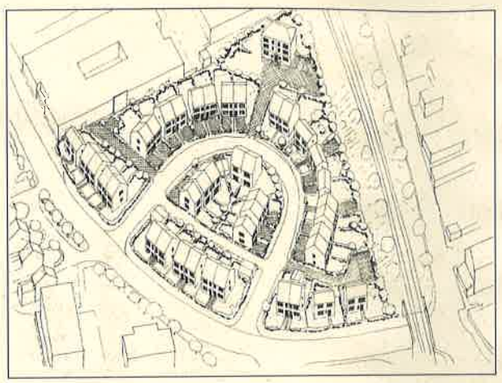
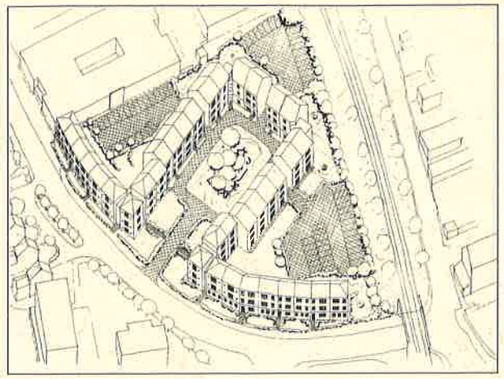
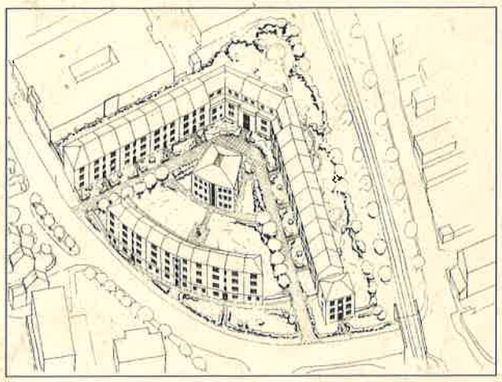
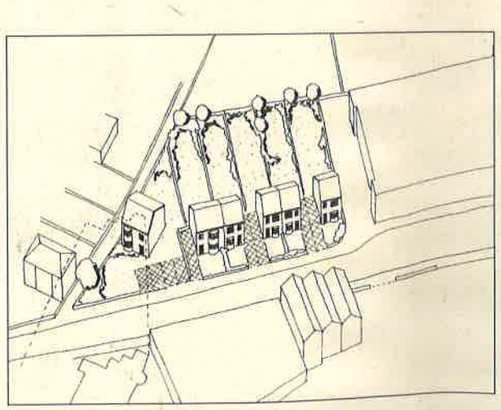
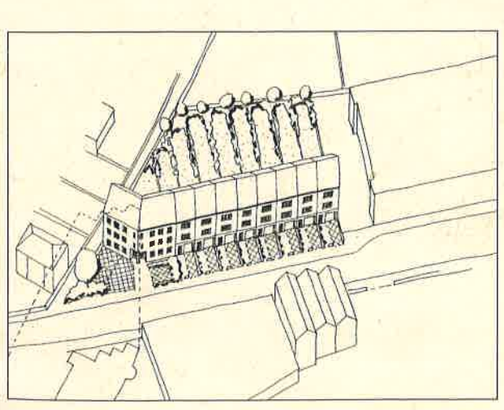
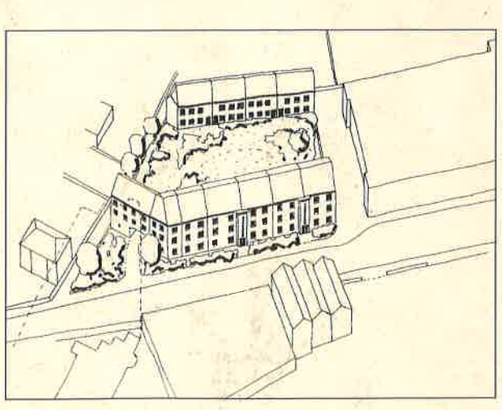
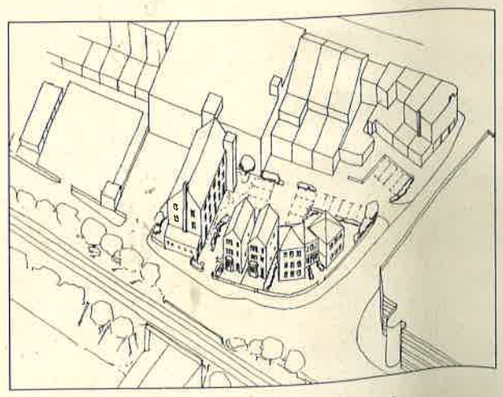
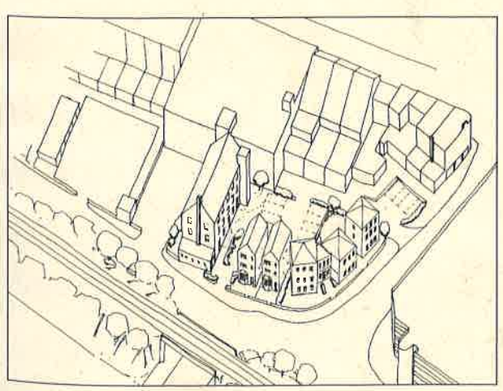
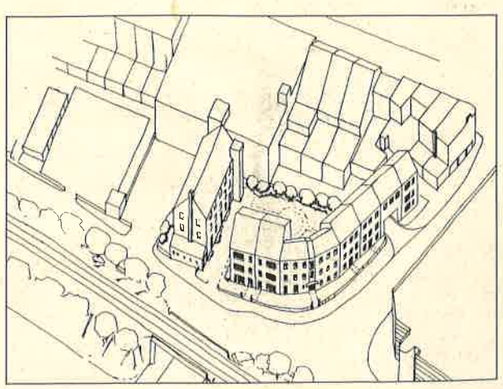
Llewelyn-Davies
in association with
Urban Investment Partnership
London Research Centre
Savills

Sustainable Residential Quality: new approaches to urban living

DETR
ENVIRONMENT
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DEPARTMENT OF ENVIRONMENT
TRANSPORT AND THE REGIONS

GOVERNMENT OFFICE
FOR LONDON

LPAC
PLANNING FOR
GREATER LONDON

LONDON PLANNING
ADVISORY COMMITTEE

GOVERNMENT OFFICE FOR LONDON

The Government Office for London (GOL) was created in 1994 and comprises the former London regional offices of the Department of the Environment, Transport and the Regions; Department of Trade and Industry; Department of Education and Employment; its role is "to work in partnership with local people to maximise the competitiveness, prosperity and quality of life in the capital".

DEPARTMENT OF ENVIRONMENT TRANSPORT AND THE REGIONS

The DETR was created in summer 1997, merging the former departments of the Environment and Transport. Its aim is "to improve the quality of life by promoting sustainable development at home and abroad, fostering economic prosperity and supporting local democracy".

LONDON PLANNING ADVISORY COMMITTEE

The London Planning Advisory Committee (LPAC) is the Boroughs' statutory planning committee for London. It was set up in 1986 by the Act which abolished the GLC. Its main role is to give Londoners, through their Borough representative, a say in the overall planning of London. It does this by:

- advising government and Boroughs on strategic planning matters and major development proposals
- representing London in the regional planning of the South East
- advising government on parking policy

LPAC is funded by the 32 London Boroughs and the Corporation of London. It has a staff of 22 (15 technical and 7 administrative) and works with Borough officers and with consultants.

Contents

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LPAC.
John Lett (Chair)
Debbie McMullen
Giles Atkinson
Jenny Fender

GoI
Phil Dykins
Nick Tennant
John O'Neil

DETR
Simon Brown

Llewelyn-Davies Study Team:

Dr Patrick Clarke - Project Leader

Planning Team:
Wayne Dyer-Team Leader
Andrew Bayne

Urban Design and Architecture:
Paul Drew- Team Leader
Tony Malcolm
Richard Brindley
Keith Denham

Transport:
Tim Pharoah (Specialist advice on Neighbourhood Car Fleets/Car Free Housing)

Demography & Household Projections:
Matthew Chell – London Research Centre

Property Market & Development Issues:
John Goulding – Urban Investment Partnership
Julian Clarke – Savills

Graphics & Production:
Bally Meeda
Edmund Whitehouse
Donna Mountain

About the Study

1 The following sections present an overview of the Sustainable Residential Quality Project undertaken by consultants Llewelyn-Davies for the London Planning Advisory Committee, the Government Office for London and the Department of the Environment, Transport and the Regions.

2 The purpose of the project has been to examine "*to what extent and how might London accommodate additional dwellings while maintaining urban quality and fostering sustainable development?*"

3 In the context of Government projections showing the number of households in London growing by 629,000 between 1991 and 2016 compared to a current housing capacity estimate of 234,000 dwellings up to 2006, the project is one of a number of studies examining London's future housing potential.

4 This project's particular contribution is that it examines the potential for new housing in relation to established strategic concerns: of enhancing the quality of London's urban environment; of securing urban regeneration; and of planning for more sustainable patterns of development and transport. It does this in relation to three sources of new housing:

- *housing on small gap and infill sites of up to 1 ha;*
- *the conversion of houses into flats; and*
- *housing in backland areas within existing residential areas.*

5 Three aspects of the project's approach are particularly important:

- *relating the analysis of housing potential to pedestrian accessibility to facilities and public transport. The study examines the potential to accommodate new housing in areas within 10 minutes walking distance (800m) of town centres where residents have a real opportunity to walk to facilities and public transport;*
- *exploring the potential to increase quality and housing potential through a "design led" approach to the development of housing sites rather than a simple adherence to existing planning controls and standards. The project explores a series of different design options for 48 case study sites based on different assumptions about car parking, density and treatment of spaces between buildings; and*
- *examining how existing residential areas and buildings could contribute more to London's housing needs while maintaining quality. The project explores how the potential for further conversion of houses into flats and new housing in backland areas can be reconciled with concerns about the need to maintain quality and pressures for residential car parking.*

6 The study also explores ways of encouraging more sustainable urban living which could work to reduce the proportion of people who feel the need to own a car. Annex 1 to the report reviews various forms of 'car-free' and 'car-reduced' housing, and Neighbourhood Car Fleets. The study concludes that there is enough evidence from current European practice to justify treating such approaches as serious and useful options.

Key Findings

Intensification can be achieved without compromising quality

7 The main components of a successful approach are:

- *bringing vacant, derelict and under-used urban land back into productive use, especially where its location provides residents with the opportunity to live close to facilities, good public transport and become less reliant on the private car;*
- *using land and buildings more intensively: for example, through the conversion of large houses into flats; or by making much better use of under-utilised land around town centres such as large surface car parks;*
- *managing better the pressures that can arise from the more intensive use of land and buildings; in particular, how this can be done in respect of traffic and car parking pressures; and*
- *crucially, paying much closer attention to the design quality of new housing and mixed-use development.*

There is significant housing potential on small sites in the "ped-sheds" around town centres

8 There is significant potential to accommodate new housing in areas within a 10-minute walk of London's network of town centres referred to in the report as "ped-sheds":

- *factoring up the potential identified in the 10 case study centre (including reduced or nil car parking) could produce a possible London wide potential of between 77,000 and 106,000 dwellings;*
- *new residential development within these areas can make a significant contribution to enhancing urban quality;*
- *some sites with housing potential may well be constrained by issues of land assembly and ownership; and*
- *development values tend to increase with the intensity of development. The higher density approaches advocated by the study could well make town centre housing more attractive to developers.*

9 Overall the analysis suggests that residential development within town and district ped-sheds could not only make a significant contribution to meeting London's housing requirements it would, too support urban quality and sustainable development objectives.

Potential on small sites outside the "Ped-sheds" is more limited, but still worth exploration

10 Further away from town centres, there is generally less potential:

- *sites of 0.2-1 hectare outside ped-sheds with established potential for housing are fairly limited; 64% of the housing sites recorded by the London Development Monitoring System (LDMS) are within town centre ped-sheds;*
- *nevertheless, applying a design led approach with reduced off-street car parking indicates that these sites could increase their contribution to London's housing needs by 2,300 dwellings.*

Potential on backland in residential areas should be treated cautiously, and mainly as a longer term resource

11 There is, in theory, considerable potential to accommodate new housing on backland sites; and in some cases it would significantly enhance urban quality. However:

- *the majority of backland areas are well maintained and highly valued; and*
- *the potential for backland development is significantly constrained by practical issues of land assembly and ownership.*

Notwithstanding these significant constraints the study concludes that over the longer term backland areas need to be viewed together with the future of the houses which surround them. New procedures may be needed to facilitate redevelopment, and adherence to good design principles will be essential.

The potential arising through conversion of houses into flats is extensive - but needs handling with care and further analysis

12 The demand for converted flats is likely to grow strongly over the next 15-20 years; and this is potentially an important source of future supply. The research concludes that:

- *there is considerable potential for the conversion of houses into flats;*
- *conversions can impact on the quality of the residential environment, but potential impacts can be mitigated though sensitive design;*
- *planning policies and standards play a significant role in regulating the supply of conversions;*
- *car parking standards for conversions need to reflect the character of the residential area and its location relative to public transport and facilities; and*
- *further work is needed before future rates of conversion activity can be estimated with confidence.*

Much closer attention needs to be paid to the design opportunities and constraints of individual sites and to the relationships between car parking provision and accessibility to public transport and facilities

13 The case study design analysis highlights a number of significant shortcomings in current practice and the potential for a site specific design led approach:

- *the ability to accommodate new dwellings is greatly influenced by planning policies and standards governing their design;*
- *a site specific "design-led" approach produces better residential development than tends to be possible under current UDP policies and standards;*
- *density and car parking requirements should be more carefully varied, using a public transport accessibility index; and*
- *relaxation of planning standards, and the use of a site-specific approach, could unlock the potential of other currently unidentified sites.*

Implications for overall housing potential

14 The research shows that a design-led approach to small sites, with the requirement for off-street parking reduced to one space per dwelling, increases the number of units that can be accommodated by 50% over what is possible under current UDP policies and standards. Removing the requirement for off-street parking altogether can double what is possible under current policies and standards.

15 If the 10 case study centres are representative of town centres across London (and assuming that all the land identified is developed for housing), then the impact of these different design and policy approaches could be in the order of:

- *52,000 dwellings if current policies and standards were applied to a systematic trawl of all small, potential development sites;*
- *77,000 dwellings if a site based design led approach with 1:1 parking were adopted; and*
- *106,000 dwellings if the requirement for off-street car parking were removed altogether.*

16 These denser forms of development are especially suited to sites within town centre ped-sheds. But there is no reason why a lower car parking requirement (i.e. 1 space per dwelling) could not be applied elsewhere, and particularly in areas along public transport corridors or on the edge of a ped-shed. If this approach was applied to a site of between 0.2 and 1ha beyond town centre catchments which have an outstanding planning permission for housing, the number of units accommodated could be increased from around 4,500 to 6,800.

Conclusions & Recommendations

17 Based on the findings in Part 2 "*The Potential for New Housing*" Part 3 of the report presents the conclusions of the project and their implications for planning policy and practice at the strategic and local levels. A detailed illustrated Annex presents the case study design exercises, showing how different types of sites could be developed at different densities and with different levels of off-street car parking provision.

An integrated approach

18 The research points to significant potential in the areas immediately surrounding London's town centres. Focusing new residential development in these areas could:

- *enhance urban quality;*
- *make better use of under-used land; and*
- *support the vitality of town centres and the services and facilities they provide.*

It should also provide more people with a real opportunity to walk and use public transport, rather, than having to rely on a car for most journeys.

19 London's network of town centres (which might be seen as effectively pre-existing "urban villages"), and its comprehensive public transport system, provide a sustainable city structure which can now be strengthened

by new housing in more attractive and denser centres of activity.

Courses of Action

20 This report's final section "*Conclusions and Implications for Planning Polices and Practice*" reviews the actions needed to give effect to the Sustainable Residential Quality initiative. There are three broad groups of actions:

- *what Boroughs should do about the various sources of additional housing potential;*
- *what Boroughs should do about their related policies and standards; and*
- *what other actions are needed, including those by Government, English Partnerships, and other agencies.*

Borough actions on the sources of additional potential

21 Boroughs should focus on the "ped-sheds" (consistently defined town centre catchments) to inform their assessment of housing capacity, and should target, through UDP proposals maps, relevant measures to realise this potential.

22 Boroughs should test the ways in which **conversions** can optimise their contribution to supply and can support the achievement of wider sustainability objectives using the methodology and policy principles outlined in the report. They should assess the balance that needs to be struck between retaining larger dwellings for single household accommodation and encouraging sub-division for smaller households. In the light of this assessment, UDPs should positively seek to meet small household needs through conversions and other appropriate dwellings, within "ped-sheds" and other locations with good access to public transport and town facilities.

24 In carrying out housing capacity studies and testing housing capacity guidelines in UDP reviews, Boroughs should explore the potential residential development capacity of **backland** throughout their areas in both the short/medium and longer terms, along the lines indicated in chapter 6 of the report.

Implications for Borough UDP Policies

25 Boroughs should examine carefully how **standards, guidelines and regulations** affecting residential development might be modified or interpreted to encourage more creative residential design, a higher quality environment and more efficient use of urban land without compromising the intentions of the standards.

26 Boroughs should apply the broad guidelines on housing **density** in different types of location and in relation to different housing mixes outlined in the Density Matrix in Chapter 8. Densities below these ranges should be justified in UDPs for specified areas of special character or those which are particularly vulnerable to more intensive development; Development above these ranges may be justified in highly accessible locations such as parts of Central London, town centres or near public transport interchanges.

27 UDPs should reflect the **design** principles in the report, and in preparing planning briefs and considering individual development proposals, Boroughs should use the Design Annex and the many other ideas listed in the report.

28 Boroughs should use other associated policy instruments in an integrated way to achieve the policy objectives of the Sustainable Residential Quality initiative; in particular, to complement the density/parking matrix. Boroughs should use **TPPs, UDPs, Parking Plans** and other relevant instruments to introduce the parking schemes, pricing mechanisms and road space re-allocation for appropriate locations.

Other Actions & Initiatives

29 A Pilot Project should be undertaken for a "ped-shed", to demonstrate how the urban quality and sustainable development agendas, explored by this and other studies, can be implemented in a coherent and comprehensive manner. Ideally, such a demonstration project should bring together the key agencies involved: Housing Corporation, English Partnerships and/or the London Development Agency and London Transport. The possibility of securing funding under the current English Partnerships/Urban Villages Forum initiatives on mixed use and urban villages or from the EU as an innovative urban project for sustainable development could be investigated.

30 A **Community Chest** to fund local projects could be established, funded in the first instance by a levy on new residential development paid for from the increased development land value generated by higher density development. Over time the sources could be widened to include:

- *monies already earmarked for environmental improvement;*
- *contributions from the developers of major schemes in town centres or as a grant or donation from major businesses already represented in the centre; and*
- *parking charges, fines and other locally collected "green taxes".*

It would be used to fund urban quality initiatives such as:

- *measures to encourage walking: streetscape improvements, seating, re-instating pedestrian priority through the introduction of convenient and safe crossing points and 'safe routes to school'; and*
- *urban design initiatives; greening, signage, treatment of gateways and other measures to strengthen local identity and a sense of place.*

Finally, the report emphasises that urban housing potential cannot be viewed in isolation from wider concerns about the quality of urban life: safety and security, the quality of education and health services, public transport and access

to employment. Performance on these broader issues will affect not only the quality of life enjoyed by Londoners, but also the extent to which London's full potential to accommodate new housing is realised.

1 About the Project and this Report

1.1 Introduction

1.1.1 This is the Final Report of the Sustainable Residential Quality Project, commissioned by the London Planning Advisory Committee (LPAC), the Government Office for London (GoL) and the Department of the Environment, Transport and the Regions (DETR), from consultants Llewelyn-Davies in December 1996.

1.1.2 The report has been prepared in consultation with interested parties, in particular the London Boroughs, and will inform the development of LPACs Strategic Planning Advice for London and the Government's Regional Planning Guidance for London and the South East, as well as the review of Borough Unitary Development Plans (UDPs).

1.2 Project Objectives

1.2.1 Our terms of reference asked us to examine "to what extent and how, might London accommodate additional dwellings while maintaining urban quality and fostering sustainable development". The project therefore builds on two strands of LPAC'S earlier work:

- *on London's housing capacity (e.g. the 1988 and 1992 Capacity Studies); and*
- on urban quality and sustainable development (e.g. the studies of London's Urban Environment and the Quality of London's Residential Environment).

1.2.2 Bringing these strategic concerns together is crucial. On the one hand, additional housing capacity which undermines urban quality or sustainable development objectives does not make strategic sense. On the other, enhancing urban quality can help stimulate the demand for housing and thus increase urban housing potential. In addition, this study adopts a site speific design-led approach to additional housing as a means of increasing the potential for residential development whilst maintaining and enhancing urban environmental quality.

1.3 Scope of the Research

1.3.1 This study is one of a number of studies examining aspects of London's housing potential up to 2016. Its particular focus is on bringing together housing capacity, urban quality and sustainable development issues, in relation to three categories of new housing:

- *housing on small gap and infill sites if up to 1 ha in size;*
- *the conversion of houses in flats; and*
- *housing in backland areas within established residential areas.*

1.3.2 It is not concerned with the potential from larger housing sites (i.e. sites larger than 1 ha), or residential conversions from office, industrial or retail users. These are being considered by other related GoL/ LPAC studies.

1.4 Approach and Methodology

1.4.1 We have interpreted out terms of reference as asking not "how much additional housing can London accommodate before urban quality and sustainable development objectives are compromised?" but rather "how can new housing be accommodated so as to maximised its contribution to strategic objectives of enhancing quality, securing urban regeneration and fostering more sustainable patterns of transport and development?".

1.4.2 This interpretation: that the demand for new housing should be seen as a strategic opportunity, rather than a threat, has shaped our approach to the study in three important respects which follow:

1.4.3 First, we have structured our analysis of housing potential in relation to accessibility to facilities and public transport. In particular, we have focussed on the potential that exists within 10 minutes (800m) walking distance of town centres. An area which we term "ped-shed".

1.4.4 Second, reflecting sustainable principles, we have focused our search for opportunities to accommodate new housing within these ped-sheds. This has involved a street by street survey of 10 town centre ped-sheds in London and an assessment of their potential which is not constrained by issues of immediate land availability, planning policies or current use. This means that we have included sites which are not only vacant or derelict, but also those which we judged to be under-used. Under-used sites included those where only a small proportion of the site was in use, where land and buildings were in disrepair and occupied by uses which were short-term or marginal in nature, or where, although in established use, land was not being used intensively in relation to its potential such as under utilised surface car parks or open storage areas.

1.4.5 Third, having identified land with housing potential, we have examined how it might be developed more intensively than at present while maintaining and enhancing quality. This involved exploring a series of design options for 48 case study sites based on different assumptions about car parking provision, density and the spaces between buildings.

1.5 Report Structure

1.5.1 The report is divided into three parts. Part 1 considers the demand for housing in London arising from the 1992 based household projections and sets out some strategic principles for accommodating new housing so as to promote Sustainable Residential Quality (Chapter 2 and 3 respectively).

1.5.2 Part 2 considers the relationship between housing potential, urban quality and sustainable development in relation to four categories of housing development:

- *housing on sites of up to 1 ha in size within 800m walking distance of a town centre: the ped-shed (Chapter 4);*
- *housing on sites of between 0.2 and 1 ha which are beyond 800m of a town centre (Chapter 5).*

- *housing development in backland areas including areas both within and beyond town centre ped-sheds (Chapter 6); and*
- *the conversion of houses into flats, again including areas both within and beyond town centre ped-sheds (Chapter 7).*

1.5.3 Part 3, presents the conclusions of the project and their implications for planning policy and practice both at the strategic and local levels. At the end of the report there are two Annexes, the first reviews best European practice on Neighbourhood Car Fleets and "car free housing", the other sets out the case study design exercises which show how different types of sites could be developed at different densities and with different levels of off-street car parking provision.

1.6 *A Disclaimer*

1.6.1 In undertaking the research we were guided by a Steering Group of LPAC and GoL officials and we are grateful for their advice and guidance. It is important to point out, however, that the Project did not include any involvement or assistance from the London Boroughs concerned. The selection of case study sites, the assessment of their suitability for housing and the design options explored is the consultants work alone. It does not imply any endorsement of the local authority, land owners, LPAC, GoL or the DETR. The sites used in the design exercise are examples of how innovative, good quality housing provision could be achieved. They are not meant to be indicative of how these specific sites should be developed, nor should they be construed as such.

Part 1

New Housing

Demands, Opportunities & Principles

2 Future Housing Demand

2.1 Introduction

2.1.1 This chapter considers the potential demand for new housing in London as indicated by the 1992 based sub national household projections and contemplates some of the main implications for housing provision and planning policies. In summary the analysis shows that:

- *the number of households in London is projected to increase by 26,000 each year to 2011;*
- *80% of the growth will be one person households, predominantly single men and divorcees;*
- *by 2011 39% of households will be one person households;*
- *household growth will be higher in Inner rather than Outer London;*
- *growth in single households will contribute to a larger element of the growth in Outer London;*
- *more than half the additional households will need subsidised housing which equates to a 180% increase on the current rate of supply of social housing; and*
- *the changing nature of households will have implications for the demand for housing amenities such as car parking and private garden space.*

2.1.2 The planning for housing debate has over the last two years been focused around the 1991-2016 set of household projections published by the Government in 1995[1]. According to the projections 1.7 million of the 4.4 million additional households will be in the South East of which 629,000 are expected to be accommodated in Greater London. This chapter examines the projected household growth in London, particularly how households are expected to change their composition and addresses the implications this may have for the demand for housing in the capital into the 21st Century.

2.1.3 This chapter does not comment extensively on the methodology of the household projections as this has already been carried out in previous studies [2]. However it should be remembered that projections can never be accurate forecasts of the future as unforeseen changes may well invalidate the assumptions upon which projections have been based. Nonetheless, previous projections have consistently under-estimated actual household growth..

2.1.5 It is important to realise when comparing figures from one year to another that the increase in numbers is the net result of new household formation and other households ceasing to exist. Consequently the figures do not show how many new households there will be of any particular type. It is also important to realise that the projections estimate the increase in households, which does not translate directly into the number of houses that need to be built. Existing levels of unmet housing need in London has also been examined in earlier research[3].

2.2 Scale of household growth

2.2.1 The number of households in London is expected to increase by 18.5% from 2.8 million in 1991 to 3.4 million in 2011. This amounts to an average of 26,000 extra households each year.

2.2.2 The increase in the number of households nationally is also expected to be 18.5% over this period, but in ROSE there is expected to be a greater rate of increase (21.3%).

2.2.3 Nationally it is projected that there will be more one-person households and that the average size of other households will reduce. Overall average household size in London is expected to reduce from 2.39 in 1991 to 2.17 by 2011.

2.3 Reasons for household growth

Population Increase

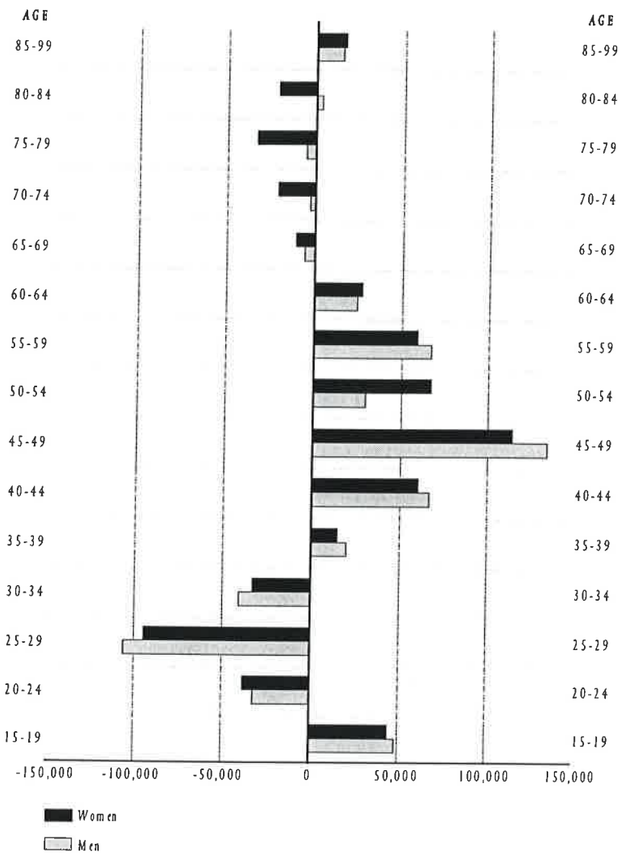
2.3.1 The most significant reason for the increasing number of households is the increase in the population. London's population is expected to grow by 7.6% from 6.8 million to 7.3 million between 1991-2011. This increase accounts for about half (46%) of the growth in households.

2.3.2 Figure 2.1 overleaf shows the net change by age group and gender over the period (aged 15 and above only). The graph shows quite clearly that:

- *the population aged between 20 and 34 is expected to decrease by about 340,000, while the number of people between 35 and 64 is expected to increase by about 670,000. The bulge in 45-49 year olds is the result of the 'baby boom' of the early 1960's;*
- *the number of people of 65 and over is projected to decrease and most of this decrease will be in the number of women; but*

2.3.3 The population estimates take account of projected trends in fertility and mortality which are fairly well known and therefore subject to less uncertainty. What is not so well understood is the extent of migration, both international and national. London is particularly affected by international migration trends and assumptions which is partly due to its status as a 'World City' and its pivotal role in the global economy. Changes in assumptions about migration account for more than 10% of the increase in the 1992-based household projections over the previous 1989-based projections.

