EC value of 6.83kgCO_2e/kg for European extruded aluminium profile.

It was assumed that the glazing units come in 1m x 1m units. Hence the length of aluminium extrusion used in the window frames is 4× the window area.

So, the EC cost of glazing frames for stages A1 – A3 was calculated:

$EC_{A1\text{-}A3}$ (frames) = (11,534 × 4) × 0.7 × 6.83 = 220,571kgCO_2

d) Stage A4 – EC Costs of Transportation

The Institution of Structural Engineers publication CEC gives default Embodied Carbon Factors (ECF) in table 5 on p.19. These ECF's apply to the transport of building materials either locally, nationally, or internationally.

It was assumed that new glazing units and insulation boards required for refurbishment works could be sourced from a national manufacturer, in the UK. Hence, the national ECF value was chosen: 0.032kgCO_2e/kg.

The total weight of refurbishment materials was estimated at: 836,991kg.

So, the EC cost of transportation was calculated:

EC_{A4} = 836,991 × 0.0032 = 26,784kgCO_2

e) Stage A5 – EC Costs of Construction

The cost of refurbishing each existing home was estimated at £20,000.

The RICs document recommends using an EC value of 1400kgCO_2/£100,000 of project value.

So, the EC costs of construction were calculated:

EC_{A5} = 1400 × (20,000 × 760) / 100,000 = 212,800kgCO_2

f) Total A1 – A5 EC Cost of Refurbishment

The cradle to practical completion of works EC cost of refurbishment was calculated by adding the A1 – A3, A4, and A5 EC costs:

$EC_{A1\text{-}A5}$ = 1,876,151kgCO_2 = 1,876TonnesCO_2

4. Proposal to Demolish and Redevelop St Raphael's Estate

Karakusevic Carson Architects (KCA) were appointed by Brent Council to design redevelopment options for St Raphael's Estate, and several proposals for complete demolition and redevelopment were presented at a public exhibition in March 2020. The options presented by KCA all comprise the building of approximately 2000 new residential homes of different sizes.

An estimate was made of the average floor area of the proposed units via comparison with the existing homes on the estate. It was estimated that a redevelopment proposal comprising 2000 homes has a total floor area of 151,760m^2

Estimates of the EC associated with this redevelopment were calculated, and the results appear in the table below.

RIBA Embodied Carbon Metric	**Embodied Carbon** ***(Tonnes of CO_2)***
2020 Target: <600kgCO_2/m^2	91,056 TonnesCO_2
2025 Target: <450kgCO_2/m^2	68,292 TonnesCO_2
2030 Target: <300kgCO_2/m^2	45,528 TonnesCO_2

CONCLUSION

To demolish the existing residential buildings comprising St Raphael's Estate, replacing them with new residential buildings, would incur a significant carbon cost, both in terms of what was lost, and what was built.

At best, using the ambitious RIBA 2030 EC target, a demolition and complete redevelopment of the site into approximately 2000 new homes, could hope to incur an EC cost of around 100,000 Tonnes of CO_2, when taking into account the EC cost from the loss of the existing site with that of the EC cost of the new construction.

To infill the site with around 600 new homes and refurbish existing homes would also incur an EC cost. If the most stringent RIBA 2030 target is used for the infill buildings, the cost of infill plus refurbishment would be approximately 17,000 Tonnes of CO_2 or 17% that of the EC cost of demolition/redevelopment.

Moreover, the infill/refurbishment proposal provides approximately 70% of the total number of homes proposed by demolition/redevelopment, which is a disproportionately large number compared with the discrepancy in EC cost. This discrepancy translates into making the EC cost of each infill proposal home (including the existing homes) approximately four times lower than that for each home proposed under demolition/redevelopment of the whole site.

Operational energy use (stages B6 and B7 highlighted in the RICs guidance) is another factor to be considered when comparing the environmental cost of buildings. It can

be assumed that the operational energy use of new buildings will outperform that of the existing (decades old) buildings.

The 'break-even' time is used to define at what point in the future the increased EC costs associated with new buildings, where they replace old ones, are cancelled out by improved energy performance. If the 'break-even' time falls within the estimated lifespan of the new building (sometimes taken as 60 years), then it may be that the proposal is considered favourable in terms of its overall environmental cost.

It is notoriously difficult to make direct accurate comparisons between energy use values and EC values. The carbon intensity of the National Grid is constantly changing due to the increase in renewable energy sources, whereas the carbon cost of each fossil fuel source used, for example, for heating, remains roughly constant over time. In the last five years the National Grid EC cost per kilowatt hour (kWh) has fallen from around 500kgCO_2 per kWh, to around 150kgCO_2 per kWh. In addition to this changing picture of energy carbon costs, each site and building are different and specific heating plans may be used to contrast the operational energy use profiles between them.

Nevertheless, despite the absence of information required to complete a detailed study, in the context of St Raphael's Estate, it is the opinion of this author that refurbishing the existing buildings with the aim of reducing their energy use as far as practically possible, coupled with the large EC cost of demolition/redevelopment, would result in a break-even time far outside any anticipated lifespan for a new building. If correct, this assertion implies that the EC cost outlined in this report may be regarded as a real and significant environmental cost inherent in demolition and redevelopment of St Raphael's Estate.