Figure 2.1: Projected Net Change in Population 1991-2011 by Age and Gender



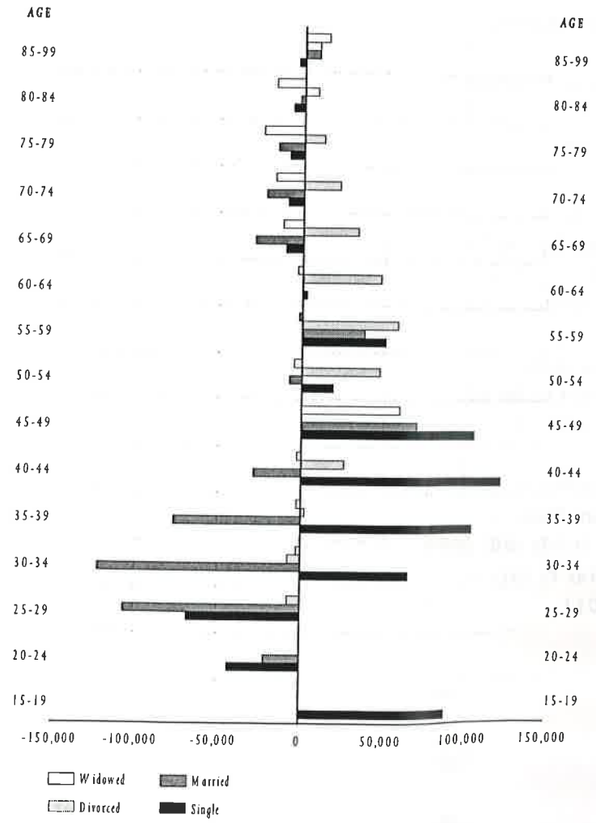
Marital Status & Headship Rates

2.3.4 The proportion of people who, for any given age, gender and marital status, are likely to become 'heads of household', accounts for a further 29% of the increase in the number of households.

2.3.5 The movement of people into and out of marriage is less predictable as its obviously dependent to some extent on changing social attitudes:

- *from Figure 2.2 it can be seen that there is expected to be a continued change towards staying single in the younger age groups, that is between 30 and 44 years;*
- *the number of married people between 45 and 59 is actually expected to increase, while the number of divorcees is expected to increase substantially; and*
- *the number of widows and widowers is expected to decline.*

Figure 2.2 Projected Net Change in Marital Status of Population: 1991-2011



Reduced number of concealed households

2.3.6 The number of concealed households is also expected to fall by about 8,000 over the period. This includes concealed married and cohabiting couples and concealed lone parent households. It does not include single children who are old enough to live on their own, even though a proportion would want to do so. The desire of such households for separate accommodation has been estimated from the London Housing Survey 1992 in an earlier LRC/LPAC report[3].

2.4 *Where will the growth occur ?*

2.4.1 There is some variation in the projected rates of growth of households across London. However it must be remembered that the more the migration figures are disaggregated, the less reliable they become. In particular, when looking at borough figures, it should be remembered that the estimation of movement of households within London is based on a very small data sample. Taking these considerations into account it is predicted that:

- *growth is expected to be higher in inner London (23%) than in outer London (16%);*
- *growth ranges from 5% in Havering to 34% in Newham, with the highest rates of growth, expected in a band of Inner London boroughs north of the Thames, and the lowest in peripheral boroughs;*
- *the growth in one person households makes up 80% of all growth and contributes to a larger part of the increase in households in Outer London than in Inner London; and*
- *the expected growth of one person households varies from 36% (Lewisham) to 69% (Newham).*

2.4.2 The projections assume that migration within London, as between London, the rest of the UK and the world, continues over the next twenty years in much the same way as it did in the year before the 1991 Census of Population and the two years following. The projection of past migration trends is a questionable assumption

2.4.3 Figure 2.3 highlights some of the variations in the household projections between Boroughs.

Figure 2.3: Projected Net Change in Households, 1991-2011
London Boroughs

N.B. City of London is excluded as the sample is to small to provide reliable data

Source: DOE 1992 based household projections

2.5 *What sort of households?*

2.5.1 In London, as nationally, the main feature of the household projections is the notable increase in one person households. This has significant implications for the types of extra housing needed. Figure 2.4 presents net change as analysed across seven specific household types.

2.5.2 The number of one person households is in London projected to rise by 422,000 between 1991 and 2011: 80% of the net increase in all types of household. At the same time, the number of married couple households is projected to fall by 157,000.

2.5.3 The number of people aged 60 or older living alone will increase by 45,000 (11%). By 2011, about 33% of this age group will be men, compared to 26% in 1991.

2.5.4 The largest increase using the categorisation shown in Figure 2.4 is in men living alone (289,000). Of this, two-thirds are single men and one third divorced men. In 1991, 43% of one person households were men. By 2011, this will have risen to 51%. As Figure 2.5 shows, most of this increase is confined to the 30-64 age range. For single men living alone, (i.e. who have never been married), half were under 35, but most of the increase is in men over 40 years old. The number of divorced men living alone is expected to rise in every age group over 35, but particularly in the 45-59 age band.

2.5.5 Furthermore divorced men are more likely to live as one person households than divorced women are. This is because in most instances where there are children, they live with the mother. The increase (see Figure 2.4) in the divorced population, therefore, adds substantially more to the number of men rather than women living alone.

2.5.6 The second largest increase is in women living alone (113,000). In 1991, 45% of these were widows but by 2011 it is expected that there will be more women living on their own who haven never married than widows. The number of those aged 60 or older living alone is expected to stay much the same, but there will be a shift towards very elderly women.

2.5.7 It might be that the single people living alone, both men and women, might have rather different life styles to their peers who have families. Their lives need to revolve around the home less, and they are likely to make more use of pubs, cafes, restaurants, cinemas, theatres and sports facilities. Their social life is likely to mean that they travel more widely than people in their age group who have children to look after. One might also speculate that divorced men will have maintenance responsibilities and therefore have less money on average to spend, for example, on their own homes and on cars than their never-married peers, and that they might sometimes want to live near if not very near, their dependants.

Figure 2.4: Net Change in Households 1991-2011

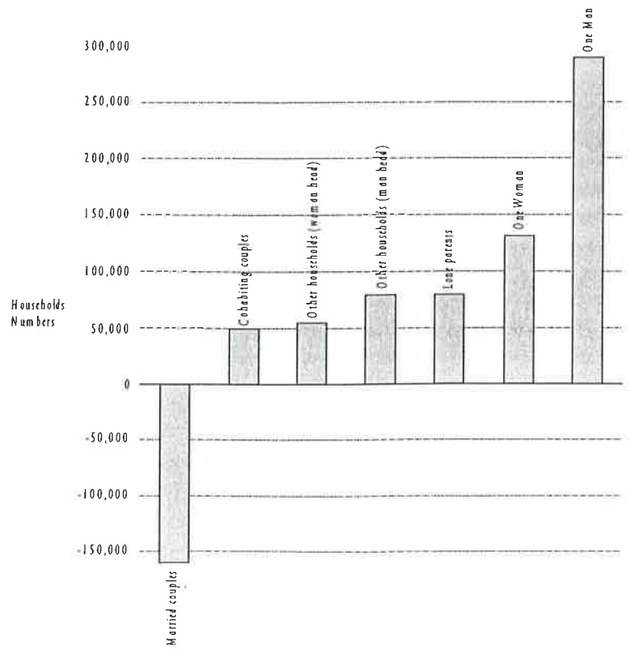
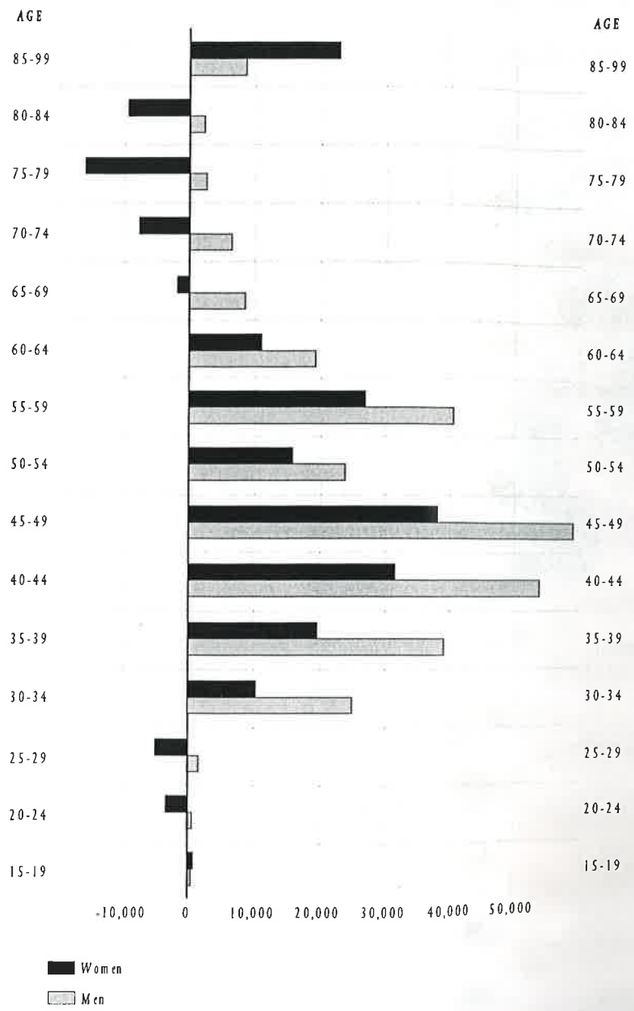


Figure 2.5: Projected Net Changes in People Living Alone 1991-2011



2.6 Some Portraits of the New Households

2.6.1 The four portraits of new households presented here, while clearly not representing the diversity of households, do help translate the statistics into reality.

Matthew is 42 and describes himself as an electrician, although the reality is that he is more often out of work. But when he does find work, he can earn quite a lot. He rents a one-bedroom council flat on the third floor of a block in Putney, which in good times he can afford; in bad times he relies on Housing Benefit. He needs his car for work, but spells of unemployment make it difficult to maintain. He is not bothered about not having a garden. When in funds, he enjoys spending evenings at the pub with friends.

Alison is 45 and lives in her own 3 bedroom house in Kentish Town. She works full-time for an insurance company in the City during the week but spends many weekends in Worthing with her 72 year old mother who is becoming less and less able to cope on her own. She has a small hatchback which is increasingly difficult to park near her home. Her London house has a small patio garden which she and her girlfriend Caroline enjoy during rare weekends in London. This is her second property. The first was a one bedroom flat, and the extra rooms mean she has room for a study for working at home as well as being of use as a guest room. Her next priority is somewhere with a parking space or garage. She enjoys being close to the West End where she meets friends on weekday evenings.

Steve(55) and **Cathy** (52) divorced four years ago, as soon as their youngest son Jack finished at school. Steve is a salesman for a drugs company and is struggling to keep his job; early retirement could be upon him at any moment. The family home is a 3 bedroom semi in East Croydon. When they separated, Steve moved in with Julie, a colleague from work, temporarily and then found a flat to rent in Purley. He would like to have bought, but was considered too old for another mortgage. The flat has only one bedroom and he is not used to being so cramped. He still has the company car, but will not be able to afford his own after retirement.

Meanwhile, Cathy has kept the house and Jack, now 22, lives there too while completing his apprenticeship. Cathy also now works part-time at the local supermarket. She is worried about having enough money as she gets older; she is still discussing with Steve her share of the house and his pension. Once Jack moves out, she wants to get somewhere smaller, perhaps near to Elizabeth, her daughter in Coulsdon, and the grandchildren. Jack wants to travel before settling into a career and will want somewhere to store his things and to stay while he sorts out his future. Cathy and Jack manage to run a medium-size car between the two of them, but without Jack's contribution it would be difficult for Cathy. She has persuaded Jack to take over the gardening, which Steve used to do, but is not so sure she will be able to cope with it on her own. Steve and Jack occasionally go to see Crystal Palace at home together. Elizabeth often brings the grandchildren over to Cathy's and leaves them so that she can go shopping alone.

2.7 Other Considerations

Household Ethnicity

2.7.1 According to the London Research Centre's dwelling constrained population projections, by 2011 28% of London's population (just under two million people) is expected to be from an ethnic minority. This growth is almost entirely the result of natural change as the population ages, rather than migration patterns. Rates of growth will be higher in outer London (48%) than in inner London (32%) during the period to 2011. The majority of these people will be UK born.

2.7.2 The 'White' population is expected to decline from 5.5 million to 5.1 million, while the population of all the ethnic groups identified in the Census is expected to increase. In the Census, white ethnic minorities such as the Irish, Cypriots and Turks, are not separately identified. The average household size for ethnic minorities is generally higher than for the White population. However, there is uncertainty as to whether these differences will continue to be as pronounced in the future.

Economic considerations

2.7.3 Predicting economic circumstances in the future is subject to even more uncertainty and inaccuracy than producing projections of household character. The question is how will the changes in employment influence the sorts of housing which the new households want and can afford. Such changes also have a spatial aspect, but this is more difficult to predict.

2.7.4 If levels of employment were to remain constant then the number of people in employment per household will fall simply because of the increasing number of households. In fact, the trend is for overall levels of employment to rise, but not at anything like the rate of household growth.

2.7.5 If current trends in employment continue we can expect the proportion of households in London with two or more earners to drop considerably, to perhaps only 20% in Inner London and 29% in Outer London by 2011. The proportion with one earner is expected to drop only a little. This will leave some 43% of households in Inner London, and 39% in Outer London with no earners. Across London, the proportion in full time employment is projected to fall and those not working (other than retired) to increase correspondingly.

2.7.6 It is in the market sector where the reduction in households with two incomes will be most felt, falling from 45% of all households in 1991 to 36% by 2011. Meanwhile, the percentage with one earner will increase to about 40%. In the social housing sector, up to 71% of households will have no earner by 2011.

Income

2.7.7 Over the last fifteen years average household incomes have risen in real terms. However, when looking at income distribution, it is clear that the gap between the rich and poor has widened. It is the income of the top 60% which has increased, while those of the bottom 40% have hardly changed at all in real terms. It is also worth noting that household incomes have increased on average at the same time that average household size has declined.

2.7.8 There is no reason to suppose that these trends will not continue. Average incomes in London and the South East are considerably more than elsewhere in England. About 85% of households in the social housing sector had incomes in the lowest 40% in 1991. This may reduce to nearer 80% by 2011, not because social sector tenants become wealthier, but because of an increased number of owner-occupiers and private renters on low or no incomes.

2.8 Implications for future housing provision

Market or social housing?

2.8.1 The London Research Centre has recently made some estimates of how many households will need social housing, as part of research for the Housing Corporation. The research methodology depends both on the household's current tenure and on its ability to afford market housing costs, either buying or renting. The results indicate that:

- *over the 1991 – 2011 period more than half the extra households will need subsidised housing;*
- *the social housing sector will grow to about 29% of households in London;*
- *without making inroads into the current levels of unmet need for housing, about an extra 14,000 social rented dwellings are needed each year to keep pace with household growth, as a long-term average. This figure is well above the current rate of supply which is about 5,000 dwellings per year; and*
- *by 2011 about 45% of households in the social sector will be people living alone and a further 17% are expected to be lone parents.*

2.8.2 The projections above are based on recent tenure patterns. But job insecurity may lead to fewer households being willing or able to take on the long-term financial commitment of buying a home.

Dwelling size

2.8.3 As part of recent research for the Housing Corporation the LRC has estimated the bedroom requirements of future households according to the bedroom standard, based on the DoE household projections.

2.8.4 Research shows that of the 530,000 extra households projected for London in the next 15 years, 485,000 will have a minimum requirement of only one bedroom, another 90,000 will need only two bedrooms. There is

likely to be a reduction of about 45,000 in the number of households needing 3 or more bedrooms.

2.8.5 The majority of households occupy, and wish to occupy, dwellings above the minimum bedroom standard. Those who can afford to house themselves choose, on average, to have at least one bedroom more than the minimum requirement suggested by the bedroom standard. Those who live in social housing or the private rented sector but supported by Housing Benefit are more likely to be near the minimum requirement but they may have good reason to have more bedrooms than the minimum[5]. For example there will be increasing numbers of divorcees living alone. Some will have children who do not live with them but may need to stay for periods of time

Supported housing

2.8.6 The projections do not allow one to assess directly the likely need for sheltered or warden assisted housing for the elderly. However, such need is strongly related to the population's age. The number of people over 65 is reducing. This suggests that there may be some reduction in need in this area. However, more of these people will be living alone, and more of them will be over 85, who are more likely to have physical disabilities, problems with access and to need special aids and adaptations to their homes.

Gardens

2.8.7 It is generally assumed that most households would prefer to have a garden. But, will this be true in future given the changing nature of households? Most extra households are expected to be one-person households. Younger people who are working may not have time to look after a garden and elderly people may not be able to even if they would like somewhere private outside.

2.8.8 An analysis of the 1992 London Housing Survey[5] suggest the following:

- *about a quarter of London's households have no access to a garden;*
- *the households for which this is a source of dissatisfaction are predominantly (but not exclusively) headed by someone aged 25 to 40 years old, and tend to be lone parent families and couples with children;*
- *the number of households containing dependant children is expected to reduce slightly in the future and therefore one would not anticipate lack of gardens becoming a greater cause for dissatisfaction in the future than it already is.*

Car ownership

2.8.9 There are two aspects to examine here, the impact of the changes in households on car ownership and on the use of transport. Car ownership is important because people who own a car will want to park it as near as possible to their home. But car ownership need not be exactly related to the amount of car use. Transport use is related to the type of household, income and wealth and also to location, especially centrality and proximity to public transport. This is beyond the scope of this project, however some analysis is available from the London Area Transport Survey (1991)[6].

2.8.10 Nationally levels of car ownership are rising by between 400-450,000 a year, about 2%. The number of cars in London at the time of the 1991 Census of Population were estimated to be 2.25 million, with a growth rate nearer 1%.. On this basis, ownership might increase to 2.7 million by 2011, an increase of 450,000 cars or 23,000 cars per year.

2.8.11 Levels of car ownership vary considerably by area. Figure 2.6 gives the proportion of households who had access to different numbers of cars at the time of the 1991 Census of Population for each London borough. The average number different numbers of cars at the time of the 1991 Census of cars per household varies from 0.52 in Southwark to 1.11 in Hillingdon. It should be noted that looking at ownership at ward level would produce greater variations in the ratios. These variations are extremely important in thinking about standards for residential parking.

Figure 2.6: Car Ownership by London Borough (1991)

	Households with No Car (%)	One Car (%)	Two or more cars (%)	Average cars per household
Barking & Dagenham	42.9	42.6	14.5	0.74
Barnet	30.2	43.5	26.3	1
Bexley	26.7	47.2	26.1	1.04
Brent	43.4	40.6	16	0.75
Bromley	25.6	45.5	28.9	1.08
Camden	55.8	34.8	9.4	0.55
Croydon	30.5	44.9	24.6	0.98
Ealing	36.6	44.4	19	0.86
Enfield	31.8	44	24.2	0.96
Greenwich	43.6	41.6	14.8	0.74
Hackney	61.7	31.6	6.7	0.46
Hammersmith & Fulham	52	36.7	11.3	0.61
Haringey	50	38.3	11.7	0.64
Harrow	26.5	44.3	29.2	1.08
Havering	26	46.5	27.5	1.06
Hillingdon	24.4	45.4	30.2	1.11
Hounslow	32.3	45.2	22.5	0.94
Islington	59.9	32.9	7.2	0.48
Kensington & Chelsea	50.5	38.3	11.2	0.63
Kingston Upon Thames	27	45.4	27.6	1.05
Lambeth	55.4	35	9.6	0.56
Lewisham	47.1	40.2	12.7	0.68
Merton	33.8	45.8	20.4	0.9
Newham	53.5	37.7	8.8	0.57
Redbridge	29.9	46.2	23.9	0.98
Richmond Upon Thames	28.5	46.1	25.4	1.01
Southwark	58	33.2	8.8	0.52
Sutton	26.4	45.2	28.4	1.07
Tower Hamlets	61.6	31.7	6.7	0.46
Waltham Forest	42.9	41.7	15.4	0.75
Wandsworth	44	41	15	0.73
Westminster	57.7	33.5	8.8	0.53
Corporation of London	44.1	46.6	9.3	0.67
London	40.7	41.1	18.2	0.8

Source: 1991 Census of Population . Crown Copyright

Figure 2.7: Car Ownership by Household Type, London 1991

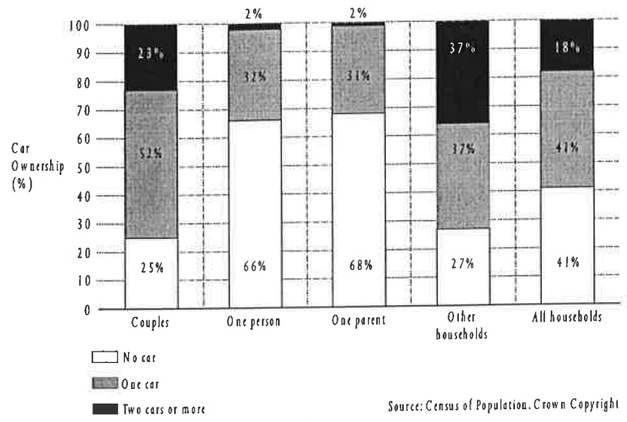
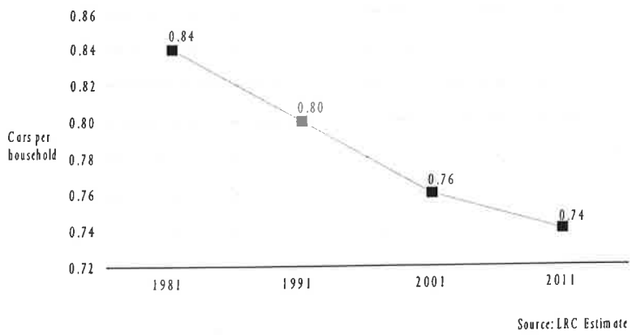


Figure 2.8: Projected Car Ownership in London



2.8.12 The 1991 Census tables also allow some analysis of the variation in car ownership, shown in Figure 2.7. This allows us to make crude estimates of the effect of the changing number of types of household on car ownership, assuming that the levels of ownership by particular types of household were to stay the same. Given that one person households are projected to be the most significant component of growth the potential to decrease future levels of car ownership , as suggested by the non car ownership rates for one person and one parent households in Figure 2.7, could be significant.

2.8.13 If levels of car ownership remain the same for each household type, then the average number of cars per household in London would decrease from 0.8 to 0.74 (see Figure 2.8). However, levels of car ownership are currently increasing and changes in the number and types of household can account for an increase of about 11,000 extra cars per year in London, or about % of the 23,000 cars a year increase projected above. The average number of cars per household is likely to remain much the same, at about 0.8 per households to the year 2011 based on current trends.

Glossary

Concealed Household: A married or cohabitating couple, family or lone parent (not containing the household representative) living within a larger household. This definition does not include single adults.

Ethnic Minority: 1991 Census of Population definition. As used here, ethnic minority does not include White minority groups e.g Irish, Cypriot and Turkish.

Household Representative: This replaces the term head of household in the latest household projections. For a married or cohabitating couple, it is the male partner; for a lone parent household, the lone parent; in a one person household, that individual. In other households, the oldest man, or if there is none the oldest woman.

Projection: projections of population and households are illustrations of what would happen under a specified set of assumptions. They are not forecasts.

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3 Strategic Principles for Sustainable Residential Quality

3.1 Introduction

3.1.1 This chapter sets out some strategic principles for sustainable residential quality which seek to underpin the research reported in subsequent chapters. The principles reflect two key beliefs. First, that concerns for sustainable residential quality must embrace issues of liveability and quality of life as well as concerns about the physical quality of the urban environment. Second, that they must also be concerned about improving the quality of existing places as well as ensuring the quality of new development.

3.1.2 New housing development will be a major driver of economic, social and physical change over the next two decades. The strategic principles set out below seek to ensure that new housing development contributes fully to advancing key strategic objectives of: fostering sustainable patterns of urban growth; securing urban regeneration ; supporting London's economy and enhancing London's attractiveness as a place to live. The six principles are:

- intensifying the use of urban land and buildings while maintaining and enhancing environmental quality;
- encouraging long term quality in new housing design;
- maximising the contribution of new housing development to meeting urban regeneration objectives;
- creating the greatest possible opportunity for pedestrian access to facilities and public transport;
- encouraging forms of housing which seek to reduce people's propensity to own cars; and
- enhancing the quality of the urban environment and community and social facilities.

3.1.3 The following sections now consider each of these strategic principles in turn.

3.2 Six strategic principles

Intensifying the use of urban land and buildings while maintaining and enhancing quality

3.2.1 Fundamental to the research presented in this report is the belief that land and buildings can be occupied and used more intensively than previously whilst maintaining and enhancing urban quality. This is important for a wide variety of reasons including:

- so that London can meet the housing needs of the new households, both in terms of the number of dwellings available and in terms of their size and affordability;
- to ensure that scarce urban land is used efficiently and in a way which reflects strategic concerns about maximising accessibility to facilities and public transport;
- to support and sustain the range and quality of services and facilities available to local communities; and
- to enable London to retain more of the wealth that it creates for benefit of its people.

3.2.2 Intensification can be achieved while maintaining and enhancing quality by:

- bringing vacant, derelict and under-used urban land back into productive use, especially where its location fits with strategic objectives of fostering more sustainable patterns of transport and development;
- using land and building more intensively. For example, through the conversion of large houses into flats or by freeing up for development surface car parks in town centres by developing a number of multi-storey car parks; and
- managing better the consequential pressures that can arise from the more intensive use of land and buildings. Later we suggest how this can be done in respect of traffic and car parking pressures.

3.2.3 Implicit in these approaches is the belief that the scope for intensification exists across all urban land uses and in some cases, more than within existing residential areas. Intensification is also consistent with policies seeking to maintain the quality of existing places from harmful development. For example, a strong policy framework for the protection of Public Open Space and Urban Green Space can not only ensure that open space with recreational or non-recreational value is protected, but can help to focus new development on areas where it can support strategic objectives of regeneration and urban enhancement.

Encouraging long term quality in new housing design

3.2.4 It is axiomatic in a study of sustainable residential quality that the quality of new residential development must be a predominant concern. In this context "quality" is defined as having three inter-related components. It should:

- be enduring and robust;
- fulfil the functional requirements of residents; and
- give pleasure and joy to those who experience it.

3.2. 5 Quality design should enable dwellings to fulfil a range of different lifestyles. Homes should be capable of evolving over time and adapting to the needs of future generations of users. Implicit in good design is an awareness that dwellings have both a social and private context and that this duel function needs to be made apparent. Some of the key design principles which have underpinned the case study design exercises presented later in this report are:

- providing a feeling of safety;
- clearly defining public and private realms;
- safeguarding privacy, light and street frontage;
- creating a healthy environment;
- designing robust and adaptable dwellings; and
- respecting, and where possible, enhancing local character.

3.2.6 These design principles are set out and considered more fully overleaf.

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- *designing robust and adaptable dwellings; and*
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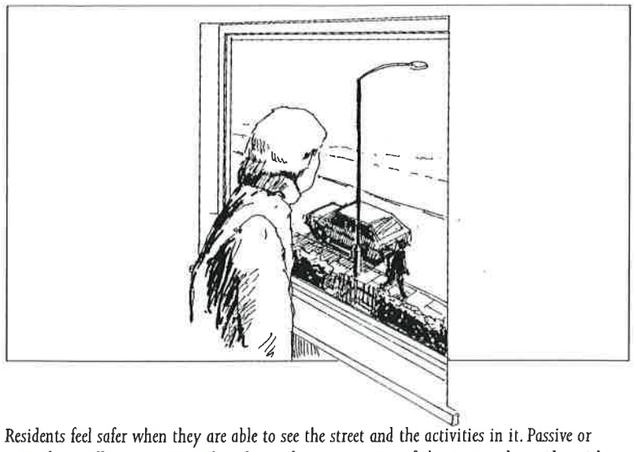
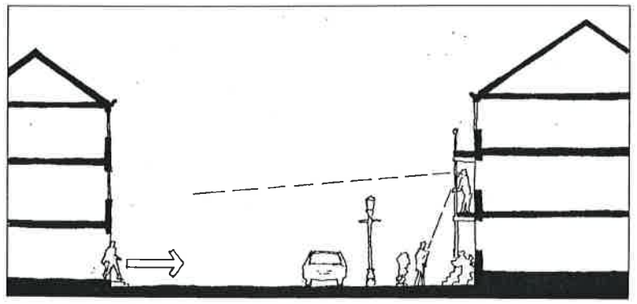
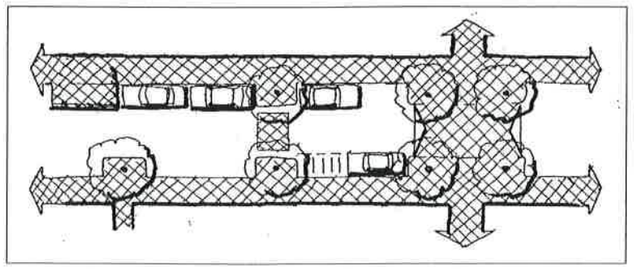
1. Providing Feeling of Safety



Residents feel safer when they are able to see the street and the activities in it. Passive or natural surveillance can strengthen the residents governance of the street and provide quick response to incidents.