Issue	Date	Remarks	Prepared	Checked
A	25th March 2021	draft	HW	
B	2nd April 2021		HW	
C	30th June 2021		HW	

Appendix 3. Phytoremediation by Down to Earth

Phytoremediation

A working summary produced for Architects for Social Housing
and for residents of the St Raphael's Estate, London.
Adriana Massidda, Leicester School of Architecture - May 2020/March 2021

Phytoremediation is one of the techniques currently used to remove contaminants from soil and water with the purpose of mitigating or avoiding negative effects in the human body ('phyto'=plant; 'remediation' refers to this removal process). At its most basic, it displaces mineral elements into the plant's tissues, and also engages the plants' associated microbia in chemical processes related to the contaminants.

Advantages:

- creates enjoyable outdoor space, enhancing users' wellbeing
- nature-based solution (as such it does not add to the carbon footprint)
- low-cost (it only involves sourcing, planting and maintaining the plants, which use solar energy, as opposed to energy-heavy techniques such as soil removal)

Drawbacks:

- slow (in water may take months; in soil, years)
- limited effectivity (it may mitigate yet not fully remove the contaminants)
- in most cases, it does not neutralize the contaminant at the molecular level, but simply displaces it to the plant's tissues. Thus, one is left with a contaminated plant to dispose of safely, which may be expensive or difficult to implement
- moreover, concentrating contaminants in an element with which residents can have physical contact, may increase risks rather than mitigating them

Other comments:

- root-length removal (average 50cm; it varies according to species and climates; there exist additional techniques to increase it exist)
- sometimes the most effective plant species to remove a contaminant is considered invasive in a specific area/environment/climate (for example the water hyacyntus in the UK)

Research on phytoremediation advances at a fast pace, and has been doing so for over twenty years. An indicative reference list can be found at the bottom of this document, although that shouldn't be considered representative – in reality, the bibliography is immense. Interested readers will want to do their own research.

Phytoremediation is only one of the existing soil remediation techniques. Another system, and one of the most used, is **soil excavation**, often preferred for being fast and effective. It consists of the removal of an upper layer of soil of variable depth using construction machinery. It presents the challenge of being left with hazardous waste (the removed soil) to treat and dispose of. At St Raphael's, the Brent Council has used a **cover system**, which consists of the installation of a geomembrane and the laying of clean soil on top of it.[1] This is a cost- and time-effective method but with limited results in the longer run. It is also slightly invasive in the sense that it creates new waste/introduces the presence of a human-made feature in the soil, which should be arguably avoided. Some further techniques are **bioremediation**, where bacteria are able to break-up the contaminants at the molecular level, and **mycoremediation**, which uses fungi.

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Phytoremediation within St Raphael's?

Phytoremediation is most effective in dealing with minerals, as plants mainly absorb inorganic matter. For St Raphael's Estate, the few existing reports (see list at the end) indicate presence of PAHs, which are, in contrast, organic components. For components of this type, some studies suggest that they could still be mitigated through the use of specific plants, specifically through phytostimulation: here, the plants utilized would promote the growth of microbia in the upper layer of the soil, which would in turn degrade the PAHs.[2] Other studies, however, indicate that the capacity of micro-organisms in synthesising organic components requires further research.[3]

For outlining a landscape design approach for St Raphael's, we have taken the working assumption that it is worth looking at phytoremediation in our proposed scheme. Even if effectivity is low, the assumption is that plants could help as a low-cost, un-invasive way of gradually mitigating traces of contaminants left, if any. Having said this, no recent studies have, to the best of our knowledge, been undertaken at this stage, and the actual situation and needs at St Raphael's must be studied through a thorough process of sampling, analysis and consultation.

Following reviews such as Pilon-Smits, it seems that the plants most effective for removing PAHs are different types of grass, preferred for the density of their roots.[4] They can be used as part of a landscape proposal with different sectors and atmospheres according to the grasses used. For St Raphael's we looked at fescue (Festuca sp.) and ryegrass (Lolium sp.) specifically as two species native to the UK.

[2] Pilon-Smits, 'Phytoremediation,' p. 19 and throughout. See also the studies reviewed by her in this piece.
[3] Kundu et al., 'Defining lower limits of biodegradation'; Ehrl et al, 'Isotope Fractionation Pinpoints…'.
[4] Pilon-Smits, 'Phytoremediation'.

fescue (*Festuca sp.*)
Native to the UK

Image credits:
Jean_Claude, wikimedia commons
Peggy A. Lopipero-Langmo@flickr

ryegrass (*Lolium sp.*)
Native to the UK

Image credits:
Hans@Pixabay
Matt Lavin@flickr

Relevant reports on St Raphael's Estate

Brent Council. 'REMEDIATION STATEMENT. Land at St Raphael's and Brentfield Estates'. April 2011. Available at https://www.brent.gov.uk/media/16409004/brent-council-contaminated-land-register.pdf [last accessed 18th March 2021].

Brent Council. 'Summary of Contaminated Land Investigation and Remediation: St Raphael's and Brentfield Estates.' London, April 2011. 5 pages.

Rick Mather Architects. 'LAND CONTAMINATION. Section 1: RPS Desk Study. Section 2: Brent Dury Way Depot - Phase 1 Desk Study.' Originally produced by RPS Planning Transport and Environment. London, 2010. Available at the Brent Planning Portal [last accessed 2nd April 2020].

Taylor, Christopher. 'Phase 1 Desk Study. Drury Way Depot'. London: Brent Council: Environmental Health, September 2008. Available at the Brent Planning Portal [last accessed 2nd April 2020].

St Raphael's Estate, London – Environmental History

Adriana Massidda - May 2020/March 2021

This is a working document produced for Architects for Social Housing and for residents of the St Raphael's Estate. It reflects my current understanding of the environmental history of the estate as part of the ongoing research project 'Down to Earth: Contamination and Collective Design in Contexts of Urban Poverty', in the context of the debate regarding the estate's redevelopment. These are initial reflections to stimulate conversation among colleagues and residents, and the document is by no means intended to be an in-depth report.

Information about the environmental history of St Raphael's Estate is extremely scarce. The summary below condenses the following documents:

- Historic Ordnance maps, 1870s to 1970s: see illustrations at the end.

Phase 1 studies (2005 and 2008):[1]

- Rick Mather Architects. 'LAND CONTAMINATION. Section 1: RPS Desk Study. Section 2: Brent Dury [Sic] Way Depot - Phase 1 Desk Study.' Originally produced by RPS Planning Transport and Environment. London, 2010. Available at the Brent Planning Portal (file Land_contamination-2592072.tif) [last accessed 2nd April 2020].
- Taylor, Christopher. 'Phase 1 Desk Study. Drury Way Depot'. London: Brent Council: Environmental Health, September 2008. Available at the Brent Planning Portal (file Phase_1_desk_study-1091736.tif) [last accessed 2nd April 2020].

Phase 2 study and intervention (2011):

- Brent Council. 'REMEDIATION STATEMENT. Land at St Raphael's and Brentfield Estates'. April 2011. Available at https://www.brent.gov.uk/media/16409004/brent-council-contaminated-land-register.pdf [last accessed 18th March 2021].
- Brent Council. 'Summary of Contaminated Land Investigation and Remediation: St Raphael's and Brentfield Estates.' London, April 2011. 5 pages.[2]

Cover system applied (2011):

- Vertase FLI, 'Part 2a Remediation West London'. Available at http://www.vertasefli.co.uk/our-expertise/case-study/part-2a-remediation-west-london [last accessed 18th March 2021]

A 'Phase 1' or desk report is one produced from the specialist's desk, based on historical documents and third-party information, in contrast to a Phase 2 study which involves taking and analysing samples (soil, or others).

St Raphael's soil

The area where St Raphael's estate sits today contained a sewage farm during the period 1886-1911, and also a gravel pit which was later filled-in with unspecified material. These can be clearly seen in Ordnance maps (see A4 series, at the end of this document).

Desk studies (Phase 1) about the contamination of the area were done in 2005[3] and 2008[4] and a more thorough (Phase 2) study in 2011,[5] the latter over 1,200 households.

The studies found polycyclic aromatic hydrocarbons (PAH), which is a type of contaminant that, when concentrated, can affect human health.[6] Benzo(a)pyrene was used as a marker, but others could have been present too. They established a threshold for the presence of this substance to be considered harmful (17mg/kg), and based on that they singled out 5 main areas where this concentration existed. It is there that they applied the geomembrane described below.

[1] Both Phase 1 reports are available at the Brent Council portal, planning application 10/1764, yet they are not straightforward to find:
https://pa.brent.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=DCAPR_101481
Once in the page, go to 'View Documents' tab. The relevant entries are '03 Apr 2012 - Approved Documents - Phase 1 desk study', for Taylor's report, and '03 Apr 2012 - Approved Documents - Land contamination' for Rick Mather Architects'.
Please note that the facility for previewing documents in this portal does not work well. If you intend to view or download the document, make sure to select it by ticking the box to the left, and click 'Download Selected Files'. The relevant file names for each report are 'Phase_1_desk_study-1091736.tif' and 'Land_contamination-2592072.tif' respectively.
The reports are in tiff format. In a Windows platform, tiff files can be navigated page by page by using the Windows Photo Viewer and the arrows displayed at the bottom of the image.
Please note that the relevant report for the 2005 desk study was actually published in July 2010.

[2] This report is not publicly available and was obtained through direct consultation with the Council. 'REMEDIATION STATEMENT' does, however, contain a summary of its contents.

[3] Rick Mather Architects. 'LAND CONTAMINATION'.