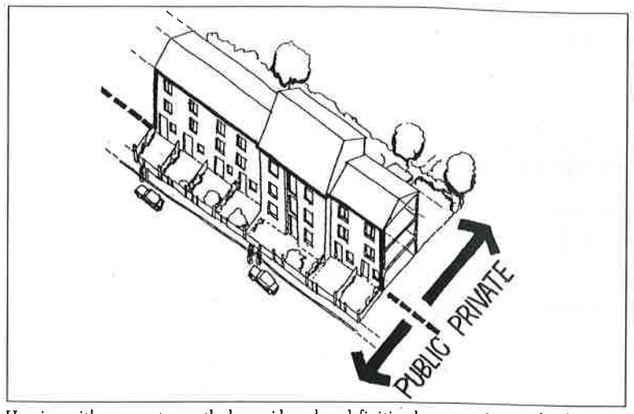


To 'see and be seen' can effect the conduct of non-residents that use the street. Easy access improves the residents relationship to the street and the feeling of social connection.

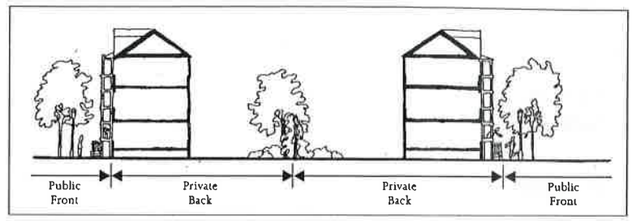


Streets should be designed for the safe circulation of people and not just cars and service vehicles. Other interested parties that value the street are pedestrians, the mobility impaired, children and cyclists. Streetscape detailing should prioritise these users over the car.

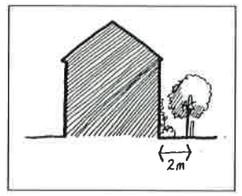
2. Clear Defining Private and Public Realms



Housing with an aspect or outlook provide a clear definition between private and public space.

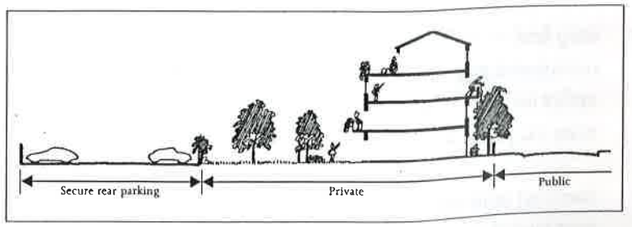


Layouts should form continuous fronts and backs, with consistent levels of privacy.



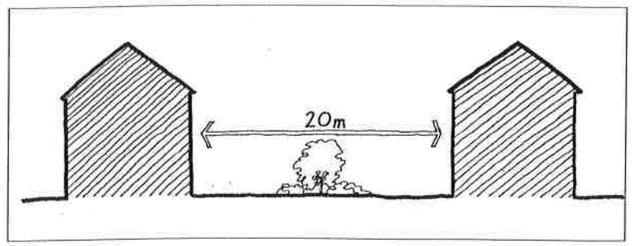
Front gardens serve as a buffer zone of semi private space.

Many traditional layouts provide a clear definition between public fronts and private backs.

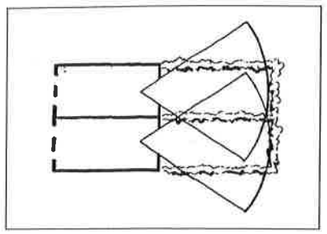


Rear parking should be a continuation of private space and be secure.

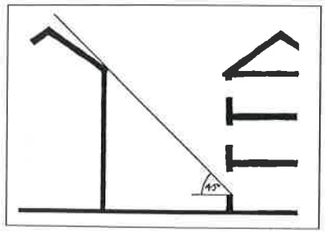
3. Safeguarding Privacy, Light and Street Frontage



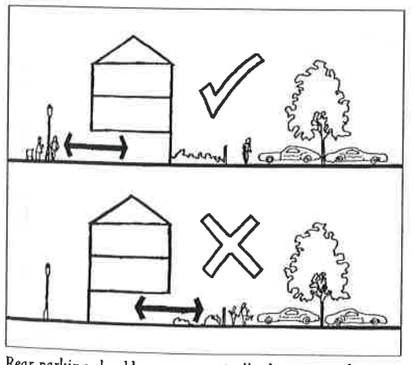
20m is an oppropriate privacy distance between windows, less can be considered only when appropriate to local context.



Overlooking of gardens is acceptable if loss of privacy is consistent between neighbouring dwellings.

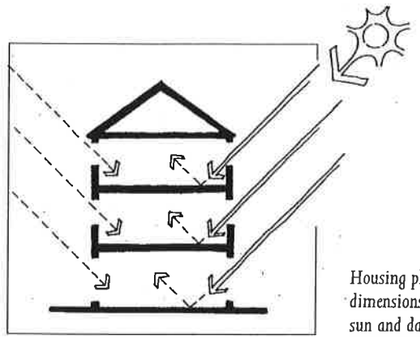


Single aspect can reduce distances further between dwellings but not to the detriment of neighbours right to light.

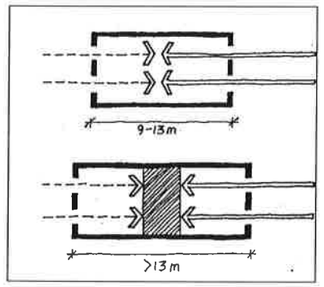


Rear parking should not automatically dictate rear front doors as this weakens the connection between dwelling and street for non car users. With rear access the character of the street changes to that of a road.

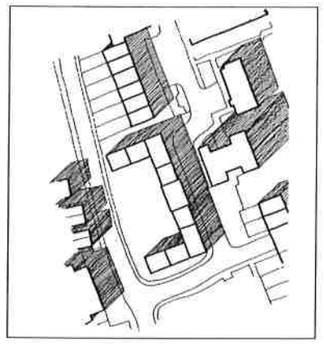
4. Creating a Healthy Environment



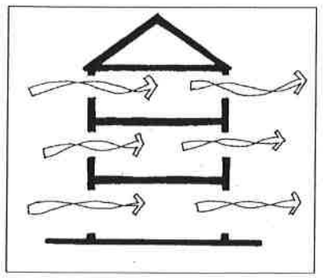
Housing plans with front to back dimensions of 9-13m provide good sun and day light penetration.



Plan depths over 13m have poor light penetration to the core, increasing the need for artificial lighting.

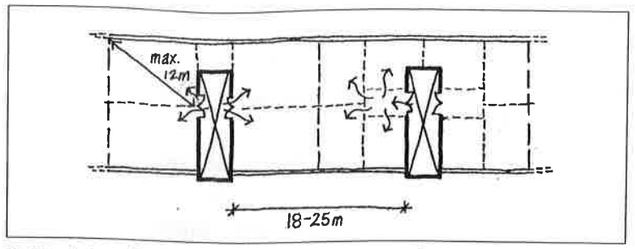


Layout design should demonstrate minimum overshadowing from one block to another.

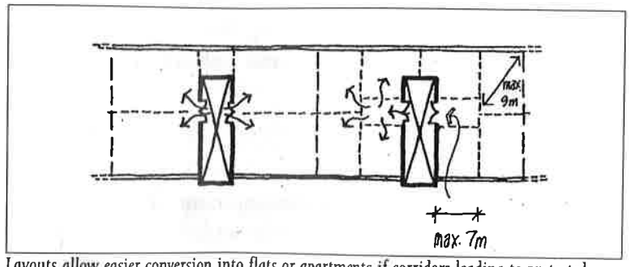


This kind of shallow plan building provides the opportunity for natural through ventilation and reduces the need for mechanical assistance.

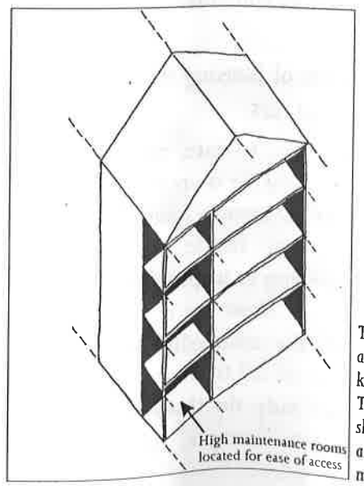
5. Designing Robust and Adaptable Dwellings



Building design and layout should be flexible enough to cater for the needs of present and future generations of users. Changing demographics, live/work arrangements and changing uses of ground floors require robust layouts which are easily convertable from employment to residential.
Common circulation cores provide fire protected areas. In adaptable buildings these should be not more than 25m apart so that prompt exit can be achieved.

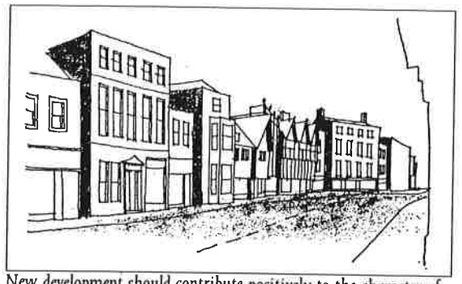


Layouts allow easier conversion into flats or apartments if corridors leading to protected areas are not more than 7m long.

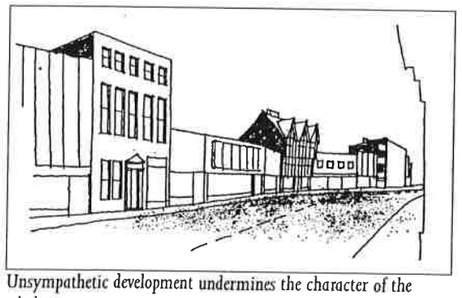


The rooms needing most maintenance and refurbishment are bathrooms and kitchens.
The layouts of flats and apartments should be rationalised so that these areas are able to be isolated and change made easier.

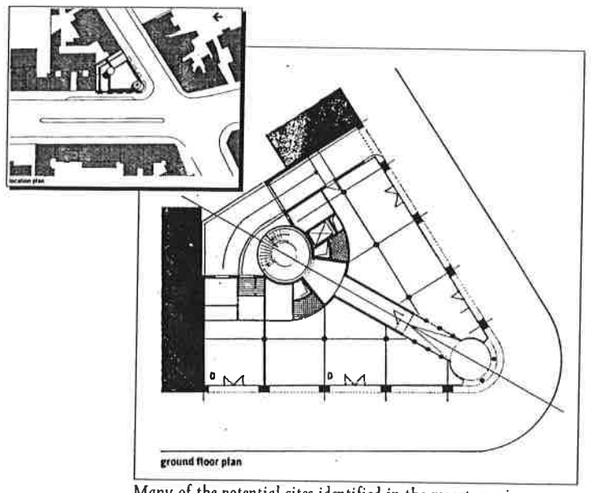
6. Respecting Local Character



New development should contribute positively to the character of its context. This requires building line continuity, expression of vertical and horizontal rhythms, regard to adjacent building heights and use of quality detailing and materials.



Unsympathetic development undermines the character of the whole street.



Many of the potential sites identified in the report require attention paid to corners. Standard off-the-shelf layouts are insufficient. Corner sites are visually prominent, have two frontages, occur at the confluence of two access-ways, allow for more parking, have potentially more entrances to different parts of the building and often therefore provide a special opportunity for mixed uses. Their landmark status should be recognised and prominent entrances incorporated.

Maximising the contribution of new housing development to meeting urban regeneration objectives

3.2.7 New housing development can be a powerful driving force in urban regeneration. New housing can make an important contribution by:

- *creating the values needed to reclaim derelict, vacant and under used urban land;*
- *sustaining and extending the range and quality of local facilities and services through increased demand and local spending power;*
- *creating and sustaining direct and indirect employment in the construction and associated industries.*

3.2.8 New housing can therefore not only transform the physical character of areas, but it can also make an important contribution to London's economy. The importance of this wider contribution cannot be under-estimated: LPAC have estimated that London effectively exports back to the surrounding South East region some £10 billion of indigenously produced GDP, almost 30 times more than it receives as public regeneration investment. New housing provision can not only help address labour market imbalances in the region, but also enable more of the wealth created in London to be spent in London.

Giving as many people as possible an opportunity to walk to facilities and public transport

3.2.9 A fundamental objective in planning for new housing development in London, is to reduce peoples need to travel by car. This implies a strong preference for locating new housing where residents will have a real opportunity to walk to a good range of local facilities (jobs, shops, leisure, etc.) and to public transport serving a range of destinations.

3.2.10 Town centres and to a lesser extent public transport corridors provide this opportunity. Locating new housing development in areas within comfortable walking distance of centres (either 800m, or a 10 minute walk); within what we term the "Ped-shed" can provide residents with a realistic choice to walk and use public transport rather than the car.

3.2.11 There are several indications that new housing close to town and district centres will become increasingly popular. In terms of transport, the balance of advantage will increasingly shift from the car towards public transport and walking as congestion grows and public transport improvements and priority measures are implemented. This will affect the choices people make about where they want to live, with the relative attractiveness of the more remote car dependent suburbs declining in comparison to areas which are convenient for good quality public transport and local facilities. Moreover, with 80% of the additional households expected to be people living alone, it seems likely that there will be a strong demand for housing in areas offering entertainment and leisure as well as shopping and jobs.

3.2.12 Maximising pedestrian accessibility to facilities and public transport is not only about new development. It should also be about improving pedestrian access within existing areas through measures such as better sign posting, more convenient crossing points, making walking routes attractive and safe and by creating addition entrances to stations to increase their walking catchments.

Encouraging measures and forms of housing which seek to reduce people's propensity to own cars

3.2.13 Transport and planning policy has, to-date, responded to the pressures arising from increasing car ownership and use through traffic management measures such as the introduction of one way streets, traffic calming and controlled parking as well as seeking to improve the quality and reliability of public transport. These are important and necessary measures, but with car ownership in London continuing to grow at the rate of 23,000 additional cars every year, it is clear that not only do these approaches need to be strengthened (for example, through the reallocation of road space from the car to public transport and cycling), but that they need to be complemented by strategies which actively seek to encourage people not to own their own car.

3.2.14 This is important not only because car ownership encourages use (i.e. because once purchased trips are seen as free and indeed necessary to justify the purchase), but also because of the significant areas required to accommodate parked cars. This impacts on the quality of residential areas, with space that could be given over to landscaped amenity areas devoted to parking, which in turn significantly effects the intensity with which housing land can be utilised.

3.2.15 Locating new housing development where people are within comfortable walking distance of pubic transport and facilities can reduce the need for people to use a car. But, if this potential is to be realised new housing must reflect the reduced need for car ownership. In our view this means providing less parking space, or no parking space at all, and encouraging people to share cars rather than owning their own. In Annex 1 we review best international practice in two areas: first, in the development of car free housing; and second, in establishing Neighbourhood Car Fleets. These approaches which seek to reduce the propensity for individual car ownership are closely related to the analysis of the potential for new housing close to London's town centres reported in Chapter 4.

Enhancing the quality of the urban environment and community and social facilities

3.2.16 New urban housing cannot be viewed in isolation from the quality of the urban environment and the social and community infrastructure needed to support and sustain a high quality of urban life. At the most general level a good quality environment and facilities add to the attractiveness of areas, stimulate the demand for housing and encourage land to be used intensively. Conversely a poor environment and poor support facilities detract from the attractiveness of

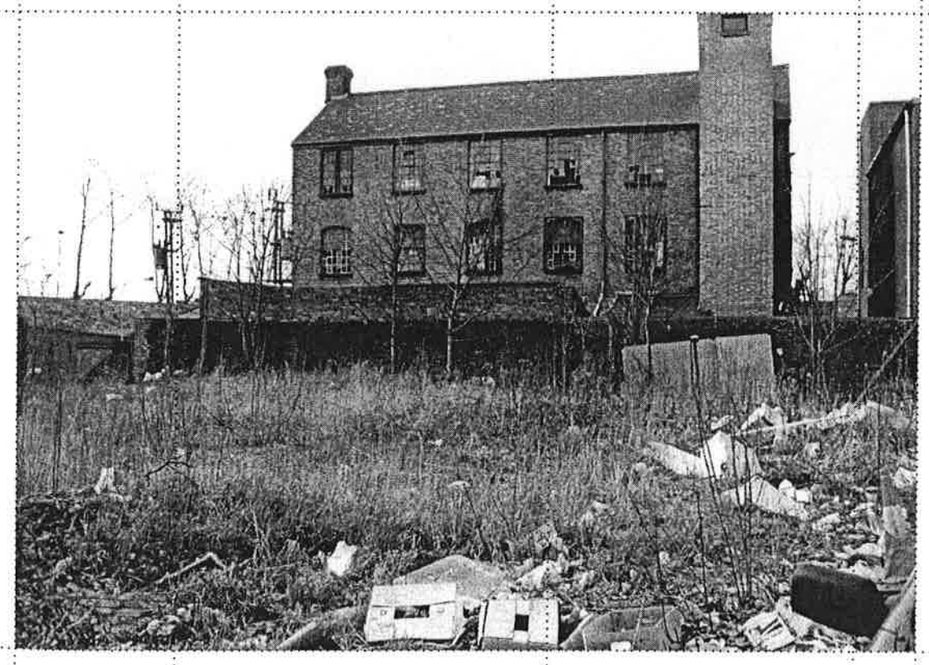
areas and can result in a vicious circle where low expectations produce poor quality development which leads to lower quality and yet lower expectations.

3.2.17 This is fundamentally important, because it emphasises that urban housing potential is as much a matter of choice as it is of fact. The more attractive the urban area becomes as a place to live the more the development industry will be stimulated either to build houses in areas where demand and development activity were previously low or to develop land more intensively reflecting stronger demand and rising land and property values.

3.2.18 Improving the quality of the urban environment and the quality of community and social facilities is not therefore a marginal or optional consideration. It is intimately bound up with London's ability to accommodate additional housing at both the local and strategic levels.

Part 2

The Potential for New Housing



4 Town Centre "Ped-sheds"

4.1 Introduction and overview

4.1.1 This Chapter examines the potential to accommodate new housing within what we term London's "Ped-sheds": the areas within 10 minutes walking distance of a town centre which offer a range of amenities, services and employment opportunities as well as access to public transport.

The analysis presented in this chapter shows that:

- *there is significant potential to accommodate new housing within town centres and their surrounding ped-sheds;*
- *the extent of this potential varies considerably between centres;*
- *the ability to accommodate new dwellings is greatly influenced by planning policies and standards governing their design;*
- *a site specific "design led" approach produces better residential development than tends to be possible under current UDP policies and standards;.*
- *new residential development within town centre ped-sheds can make a significant contribution to enhancing urban quality;*
- *some sites may be constrained by issues of land assembly;*
- *development values increase with the intensity of development; and*
- *residential development within town centre ped-sheds could make a significant contribution to meeting London's housing requirements.*

4.1.2 We begin by considering why town centre ped-sheds demand and require separate and distinct analysis as a source of housing potential. We then describe, in some detail, the approach developed by the study, before assessing the potential of town centre ped-sheds to accommodate new housing at the local and strategic levels.

4.2 *Why focus on town centre Ped-sheds?*

4.2.1 The belief that town centres can, and should, be the focus of significant new residential development is underpinned by four overlapping propositions:

i) *Fostering more sustainable patterns of development and transport*

4.2.2 A fundamental objective for sustainable development in London is to reduce the need for people to travel by car. This means giving a high priority to residential development in areas where people will have a real opportunity to walk to jobs, local facilities, services and to public transport serving a variety of destinations. Town centres and their hinterland within, say 800 metres or 10 minutes walking distance, provide this opportunity.

4.2.3 Pedestrian catchments are a well established planning tool (see, for example, LPAC's Open Space Hierarchy) but they have recently attracted particular attention in Australia where attempts are being made to increase population density around local facilities, and where the term "Ped-shed" was coined.

4.2.4 London, with its network of well developed centres and public transport starts with a major advantage. But, new residential development can add further to the mixed-use character of many centres and support the development of a more sustainable urban structure of denser centres of activity linked by public transport.

ii) *Enhancing the quality of Town Centres*

4.2.5 Competition from new out of town and off centre developments and the growth in traffic have, in particular, caused a decline in the environmental and physical quality of many centres. Yet, they remain the focus of community life and recent years have seen a strong commitment to enhancing their quality, vitality and viability.

Planning policies must seek to reduce Londoners dependence on the car. Town centres are the focus of the local public transport network. Bus only lanes could further enhance the accessibility of London's centres.

Town centres remain the hub of community life, providing jobs, shops, leisure and services. Recent years have seen a growing commitment to strengthening their vitality and attractiveness. A Ped Shed housing programme could be a complimentary intiative to aid the robustness of town centre activity.

4.2.6 New residential development can make an important contribution to meeting these objectives through the re-development of vacant, derelict and under-used land, by helping to sustain and enhance the range of local services and facilities; and by extending the life of centres beyond business hours.

iii) *Matching the patterns of household demand*

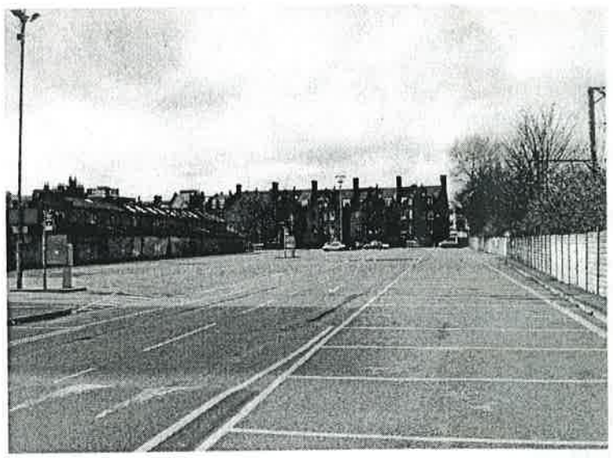
4.2.7 The analysis of the projected patterns of household demand in Chapter 2 shows that the vast majority of the additional households will not be conventional families, but rather single people aged 20-60. There is good reason to suspect that many single people living alone will value town centre housing because of the proximity to retail, leisure, entertainment and social facilities as well as the ability to live closer to work and public transport. New housing in town centres can add to the choice of housing that is already available and reflect the changing pattern of demand.

iv) *Opportunity*

4.2.8 These potential benefits would count for little if the physical opportunity for new residential development did not exist. There are good reasons why centres and areas around them can be expected to be the source of significant potential. Most importantly, centres tend to be a focus for urban change:

- *land is redeveloped and uses turn over more rapidly than elsewhere;*
- *major development proposals, such as for new roads can redefine the land use pattern giving new frontage and access to sites but causing others to be blighted;*
- *development can be slow to occur because of fragmented land ownership's and speculation; and*
- *businesses many of which are or become marginal, come and go with the economic and business cycles.*

These factors suggest that town centres could yield considerable potential for new housing.



As these photographs show there is considerable potential to capitalise further on the locational advantages of ped-sheds around town centres. Too often such centres, with their facilities and good access to public transport, are characterised by low levels of activity with extensive areas of surface car parking and land in marginal use.

4.3 *Approach and methodology*

4.3.1 The following sections set out the method and approach developed by the study. This is described in some detail, both to make clear the basis on which the potential has been identified, and to enable Boroughs to replicate the approach for their own centres.

Step 1: Selection of case study centres

4.3.2 Four centres: Bromley, Hackney (Mare Street), Walthamstow and Hounslow were selected for analysis. The case study centres were initially limited to four to enable the survey work described below to be conducted in sufficient detail. The centres were selected in an attempt to reflect the varying characteristics of London's town centres in terms of their geographic distribution, vitality and size. In terms of LPAC's classification of town centres, Bromley and Hounslow are classed as Metropolitan Centres, Walthamstow is a Major Centre while Hackney is a District Centre.

Step 2:Definition of the Ped-shed

4.3.3 The term 'ped-shed' in this report refers to the area within 800 metres (approximately 10 minutes walking distance) of a town centre. The ped-sheds for our case study centres were defined by: first, identifying the core town centre area in terms of retail, commercial and administrative uses; and then plotting an 800m catchment using the method developed in "Open Space Planning in London" for the identification of park catchments (LPAC 1992). In essence the catchment area is plotted from the edge of the centre following the street pattern and taking into account the severance effects of busy roads and railway lines.

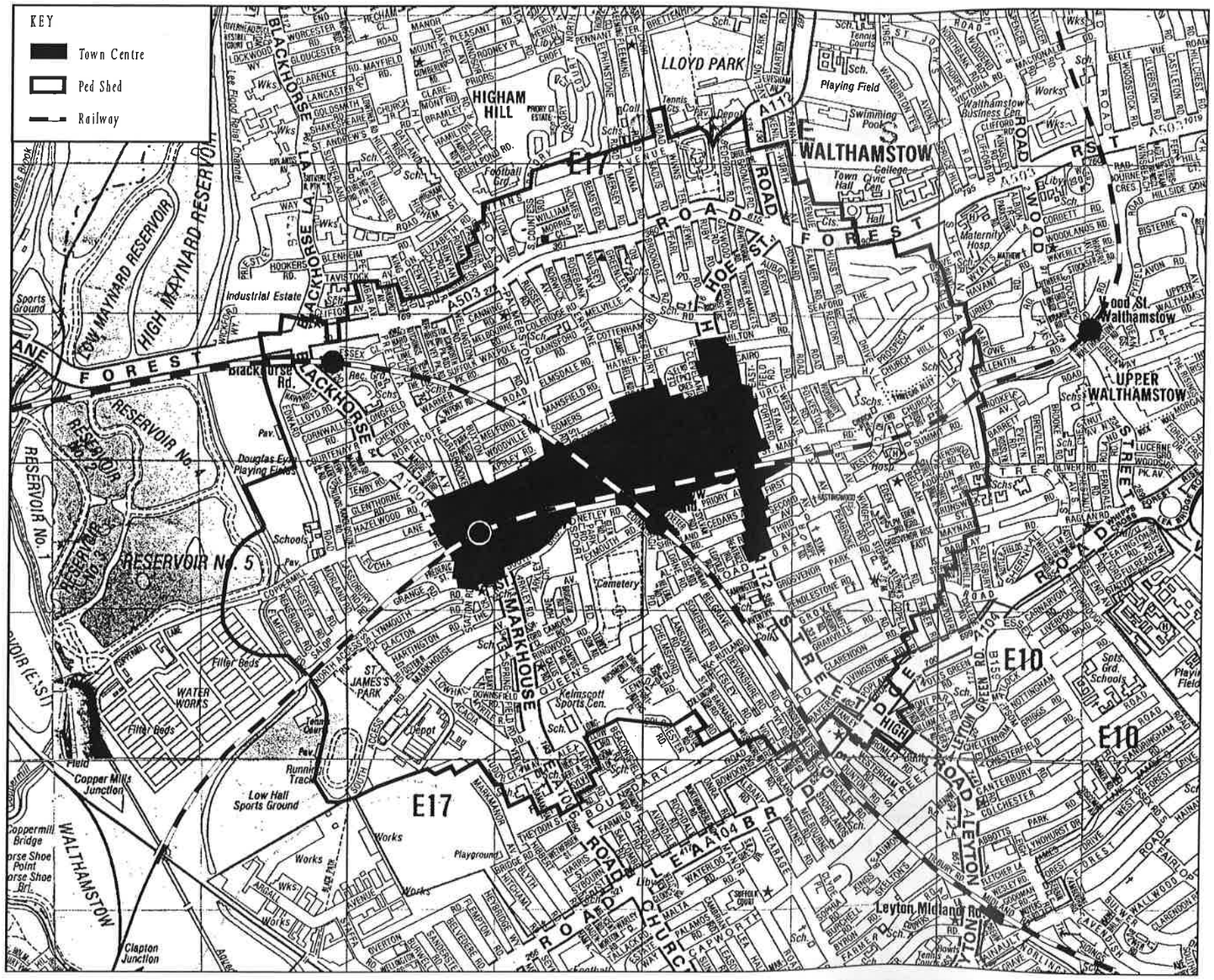


Figure 4.1
The ten minute walking catchment or "ped-shed" around Walthamstow Town Centre

Step 3: Survey of the Ped-sheds

4.3.4 A street by street survey was then conducted of each of the ped-sheds. This sought to identify the opportunities for new residential development arising from:

- *small gap and infill sites of less then 1ha;*
- *backland sites; and*
- *the redevelopment of derelict or under-used land.*

4.3.5 The survey explicitly excluded analysis of opportunities for the conversion of vacant office space into flats (already examined by the Offices to Flats Study) and for the conversion of space above shops and vacant shops into residential units (is to be subject of a further study). Large sites of more than 1ha were noted but are not considered as part of this study; again they are the subject of a separate study.

4.3.6 The full potential of town centres to accommodate new housing therefore needs to take into account not only the potential considered here, but also that identified by other relevant studies.

4.3.7 The surveys were conducted using 1:2500 scale mapping and without regard to existing UDP policies and proposals. The aim is to provide an unconstrained assessment of what could be possible with each ped-shed. It is accepted that some of the sites identified may already be subject to committed proposals and that others might be constrained by access or ground conditions. It should also be borne in mind that the survey is only a snap shot: some of the sites will already be committed for other non-residential uses, but equally other sites will become available over time.

4.3.8 The opportunities identified by the surveys were then mapped and their net and gross area measured.

Step 4: Case Study design Exercises

4.3.9 From the sites identified by the ped-shed surveys 27 sites were selected for case study architectural/urban design analysis. These case study sites were selected to:

- represent the range of sites identified overall in terms of their character, size, location and configuration; and
- provide interesting (and indeed sometimes challenging) examples, showing how new residential development could be accommodated in ways which enhance environmental quality.

4.3.10 The purpose of the case study design exercises was threefold:

- to provide a assessment of site capacity i.e. based on physical design analysis rather than the application of standard assumptions about density;
- to expose the potential of different design options, reflecting different assumptions about car parking, density and other development standards, on site capacities and the form and quality of development; and
- to illustrate how a site specific design-led approach can produce quality residential environments which enhance local character and quality.