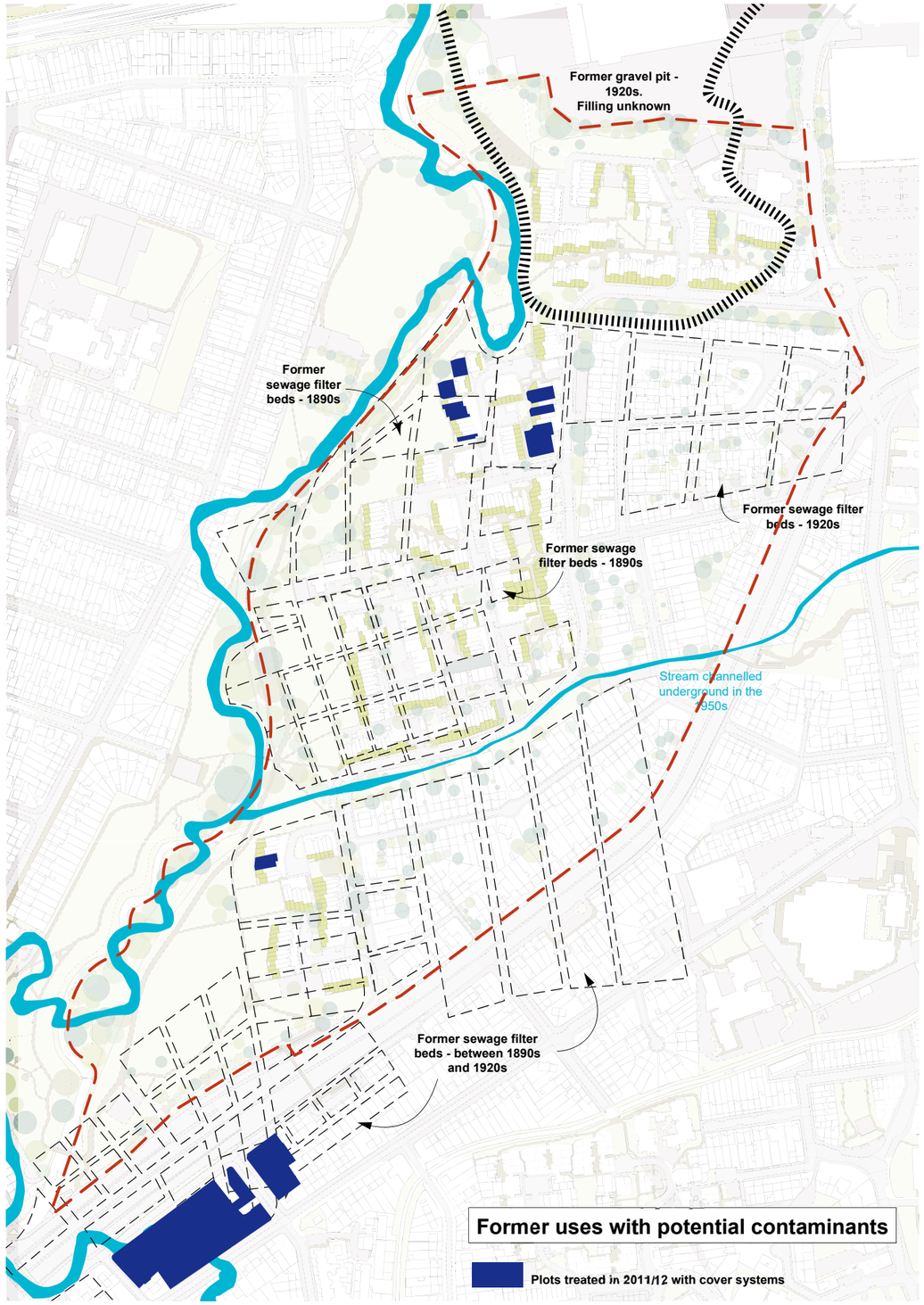
[4] Taylor, 'Phase 1 Desk Study. Drury Way Depot'.

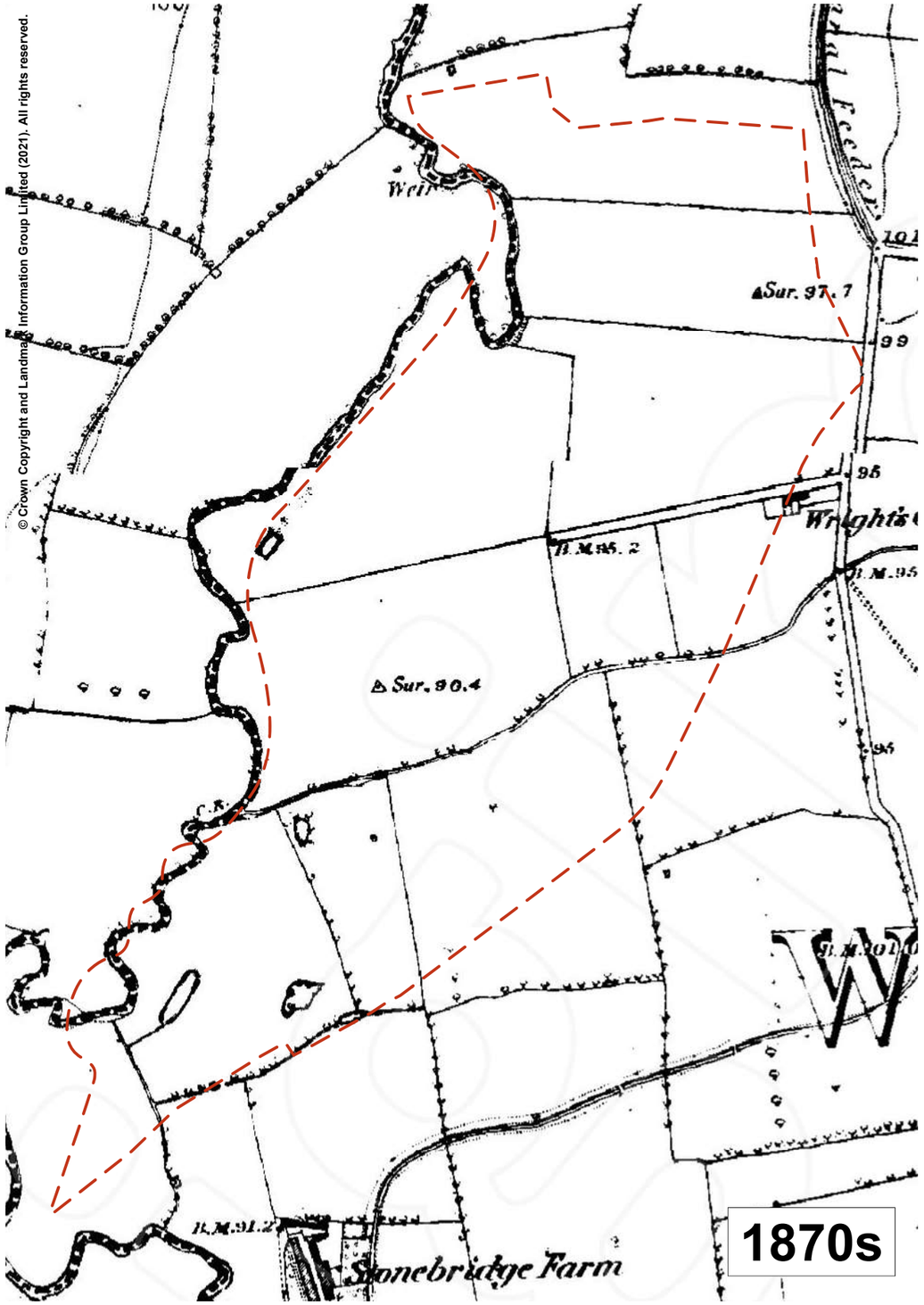
[5] Brent Council. 'Summary of Contaminated Land…'

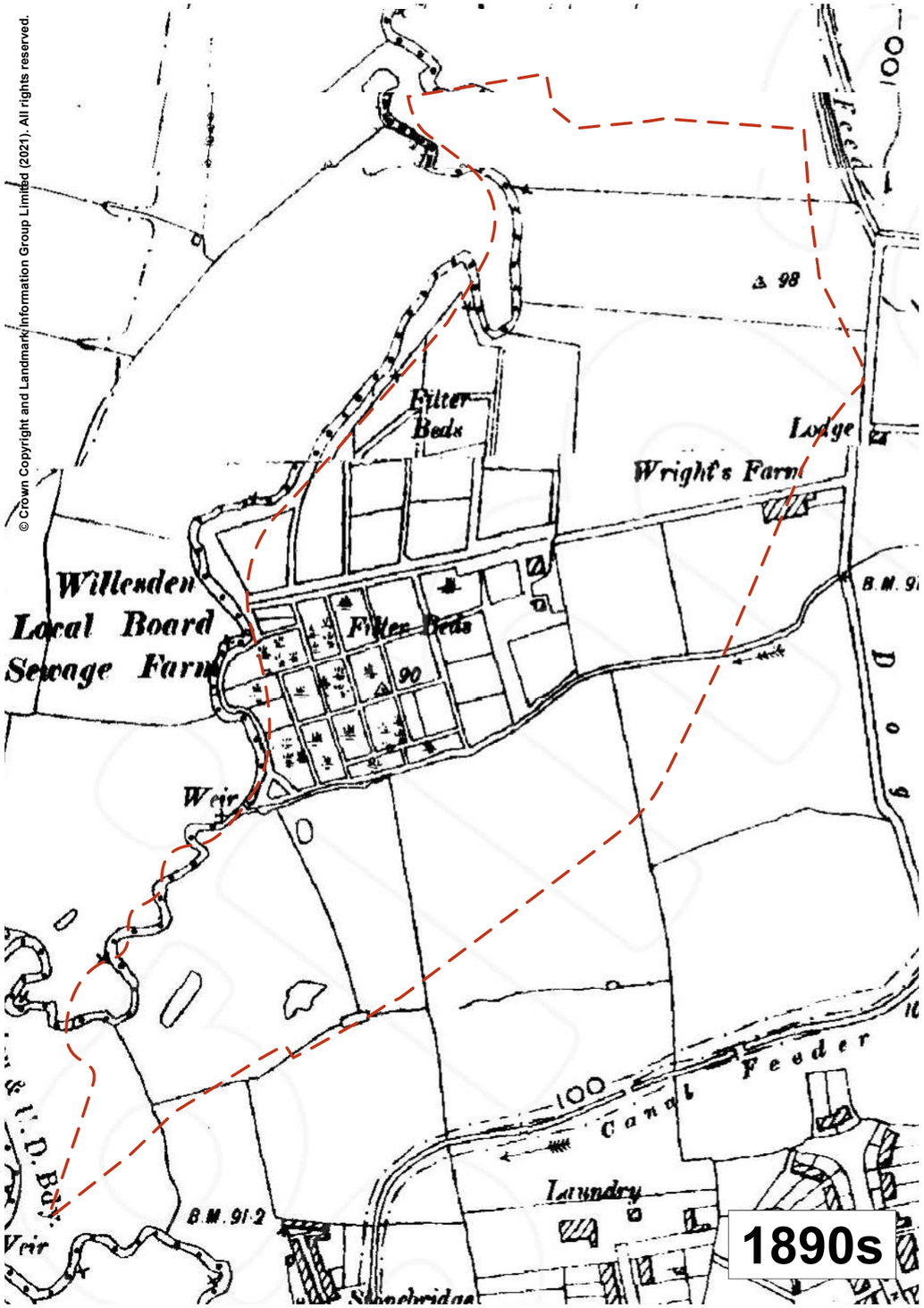
[6] The presence of PAHs in London soil is not uncommon: see Vane, C.H., Kim, A.W., Beriro, D.J., Cave, M.R., Knights, K., Moss-Hayes, V., Nathanail, P.C., 2014. 'Polycyclic aromatic hydrocarbons (PAH) and polychlorinated biphenyls (PCB) in urban soils of Greater London, UK.' *Applied Geochemistry* 51, 303–314.