4.3.11 For each of the case study sites, three design options were proposed:

- Option 1: based on the application of existing UDP policies and standards, but in some cases varying them slightly where the rigid application of a standard, for example, on over looking distance, would have prevented development of a site altogether;
- Option 2: a site specific design led approach with the requirement for off street car parking reduced to one space per unit and with no provision for visitor parking. The "design-led approach" seeks to reflect the concerns addressed by design standards, but seeks to do this through a design approach taking account of established building practice in the locality rather than by applying uniform standards;
- Option 3: the same design-led approach, but with the requirement for off-street car parking removed altogether.

4.3.12 The design exercises produced two outputs for each option:

- a site layout plan at 1:1250 scale showing the building footprint and the location of car parking, private and communal open space, accesses and roads; and
- a three dimensional axonometric drawing illustrating the form and character of the development envisaged.

4.3.13 To ensure consistency the design work was based on a "template" of dwelling types and sizes. The assumed dwelling and room sizes are based on, but tend to be slightly more spacious, than current private sector practice. The templates of dwelling types and room sizes used are illustrated in Figure 4.2.

4.3.14 The mix of houses and flats on each site was determined in relation to the local context, the opportunities and constraints of the site and, in the case of Option 1, by UDP policies and standards. As one would expect the mix of houses and flats varies between the three options.

4.3.15 It is important to point out that the design exercises were conducted within the time and resources available to the study. They are therefore only intended to illustrate how sites could be developed under different assumptions and to expose what impact different approaches to policies and standards could have on the form of development and site capacities.

Step 5: Estimating the capacity of the Ped-sheds

4.3.16 The calculations of site capacity for each of the case study sites under each of the three design options then provided the basis for estimating the capacity of the other sites identified in the ped-shed and then for each of the ped-sheds overall.

4.3.17 This was done by matching each of the sites to the most similar case study site in terms of character, size, configuration and the form of development considered appropriate. In seeking the most appropriate comparator we drew on all 27 case study sites i.e. sometimes matching sites in one ped-shed to a case study site in another. The one exception to this was the Option 1 case studies in Hackney where the form of development tended to the more intensive than in the other three centres, reflecting a lower UDP parking standard.

Step 6: Initial analysis and assessment

4.3.18 Having surveyed four ped-sheds, identifying opportunities for new residential development and estimating their capacities, we then sought to examine the differences between the ped-sheds in terms of the amount and nature of capacity. This was to see whether any patterns or relationships existed that might be significant in thinking about the potential of other ped-sheds across London.

4.3.19 As part of this we related the potential of each ped-shed by dividing the ped shed into the following discrete zones:

- Town centre: consolidated retail and employment areas which include primary retail frontage and associated development, office development, municipal, cultural and leisure facilities;
- Consolidated Residential Areas (CRA): dominated by housing although they may include elements of open space and isolated retail and community facilities;
- Employment Areas : consolidated employment areas other than the town centre. Often industrial areas they may also consist of commercial development;
- Institutional Areas: consolidated areas of municipal use which lie outside the town centre such as schools and hospitals;

- *Open Space: encompassing all public open space, private sports grounds, allotments and nature reserves.*

4.3.20 In between these consolidated areas lie "interface zones", which are the awkward, mixed, transitional areas where one form abuts another. They can occur in a broad range of locations including:

- *around the periphery of consolidated town centres;*
- *along main through routes which are lined with retail development;*
- *they may occur where two consolidated areas meet, particularly housing and employment areas; and*
- *they may also occur as mixed use areas within consolidated housing areas.*

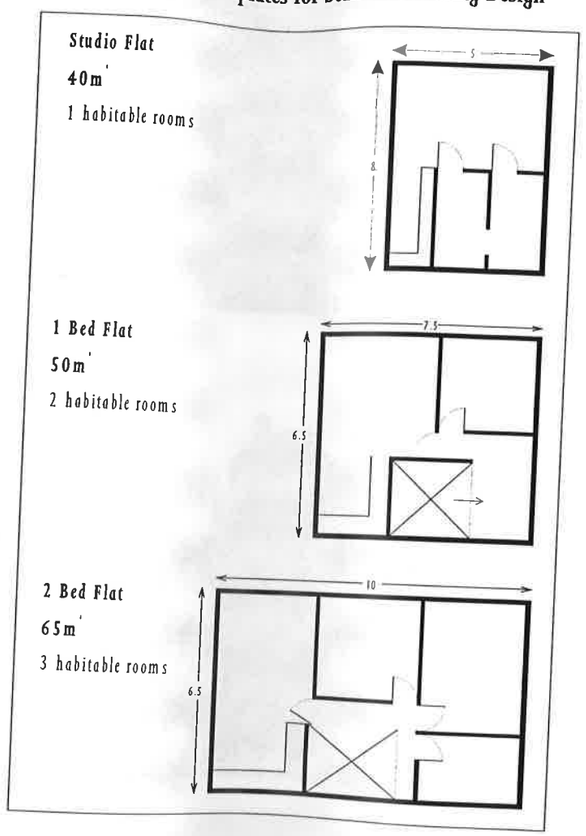
4.3.21 Town centre interface zones are typically mixed use areas with employment uses like retail, office or light industry as well as community and municipal uses and residential development. Interface zones are more common and extensive in older urban areas, declining employment areas and regeneration areas.

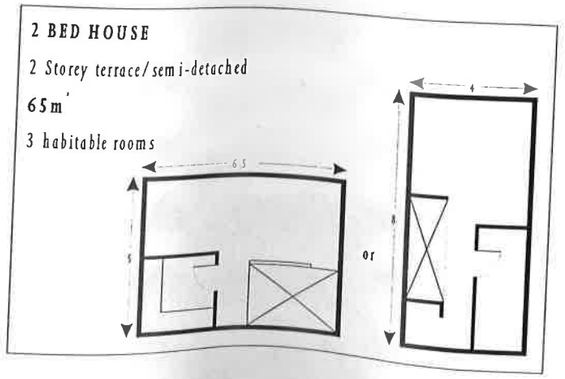
4.3.22 By relating the potential for new residential development to land use in ped-shed areas, our analysis identified a number of significant relationships, but also highlighted variations between the four ped-sheds. Consequently, further case study centres were chosen to enable conclusions to be more confidently drawn.

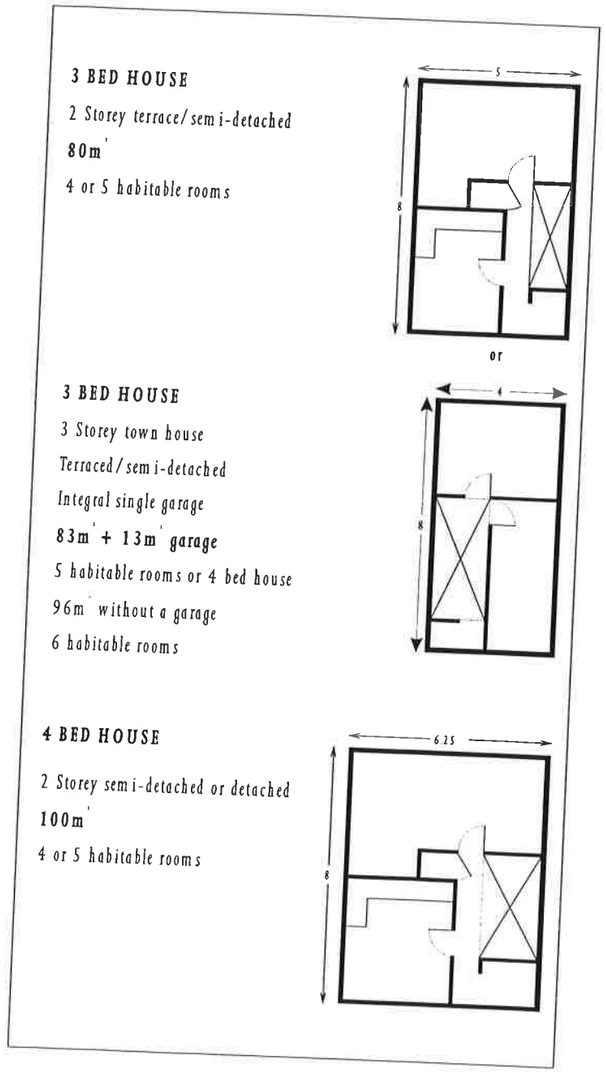
Step 7: Analysis of development values

4.3.23 At this stage we also sought to explore the relationships between the intensity of development and its value and viability. Four case study sites within the ped-sheds were surveyed by experienced development and property surveyors and current market values estimated for each of the three development options. This was done using the axonometric drawings showing the form of development envisaged, details of the development mix and design parameters for each option and in relation to the values being achieved for similar dwellings in the locality.

Figure 4.2 Step 4 Templates for Standard Housing Design







Step 8: *Analysis of additional centres*

4.3.24 To examine whether, and to what extent the patterns observed in Bromley, Hackney (Mare Street), Walthamstow and Hounslow are reflected in other centres we examined six further centres. Again these were selected to provide a good geographic spread and to reflect the diversity of London's centres.

4.3.25 However, as the first four centres were weighted towards larger metropolitan and major centres (in terms of LPAC's Classification of Town Centres) the additional six centres included five more district level and one neighbourhood centre. The six additional centres were:

- *West Norwood (Lambeth);*
- *Wealdstone (Harrow);*
- *Erith (Bexley);*
- *Chadwell Heath (Barking & Dagenham);*
- *Willesden Green (Brent):and*
- *Raynes Park (Merton);*

4.3.26 Each of these six centres was then subjected to a streamlined version of the method described for the initial four centres. This involved:

- *the definition of the ped-sheds;*
- *site survey analysis;*
- *the definition of land use/character areas; and*
- *estimating site and ped-shed capacities.*

4.3.27 This element of work was conducted at 1:10,000 scale and site capacities were estimated using average densities derived from the 27 infill case study sites from the initial four centres, rather than by matching each site to a case study comparator.

Step 9: *Analysis and assessment of London-wide implications*

4.3.28 On the basis of this analysis of 10 case study ped-sheds, we then sought to assess in, broader terms, what the London-wide potential might be if the potential identified was replicated across London.

4.4 *Findings*

4.4.1 The following sections now present the findings of the analysis.

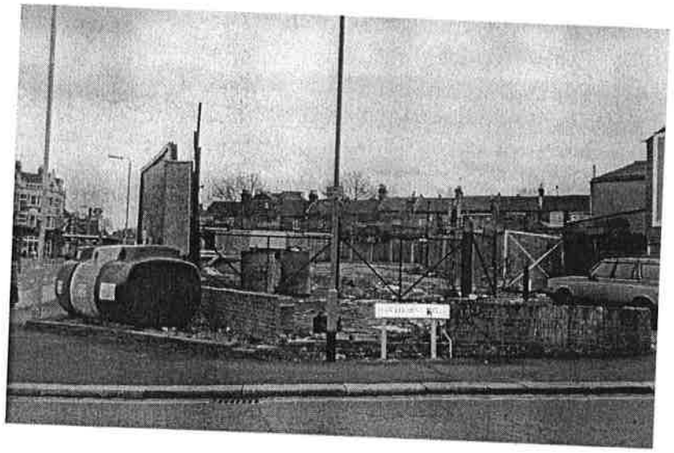
There is significant potential to accommodate new housing within town and district centres and their surrounding ped-sheds.

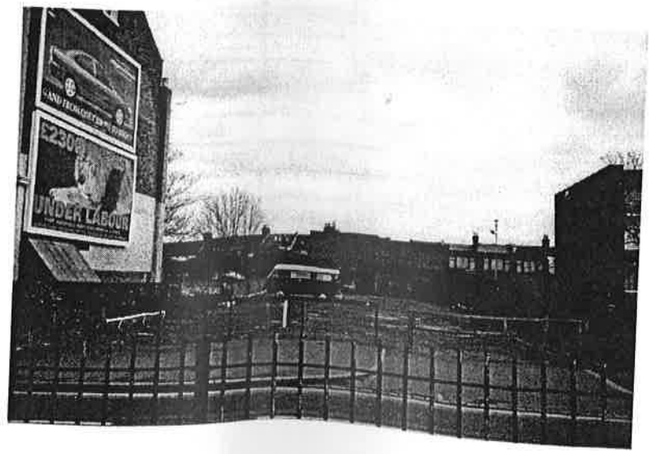
4.4.2 The street by street survey of our 10 ped-sheds identified a total of 36 ha which could be developed for housing. This could accommodate between 2,500 and 5,000 new dwellings. The estimate comprises predominantly gap/infill sites and areas of vacant, derelict or under-used land. The photographs opposite give an indication of the variety of potential that exists within the ped sheds.

4.4.3 While we have excluded sites larger that 1 ha (0.5ha in central London) it is worth noting that if the "large" infill /derelict sites identified within the ped sheds were included then the total for the 10 ped-sheds would increase to 62 ha. The estimate also excludes opportunities to convert vacant space above shops or vacant office / commercial space to residential. The potential for backland development within the ped-sheds is considered in Chapter 8.

There was considerable variation between centres in the amount of potential identified.

4.4.4 The amount of gap/infill potential identified varied considerably between the 10 case study ped-sheds. We found the greatest potential in Hounslow and Hackney (10.75 ha and 6.52 ha respectively) and the most modest potential in Raynes Park (0.63ha) and Chadwell Heath (1ha). In general it seems that the amount of potential is related to the size of the centre (i.e. larger centres have proportionally larger ped-sheds) and to the land-use pattern within the ped-shed.





These photographs give an indication of the type of potential within town centre ped-sheds. Disused and under-utilised hard-standings, derelict corner and infill sites and ill-maintained allotments could be considered.

4.4.5 The classification of the ped-shed areas into land use/character types (see Step 6) produced some interesting variations between the centres which seem to be related to the variations in the potential identified.

4.4.6 Figure 4.3 opposite shows the area given over to each of the land-use/character types identified and relates this to the amount of potential for new housing identified. It shows that the overall ped-shed potential tends to be highest in those centres with the largest amounts of "interface zone" and lowest in centres where established residential and commercial areas, open space and public uses predominate.

4.4.7 Taking this a step further and looking at the distribution of potential within each ped-shed, we found that potential was heavily concentrated within the "inter-face zones". Overall 60% of the potential identified (on gap/infill sites and on areas of vacant, derelict or under-used land) was found within inter-face zones. This means that 60% of the potential identified within the ped-sheds was related to just 15% of the ped-shed area. As Figure 4.4 overleaf shows, however, there was some variation between the centres, with the proportion of potential identified within the interface area varying between 0% and 90%. It should also be noted that on average 33% of infill capacity is located within Consolidated Residential Areas, with a range between 10% and 76% among the 10 centres.

Figure 4.3 The Relationship Between Character Area and Housing Potential

Bromley	Size (Ha)	Option 1	Option 2	Option 3
Town Centre	17	0	0	0
Interface Zone	55	158	270	363
CRA	252	39	58	105
Employment Zone	3.1	5	12	28
Open Space*	43	0	0	0
Institutional	1.4	0	0	0
Total	**370.1**	202	340	**496**

Hounslow	Size (Ha)	Option 1	Option 2	Option 3
Town Centre	20.6	1	2	3
Interface Zone	38	347	515	1032
CRA	208.9	188	269	388
Employment Zone	0	0	0	0
Open Space*	39.5	60	69	112
Institutional	12	0	0	0
Total	**307**	**596**	**855**	**1535**

Walthamstow	Size (Ha)	Option 1	Option 2	Option 3
Town Centre	25.7	2	5	5
Interface Zone	74	136	219	266
CRA	263.1	192	244	292
Employment Zone	3.5	13	16	18
Open Space*	38.4	0	0	0
Institutional	14.3	0	0	0
Total	**404.7**	**343**	**484**	**581**

Hackney (Mare St	Size (Ha)	Option 1	Option 2	Option 3
Town Centre	15.2	28	33	53
Interface Zone	**41.3**	373	521	731
CRA	235.4	99	115	197
Employment Zone	2.9	0	0	0
Open Space*	20.7	0	0	0
Institutional	20	0	0	0
Total	315.5	500	669	981

Willesden Green	Size (Ha)	Option 1	Option 2	Option 3
Town Centre	**8.1**	**0**	**0**	**0**
Interface Zone	**25.7**	78	88	120
CRA	210.5	9	9	11
Employment Zone	0	0	0	0
Open Space*	8.7	0	0	0
Institutional	0	0	0	0
Total	253	87	97	131

*Although all open space has been included in this designation, potential redevelopment was limited to poor quality and under-utilised spaces such as disused allotments or poor quality incidental open space.

Chadwell Heath	Size (Ha)	Option 1	Option 2	Option 3
Town Centre	7.8	8	13	30
Interface Zone	21.2	0	0	0
CRA	158.4	26	62	142
Employment Zone	14.8	0	0	0
Open Space	15.8	0	0	0
Institutional	0	0	0	0
Total	**218**	**34**	**75**	**172**

Raynes Park	Size (Ha)	Option 1	Option 2	Option 3
Town Centre	2.62	0	0	0
Interface Zone	8.03	20	32	67
CRA	164.95	9	15	27
Employment Zone	0	0	0	0
Open Space*	34			
Institutional	0	0	0	0
Total	**209.6**	**29**	**47**	**94**

Erith	Size (Ha)	Option 1	Option 2	Option 3
Town Centre	10.4	0	0	0
Interface Zone	44.6	175	313	389
CRA	73.8	33	77	88
Employment Zone	40	0	0	0
Open Space*	12.5	54	66	94
Institutional	0	0	0	0
Total	**181.3**	**262**	**456**	**571**

W.Norwood	Size (Ha)	Option 1	Option 2	Option 3
Town Centre	11.23	0	0	0
Interface Zone	**17.7**	**142**	**181**	**216**
CRA	202.3	138	180	238
Employment Zone	0	0	0	0
Open Space*	22.37	0	0	0
Institutional	0	0	0	0
Total	253.6	280	361	454

Wealdstone	Size (Ha)	Option 1	Option 2	Option 3
Town Centre	**9**	**0**	**0**	**0**
Interface Zone	**68.5**	**60**	**84**	**110**
CRA	101.6	28	34	57
Employment Zone	25.8	0	0	0
Open Space*	9.04	0	0	0
Institutional	0	0	0	0
Total	213.94	88	118	167

Figure 4.4 Proportion of Infill Capacity within the Interface Zone

	Potential Within the Interface Zone*	"Interface Zone" as a percentage of the ped shed
Bromley	76%	15%
Hounslow	61%	12%
Walthamstow	43%	18%
Hackney (Mare Street)	75%	13%
Willesden Green	90%	10%
Raynes Park	69%	4%
Erith	67%	25%
W.Norwood	49%	7%
Wealdstone	68%	32%
Chadwell Heath	0%	10%
Case Study Average	**60%**	**15%**

* The proportion of potential within the interface zone is an average of the potential from Options 1-3. There is a difference between the options due to the variation in dwelling mix between each scenario.

The ability to accommodate new dwellings is greatly influenced by planning policies and standards governing their design

4.4.8 The three design options explored for each of the infill case study sites (see Step 4 in the methodology) show very significant differences in the intensity with which sites can be developed. Overall the case study design exercises show the number of units which could be accommodated on a given site increasing by between 50% - 60% in Option 2 (Enhanced) compared to Option 1 (Current UDP policies and standards) with Option 3 (no off street car parking provision) accommodating over twice as many dwellings as Option 1. Figure 4.5 opposite shows the variation between the three options for each of the 27 design exercises (Ref Annex 2).

Figure 4.5 Variation in Site Capacity - Options 1 - 3

Design Exercise	Option 1 (No. of Units)	Option 2 (No. of Units)	Option 3 (No. of Units)
1	10	18	32
2	10	11	32
3	20	26	27
4	27	32	40
5	8	9	16
6	9	12	15
7	8	8	16
8	42	54	63
9	21	34	44
10	14	22	24
11	7	10	22
12	17	20	24
13	26	45	77
14	9	12	17
15	8	10	31
16	74	87	169
17	25	30	62
18	3	6	12
19	54	126	164
20	6	14	32
21	53	62	64
23	5	8	23
24	4	6	10
25	2	4	6
26	6	7	8
27	46	108	124
28	16	20	32
Total	**530**	**801**	**1186**

4.4.9 Applying these different design approaches to all of the infill sites identified in the 10 case study ped-sheds (see Step 5 in the methodology) produces capacity estimates of 2500 units under Option 1; 3,500 units under Option 2; and 5,000 under Option 3.

4.4.10 These differences are significant in two respects: first, in terms of sustaining and extending the range and quality of services and facilities and supporting town and district centre vitality; and second in maximising the number of people who have a real opportunity to meet most, if not all, of their daily needs on foot, rather than having to rely on a car.

A site specific "design led" approach can produce better residential development than is possible under current UDP policies and standards.

4.4.11 The increases in site capacity achieved in Options 2 and 3 would count for little if they were achieved at the expense of the quality of development. In fact we believe that the more intensive forms of development achieved through our design-led approach have produced better residential schemes as compared to those prepared under current UDP policies and standards. The design exercises for all the 27 infill sites within the ped-sheds are presented in Annex 2 together with a brief urban design commentary.

4.4.12 The most important point about the design-led approach, is that it allows the architect to respond to the particular character, opportunities and constraints of a site in a creative way, rather than having to work within a set of pre-determined standards which have been designed for universal application. This is especially important in locations close to town centres where the character of existing development is often much denser and "more urban" than in a sub-urban residential environment.

4.4.13 Three qualitative differences between the options are worthy of particular note:

a) Scale and relationship to surrounding character

4.4.14 The sketch schemes designed under Options 2 and 3 tend to be more in scale and more sympathetic to their surrounding context than those produced following current UDP policies and standards. In contrast many of the Option 1 schemes appear to be overwhelmed by their surroundings and give the impression of having been transplanted from a sub-urban context to an urban town centre location with little or no regard for the established townscape context. As a result they often undermine rather than enhance urban quality.

b) Cars and Car Parking

4.4.15 A defining feature of many of the Option 1 schemes is that a very high proportion of the site area is given over to car parking and roads. Typically this is in the order of 25% - 40%, (although somewhat lower in Hackney where the requirement for off-street car parking is lower). While theoretically car parking can be "hidden" in basements or under-crofts this is generally only possible where development values are sufficiently high to off-set the additional costs. For the most part surface provision is the norm. The consequence tends to be residential environments which are dominated by the car and by "hard" car parking areas. Moreover, as many of these communal areas are "designed" to require minimum or no maintenance they include little landscaping to soften the impact of cars and hard surfaced areas. The result is often poor quality environments with buildings rising directly from the car park.

4.4.16 The reduced off-street parking requirement in Option 2 (one space per unit) significantly lessens the impact of car parking provision on the residential environment and provides the opportunity for more garden space, better landscaping and more interesting building forms as well.

4.4.17 While removing the requirement for off street parking altogether gives rise to obvious benefits in terms of the character and quality of the development possible, it may be argued that this is achieved by displacing the parking requirement onto surrounding streets.

4.4.18 Where on-street spaces are available (and residents own cars) then this can be an efficient way of accommodating parking demand. Where on-street spaces are not available then consideration will need to be given as to whether local authority intervention is required to regulate parking or whether a deliberate decision is taken to allow people to reconcile their ownership and use of cars to the space which is available.

4.4.19 If regulation is needed then this could take a variety of forms:

- *controlled residents parking (with perhaps non-car owning residents allowed to trade their parking entitlement);*
- *planning agreements or restrictive covenants restricting car ownership;*
- *offering residents secure car parking at a near-by local authority car park; or*
- *establishing a neighbourhood car fleet from which members can hire cars whenever they need. Establishing a car pool scheme in advance could encourage more car free schemes to come forward, encourage prospective residents not to buy a car or to sell their existing car.*

The concepts of car free housing and neighbourhood car fleets are considered in more detail in Annex 1.

c) Landscape and setting

4.4.20 Reducing or removing the need for on site car parking provides the opportunity to introduce greenery and landscape features into the development. Our Option 2, and 3 schemes feature larger private rear gardens, a mix of private patio space and communal space, and communal landscaped gardens. Where the opportunity is created for a communal space through the removal of cars, care will be needed in the design of the space and in providing proper maintenance so that the space provides maximum value for residents.

An alienating public link. Not only does the open space fail to provide public benefit; it creates a sense of neglect and danger.

Attractive and well designed open space adds to quality and defines place

New Residential development within town and district ped-sheds can make a significant contribution to enhancing urban quality.

4.4.21 The quality of the urban environment varied considerably within each of our case study ped-sheds as well as between centres. The components of quality which we observed were similar to those identified by earlier studies (see, for example, The Quality of London's Residential

Environment, LPAC & GOL 1994; The Quality of London's Urban Environment GOL 1995) such as:

- *attractive and well maintained open space areas;*
- *unobtrusive and well managed car parking;*
- *a high level of maintenance in the public and private realms;*
- *care over the design and appearance of buildings and spaces in public view.*

4.4.22 The characteristics of poor urban quality tended to be the opposite of these components, but especially badly maintained or "forgotten" open space; broken down boundary walls to facilitate front garden parking; and sometimes an apparent lack of any concern for the external appearance of buildings, fencing or parking areas fronting public places.

4.4.23 Our land use/character area classification was not intended to be a detailed quality audit, but aspects of the classification do reflect qualitative differences in the urban environment. In particular our "interface zones" were defined so as to distinguish between on the one hand: core town centre uses and the consolidated areas (residential (or commercial/employment) surrounding them where the integrity of streets, buildings and spaces was being maintained and quality was moderate to high; and, on the other, the areas often found in between these more established and settled areas where land uses are more mixed and transitory and where quality is low or being eroded.

4.4.24 While we found examples of urban quality being eroded in each of our land use/character types, by far the greatest concentration was within the inter-face areas. Here we tended to find land and buildings in short term and marginal use, land which was vacant, derelict or underused, informal car parking, crudely placed advertising hoardings, scant regard for appearance of buildings or sites and their impact on the surrounding area. New residential development can make a significant contribution to enhancing the quality of these areas and be a catalyst in bringing about their regeneration.

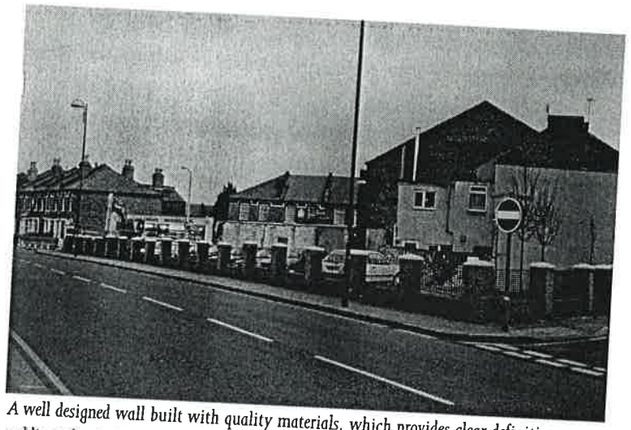
Some sites may be constrained by issues of land ownership, or development speculation

4.4.25 It was not practical within the time and constraints of this study to undertake site investigation work to identify any abnormal costs associated with the sites identified or to investigate issues of land ownership. However, our impression from site visits, is that only a very small number of the sites were likely to be subject to major cost creating constraints such as ground contamination or infrastructure. Nonetheless, it is likely that many of the sites identified could be constrained by factors such as:

- *ownership: different ownerships, ransom strips, land owned by companies in liquidation etc;*
- *speculation: land being held in the expectation of attracting a high value use such as retail or commercial leisure;*
- *existing buildings which need to be demolished and which add risk and cost;*
- *legal issues: tenancies, covenants, public and private rights of way etc;and*
- *existing uses and users: relocation of existing users from parts of some sites and the need to set capitalised development value against current returns from low risk uses such as open storage or car parking.*

Obtrusive parking in a bleak and environment. Also is "dedicated" parking like this the most efficient way of using Ped-shed land?

Welcome to our street. Shops and restaurants may need service areas, but they don't need to look like this.



A well designed wall built with quality materials, which provides clear definition to public and private realms

High quality and well designed housing can significantly enhance the character and quality of materials

In addition, as the analysis reported below demonstrates, potential housing sites may be constrained by planning policies and standards which restrict the amount of development, and hence its value, to below the threshold of viability.

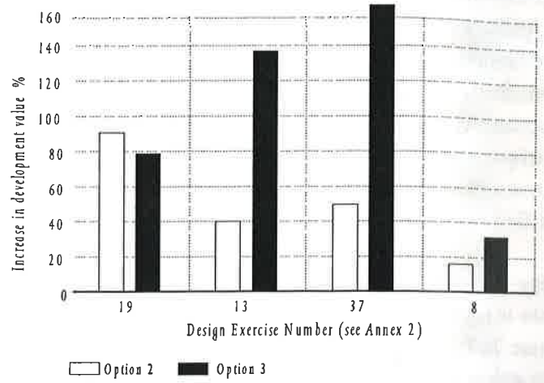
4.4.26 These constraints are common to much urban development and in many cases they are resolved through the normal workings of the property market. Indeed, this has recently been the case for several sites currently being developed for housing within our case study ped-sheds. However, the fundamental pre-requisite is for the development to generate sufficient value to cover the costs of development including the costs of overcoming any site constraints. Where costs exceed development value (either because of high abnormal costs or low demand / market value), or it is not possible to assemble the site through voluntary acquisition, assistance will be needed with gap funding and land acquisition through the use of compulsory purchase powers.