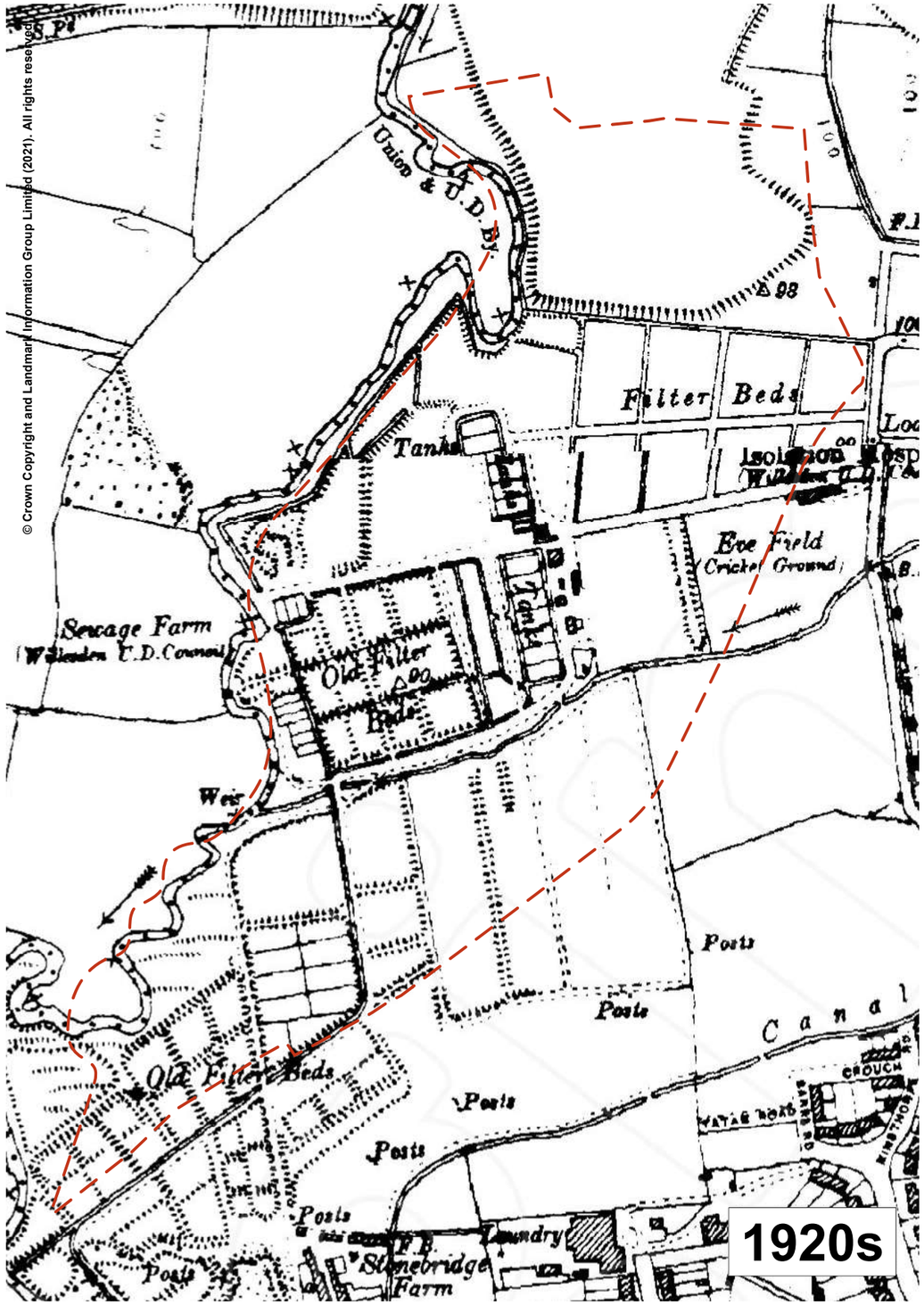
As a system, the membrane does not remediate the soil but looks to break the 'pathway', this is to say, to ensure that the user has no contact with the contaminant. There is a total of 600mm of new soil on top of the membrane. In the plots with over 17mg/kg benzo(a)pyrene, the membrane was only used in soft landscape, so any soil under buildings and pavements would still be untreated. Based on the information available, common spaces do not seem to have been treated either, although the sources are not sufficient to state this conclusively. The mitigation works were funded with a £1.4m grant from the Department for Environment, Food and Rural Affairs / Environmental Agency (Defra/EA), national government.