Development values increase with the intensity of development

4.4.27 A preliminary development appraisal of four case study sites (see Step 7 in the method and Figure 4.3) shows the estimated Gross Development Value increasing significantly with the intensity of development. The extent of the increase in value varied considerably between sites reflecting different rates of increase in the volume of development between the case study sites as well as changes in the dwelling mix between options and the differential values of different dwelling types. Overall the sketch schemes produced under Option 2 were found to generate values up to 91% higher than those produced under Option 1 while the values for Option 3 exceeded those for Option 1 by up to164%.

4.4.28 While this finding may appear axiomatic, it is in the context of this study, significant in two respects. First, because we have already concluded that the quality of residential schemes, within the ped-sheds, was higher under the site specific design led approach than that achieved under current policies and standards; and second, that these increases in value are often needed to make housing development viable in locations where it has to compete against other uses.

Figure 4.3 Percentage Increase in Development Value Over Option 1



Residential development within town and district ped-sheds can make a significant contribution to meeting London's housing requirements

4.4.29 The detailed survey and analysis of 10 town centre ped-sheds points to considerable potential to accommodate new housing in areas within walking distance of facilities and public transport. This potential is significant because of the strong relationship to other policy objectives of enhancing urban quality, making efficient use of urban land and reducing the need to travel as well as in terms of the capacity to accommodate new housing.

4.4.30 Inevitably it raises the question about how much potential there might be in ped-sheds London-wide? A definitive answer to this requires a comprehensive survey of each ped-shed as well as a recognition that even this can only provide a snap-shot: sites will come and go. But, the analysis presented in this Chapter does at least provide a basis for indicating the broad order of potential that might exist London-wide.

4.4.31 The difficulty in seeking to reach a London-wide estimate is that, as the analysis shows, the extent of potential will vary between ped-sheds. The analysis of these differences suggests that they are related not only to the size of the ped-shed, but also to the pattern of land uses within it and in particular to the extent to which a ped-shed includes areas of transition or interface. In turn these factors appear to be related to the nature of the property market: areas of strong and certain market demand and high land values tended to have smaller areas of inter-face than places where demand is weaker and less certain.

4.4.32 Based on this analysis we divided our 10 case study ped-sheds into three broad categories reflecting the level of potential identified:

- *high potential: weak property market, significant areas of inter-face;*
- *moderate potential: moderate or uncertain demand, some areas of inter-face; and*
- *low potential: a strong property market, limited areas of inter-face.*

We then classified London's other ped-sheds in the same way (discounting those – particularly in central London where it seemed that the potential for gap and infill development would be negligible). This then provided a basis for estimating, in very broad terms, the possible London-wide potential under each of the three design options. This is:

- Option 1: **52,000** *dwellings;*
- Option 2: **77,000** *dwellings*
- Option 3: **106,000** *dwellings*

4.4.33 These can only be very broad estimates, based on a series of assumptions. Nonetheless they do indicate that there is significant potential for new residential development within walking distance of town and district centres and public transport.

5 Other Small Housing Sites Beyond the Ped-Shed

5.1 Introduction

5.1.1 Building on the analysis in the last chapter this section examines the potential to increase the housing contribution from identified sites but which are "beyond the ped shed"; (the areas which are outside the 10 minute walking catchments of town centres across London) and thus not included in our estimate of ped shed potential.

5.1.2 The analysis presented in this Chapter shows that:

- *62% of outstanding permissions for sites of 0.2-1Ha recorded on the London Development Monitoring System (LDMS) lie within existing ped sheds;*
- *potential from sites of 0.2-1Ha in size which are currently recorded on the LDMS and outside ped sheds is fairly limited, only 38% (192 applications) fell into this category;*
- *applying an Option 2 design led approach with reduced off-street car parking indicates that these sites would increase their contribution to London's housing needs by 2,300 dwellings;*

More generally the analysis suggests that:

- *density and car parking requirements could be closely linked to a public transport accessibility index; and*
- *relaxation of planning standards and the use of a site-specific approach could unlock the potential of other currently unidentified sites.*

5.2 Approach and Methodology

5.2.1 The following section sets out the method and approach used to identify the potential capacity of housing sites beyond the ped-sheds. This is described in detail so that it is clearly apparent on what basis the potential has been identified.

Step 1: Identifying a data-source

5.2.2 The London Development Monitoring System (LDMS) database is a London wide system that monitors and records the status of all major (i.e greater than 1000 m^2 or 10 dwellings) residential planning applications. It acts very like a strategic planning register from which patterns of residential development activity can be monitored. The database was used as the baseline to identify sites with established housing potential.

5.2.3 In terms of the accuracy of the information, and especially the current planning status of sites, it should be noted that the database was last updated in February 1997, therefore it is possible that a number of the outstanding permissions on the database may well have now been implemented but equally new sites may have become available

5.2.4 Furthermore as the database only records the status of applications of 10 dwellings or more. an element of the potential capacity for areas beyond the ped shed will not be included

Step 2: Definition of Areas Beyond the Ped Shed

5.2.5 The term 'beyond the ped shed' refers to the areas across Greater London which are outside 800 metres walking catchments of town centres. The extent of the ped shed coverage for each of the London boroughs were defined in broad terms from UDP mapping. This left us with a patchwork of areas that could be regarded as more remote in terms of access to facilities.

Step 3:Discounting Database Entries

5.2.6 As the LDMS database records the status of *all* housing applications on sites of 0.2 Ha and above it was necessary to discount those sites that were:

- *recorded as being completed, in progress or superseded;*
- *larger than 1Ha; and*
- *within identified ped sheds*

5.2.7 The difficulty with discounting sites larger than 1Ha is that the database does not record site size; therefore a crude assumption had to be made about size based on the number of units proposed under each application. In order to do this it was necessary to decide a "cut off" residential unit figure above which it was reasonable to expect the site to be larger than 1 Ha. The figure used was 80 units per Ha. This figure assumed a density of 250 h.r.h (which is at the top end of current UDP ranges) and a mix of houses and flats.

5.2.8 In order to identify sites that were beyond town centre ped sheds it was necessary to cross reference the remaining site locations against the UDP mapping (see Step 2 in the method).

Step 4: Identification of existing and potential capacity

5.2.9 This discounting process left 192 of the original 2,400 database entries from which we could estimate potential. It is important to emphasise that we assumed that the existing potential of these sites had been based on the application of existing UDP policies and standards (See Figure 5.1). With this in mind it was decided that the capacity of the sites could be factored up to apply the more intensive forms of development identified by the design exercises.

5.2.10 Factoring the site capacities up by 50% to reflect the differences identified between Option 1 and 2 in the design exercises undertaken in the ped sheds clearly only provides a crude estimate of the possible increase in capacity. However without knowledge of the site sizes this was the only approach possible.

5.2.11 We concluded that in general it was inappropriate to factor up site potential by applying an "Option 3" - nil parking scenario in most cases. However, when carrying out a more site specific survey this option should not be discounted altogether as there may be situations where there is sufficient on-street car parking capacity and good public transport.

5.2.12 Given these methodological issues the findings presented in the following section should be taken as indicative of the potential to increase capacities on sites beyond the ped shed through the application of the design led approach.

5.3 Findings

5.3.1 The following sections present the findings of the analysis.

There is fairly limited potential to increase the contribution from sites with outstanding planning permissions which are outside of ped sheds.

5.3.2 The analysis showed that of the planning decisions set out in the database only 192 fell within our parameters, i.e. they were less than 1Ha, were as yet undeveloped and lay beyond a ped shed. Of these 96% (184 sites) were decisions that had been granted permission but as yet had not been started, the remaining 4% (8 sites) had been granted planning permission at appeal but similarly were unimplemented at the time of entry onto the database. This then provided a basis for estimating, in very broad terms, the possible additional contribution from sites with established housing potential. The potential is:

- *Existing Outstanding Permissions :* **4,500** *dwellings;*
- *Application of an Option 2 scenario:* **6,800** *dwellings.*

5.3.3 Taking into consideration the buoyancy of the current housing market in London it is likely that a number of these sites have already been developed. However it is also likely that further sites could have also come on stream.

5.3.4 While we have excluded sites larger than 1 Ha it is worth noting that if the larger sites identified outside of ped sheds were included then the figures would increase to 14,200 under existing permissions and 20,000 if an Option 2 scenario was applied.

5.3.5 This can only be a very broad estimate, based on a series of assumptions. Nonetheless it does indicate that there is some potential, albeit fairly limited, to increase the contribution from already identified housing sites.

Figure 5.1 London-wide Potential from established housing sites beyond the Ped shed

Borough	Exisitng Potential	Option 2 Scenario
Barking & Dagenham	36	54
Barnet	224	336
Bexley	62	93
Brent	271	406
Bromley	116	174
Camden	174	261
Croydon	103	154
Ealing	186	279
Enfield	147	220
Greenwich	42	63
Hackney	172	258
Fulham	0	0
Haringey	17	25
Harrow	44	66
Havering	0	0
Hillingdon	66	99
Hounslow	118	177
Islington	263	394
Kensington & Chelsea	0	0
Kingston	75	112
Lambeth	266	399
Lewisham	120	180
Merton	97	145
Newham	205	307
Redbridge	48	72
Richmond	26	39
Southwark	398	597
Sutton	153	229
Tower Hamlets	633	950
Waltham Forest	30	45
Wandsworth	101	151
Westminster	322	483
Total Potential	**4515**	**6768**

Source: LDMS Database

N.B Hammersmith & Fulham, Kensington & Chelsea and Havering have no extant planning permissions outside the ped sheds..Option 2 in Inner London is based on 0.5:1 parking standard.

There was considerable variation between boroughs in the amount of potential identified

5.3.6 The amount of outstanding planning permissions varied considerably between the 33 boroughs. We found the greatest potential in Tower Hamlets and Southwark (21 sites and 12 sites respectively) and the most limited in Hammersmith and Fulham and Kensington and Chelsea where no sites met our criteria.

5.3.7 By implication this means that potential is heavily concentrated within the ped sheds. Overall only 38% of outstanding permissions were found to be outside 800 metres walking catchments of town centres. As Figure 5.2 shows there was a wide variation between boroughs, with the proportion of potential identified within peds sheds varying between 0% and 100%.

The capacity of sites beyond the ped shed could be linked to a "Public Transport Accessibility Index".

5.3.8 A site-specific "design-led" approach, which considers proximity to public transport, could be taken for sites beyond the ped shed. The reduced off street parking requirements of Option 2 (i.e. one space per unit) can be as appropriate for locations beyond the ped shed as within them. Option 3, (i.e nil parking) may be appropriate in locations where access to public transport is particularly good and where on-street spaces are available

5.3.9 If however a full UDP car parking standard car parking is required due to the current remoteness of the site then in terms of public transport incorporation of a "Public Transport Accessibility Index" as a condition on planning permission could be considered. This would allow the site to be designed with full parking but, in such a way as to ensure that, when access to public transport in the area improves, the car-parking ratio per unit could be reduced

accordingly. This could be achieved by designing the residential layout so one parking space is allocated adjacent to each unit whilst the remainder are pooled together as a communal car parking area on part of the site. Thus when access to public transport improves to the point that one space per unit is adequate the communal parking element of the site could be landscaped and redeveloped as open space.

Relaxation of current planning standards could unlock sites currently regarded as unviable

5.3.10 As discussed in Chapter 4 relaxing car parking standards and intensifying density can significantly increase the Gross Development Value of sites. As with ped shed areas, this may help release the potential of housing sites that previously developers had contemplated but subsequently dropped because current UDP standards meant that development values were marginal or even negative for housing.

Renegotiate outstanding sites with developers

5.3.11 One implication of this analysis is that Boroughs could replicate this procedure using their own planning registers in order to find sites that have established interest in residential development but have not yet been developed. Also on this basis discussions with developers could result in the submission of new or amended applications.

Figure 5.2 Variation in Established Housing Potential by Borough

Borough	Location of Outstanding Planning Permissions	
	Within Ped Shed	Beyond Ped Shed
Barking & Dagenham	85%	15%
Barnet	54%	46%
Bexley	0%	100%
Brent	40%	60%
Bromley	55%	45%
Camden	72%	28%
City	100%	0%
Croydon	73%	27%
Ealing	40%	60%
Enfield	67%	33%
Greenwich	83%	17%
Hackney	72%	28%
Hammersmith & Fulha	100%	0%
Haringey	0%	100%
Harrow	48%	52%
Havering	100%	0%
Hillingdon	61%	39%
Hounslow	64%	36%
Islington	68%	32%
Kensington & Chelsea	100%	0%
Kingston	55%	45%
Lambeth	52%	48%
Lewisham	76%	24%
Merton	69%	31%
Newham	42%	58%
Redbridge	0%	100%
Richmond	81%	19%
Southwark	58%	42%
Sutton	50%	50%
Tower Hamlets	52%	48%
Waltham Forest	83%	17%
Wandsworth	83%	17%
Westminster	72%	28%
Average Potential	**62%**	**38%**

Source: LDMS Database

6 Planned Backland Development

6.1 Introduction and Overview

6.1.1 The chapter seeks to explore the theoretical potential that exists for backland development within existing residential neighbourhoods, but it is also very mindful of the practical constraints of land ownership, the impact that inappropriate backland development can have on urban quality and the sensitivities that surround backland development at the local level.

6.1.2 The analysis reported in this chapter shows that:

- *there is, in theory, considerable potential to accommodate new housing on backland sites;*
- *however, the potential for backland development is significantly constrained by practical issues of land assembly and ownership;*
- *the majority of backland areas are well maintained and highly valued;*
- *in some cases backland development could significantly enhance urban quality;*
- *to be successful backland development must follow a number of important design principles; and*
- *over the longer term backland areas need to be viewed together with the houses which surround them. New mechanisms may be needed to facilitate redevelopment.*

Policy context

6.1.3 New housing in backland areas behind houses has historically been an important source of new housing in London. However, a rash of incremental and often inappropriate backland development during the late 1980's, gave rise to considerable concerns about the impact of backland development on the character of residential areas as well as on the biodiversity of garden areas.

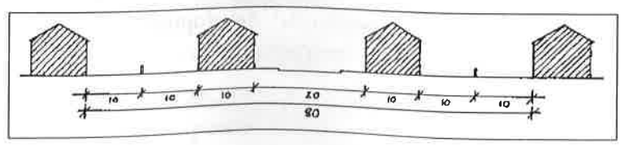
6.1.4 The policy approach of most the London Boroughs with significant backland areas reflects these concerns. It is to resist backland development unless specified criteria, usually relating to the scale of development, separation distances and accesses can be met. In addition some Boroughs, notably Sutton, require an assessment of the ecological importance of the backland area before development is permitted.

6.2 Approach

6.2.1 Our approach sought to firstly establish the scale and nature of the backland resource, before exploring the issues surrounding its potential development through site visits and case study design exercises. The following sections describe the main steps in the approach.

Step 1: Desk Review

6.2.2 To obtain an overview of the theoretical potential for backland development we undertook a desk review to identify backland areas large enough to accommodate new residential development. For the purposes of this overview, we assumed a distance of 80metres between facing rear elevations as the minimum plot depth required. This depth allows for a road and footpath access, houses or flats on both sides of the new road and for both new and existing dwellings to have back gardens of at least 10 metres depth.



Step 2: Street surveys

6.2.3 Tighter forms of backland development (with houses on one side of the street only, or using shallow or single aspect dwellings) are possible. While it was not practical to identify the opportunities for such forms of development London-wide, we did seek to identify potential sites as part of our street by street survey of the Hounslow, Bromley, Hackney and Walthamstow ped-sheds.

Step 3: Site visits and design analysis

6.2.4 The desk review and street surveys identified a range of different types of backland sites and from these we selected a sample for site visits and case study design analysis.

6.2.5 The purpose of the design analysis was to explore some of the practical site development issues associated with backland development in different contexts and to show how planned backland development might be accommodated. Three design options were explored for backland sites within a town or district centre ped-shed following the same assumptions as applied to the gap and infill sites considered in Chapters 4:

- *Option 1: based on the application of existing UDP policies and standards, but varying them slightly in cases where the rigid application of a standard, for example, on overlooking distances would have prevented development of a site altogether;*
- *Option 2: a site specific design led approach with the requirement for off street parking reduced to one space per unit and with no provision for visitor parking; and*
- *Option 3: the same design led approach, but with the requirement for off street car parking removed altogether.*

6.2.6 For sites beyond the ped-sheds, and hence beyond 10 minutes walking distance of facilities and public transport, we discounted Option 3 (with nil parking) and developed only Options 1 and 2.

6.3 Findings

There is, in theory, considerable potential to accommodate new housing on backland sites

6.3.1 The London-wide desk review identified around 1,400 ha of land in backland plots of 80 metres or more between facing rear elevations. More than 90% of this was in Outer London and half of this was concentrated in just four boroughs:

- Bromley (270ha);
- Croydon (140ha);
- Barnet (120ha);
- Sutton (110ha).

6.3.2 Of the Inner London Boroughs only Lewisham (35ha), Haringey and Lambeth (both 15ha) were found to have any significant backland areas.

6.3.3 Overall, the average size of these backland areas (i.e. the total area enclosed by facing rear elevations) was 1.4ha. In Outer London, however, more than 200 sites larger than 2ha were identified with the largest site being over 10.5ha.

6.3.4 The more detailed street by street survey of four town centre ped-sheds (Bromley, Hounslow, Walthamstow and Hackney) identified a further 41 sites totalling 30ha where, although the space between facing rear elevations was less than 80 metres, we judged that, in physical terms at least, new housing could be accommodated whilst retaining character.

The majority of backland areas are attractive and highly valued

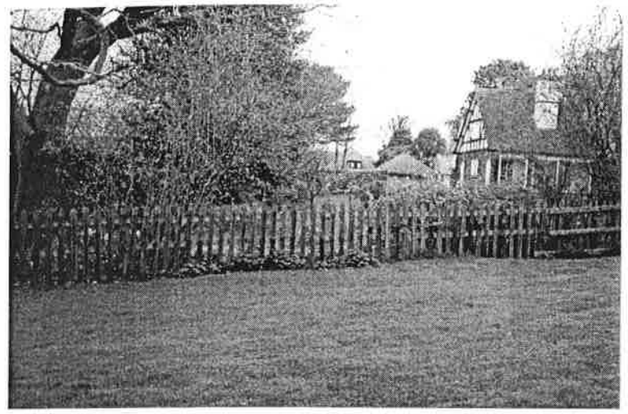
6.3.5 Our site visits confirm that the vast majority of backland areas are well maintained and valued. This is especially the case where the backland area comprises only private garden space. Even where there were some poorly maintained areas these tended to be easily out numbered by other plots in the residential block which were well maintained.

In some cases backland development could result in significant environmental enhancement

6.3.6 While these well maintained garden areas represent the archetypal backland area, the analysis highlights important differences in the nature and character of backland areas. These differences relate to:

- *the configuration and size of the backland plots: between those which are long and thin and thus include many ownership's to those which are both broad and deep;*
- *the character of the backland area: ranging from garden areas of mature trees and landscape and more intensively managed grassed areas to a combination of gardens and garage courts. These varied from the well maintained and used to those which were dilapidated and vandalised;*
- *the degree to which the backland area is accessible or potentially accessible: land locked areas which would require the demolition of a dwelling to provide access to those which already have mews type access often to garage court areas.*

6.3.7 The site visits suggest that the presence of a mews access can be significant. Not only does it provide a means of access, but some garage mews have become neglected: garages are used more for storage than for parking; and accesses, garages and fencing are often poorly maintained. In such cases, and subject to the design principles set out below, it seems that new residential development could bring about significant improvements in environmental quality.



While the majority of backland areas are highly valued, the nature and character of backland areas does vary considerably

To be successful backland development must follow a number important design principles

6.3.8 The design exercises show that new residential development can be integrated into backland areas to produce a high quality residential environment. But to be successful schemes must observe a number of important design principles. These relate not only to the suitability of backland plots for development, but also to the design of new development and its interface with the existing area.

New residential development can be integrated into backland areas to produce attractive environments where the backland area is of sufficient depth. The results on backland plots with less than 80m between facing rear elevations can be less than satisfactory. In the example illustrated above a legible access route is established, but the single row of large semi-detached dwellings face the backs of existing houses. This may compromise environmental quality and privacy.

i) Appropriate plot depth and configuration

6.3.9 A fundamental requirement for successful backland development is for the backland plot to be of sufficient depth to accommodate new housing in a way which provides a quality residential environment for the new and existing residents. Our design exercises suggest that the minimum plot depth for backland development is 80 metres between the facing rear elevations of existing properties. This is sufficient to accommodate a new residential street with houses or flats on each side and provide both the new and existing properties with a rear garden of 10 metres.

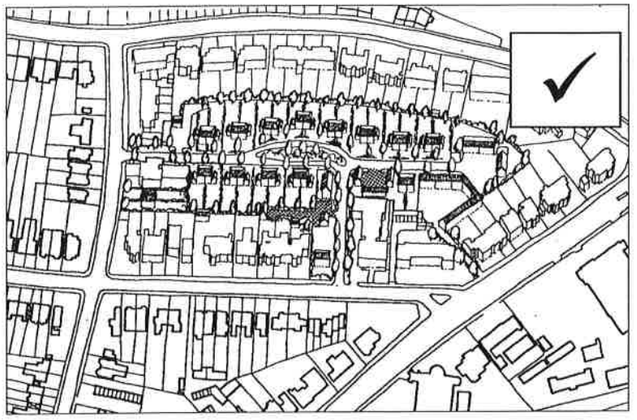
6.3.10 While it is possible to accommodate new housing in plots where the depth is less than 80 metres, this can only be achieved either by reducing the overlooking distance to below 20 metres, by having houses on only one side of the street or by using single aspect or shallow plan dwelling types. These approaches can cause problems in terms of the quality of the environment created:

- a single row of houses or flats can result in a confusion of fronts and backs (i.e. existing properties fronting on to the back of the new development and the new onto the back of the existing);
- to ensure adequate day lighting single aspect dwellings are usually only appropriate where they are south facing; and
- reducing the overlooking distances can not only have implications for privacy, but also affect day lighting to north facing dwellings.

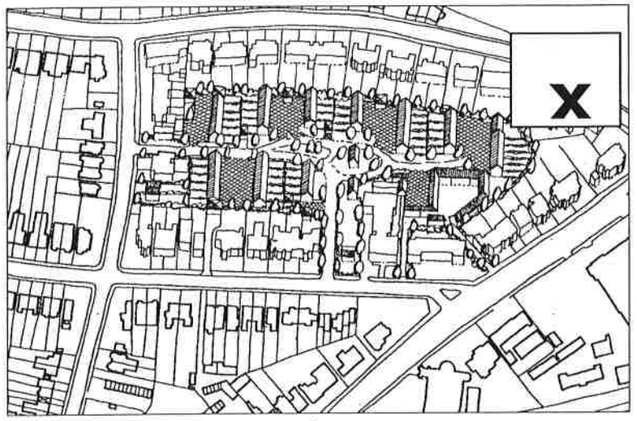
6.3.11 While these issues can be resolved through careful site planning and architectural design, we conclude that backland development on plots of less than 80 metres depth is unlikely to be acceptable, except where the existing urban grain is very urban in character, and where careful design can overcome concerns of overlooking and day lighting.

ii) be of a form and scale which respects the local context

6.3.12 The design cases studies for backland sites show that, with few exceptions, the sketch schemes produced under Option 1 are more in keeping with the surrounding (and predominantly low density suburban) context than those produced under design Options 2 and 3. This is in contrast to our finding of enhanced quality under Options 2 and 3 for infill sites within ped-sheds.



OPTION1



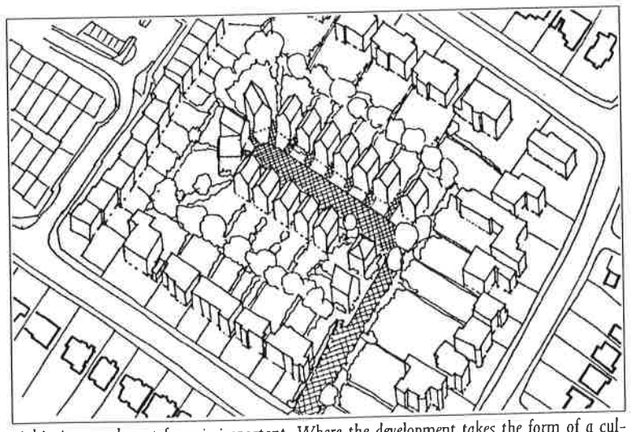
OPTION2

Option one is preferred to option two. The lower density positioning of large houses in option one enables consistent fronts and backs to be maintained, consistent with the existing street pattern and essentially creates two new perimeter blocks from the one existing. Option two provides a much harder landscape, consisting of smaller units that is detrimental to the character of the existing block. The orientation of houses perpendicular to internal streets provides poor definition to this public space.

6.3.13 Where the surrounding context is not sufficiently robust, for example, in terms of the scale of the existing houses, the maturity of the landscape structure or the size of the backland site, the schemes produced under Options 2 and 3 can result in a severe contrast in density. This is in part because the denser and more active residential area is effectively screened from the street with lower density development and in effect denied a civic presence apart from through accesses.

iii) achieve a coherent and legible form

6.3.14 A coherent form is important for all new development. But it will be different for backland schemes with through access and those without. A through access will effectively sub-divide a large perimeter block into two smaller blocks thus maintaining legibility. Where the development is effectively a cul de sac, buildings will be most legible when they are organised into crescents, clusters and squares. Whatever the arrangement, a clearly defined structure in terms of fronts and backs and understandable levels of privacy will be important.



Achieving a coherent form is important. Where the development takes the form of a cul-de-sac, buildings will be most legible when they are organised into crescents, clusters and squares.

iv) integrate existing landscape features

6.3.15 Where mature trees or landscape features form part of a backland plot, the design should seek to retain these and integrate them into the new development. An ecological survey may be appropriate in where it seems possible that the backland area may include areas of ecological importance or which are important to local bio-diversity.

v) provide a residential aspect onto the new road:

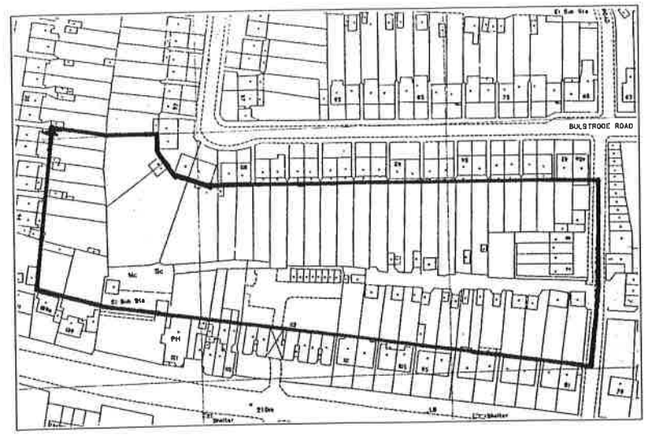
6.3.16 New residential development should seek to reinforce the existing organisation of fronts and backs. It should seek to organise aspects to increase street overlooking where this is deficient. Where new housing addresses a common space this will imply its publicness and importance.

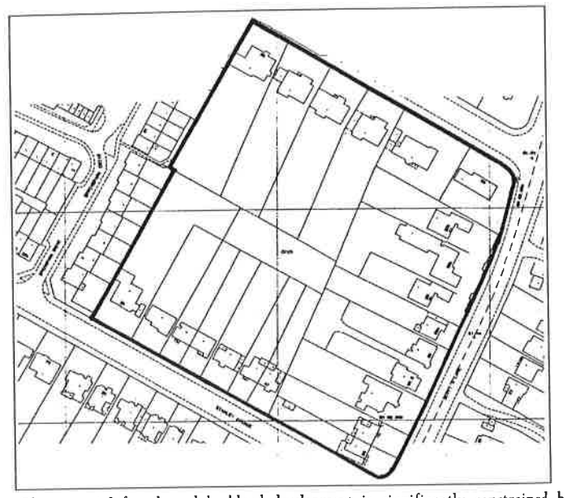
vi) care over the integration of the existing and new landscapes and streetscapes

6.3.17 The threshold between the new development and the surrounding streets requires very careful attention. The aim must be to achieve a continuity in design and character in terms of both the streetscape and landscape. It should not simply be seen as a "plug-on" or solely a road engineering issue.

The potential for backland development is significantly constrained by practical issues of land ownership and assembly

6.3.18 While the design exercises show what is theoretically possible, it is clear that in practice there are very significant obstacles to achieving good quality planned backland development. Principal among these is the difficulty of securing the agreement of all the affected owners to the development. The number of individual ownership's will vary according to the width of the plots as well as the size of the backland area, but for any comprehensive backland development of the types illustrated here anything between 10 and 150 separate ownership's may be involved.





The potential for planned backland development is significantly constrained by practical issues of land ownership and assembly. However, the number of individual ownerships does vary depending on the size of the residential block and the configuration of the plots.

6.3.19 Given the degree to which most backland areas are used and enjoyed by residents, it seems unlikely that, even, with a more favourable planning policy approach, any more than a small proportion will be developed in a comprehensive manner following the design principles set out above. The dynamics underlying backland development make it almost impossible to predict the future rate of activity with any accuracy. However, if one were to assume one to two backland schemes of 10 to 30 units each in

each of the 10 Boroughs with a significant backland resource this would imply between 200 and 300 units per year London-wide.

6.3.20 A more pro-active approach which sought to actively promote backland development where it could enhance urban quality and foster sustainable development could add significantly to this potential. Backland development could be promoted where:

- *the environmental quality of the backland area has become degraded and development would enhance urban quality;*
- *garage courts are not being used either because of their design/location or because they are not needed.*

6.3.21 This pro-active approach will be most appropriate within ped-sheds where access to facilities and public transport on foot is good and where policy should be seeking to encourage a lower propensity to own and use cars.

Over the longer term backland areas need to be viewed together with the houses which surround them. New mechanisms may be needed to facilitate redevelopment.

6.3.22 A key constraint on the potential development of backland sites is the houses which currently surround them. Not only are there practical problems of assembling a multiplicity of ownership's but, in order to maintain quality, the intensity of development will usually be restricted in order to respect the character of the surrounding houses. However, over the longer term these constraints might change. If for example, the increasing costs of maintaining buildings begins to favour demolition and redevelopment, then comprehensive redevelopment of street blocks at a higher density may be possible.

6.3.23 Planning policies could have a role in encouraging this by, for example, indicating the potential for a higher density of development, but problems of land assembly would still need to be overcome. The use of compulsory purchase powers may be appropriate where the quality of the dwelling stock has declined to the point where there is a strong public interest in securing its redevelopment, but new mechanisms to facilitate privately led redevelopment also require development. These might establish legal processes whereby groups of owners could propose a redevelopment scheme and secure the necessary majority of other owners to its implementation.

7 The Conversion of Houses into Flats

7.1 Introduction

7.1.1 This chapter is concerned with the conversion of houses into flats. Residential conversions are an important source of new housing and could potentially make a significant contribution to meeting the growing demand for smaller dwellings. However, conversions also give rise to a number of important concerns in terms of their potential impact on residential amenity, the demand for car parking and the supply of smaller family size accommodation. Planning for sustainable residential quality has to reconcile these potential impacts and pressures with the important contribution that conversions can make to meeting London's housing needs.

7.1.2 The analysis reported in this chapter concludes that:

- *the demand for converted flats is likely to grow strongly over the next 15-20 years;*
- *there is considerable theoretical potential for the conversion of houses into flats;*
- *conversions can impact on the quality of the residential environment, but potential impacts can be mitigated through sensitive design;*
- *planning policies and standards play a significant role in regulating the supply of conversions;*
- *car parking standards for conversions need to reflect the character of the residential area and its location relative to public transport and facilities; and*
- *further work is needed before future rates of conversions activity can be estimated with confidence.*

7.2 Approach

7.2.1 Our approach to conversions is somewhat different from the analysis of small sites and backland areas reported in earlier chapters. This is because residential conversions have already been the subject of in-depth analysis . This has included not only a major DoE study of Private Sector Conversions in London, but also earlier LPAC work on the Quality of London's Residential Environment and a series of studies undertaken by London Boroughs, notably in Harrow, Wandsworth and Kingston-upon-Thames. Moreover, many of the physical design issues relating to conversions are so property, street and area specific that they can only be considered as broad principles for application through more detailed work at the local level.

7.2.2 We have therefore sought to review and up-date previous work in the light of growing concerns about urban quality and sustainability on the one hand and London's housing needs on the other. This desk review then provided a context for site visits to a number of areas with potential for further conversions and consideration of how one of the key concerns (and constraints) that of the demand for car parking can be addressed in different contexts.

7.3 Findings

The demand for converted flats is likely to grow strongly over the next 15-20 years

7.3.1 The analysis of the household projections presented in Chapter 2 shows that 80% of the projected household growth will comprise single person households. Indeed, by 2011 it is projected that almost 40% of all households will have only one member.

7.3.2 The addition of more than 500,000 single person households between 1991 and 2016 will significantly increase the demand for smaller dwellings. Even assuming that many of these households will prefer to live in dwellings meeting more than the minimum bedroom standard (and that they are able to afford such accommodation) it is clear that their will be strong demand for one and two bedroom dwellings. The conversion of larger houses into flats could make a significant contribution to satisfying this requirement.

There is considerable potential for the conversion of houses into flats

7.3.3 The conversion of houses into flats has been an important source of new housing in London over the last two decades. The 1992 study of Private Sector Conversions in London, undertaken by the London Research Centre (LRC) estimated that between 1980 and 1989, 120,000 flats had been created from 39,000 houses i.e. 12,000 new dwellings per year.

7.3.4 Activity was divided equally between central London, the rest of inner London and outer London, but there was evidence of a gradual slowing down of conversions in central London and a corresponding increase in the rest of inner London.

7.3.5 Using 1978-79 data on the floorspace of private sector dwellings and relating this to the minimum floorspace thresholds applied by Boroughs to house conversions, the LRC estimated that a further 400,000 dwellings could be converted to produce 1,125,000 flats (i.e. a net gain of 725,000 dwellings or 2.81 dwellings per house converted). The pattern of activity implied by these figures would be significantly different from that observed during the 1980's. Only 10% of conversions would be in central London, 27% would be in the rest of inner London and 63% would be in outer London.

7.3.6 If we discount the 400,000 houses which the LRC identified, first by 39,000 to allow for conversions during the 1980's and then by a further 10,800 to allow for conversions between 1989-97 (i.e. based on LPACs 1994 Capacity Study and applying the same net dwelling gain ratio of 2.81), this would leave 350,000 dwellings suitable for conversion. Assuming the same net gain ratio, this stock could theoretically generate 984,000 additional dwellings.

7.3.6 One issue that arises in relation to these estimates is the extent to which properties which are large enough for conversion into flats are already fully occupied and therefore meeting existing housing needs. An analysis of the 1991 Census, however, indicates that a significant number of larger houses in London are under-occupied. For example, of the 305,000 households living in dwellings with 7 or more habitable rooms (i.e. having a floor area in excess of 130m2), 105,000 comprised only one or two household members. While clearly this proportion of larger under occupied houses cannot be thought of as the stock of properties for conversion, it does indicate significant headroom within the existing stock for conversion of houses into flats.

Conversions can impact on the amenity of residential areas but these impacts can be mitigated through sensitive design

7.3.8 The most commonly identified impacts of conversion on residential amenity are:

- the location and design of bin stores;
- the introduction of means of escape;
- electrical and gas meter boxes;
- door bells and intercoms;
- poor garden maintenance; and
- the loss of front and rear gardens to car parking.

7.3.9 While many of these issues are minor in nature, they can cumulatively have a significant impact on the street scene. Nevertheless, there is no reason why, through careful design, they cannot be resolved satisfactorily. They are issues about the way in which conversions are carried out and controlled rather than about the conversion of houses into flats per se.

7.3.10 The most significant impact is loss of front garden space to car parking. This can result in the loss of walls, hedges and trees and produce a harsh environment with a lack of distinction between the private and public realms.
However, as earlier work (LPAC 1994) has observed, it is important to remember that the loss of front gardens to parking can also be associated with houses in single family ownership. Indeed, while front garden parking associated with conversions is often a result of a planning condition, the use of garden space for parking in single family housing does not generally require planning permission. This is important because planning control provides the opportunity to ensure that, where necessary, front garden parking can be accommodated in a sensitive manner. Nevertheless, the 1994 study of residential quality concluded that "there is a case for limiting the use of front garden space for parking on environmental grounds" (LPAC 1994 p.161).

Planning policies and standards play an important role in regulating the supply of conversions

7.3.10 Boroughs seek to reconcile the demand for conversions with their perceived impacts on environmental quality and the supply of family housing through a complex set of planning policies and standards. Policy in two areas, however, is particularly significant in terms of the supply of houses suitable for conversion:

- a minimum floor area for houses to be converted; and
- the requirement for car parking provision and how this is accommodated.

The minimum floor area threshold is intended to protect the stock of smaller family accommodation from conversion and to ensure that converted flats are large enough to meet residents needs.

7.3.11 In both cases there are significant differences between boroughs. For example, while the Hackney UDP specifies a minimum floor area of 120m^2 (including circulation space) the Bromley UDP sets a minimum threshold of 170m^2. The difference is the equivalent of three habitable rooms. Without in-depth market studies it is impossible to know whether these different minimum floor areas are justified in terms of differences in the size of dwellings and local market conditions. Nevertheless, it is clear that they will have a significant impact on the number of properties that can be converted.

7.3.12 The requirement for car parking is the second main policy applied by Boroughs. Here, too the differences are significant, both in terms of the number of spaces required and in how the parking is to be accommodated. For example, the Hackney UDP sets a standard of 0.5 – 1 spaces per unit depending on the type of unit and specifically states that this provision must not be made in front gardens in order to protect amenity and road safety (especially for pedestrians). In contrast the Bromley UDP requires between 1.5 and 3 parking spaces per unit and requires that the provision be made off street. These very different approaches to car parking can have very significant implications in terms of the number of properties which can be converted and in terms of the potential impact on the street scene.

7.3.13 The significant impact that parking requirements have on the supply of houses which can be connected is highlighted in the LRC study. This estimated that if Borough parking standards (at the time of the study) were applied uniformly then 70% of the properties suitable for conversion, in terms of other planning policies would be constrained. This would imply that of the 350,000 properties estimated to be suitable for conversion (see para. 7.3.5 above) almost 250,000 (with a potential dwelling gain of 700,000 units) would be held off by parking standards.

7.3.14 These estimates need to be interpreted cautiously. The parking policies of some Boroughs will have changed since

the time of the LRC study and even if the requirements for car parking was changed (either in terms of the number of front garden spaces required or where they should be provided) it is unclear how many more houses would be converted. Many will be in family occupation and many may be more valuable as single family dwellings than as flats. Nevertheless, the scale of the potential contribution to meeting London's housing needs indicates a need for parking policies on conversions to be examined more closely.

Car parking standards for conversions need to reflect the character of the residential area and its location relative to public transport and facilities.

7.3.15 The issues surrounding car parking polices for conversions are very area and street specific. The demand for car parking, the width of the street and the size and nature of front gardens all need to be taken into account. This means that parking policies for conversions need in-depth analysis at the local level (such as a number of Boroughs are already undertaking). Nonetheless, there are a number of strategic principles which can inform this analysis and in particular assist in integrating concerns about urban quality, sustainable development and housing needs.

(i) *Reflecting actual demand*

7.3.16 It is important that parking policies do not over estimate the actual demand for car parking as this may unnecessarily constrain the conversion of houses into flats and result in the unnecessary loss of front garden amenity space. The analysis of the household projections reported in Chapter 2 highlighted a number of important points:

- *a significant proportion of London's households do not have access to a car;*
- *less than 1/5 of households own more than one car;*
- *that although car ownership is growing the number of cars per household is actually falling, however this is masked by the increase in the number of households ; and*
- *there are significant differences in the propensity to own cars between different types of household. The differences between single persons, lone parents and households comprising couples are particularly significant in terms of the projected growth in single persons households.*

7.3.17 The analysis also indicated significant variations in car ownership between Boroughs and, as we noted, the differences would be more pronounced at ward level. Parking policies for conversions need to reflect these differences.

(ii) *Reflecting the character of residential areas and their accessibility to public transport and facilities*

7.3.18 Conversions take place in a wide variety of contexts and this has a significant bearing on what level of car parking is appropriate and how it should be provided. To understand the range of different contexts we identified a number of Wards and Enumeration Districts where there was (in 1991) a concentration of larger under occupied houses. Site visits to a range of different streets (both within and beyond ped-sheds) confirms the very wide variation between places in a number of key respects:

- *the proximity to public transport and facilities. Between places that are remote and well beyond comfortable walking distance of a town centre and places where facilities and public transport are close by;*
- *the extent to which on street car parking is available. This varied widely between places where there was, as yet, no on street car parking at all, to streets which were already close to, at or beyond capacity;*
- *the size and nature of the private garden space. Between houses with large front gardens and existing garages and houses where the gardens were too small to accommodate car parking, even if it were desirable;*
- *the nature and width of the street. Between streets which are very wide and capable of accommodating on street parking in different forms and those where there is barely room for a single line of traffic to pass between rows of parked cars.*

7.3.19 These issues need to be dealt with through local area parking strategies, but on the basis of this and earlier work, a number of strategic principles can be identified:

- *beyond ped-sheds a higher level of parking provision, perhaps to the full UDP standard, is likely to be appropriate. This could be accommodated on-street where this is possible or off street. However, off street parking should only be allowed where it does not detract from the street scene in terms of the loss of hedges, walls or mature trees;*
- *along public transport corridors or close to a ped-shed a lower level of parking provision should be appropriate. Again this could be accommodated either on or off street providing this can done with out detriment to the street scene;*
- *within ped-sheds policy should encouraging people not to own and use cars. A lower parking standard will be appropriate and this should be accommodated on street.*

7.3.20 These are only broad principles. They will need to be interpreted locally in the context of the size of the flats being developed and the level of car ownership which is actually anticipated. Where ownership levels are likely to be low , such as where flats are likely to be occupied by single people without children, then a nominal or nil parking requirement may be appropriate.

7.3.21 On street parking may raise particular concerns where streets are already at or beyond their parking capacity. Resisting the conversion of houses into flats is an understandable response to existing parking pressure, but with car ownership growing at the rate of 23,000 additional vehicles per year it must be increasingly clear as the LRC observed that "whilst more conversions are perceived as adding to the difficulties, the root cause is simply too many cars in general use".

7.3.22 Earlier work has shown how, where the street is wide enough, it is possible to re-organise the space between the buildings not only to create additional parking capacity but also to secure environmental enhancement. Increasingly though policy will have to engage more in demand management initiatives designed to reduce people's

propensity to own cars. In particular the European experience of Neighbourhood Car Fleets (see Annex 1) indicates the potential to significantly reduce individual ownership of cars.

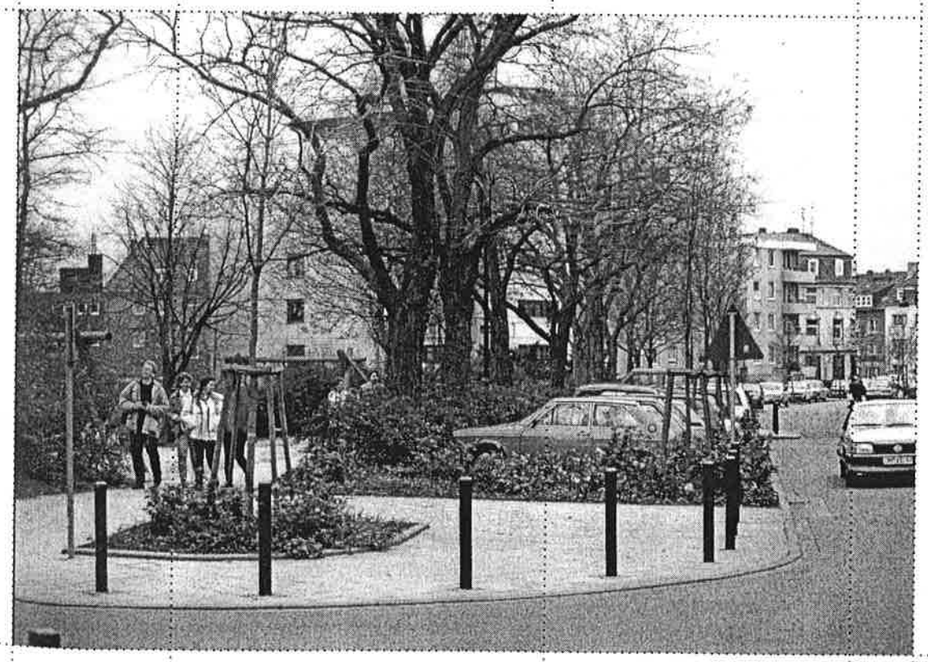
Further work is needed before future rates of conversion activity can be predicted with confidence

7.3.23 The processes whereby houses are converted into flats reflects the complex interplay of a range of factors including the size and nature of the houses, the planning policies and standards of the local authority and the local property market. The interplay of these factors makes it extremely difficult to estimate how many houses might be converted into flats in London over the next 15-20 years. For example, even if current car parking standards were to be relaxed significantly, it is unclear how many additional houses would be converted as a result. This will depend on a range of other factors and in particular the relative value of flats and single family housing in different areas.

7.3.24 These issues are now being addressed by a research study commissioned by the Department of the Environment Transport and the Regions which is examining the processes of conversion and seeking to estimate future rates of activity. When complete, in mid 1998, this research should help inform estimates of future conversions activity in London.

Part 3

Implications for Planning Policies & Practice



8 Conclusions & Implications for Planning Policies and Practice

8.1 Overall conclusions

The Opportunity

8.1.1 This study has sought to examine to what extent and how London might accommodate additional dwellings while maintaining urban quality and fostering sustainable development. Our overall conclusion is that there is indeed considerable potential. New residential development can add to urban quality and make an important contribution to fostering sustainable development.

8.1.2 In particular, the research points to significant potential in the areas immediately surrounding London's town centres. Focusing new residential development in these areas could enhance urban quality, make better use of under-used land, and support the vitality of town centres and the services and facilities they provide. It should also provide more people with a real opportunity to walk and use public transport rather than having to rely on a car for most journeys.

8.1.3 London's network of town centres; effectively pre-existing urban villages, and its comprehensive public transport system, provide a sustainable city structure which can now be strengthened by new housing in more attractive and denser centres of activity.

The Challenge

8.1.4 This is the opportunity presented by the strong demand for new housing. However, the very fact that much of this potential remains un-tapped makes plain that current policies will not unlock anything like the full potential. To do so will require further development of policy and practice in three key and overlapping areas:

- *refinement and further development of planning policies and standards on, for example, density, car parking and highways standards;*
- *a much more creative and proactive urban management approach to issues such as land assembly, promoting and securing development and responding to issues such as car parking and traffic with long term and imaginative strategies; and*
- *a stronger focus on urban quality organised through a framework of local and strategic policies, programmes and initiatives to improve and sustain London's quality as a place to live.*

8.1.5 The following sections now present the conclusions and implications of the research for each of these areas.

8.2 Planning policies and standards

8.2.1 The research shows that planning policies and standards on matters such as car parking, highways, density and design can have a profound influence not only on whether land or buildings can be developed or converted, but also on the intensity of development, its viability and its form and quality.

8.2.2 The following sections set out, in turn, our conclusions about new residential development on small sites, conversions of houses into flats and backland development.

New residential development

8.2.3 The case study design work highlights a number of problems arising from current practice. In particular it suggests that:

- *the blanket application of a planning standards approach runs the risk of shutting out good, imaginative urban design which can unlock the full potential of sites;*
- *policies and standards tend not to distinguish sufficiently either between different levels of accessibility to public transport and facilities or between the widely different contexts within which residential development takes place; and*
- *design standards are directly related to (and indeed often determine) the densities of development that can be achieved. For example, an aspiration for development at densities above the current LPAC guideline range of 125-250hrh can be frustrated by a high car parking requirement unless undercroft or basement parking is practical and viable.*
- *highway standards can impose a road geometry in isolation from the residential potential of individual sites and requirements for vehicle access on to the wider network may make development unviable or impractical especially on small sites.*

8.2.4 These issues are recognised in LPAC's 1994 Advice which suggests that densities above the guideline range of 125-250hrh could be encouraged in appropriate locations (including town centres and near public transport interchanges) and reflected in Borough decisions on some developments. But, we think that density policy and practice should be integrated more explicitly with accessibility to public transport and facilities, car parking requirements, other design standards as well as related to different dwelling mixes.

A New Strategic Approach to Density

8.2.5 What is needed is a way of thinking about these elements together. The density matrix overleaf seeks to do this by indicating a range of different densities appropriate to sites in different locations, with different mixes of houses and flats and with different requirements for off street car parking. Each of the cells in the matrix is then cross referenced to the design exercises presented in Annex 1. These show what forms of development are possible on different types of sites at each density range.

8.2.6 The matrix allows for a much broader range of densities than the current LPAC guidelines (150-700hrh compared to 125-250hrh). It also explicitly recognises the potential for much higher densities where accessibility to public transport and facilities is good and where the requirement for off street parking can be reduced or removed altogether.

8.2.7 We would stress, however, that the matrix can only be a conceptual and indicative tool. It should not be seen as a prescriptive specification of different densities to different

types of housing in different locations. Inevitably there will be circumstances when densities above and below the range will be appropriate. Above all we believe that site specific design and quality considerations should be the predominant concerns rather than a pre-determined view about density.

8.2.8 Nevertheless, the differential approach to residential density set out in the matrix is important in terms of ensuring that the form and intensity of development in different locations reflects strategic concerns about sustainable development and reducing dependence on the car. In addition it can be expected to:

- *provide a commercial incentive for residential development in locations which are well served by public transport and facilities such as town centre ped-sheds and along public transport corridors;*

- *assist the provision of affordable housing by reducing the per unit cost of development, as well as perhaps increasing the number of private schemes where an affordable housing component is required, because it increases the number of units being developed.*

Implications for London's Housing Capacity

8.2.9 These changes to density policy and practice could have significant implications for London's housing capacity. The research shows that a design led approach, with the requirement for off street car parking reduced to one space per dwelling, increased the number of units that could be accommodated by 50% as compared to what was possible under current UDP policies and standards. Removing the requirement for off street parking altogether can double what is possible under current policies and standards.

8.2.10 If our case study Ped-sheds are representative of town centres across London (and assuming that all the land identified is developed for housing) then the impact of these different design and policy approaches could be in the order of: 52,000 dwellings if current policies and standards were applied; 77,000 dwellings if a site based design led approach with 1:1 parking were adopted; and 106,000 dwellings if the requirement for off street car parking were removed altogether.

8.2.11 These denser forms of development are especially suited to sites within town centre ped-sheds. But there is no reason why a lower car parking requirement (i.e. 1 space per dwelling) could not be applied elsewhere and particularly in areas along public transport corridors or on the edge of a ped-shed. For illustrative purposes, if this approach was applied to sites of between 0.2 and 1ha, beyond town centres, and which have outstanding but unimplemented planning permission for housing (i.e. recorded by the London Development Monitoring System) then the number of units accommodated could be increased from around 4,500 to 6,800.

8.2.12 Clearly these can only be broad estimates; some sites identified within our ped-sheds will be developed for other uses, but other sites will become available. Nonetheless, the work shows that housing land could be developed more intensively than is the case at present and that this could significantly increase London's ability to accommodate more housing. As significant as this is, such an increase could be achieved without reducing the quality of development and in many cases could improve it.

Figure 8.1 Integrating Density Policy with Accessibility to Public Transport & Facilities (Small sites up to 1ha)

CAR PARKING	2 SPACES PER UNIT (Design Option 1)		1 SPACE PER UNIT (Design Option 2)		NO CAR PARKING (Design Option 3)	
DWELLING MIX	Mostly Houses	Mix	Mix	Mostly Flats	Mix	Mostly Flats
LOCATION						
Sites within Town Centre "ped-sheds"	150-250	200-300	250 ⟷ 500		500 ⟷ 700	
Selected Design Examples ⟩	26 20 16 18 23 27	17 19 21 24		27 1 12 3 7 4	16	26 24 20 3 12 4 11 7 1
Sites along Transport Corridors & sites close to a Town Centre "ped-shed"	150-250	200-300	200 ⟷ 400		300 ⟷ 500	
Selected Design Examples ⟩	16 18 23 29	17 21 24 30	29 28 17 8 10 18 24 21 30	31 1	17 28 8	10 23 18 26 24
Currently Remote Sites	150-250	200-300	200 ⟷ 300		250 ⟷ 450	
Selected Design Examples ⟩	16 18 23 29	17 21 24 30	29 28 17 8 10 18	31	17	16 10 23 18 19

NB
1) Density ranges are based on the net developable area i.e. they do not include any area beyond the site such as half the width of adjoining roads
2) Densities are expressed as habitable rooms per hectare (h.r.h.)
3) The design exercises selected for each density range in the matrix are noted in ascending density order & presented in Annex 1. These show the physical forms that are possible at different densities and on different sizes and types of sites
4) Shaded areas within the matrix are locations where, in general, it will not be appropriate to build at such densities with such parking standards

Residential Conversions

8.2.13 The conversion of houses into flats is a significant source of smaller new dwellings in London. With the household projections indicating that 80% of the 629,000 additional households in London between 1991 and 2016 will be single person households it is clear that the demand for conversion will continue to grow strongly over the next 10-15 years.

8.2.14 The rate at which conversions take place, and the extent to which the demand for smaller converted units is satisfied, reflect the complex interplay of a range of factors. These include principally the differential values of different sizes and types of housing in different locations, and planning policies and standards which regulate and filter the stock of dwellings which can be converted.

8.2.15 While the complexity of these factors makes it extremely difficult to estimate future rates of conversion activity, two things are clear: first, that there is strong demand for converted flats; and second that planning policies and standards play a significant role in regulating the supply of dwellings which can be converted.

8.2.16 Planning policies towards conversions vary considerably between Boroughs, but two issues are of particular significance:

- *a minimum size threshold for houses to be converted; and*
- *car parking requirements.*

The following sections set out our conclusions on each of these issues.

Minimum Floorspace Thresholds

8.2.17 Minimum floor area thresholds vary across a very wide range (90-170m^2) but are typically in the range of 100-110m^2. The rationale is not that properties below this threshold cannot be converted satisfactorily into flats; it is clear that they can. Rather, it is to protect the stock of single family dwellings from conversion.

8.2.18 This is clearly an important planning concern, but household sizes are falling and the protection of the single family stock could frustrate the demand for smaller and more affordable dwellings. This suggests strongly to us that policies which seek to balance the competing demands for different types of housing must be underpinned by up-to-date and segmented studies of housing demand. This could be integrated with the assessments of housing needs which Boroughs are already required to undertake.

Car Parking

8.2.19 Car parking requirements are the second key factor restricting residential conversions. Previous work by the London Research Centre estimated that 70% of dwellings which were suitable for conversion could not meet Borough car parking standards. Car parking policies have developed since, with some boroughs no longer requiring off street provision, but parking standards continue to be a significant constraint on conversions.

8.2.20 The issue of car parking and its relationship to conversions can be addressed at two levels:

- *considering how parking demand can be accommodated taking account of the nature and size of the dwellings, their gardens and the street, and the degree to which on-street parking capacity exists; and*
- *at a more strategic level, considering what planning and transport policies are seeking to achieve over the longer term.*

The following sections consider first the different ways in which parking can be accommodated so as to maintain and, in some cases, enhance urban quality, before setting this in the context of a broader strategic analysis.

Options for accommodating parking demand

8.2.21 Front garden parking can seriously detract from the quality of the street scene through the loss of important "softening" features such as trees and hedges and the blurring of the divide between the public and private realms. We conclude that, in general, in order to protect the environmental quality of residential areas, the preference should be for on street parking unless off street provision can be made without the loss of hedges, trees, grassed areas or boundary walls. By implication this means that, where parking demand can be accommodated satisfactorily on street, parking requirements should not be a planning issue in relation to residential conversions.

8.2.22 More difficult issues arise where the street and surrounding areas are at, or beyond, their parking capacity. Here, the current policy approach tends to restrict residential conversions on the basis that they result in a net increase in parking demand and thus increase parking stress and inconvenience to residents. Where the configuration and width of the street permits, the only other response in seeking to meet parking demand, is to reorganise the street to increase parking capacity through measures such as echelon parking.

8.2.23 This can result in significant environmental improvement with traffic calming and landscaping, particularly where the integrity of the street has already been damaged by cars and traffic. Funding of such improvements could be achieved from the surplus income from on street parking. However, such improvements are expensive and the necessary implementation and funding mechanisms remain to be developed,. Nevertheless such approaches are to be encouraged as part of wider environmental improvement and traffic management initiatives.

A more strategic analysis

8.2.24 Taking a longer term strategic view, we conclude that the real issue is not about conversions, but about people's propensity to own and use cars. While clearly at a local level the combination of conversions and a high propensity to own cars can contribute to parking pressure, at a more strategic level it seems to us that policies which seek to restrict conversions on the basis of additional car parking demand could run the risk of being shown to be irrelevant in the face of estimates that the number of cars in London

is growing by 23,000 per year, and the fact that the demand for parking from conversions, is often no more – and is often less – than that from a single family house.

8.2.25 Responding to the pressures, inconvenience and environmental damage caused by increasing car ownership and use therefore requires long term strategies, not only of management, but to reduce people's propensity to own cars. This will include:

- the extension of controlled parking and residents' parking schemes and the use of price mechanisms to ration parking spaces (especially beyond one space per dwelling in areas with good accessibility to public transport and facilities);
- measures to improve the quality of public transport and cycling and reduce the relative attractiveness of the car such as reallocating road space from the car to bus and cycle ways;
- the use of planning agreements and restrictive covenants on car ownership; and
- positive measures aimed at reducing car ownership such as neighbourhood car fleets.

8.2.26 If policy is to resolve the environmental problems resulting from rising car ownership and use it must do more than treat the symptoms. It must deal directly with the cause of the problem and reduce the propensity of people to own cars.

8.2.27 Taking these issues together, our overall conclusion on residential conversions is that planning policies should seek to facilitate further conversion of houses into flats in order to meet the growing demand for smaller dwellings. In particular, we suggest that a more permissive approach could be adopted within town and district centre ped-sheds and along major transport corridors. It is in these areas where people have the opportunity to walk to facilities and public transport and where therefore the need to own and use a car should be less. Not everyone need take the same decision about car ownership and use; but at the margin, some people's decisions will change, and this will make easier the creation of more housing through the conversion of houses into flats.

Backland Development

Overview of potential

8.2.28 With almost 1,500 ha of land in backland plots large enough to accommodate a new residential street, there is significant raw potential for backland development in London. Moreover, the design analysis shows that backland development can be achieved in an acceptable manner, creating attractive residential environments, if it is planned and undertaken in a comprehensive manner.

8.2.29 Despite this, we conclude that for the foreseeable future, most of this potential will remain undeveloped. This is because, in the vast majority of cases, the practical problems of land assembly will simply be too great., whilst on environmental grounds, development may be inappropriate.