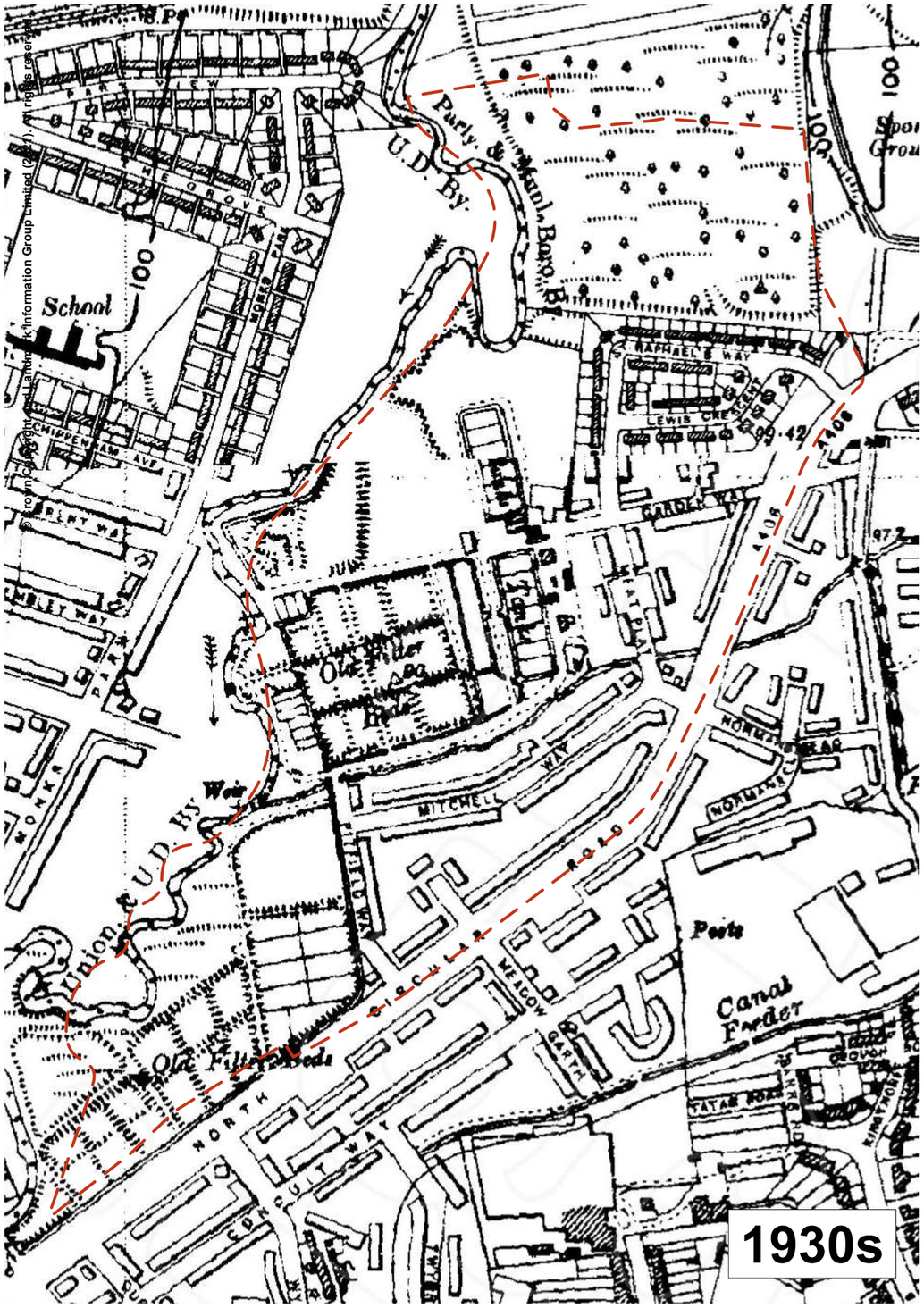
Considerations about the traces of contaminants that might have been left in St Raphael's soil are important generally, but even more so in the case of building demolition. In other words, the cost and time delays derived from the investigation and mitigation of contamination in St Raphael's should be taken into account by the Brent City Council and clearly communicated to residents, especially with regards to the redevelopment option. An infill option would still have to investigate possible contaminants and their mitigation, but this would imply a smaller scale as soil underneath existing constructions would not be exposed.



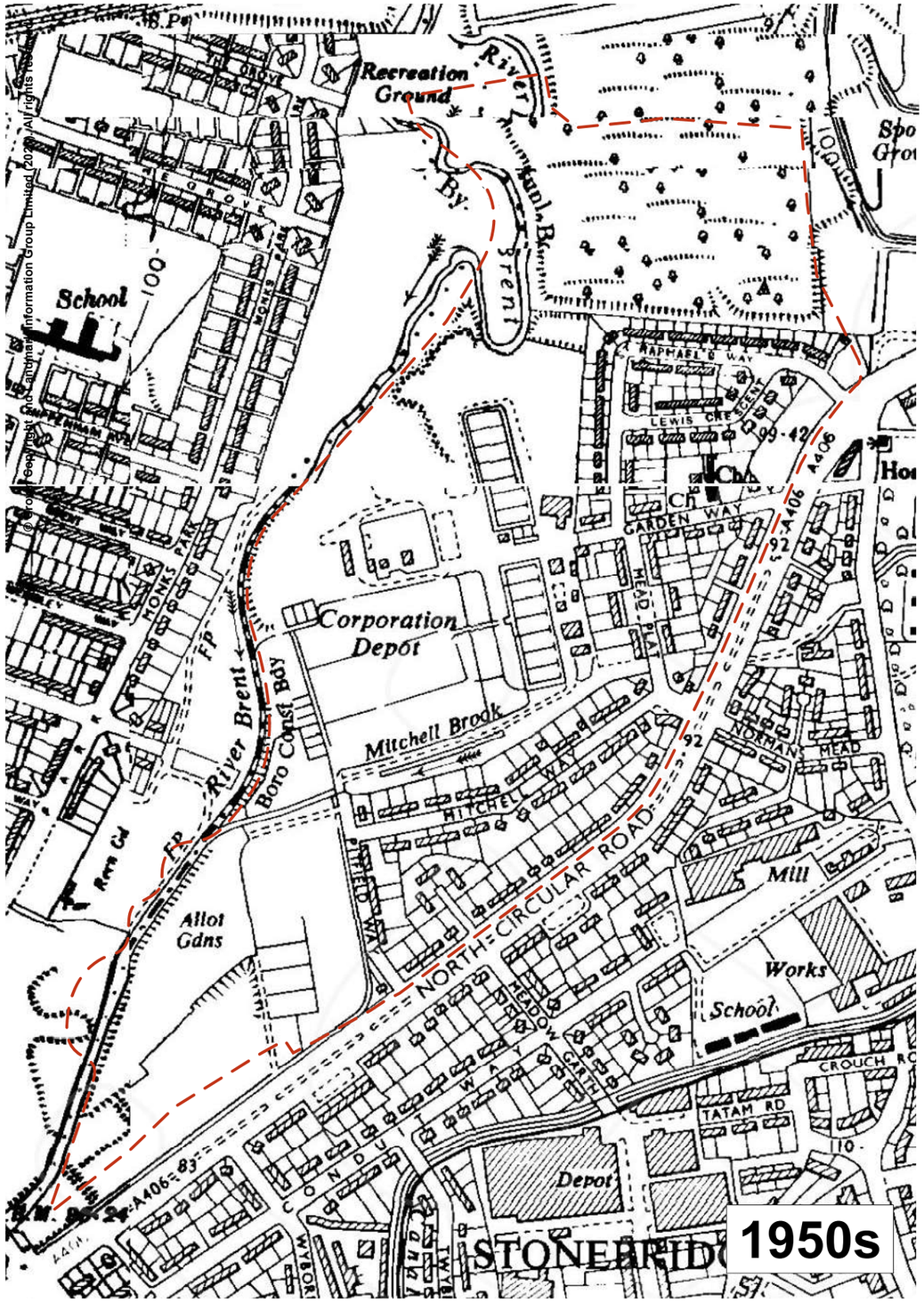







School
Parly. & Mun. Boro.
U.D. By.
Union & U.D. By
Old Filter Beds
Old Filter Beds
Canal Feeder
Posts
MITCHELL WAY
NORMANDY ROAD
NORTH CIRCULAR ROAD
MELCOM GARTH
CROUCH
TATAM ROAD
RAPHAEL'S WAY
LEWIS CRESCENT
GARDEN WAY
A406
CHIPPENHAM AVE
HONKS PARK
THE GROVE
PARK VIEW
WEMBLEY WAY
WONKS
99·42
100
97·2

1930s


Recreation Ground
River Brent
Brent Mun. Boro.
School
Corporation Depot
Mitchell Brook
River Brent
Boro Const. Bdy
Allot Gdns
NORTH CIRCULAR ROAD
Mill
Works
School
Depot
STONEBRIDGE
MITCHELL WAY
NORMANDY MEAD
MEADOW WAY
MELCOM GARTH
CROUCH RD
TATAM RD
GARDEN WAY
RAPHAEL'S WAY
LEWIS CRESCENT
HONKS PARK
THE GROVE
CHIPPENHAM AVE
A406
99·42
92
83
10

1950s