8.2.30 Nevertheless, this indicates that the constraint on backland development is more about practicality rather than about desirability per se. The implication of this is that development plan policies should recognise the potential for planned backland development and set out the circumstances in which development will be acceptable.

8.2.31 Moreover, taking a longer term view, backland areas can not be seen in isolation from the houses that surround them. As the dwelling stock ages it may cease to be cost effective to continue to repair dwellings and comprehensive redevelopment may become the preferred approach. In areas with large backlands it is likely that this redevelopment would be at a higher density and the potential for higher density development may itself accelerate this process. But, still mechanisms will be needed to secure comprehensive redevelopment.

8.2.32 We conclude therefore that, for the most part, backland areas are likely to remain part of London's longer term housing potential. Over the longer term the development of mechanisms that would permit more effective land assembly could not only facilitate more backland development, but may be needed in any event to facilitate comprehensive redevelopment of life expired dwellings in private ownership. For the present, however, it seems to us that there are more promising sources of potential that more directly address strategic concerns about urban regeneration and reducing the need to travel.

Opportunities for Backland Development to enhance urban quality

8.2.33 While the majority of backland areas are well used and valued, there are backland areas which are not well used and where environmental quality has been eroded. Often these are associated with garage mews in inter war and early post war housing. Here, new residential development could bring significant environmental improvement and have the support of local residents; not only because of a financial benefit, but because the backland area has become a source of nuisance rather than of utility and enjoyment.

8.2.34 While even in such cases, there will remain difficult implementation issues to overcome, this focused development- enabling approach is part and parcel of the pro-active urban management approach that is needed if London is to fulfil its potential to accommodate more housing in ways which enhance urban quality. A pilot project focusing on a backland area where environmental quality has been eroded could be useful not only in showing how development can bring about environmental enhancement, but also in terms of developing implementation mechanisms and informing the development of planning policies on backland development more generally.

8.2.35 Finally, where backland development is undertaken (either within or beyond town centre ped-sheds) it will be important for it to respect the character and scale of the surrounding houses. In many cases this will tend to imply

densities at the lower end of the density matrix set out earlier.

8.3 A Pro-active urban management approach

The need for a positive approach

8.3.1 The planning and regulation of development will be important in accommodating new housing, while maintaining quality and fostering sustainable development. But this must be set within the context of a broader urban management approach which is concerned with the management of activity as well as development, and in which the emphasis is on integrating new development with positive measures to improve the quality of the urban environment.

8.3.2 We believe that this pro-active approach is needed in three key areas:

- *in encouraging and facilitating development;*
- *in reconciling and managing pressures; and*
- *in improving urban quality.*

8.3.3 The following sections now set out the sorts of approaches required in each of these areas.

Encouraging and facilitating development which enhances quality

8.3.3 Permitting higher density development within the ped-sheds should give significant encouragement to new residential development by making it more attractive commercially. However, this alone is unlikely to bring forward all the land which could be developed for housing.

8.3.4 We suggest that the Boroughs will have to take a lead in identifying opportunities for residential development, marketing them to developers and when necessary assisting with land assembly and with the re-location of existing businesses or occupiers.

8.3.5 A detailed street by street survey of each ped-shed provides the starting point, but the effort must be on-going: new sites will become available; the circumstances and aspirations of land owners and occupiers will change; so too will the demands of the development industry.

8.3.6 Having a small team who are specifically charged with making housing development happen within the ped-sheds would, we believe, be the best way of responding to this dynamic situation in a focussed way. The team could be responsible for:

- *preparing local/neighbourhood urban design strategies and guidelines;*
- *identifying the opportunities for residential development;*
- *instigating environmental improvements such as the reorganisation of street space to create additional parking capacity and reduce through traffic;*
- *preparing site specific urban design briefs;*
- *marketing the opportunities to developers;*
- *liaising with land owners and affected occupiers; and*
- *liaising with other sections of the Planning Department (on planing applications, negotiations and policy development) with (other) departments (Economic Development, Estates, Highways) as well as with other agencies such as English Partnerships on grants and gap funding.*

8.3.7 As part of this pro-active approach to securing development it is likely that Boroughs will have to use their statutory compulsory purchase powers (or at least indicate a preparedness to use them) to acquire sites where voluntary acquisition has proved impossible.

Managing and reconciling pressures

8.3.8 In many cases the problems and issues which are seen to arise from new residential development (and especially higher density housing and flat conversions) are less to do with the development itself and more to do with the consequential pressures resulting from increased occupation and activity.

Traffic and Car Parking

8.3.9 Traffic and car parking issues are the main example. They need to be dealt with coherently and strategically if high density development and flat conversions, with a reduced or nil off-street parking requirement, are to be successful in practice.

8.3.10 A key purpose of focusing high density development close to town centres and public transport is to encourage people not only to use their cars less but to choose not to own a car at all. However, access to cars will be required, even, if ownership levels are low, for example, through Neighbourhood Car Fleet schemes. A pro-active approach is therefore needed to ensure that cars can be accommodated in a satisfactory way. But to get beyond an approach of management and displacement and, to seek to reduce car ownership and use, a supportive framework must be in place to encourage as many people as possible to live without their own car.

8.3.11 The approach could operate at a number of different levels:

- *where, for example, a development includes one parking space per unit, these could be sold or rented separately from the dwelling so that the actual cost of the parking space is explicit and those people who choose not to own a car can effectively receive a discount on their purchase price or rent; and*

- *where no parking provision is made on-site, the local authority could make spaces available either on-street as part of a resident's parking scheme, or at a public car park within the ped-shed.*

8.3.12 These measures are effectively about displacing the (albeit reduced) parking demand from the site, so that it can be developed more intensively and attractively. This might in itself discourage some car trips - but a more positive set of measures will be needed to encourage and enable people not to own their own car.

8.3.13 The most promising approaches are the Car Pool and Rent A Car schemes reviewed in Annex 1. Again the Ped-sheds

with their access to facilities and public transport and existing surface car parks could provide an ideal environment for such initiatives. Having a Rent A Car scheme(s) in place in a Ped-shed would make car-free housing much more attractive to prospective residents and indeed a shared car scheme could be included as an integral part of a larger housing development.

8.3.14 With around 260 such schemes in operation on the Continent involving 20,000 members and evidence that each Neighbourhood Car Fleet vehicle typically replaces 5-6 privately owned cars, we believe that the potential for such approaches to be adopted in London should be investigated as a matter of priority

8.3.15 A number of issues in relation to car free housing remain to be tested, including the possible mechanisms of controlling car ownership and residents parking, the strength of demand, and the attitudes and profile of potential residents in car free schemes. Various possibilities for distributing space saving benefits between more units, more amenity space, and ancillary uses also needs to be explored. It is therefore recommended that a number of pilot projects should be set up, backed by independent research and monitoring of processes and outcomes. Such pilots could include schemes already built.

Relocation of existing businesses and occupiers

8.3.16 Assembling sites for development (especially within Ped-sheds) may involve the displacement of existing businesses and occupiers. Clearly, care must be taken that securing new housing is not achieved at the expense of viable businesses. While we recognise the difficult issues involved and that the circumstances of each case will be different, there will be many cases where occupiers can be re-located to another part of a site, or to another site within or beyond the Ped-shed.

Improving urban quality

8.3.17 Accommodating new residential development and fostering sustainable development are inextricably bound up with issues of urban quality. On the one hand new housing can itself be a major driver of local area renewal, stimulating both physical and economic improvement. On the other improvements to urban quality can help stimulate new development, and may indeed encourage existing residents to continue to live in an area, as well as encouraging and facilitating more sustainable lifestyles. Moreover, if such approaches are to command support, existing residents must see tangible evidence that the intensification of residential development in their area is resulting in real improvements in the physical environment and their quality of life.

8.3.18 This means that considerations about quality and sustainable development must be integrated fully with efforts to promote new development. This is quite distinct from policies which seek to maintain quality by resisting change. Not only because new development and enhanced quality are compatible, but because in many parts of London, quality has already been (and continues to be) eroded well below levels that are readily achievable and desirable. Here, positive change and investment are needed to re-instate quality and provide people with an environment they can be proud of.

8.3.19 There are two levels at which urban quality issues need to be addressed: as part of the detailed design of new residential development; and in seeking to enhance the quality of the existing environment. In terms of new residential development the key principles which need to be addressed include:

- a feeling of safety and security: windows and doors opening onto the street - "to see and be seen";
- a clear definition of the public and private: providing an aspect to the street front while providing protection to the more private spaces of the interior and back garden;
- privacy: mutual levels need to be maintained and in most cases this means a room to room privacy distance of 20m. Care is also needed with the design of semi-private 'buffer spaces' such as front gardens and with over looking of back gardens;
- a healthy living environment: orientating residential development to allow sunlight into habitable rooms is very important. Special attention is needed where over-shadowing is an issue with north facing facades;
- flexible and adaptable buildings and layouts: new residential development should be sufficiently flexible to be adaptable to future generations of users and changes of use. This is important in respect of plan depth, internal circulation and ease of building repair; and
- enhancing local identity: new residential development should respect its context and enhance local identity.

At the neighbourhood level a broader range of initiatives may be required to improve urban quality and foster sustainable development. These could include:

- Physical environment
  - urban design initiatives such as greening, signage, treatment of gateways and other measures to strengthen local identity and a sense of place;
- Sustainable Transport
  - measures to encourage walking such as streetscape improvements, seating, re-instating pedestrian priority through the introduction of convenient and safe crossing points and 'safe routes to school';
  - measures to encourage cycling such as safe cycle routes, traffic calming, secure cycle parking;
  - public transport improvements such as links to surrounding and larger centres;

- *car transport and parking initiatives such as the establishment of car pool schemes; controlled residents parking or the rearrangement of on-street parking to release more capacity or improve the street scene;*

- *Supporting community facilities*
  - *improvements to local parks and open spaces; investment in new and improved facilities for children's play;*
  - *safety and security: safe routes, crime reduction initiatives.*

8.3.20 Where there is significant potential for new residential development within a ped-shed, as well as opportunities for urban enhancement, these issues could be addressed through the preparation of an integrated ped-shed strategy. We suggest that a pilot project should be undertaken for a Ped-shed meeting these criteria. This would demonstrate how the urban quality and sustainable development agendas, explored by this and other studies, can be implemented in a coherent and comprehensive manner. Ideally, such a demonstration project should bring together the key agencies involved with these issues such as relevant departments of the borough, the Housing Corporation, English Partnerships and/or the London Development Agency and London Transport. The possibility of securing funding under the current English Partnerships / Urban Villages Forum initiatives on mixed use and urban villages or from the EU as an innovative urban project for sustainable development could be investigated.

8.4 *A Supporting Framework to Improve and Sustain London's Quality as a place to live*

A 'Community Chest' to fund local projects

8.4.1 None of the quality related measures outlined in the previous section are new. Most would be on the list of projects Boroughs would like to fund if the resources were available. Moreover, as a significant proportion of new residential development in London takes place on small sites of the type considered by this study, investment in the public realm or new / improved community facilities tends not to come through planning gain as is often the case with green field development.

8.4.2 Despite this, investment in the public realm must not be seen as an optional extra. If our aspiration is to improve London's quality as a place to live rather than simply to maintain the status quo, then funding must be found for such quality related projects.

8.4.3 Taking these issues together, we suggest the establishment of a Borough Community Chest. This could be funded in the first instance by a levy on new residential development paid for from the increased development land value generated by higher density development.

Over time the sources of funds for the Community Chest could be widened to include for example:

- *monies already earmarked for environmental improvement;*
- *contributions from the developers of major schemes in town centres or as a grant or donation from major businesses already represented in the centre;*
- *parking charges, fines and other locally collected "green taxes".*

A further possibility worthy of consideration would be for an element of the Government's existing urban regeneration budget to be allocated in relation to new housing development. This would not only explicitly recognise the central role of housing development in urban regeneration, but could also ensure that new housing development is linked to investment in the public realm and the community and social infrastructure needed to support and sustain it.

8.4.5 This type of approach is integral to realising urban housing potential while enhancing quality and fostering sustainable development and in making these important relationships explicit in practice. More detailed consideration should now be given to establishing the mechanisms under which this could operate in practice.

Land Assembly and Gap Funding

8.4.6 Boroughs should be at the forefront of facilitating new residential development and conversions, but they must also be able to draw on the resources and expertise of development agencies such as English Partnerships and/or London Development Agency. This will be essential where an element of gap funding is required: either to overcome abnormal development costs arising from, for example, ground contamination; or to facilitate development in areas of low or weak market demand.

8.4.7 In addition boroughs may wish to enlist the support and expertise of English Partnerships and/or London Development Agency in assembling difficult sites for development, or where land needs to be acquired using compulsory purchase powers.

Wider Issues

8.4.8 Our conclusions have primarily been concerned with creating a planning policy framework within which London can accommodate more housing while maintaining and enhancing urban quality and fostering sustainable development. The focus has mainly been on urban quality: the physical quality and attractiveness of London as a place to live, and the aspects which are directly influenced by planning policies and development. But, important as these matters are, they cannot be viewed in isolation from wider quality of life concerns: safety and security, the quality of education and health services, public transport and access to employment. Performance on these broader issues will affect not only the quality of life enjoyed by Londoners, but also the extent to which London's full potential to accommodate new housing is realised.

Annex 1
Neighbourhood Car Fleets & Car Free Housing

Neighbourhood Car Fleets (NCF's)

The concept of Neighbourhood Car Fleets is to provide an alternative to car ownership that leads to:

- *A reduction of car dependence and use;*
- *More equitable distribution of access to cars;*
- *Reduced parking demand; and*
- *Lower household travel costs.*

There are two factors associated with individual car ownership which work powerfully against the achievement of sustainable transport objectives.

- *The costs of individual car ownership are weighted towards fixed costs (purchase, tax, insurance, etc) rather than running costs. This means that owners cannot significantly reduce costs by driving less, and that there is always a built in financial incentive to choose the car rather than other modes.*

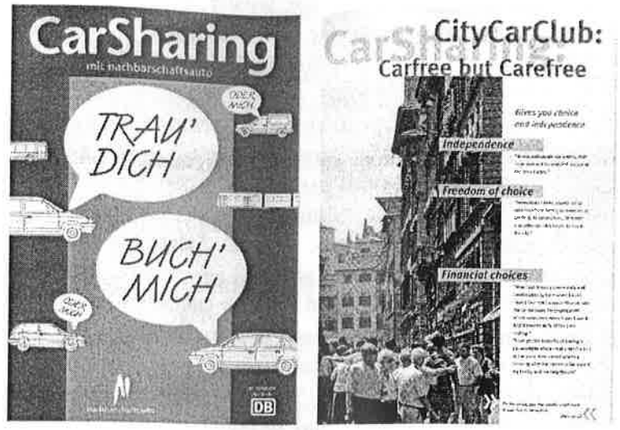
- *Cars are driven for only a small part of the time, which means that parking demand often outstrips supply.*

NCF provides an alternative which overcomes or reduces these problems. There are various types of scheme, but the basic features are:

- *A locally kept fleet of vehicles for use by members of a club*
- *Payment according to use*
- *Small fixed costs*

The concept is not new. Some schemes were introduced in the 1970s and 1980s in the USA, France, Sweden, and Japan. In London, too, pioneering work by Pharoah (1987) in the 1980s laid the foundation for schemes (though never implemented) in Kensington & Chelsea and Richmond.

On the Continent, however, Neighbourhood Car Fleets have developed rapidly in the last few years. There are now schemes in over 260 cities with more than 20,000 members. Such broad experience has allowed some general conclusions to be drawn about Neighbourhood Car Fleet operation, and its impact on the travel scene (the information below is based on analysis by the European Car Sharing Organisation).



Continental NCF promotional material

- *Each Neighbourhood Car Fleet vehicle typically replaces 5 - 6 private cars*
- *There are 15 - 20 users per vehicle*
- *Membership often adheres to the "rule of thirds"*

  a third are non- car owners
  a third had planned to become car owners
  a third gave up ownership in favour of Neighbourhood Car Fleet membership.

- *If available throughout the European Union, it is estimated that the car population could be reduced by 6 million vehicles.*
- *A quarter of all bookings are made within one hour of travel commencing. (This clearly distinguishes the flexibility of Neighbourhood Car Fleets compared with conventional car rental).*
- *Members of Neighbourhood Car Fleet schemes consume 50% less energy for their total travel needs.*

How do Neighbourhood Car Fleets work?

A typical scheme works as follows:

- Join the club to get personal key;
- Reserve a car by telephone (anytime);
- Collect car from NCF station;
- Drive and return; and
- Leaving travel docket and key in safe.

All the business of car ownership is done for members (maintenance, insurance, repairs, tax, M.O.T.).

The NCF station – containing car keys and equipment, including a children's seat and even a ski rack! (Stadt Auto, Bremen, Germany)

Britain's first formal public NCF scheme is planned to begin operation in Edinburgh's Marchment district in 1998.

With many areas of high parking stress, and good alternatives to the car, there is plenty of scope for the introduction of NCF schemes in London. A pilot scheme is urgently required.

Reference: Pharoah, Tim (1987) "Shared cars: key to reducing traffic", in Town & Country Planning, Volume 56, No. 9, page 240-242.

Car Free Housing

Attempts have been made over several decades to devise housing layouts which can resolve the conflict between, on the one hand, a safe and pleasant living environment and, on the other hand, access and parking for motor vehicles, especially residents' cars. Various issues have been tackled, such as: whether to keep roads and parking separate from pedestrian areas, or to integrate them; whether parking should be integral with the dwelling, or grouped in communal spaces; whether housing should front directly onto the road, or back onto it.

Each design type had its good and bad points, but one problem is not easily overcome, namely the sheer quantity of space required to provide for "saturation" car ownership. The proportion of housing layouts devoted to access ways and parking is commonly between 25% and 40% of total site area, which inevitably places severe constraints on the densities and environmental qualities that can be achieved. Thus in housing, as in all aspects of physical urban structure, provision for cars is fundamentally at odds with urbanity.

The new issue is traffic reduction, and whether housing can contribute to this objective. The concept to emerge in response to this challenge is "car-free housing", a term which has been used to describe all housing purposely built with less car provision than the norm.

Provision for less cars and less car use both enables and requires the parameters of layout and design to be broadened to include:

- Quality and safety of external dwelling environment;
- Housing for life-styles and travel-styles;
- Re- use and good use of available land (density and quality issues); and
- Equity (only pay for vehicle facilities used or wanted).

The term "car free" is not to be taken too literally, at least in relation to housing schemes so far developed, in which the extent of car "freeness" varies widely.

Different levels can be identified, which together form a continuum from small adjustments of parking standards or design, through to the provision of housing where cars are totally excluded, and residents are legally bound not to own a car. The latter type, so far as we are aware, has yet to be implemented anywhere in Europe.

It may be more appropriate to think in terms of housing where both design and social parameters result in few cars (rather than no cars) that need parking or access. Cars may be included, but only to a minimal level. Thus "car-free" must be interpreted in the same way as "alchohol-free" drinks, where small quantities of achohol are present. More accurate terms that could be used are "car provident", or "car frugal" housing. The term "car reduced" is sometimes used, in which case logic requires comparison with normal standards of parking and access. To meet the new policy objectives of reduced car use and dependence, however, lower levels of provision will themselves need to become the norm.

Different levels of car free housing can be identified, forming a continuum from adjustments within present standards, to a genuinely car-free scheme. At all levels, any parking provision would be communal, and no spaces would be for the exclusive use of any one household.

Current parking levels are severely undermining environmental quality.

Figure 3.1: The Continuum of Car "Free-ness" in New Housing

1	CARS EXCLUDED	Better use of existing standards, designed to provide areas on site free of vehicles. Cars parked on periphery or underground. E.g. Kista (Stockholm), Lövenich (near Cologne)
2	CAR REDUCED	Less than 1:1 parking provided. Parking provided on-site (as level 1), or on street or at other off-site facilities. E.g. Amsterdam "Westerpark", and many other planned schemes in Germany.
3	ZERO DEDICATED PARKING	No parking provided exclusively for the housing. Parking on-street or off-street shared with other activities or developments. No legal restrictions on ownership. E.g. Central London housing schemes
4	CAR-FREE HOUSING	Car ownership neither provided for, nor allowed. This means zero general parking provision, and legal restrictions (voluntary or otherwise) on car ownership by residents. However, may be provision for Neighbourhood Car Fleet shared cars, and possibly disabled persons' vehicles. E.g. Bremen "Hollerland" scheme abandoned; parking permit restrictions, Camden

The levels identified in the Table are reasonably well represented in existing housing.

Level 1 describes many areas of housing, both old and recent, where housing fronts onto vehicle-free passages, footpaths, courtyards etc.

Level 2 describes large tracts of Edwardian, Victorian and earlier housing which were built without any parking facilities, and where residents rely mostly on street parking. There are also more modern housing schemes, usually in the centre of larger cities, where car parking has been provided at less than the normal 1:1 standard.

Levels 3 and 4 are less commonly found, though there are examples in student housing, such as in Oxford and Cambridge, and of regular housing in Japan and other countries, with restrictions on car ownership and zero parking available.

Car Free Housing (continued)

A policy context for different levels of car-free housing

Level 1 represents an improvement on standard housing layouts, because design is used to create living space which is free from the nuisance and danger caused by the presence of vehicles. It does not, however, contribute to the objective of lower levels of car use. Meeting the full demand for car parking and access by provision on site may be justified where residents' parking cannot be accommodated off site, for example where on-street parking controls are difficult, or where on-street or other space is unavailable or unsuitable.

Even so, it should be possible to reduce the number of parking spaces for a given development by the use of communal rather than individual parking spaces. Communal provision allows for variations in car ownership between households to be accommodated without having to provide for maximum demand.

In new developments, especially in areas which may be regarded as "car dependent", consideration could be given to designing the scheme to minimise parking spaces for the exclusive use of a dwelling, and providing the balance in communal parking courts or on-street. If carefully arranged, this could create the possibility for using the communal parking courts for more housing units (or other uses) in the longer term when public transport has been improved, or cycle facilities have been created.

Level 2 is where parking supply on site is significantly below the usual standards, less than, say, one space per two dwellings. Such provision will be consistent with sustainable transport objectives in locations where there are good alternatives to the car: a range of facilities within walking or cycling distance, and/or good public transport facilities. In practice in London such locations are likely to be within suburban town centre or district centre ped-sheds.

Level 3 is where there is minimal parking provided on site, and no special provision off site. While residents would have no restrictions on car ownership, they would have to park their cars in whatever on-street or other space was available in the surrounding area. This could apply to in-fill or conversions, or to larger schemes, especially where on-street residents' parking and other controls are in place on the surrounding streets. In terms of parking impact there is no difference between new Level 3 housing, and the large tracts of pre- first world war housing in London, built before the age of car ownership, but with careful design the modern equivalent can achieve much higher environmental standards.

Level 4 housing is distinquished by intervention to prevent car ownership by residents. Such housing will probably need to meet at least one of the following conditions:

- *Located where ther are good alternatives to the car (central London or suburban centre ped shed);*
- *Located where ther are comprehensive controls on residents' parking within a certain distance of the site; and*
- *Availability of a Neighbourhood Car Fleet scheme.*

Although schemes have been promoted in outer suburban locations (e.g Bremen), the chances of success may be higher where land prices are high, and dependence on cars is low. Location may also be a factor in determining the type of legal restriction on car ownership to be applied. Covenants preventing residents from owning cars may be needed in non-central locations, where off street parking is available. The Canmore Housing Association scheme in Gorgie (Edinburgh) for 121 units will follow this approach, though potential residents are expected to have a positive attitude to car free living.

In central locations, or areas with Controlled Parking Zones, the restrictions can be on the right to park, rather than the right to own a car. This approach is being taken in Camden where residents in some new central London housing schemes will not be able to obtain residents' parking permits. Developers and agents are required, as part of the Section 106 planning agreement, to make residents aware of this provision. A scheme in Farringdon Road for 41 units aimed at the *pied a terre* is the first example in Camden. A housing association scheme to the rear of Holborn Town Hall (Dragons Court) for 29 units (also due for completion in 1998) will include open space and other benefits of a car-free design for permanent residents.

Camden has a proposal to convert an exisitng residential street into a car free envionment, as a pilot project. This appears likely to be consistent with Level 4 provision, though there will need to be detailed local consultation before the details of car ownership restrictions can be decided.

Whether covenants or parking restrictions are used to prevent car ownership, the ability to enforce such contracts over time has yet to be fully tested.

Car free housing in Lövenich, near Köln.

6-storey inner urban car free housing in Stockholm

Annex 2
Design Exercises

1.0 Introduction to design exercises

1.1 The following annex sets out in detail the design options, a total of 144 sketch schemes, for the 48 case study sites, which were identified during the course of the project. The 3 options were developed to test different scenarios based on the Sustainable Residential Quality principles set out in Chapter 3. The sites used in the design exercise are examples of how innovative, good quality housing provision could be achieved. They were chosen and developed by the consultants on their merits with reference to, but not necessarily conforming to current UDP designations. They are not meant to be indicative of how these specific sites could be developed, nor should they be construed as such.

1.2 For illustrative purposes the designs are presented as axonometrics in order to provide an understanding of the relationships with surrounding buildings, massing and relationship to public space.

1.3 The accompanying tables set out specifically the mix and number of units under each option, as well as the number of habitable rooms, the floorspace area and the number of parking spaces per unit type. They go on to show the density of the sketch schemes first in dwellings per hectare then in habitable rooms and finally in terms in the amount of floor area in square metres. Each is expressed in relation to a net site area (i.e. only including the area within the site boundary itself) and a gross site area (i.e. also including half the width of surrounding roads).

1.4 Before options were developed, each site was analysed in terms of the constraints and opportunities influencing its residential potential, such as orientation, access, aspect and dimensional limitations.

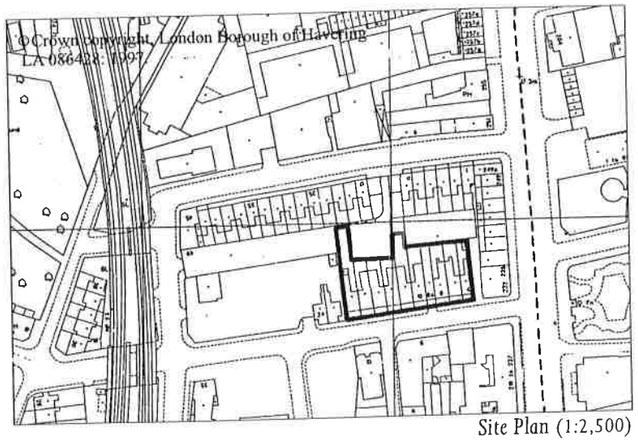
1.5 Option one schemes have been developed in accordance with current UDP. standards, excluding land use designation, and could be considered a typical response from mainstream developers. Option two removes the UDP. standards related to density and reduces the off street parking standard to one car space per dwelling (or half a space if the local standard is one per dwelling). Option three differs from option two only in that no off street car parking is provided.

1.6 It is implicit in the design exercises that technical architectural issues such as Building Regulations and service provision have an influence on design and density potential. It is however, beyond the scope of this study to access technical specification in detail, even though performance demands are made which may challenge economic viability. With this in mind, existing standards were reviewed allowing design exercises to err towards typical solutions rather than the technically inventive.

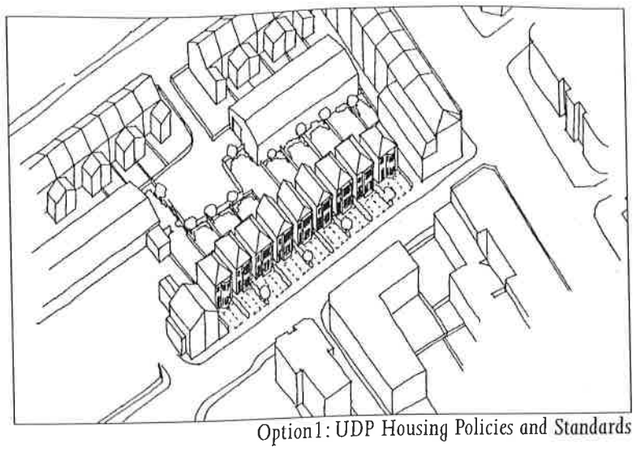
1.7 Finally the site plans and axonometrics included in the Annex are reproduced and based on the Ordnance Survey mapping with the permission of the Controller of Her Majesty's Statutory Office © Crown Copyright. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings.
London Borough of Havering LA086428:1997.

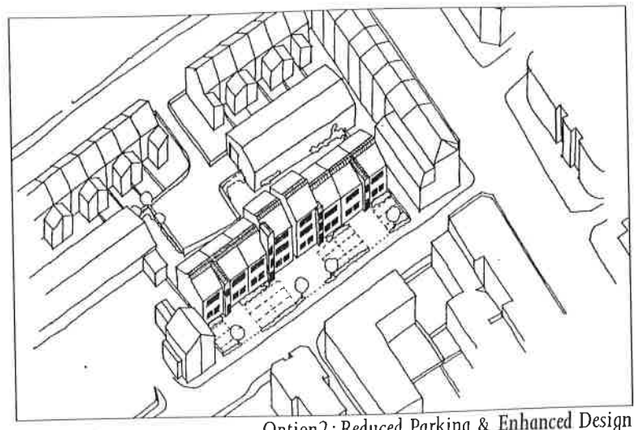
Design Exercise 1
Housing Redevelopment

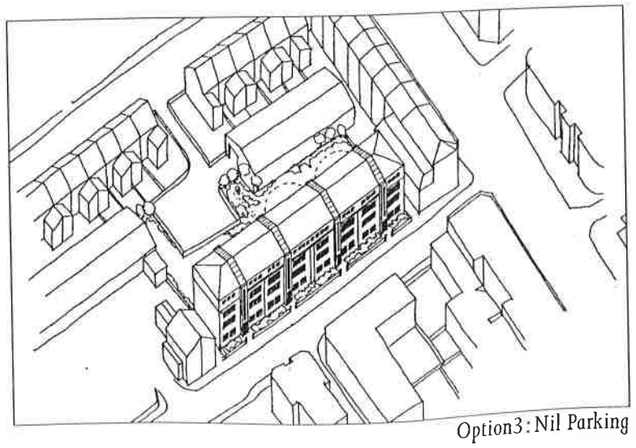
- Two-storey Victorian terrace in poor state of repair and earmarked for redevelopment.
- Front aspect faces onto street and form follows existing street pattern.
- **Option one** is designed to the maximum density allowable in this borough and therefore consists of housing with parking spaces at the front. Each house is given an individual back garden.
- **Option two** provides parking courts at the front with soft landscape boundary to the street and a communal garden to the rear. Circulation cores are organised so that they serve flats in pairs on each floor.
- **Option three** comprises four storey's, one storey above that of the surrounding context.The block is moved closer to street, enabling a larger garden to the rear.The front garden acts as a buffer space between public and private realms.



Site Plan (1:2,500)


Option1: UDP Housing Policies and Standards


Option2: Reduced Parking & Enhanced Design


Option3: Nil Parking

OPTION 1 - Complies with UDP Standards

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	2	4	100	2
2 Bed	65	0	0	0	0
3 Bed	80	8	40	640	8
4 Bed +	96	0	0	0	0
TOTAL		10	44	740	10

DENSITY

SITE AREA	NET	GROSS
HA	0.146	0.1778
Units/Ha	68	56
Hab Rm/Ha	301	247
Area/Ha	5,068	4,162

OPTION 2 - Enhanced design + Reduced Park.

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	18	54	1170	18
3 Bed	80	0	0	0	0
4 Bed +	96	0	0	0	0
TOTAL		18	54	1170	18

DENSITY

SITE AREA	NET	GROSS
HA	0.146	0.1778
Units/Ha	123	101
Hab Rm/Ha	370	304
Area/Ha	8,014	6,580

OPTION 3 - Nil Parking

DEVELOPMENT MIX

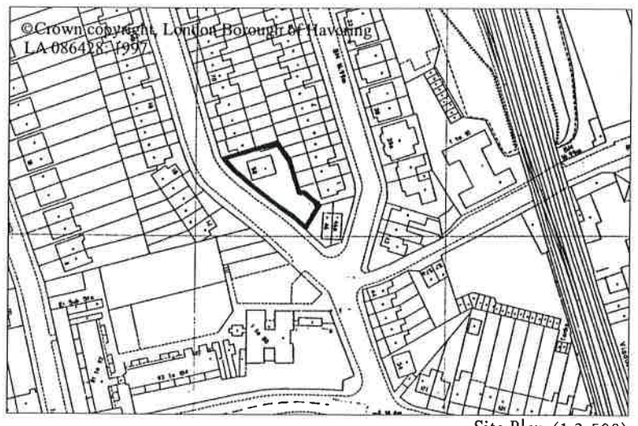
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	32	96	2080	0
3 Bed	80	0	0	0	0
4 Bed +	100	0	0	0	0
TOTAL		32	96	2080	0

DENSITY

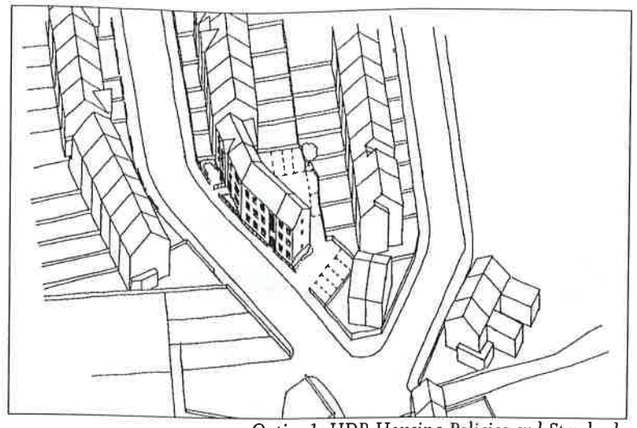
SITE AREA	NET	GROSS
HA	0.146	0.1778
Units/Ha	219	180
Hab Rm/Ha	658	540
Area/Ha	14,247	11,699

Design Exercise 2
Constrained Residential Site

- *Narrow site geometry dictates that dwellings are mostly single aspect and shallow plan, facing towards the street.*
- *Blank walls and service windows towards the rear prevent over looking of neighbouring properties.*
- *All options are designed to three-storeys, conforming to surrounding context.*
- **Option one** *conforms to the Borough requirement of a minimum 21m overlooking distance, which is more than residents of the existing Victorian terrace find acceptable (18m). All external private space is dedicated to parking or circulation.*
- *With less parking and 18m privacy distance in* **option two**, *more of the rear space is used for gardens. Parking is positioned at the end of the terrace.*
- *In* **option three**, *the rear space is used for a communal garden.*

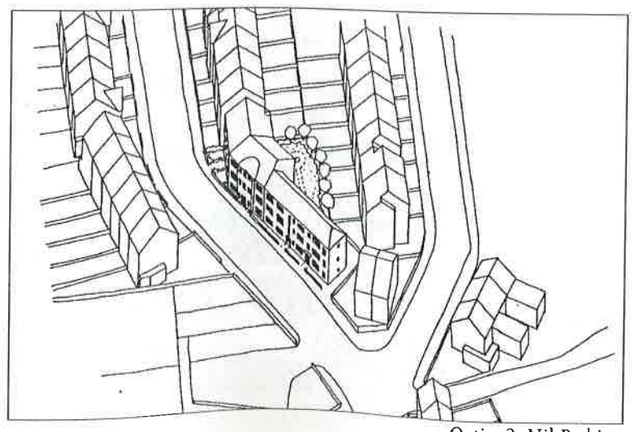


Site Plan (1:2,500)



Option1: UDP Housing Policies and Standards

Option2: Reduced Parking & Enhanced Design



Option3: Nil Parking

OPTION 1 - Complies with UDP Standards
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	2	4	100	2
2 Bed	65	0	0	0	0
3 Bed	80	8	40	640	8
4 Bed +	96	0	0	0	0
TOTAL		10	44	740	10

DENSITY

SITE AREA	NET	GROSS
HA	0.146	0.1778
Units/Ha	68	56
Hab Rm/Ha	301	247
Area/Ha	5,068	4,162

OPTION 2 - Enhanced design + Reduced Park.
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	3	3	120	0
1 Bed	50	3	6	150	3
2 Bed	65	3	9	195	3
3 Bed	80		0	0	0
4 Bed +	96	2	12	192	0
TOTAL		11	30	657	6

DENSITY

SITE AREA	NET	GROSS
HA	0.06	0.09
Units/Ha	183	122
Hab Rm/Ha	500	333
Area/Ha	10,950	7,300

OPTION 3 - Nil Parking
DEVELOPMENT MIX

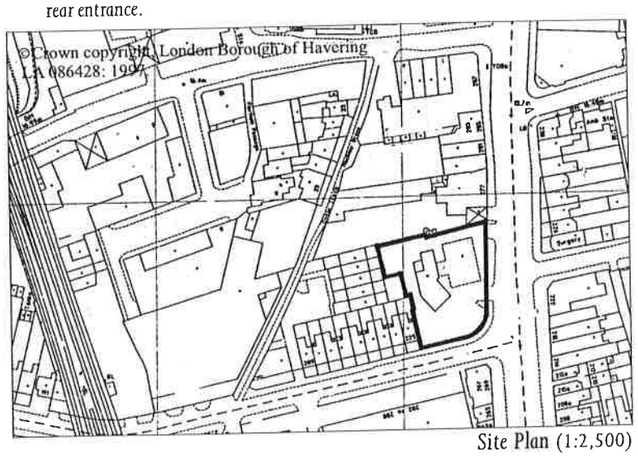
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	32	96	2080	0
3 Bed	80	0	0	0	0
4 Bed +	100	0	0	0	0
TOTAL		32	96	2080	0

DENSITY

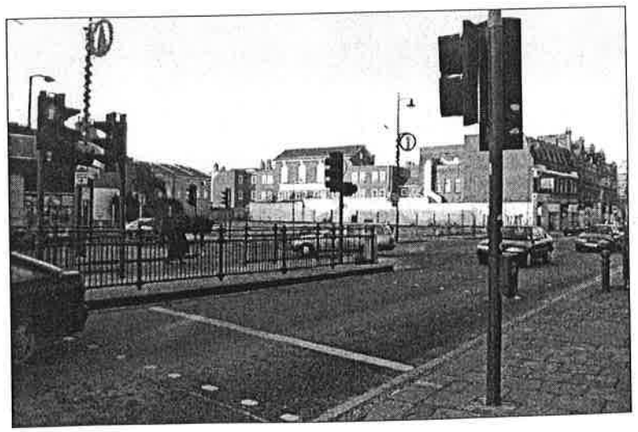
SITE AREA	NET	GROSS
HA	0.146	0.1778
Units/Ha	219	180
Hab Rm/Ha	658	540
Area/Ha	14,247	11,699

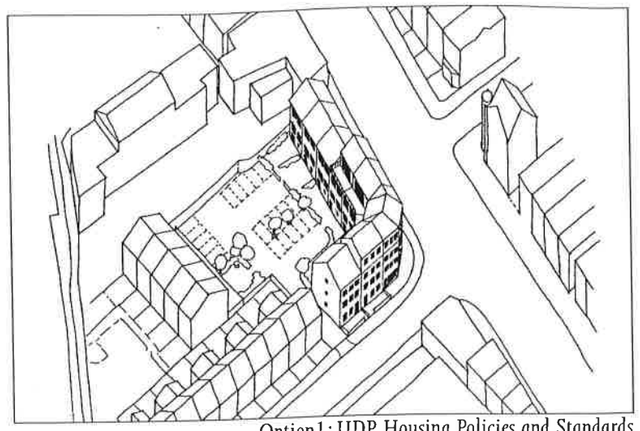
Design Exercise 3
Corner Site on Main Street

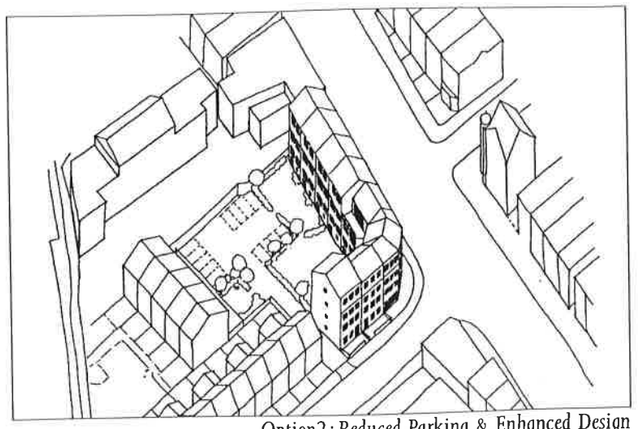
- Vacant site previously occupied by petrol station.
- All options are designed to a three to four-storey height to conform with context of the high street.
- Uses are mixed vertically by incorporating B1 office space on the ground floor.
- Special detailed corner layouts are used to respond positively to the street and provide the landmark presence demanded of this location.
- Fourth floor flats are organised as shallow plan on the corner to allow light penetration to the back of the development.
- Balconies of a generous width are provided to the rear.
- Most of the rear space of **option one** comprises parking with small courtyard gardens.
- **Options two** has a similar form, but with increased garden space to the rear. **Option three** marginally increases the capacity, with development bridging the rear entrance.

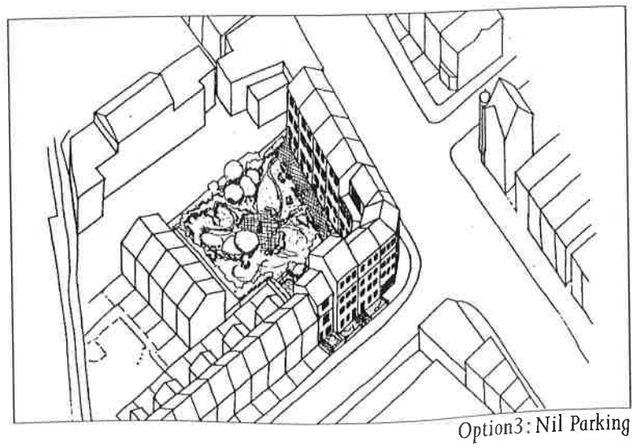


Site Plan (1:2,500)




Option1: UDP Housing Policies and Standards


Option2: Reduced Parking & Enhanced Design


Option3: Nil Parking

OPTION 1 - Complies with UDP Standards

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	4	8	200	4
2 Bed	65	16	48	1040	16
3 Bed	80	0	0	0	0
4 Bed +	96	0	0	0	0
Offices			0	490	1
TOTAL		20	56	1730	21

DENSITY

SITE AREA	NET	GROSS
HA	0.161	0.219
Units/Ha	124	91
Hab Rm/Ha	348	256
Area/Ha	10,745	7,900

OPTION 2 - Enhanced design + Reduced Park.

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	3	6	150	3
2 Bed	65	23	69	1495	10
3 Bed	80		0	0	0
4 Bed +	96	0	0	0	0
Other	Offices		0	380	0
TOTAL		26	75	2025	13

DENSITY

SITE AREA	NET	GROSS
HA	0.161	0.219
Units/Ha	161	119
Hab Rm/Ha	466	342
Area/Ha	12,578	9,247

OPTION 3 - Nil Parking

DEVELOPMENT MIX

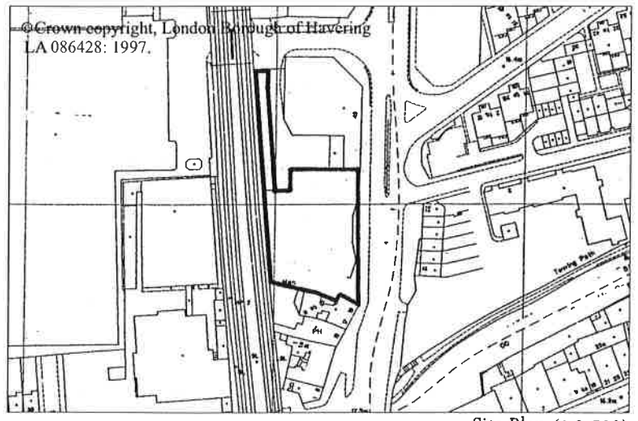
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	3	6	150	0
2 Bed	65	23	69	1495	0
3 Bed	80	0	0	0	0
4 Bed +	100	1	6	100	1
Other	Office		0	380	0
TOTAL		27	81	2125	1

DENSITY

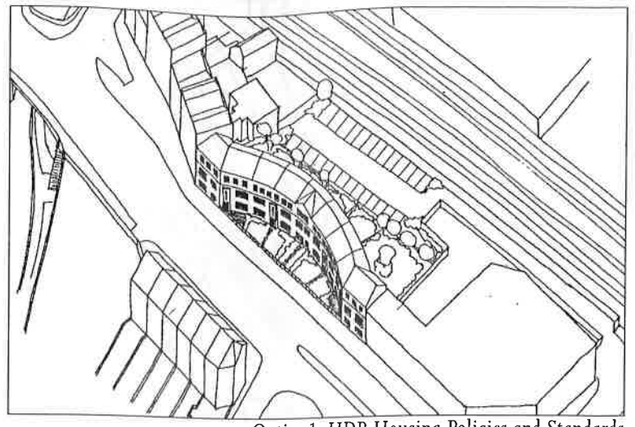
SITE AREA	NET	GROSS
HA	0.161	0.219
Units/Ha	168	123
Hab Rm/Ha	503	370
Area/Ha	13,199	9,703

Design Exercise 4
Vacant Main Street Site with Railway to the Rear

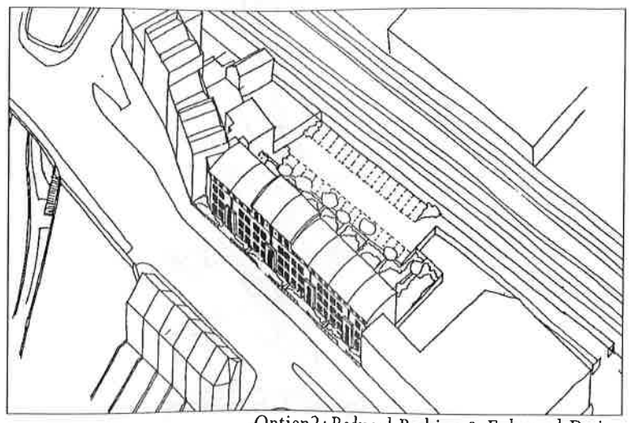
- *Layout benefits from East andWest light.*
- *Busy road and railway imposes the need for high quality acoustic detailing in the development.*
- *Generous rear parking and garden space with development positioned towards the road buffers housing from the railway and exploits existing rear access.*
- *High quality landscaping is provided to the front with special attention paid to boundary treatment.*
- *Location dictates that the majority of dwelling units would be flats.*
- *Rear gardens are organised to suit tenant blocks.*
- *The number of storeys increases through the options due to increasingly reduced parking requirements.*
- *Each layout is similarly configured.* **Option one** *forms a three-storey crescent, which is straightened and raised to four and five storeys in* **options two** *and* **three** *respectively. Fifth floor flats have roof terraces in* **option three**.



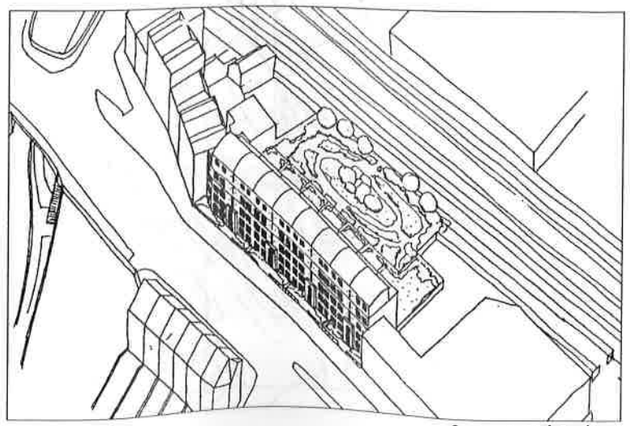
Site Plan (1:2,500)



Option1: UDP Housing Policies and Standards



Option2: Reduced Parking & Enhanced Design



Option3: Nil Parking

OPTION 1 - Complies with UDP Standards
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	3	0	0
1 Bed	50	27	54	1350	27
2 Bed	65	0	0	0	0
3 Bed	80	0	0	0	0
4 Bed +	96	0	0	0	0
TOTAL		27	57	1350	27

DENSITY

SITE AREA	NET	GROSS
HA	0.182	0.215
Units/Ha	148	126
Hab Rm/Ha	313	265
Area/Ha	7,418	6,279

OPTION 2 - Enhanced design + Reduced Park.
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	32	96	2080	16
3 Bed	80	0	0	0	0
4 Bed +	96	0	0	0	0
TOTAL		32	96	2080	16

DENSITY

SITE AREA	NET	GROSS
HA	0.182	0.215
Units/Ha	176	149
Hab Rm/Ha	527	447
Area/Ha	11,429	9,674

OPTION 3 - Nil Parking
DEVELOPMENT MIX

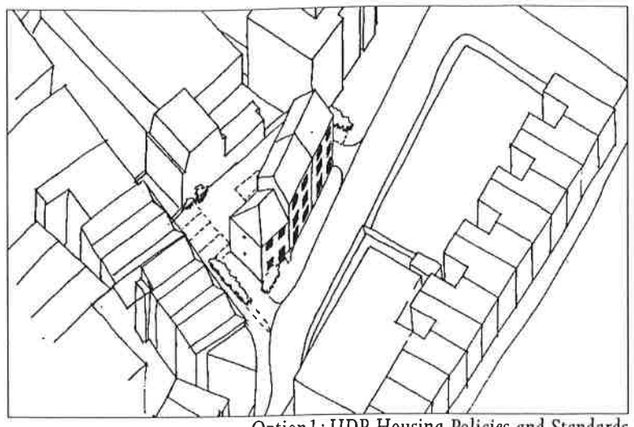
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	8	16	400	0
2 Bed	65	32	96	2080	0
3 Bed	80	0	0	0	0
4 Bed +	100	0	0	0	0
TOTAL		40	112	2480	0

DENSITY

SITE AREA	NET	GROSS
HA	0.182	0.215
Units/Ha	220	186
Hab Rm/Ha	615	521
Area/Ha	13,626	11,535

Design Exercise 5
Constrained Site with Existing Three Storey Building

- Located close to busy town centre.
- Surrounding residential buildings rely on privacy distances of 15-18m. Removal of existing three-storey building increases viability of development.
- Single aspect shallow plan units are used to respect the right of light of existing residential properties and provide minimum privacy distances of 18m.



Option1: UDP Housing Policies and Standards

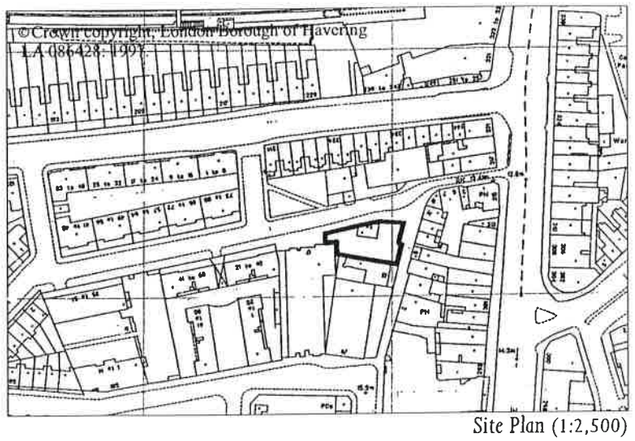
OPTION 1 - Complies with UDP Standards

DEVELOPMENT MIX

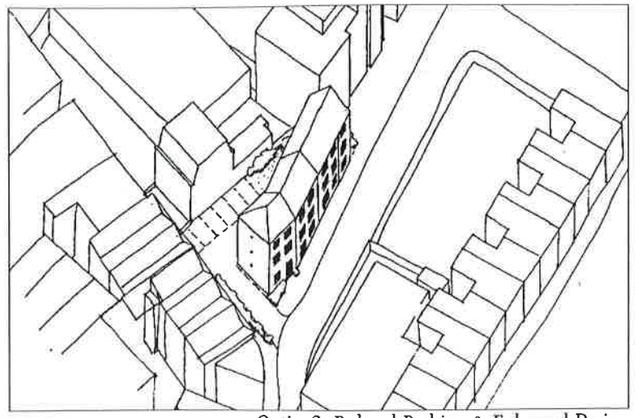
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	3	0	0
1 Bed	50	8	16	400	8
2 Bed	65	0	0	0	0
3 Bed	80	0	0	0	0
4 Bed +	96	0	0	0	0
TOTAL		8	19	400	8

DENSITY

SITE AREA	NET	GROSS
HA	0.041	0.0594
Units/Ha	195	135
Hab Rm/Ha	463	320
Area/Ha	9,756	6,734



Site Plan (1:2,500)



Option2: Reduced Parking & Enhanced Design

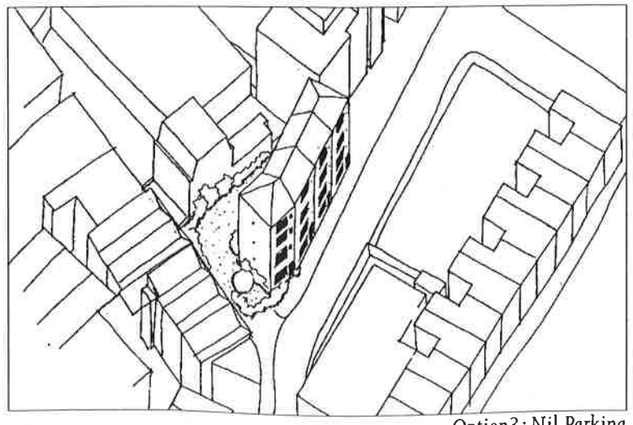
OPTION 2 - Enhanced design + Reduced Park.

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	6	12	300	3
2 Bed	65	3	9	195	2
3 Bed	80	0	0	0	0
4 Bed +	96	0	0	0	0
TOTAL		9	21	495	5

DENSITY

SITE AREA	NET	GROSS
HA	0.041	0.0594
Units/Ha	220	152
Hab Rm/Ha	512	354
Area/Ha	12,073	8,333



Option3: Nil Parking

OPTION 3 - Nil Parking

DEVELOPMENT MIX

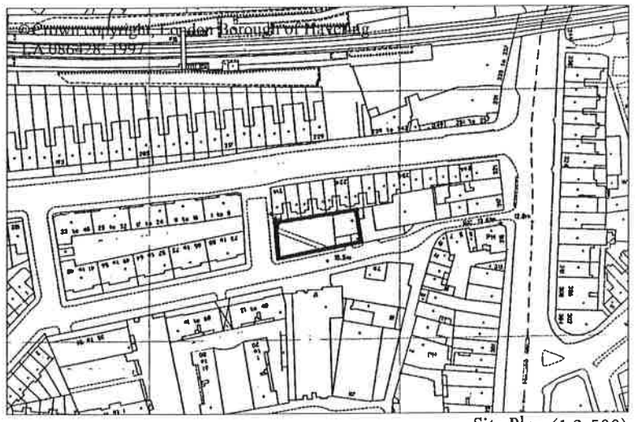
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	16	32	800	0
2 Bed	65	0	0	0	0
3 Bed	80	0	0	0	0
4 Bed +	100	0	0	0	0
TOTAL		16	32	800	0

DENSITY

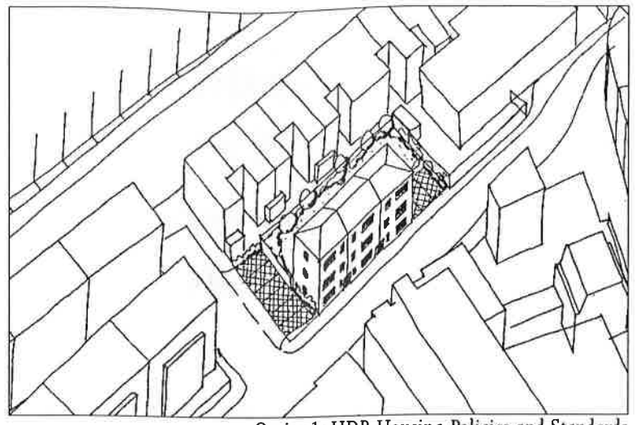
SITE AREA	NET	GROSS
HA	0.041	0.0594
Units/Ha	390	269
Hab Rm/Ha	780	539
Area/Ha	19,512	13,468

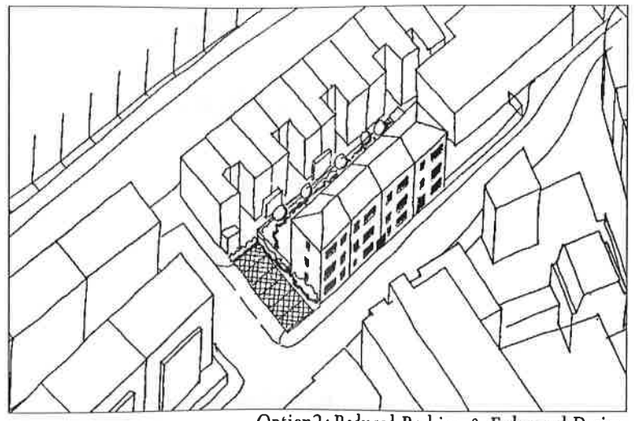
Design Exercise 6
Constrained Site Close to Town Centre

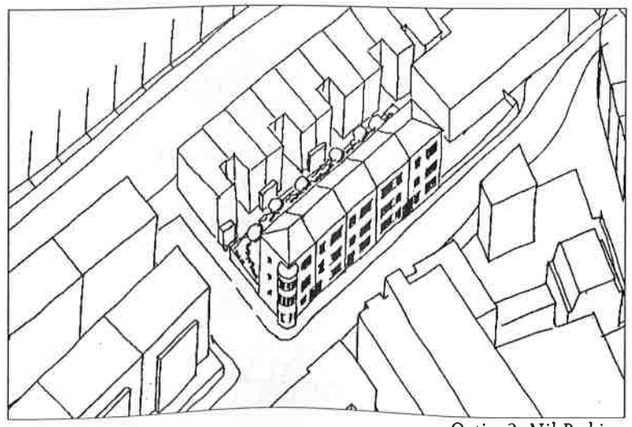
- Located close to busy town centre.
- Surrounding residential buildings rely on privacy distances of 6-18m.
- Removal of the existing three-storey building increases viability of development.
- Single aspect shallow plan units are used, restricting privacy distances to 18m and respecting the right of light of existing residential properties.
- Development takes place up to the street boundary.
- In **options one** and **two**, the number of units is reduced due to need for off-street parking despite public transport and town centre shopping facilities being only 40m away.



Site Plan (1:2,500)


Option1: UDP Housing Policies and Standards


Option2: Reduced Parking & Enhanced Design


Option3: Nil Parking

OPTION 1 - Complies with UDP Standards
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HAB.RM. NOS.	AREA SQ.M.	PARKING NOS
Studio	40	0	3	0	0
1 Bed	50	9	18	450	9
2 Bed	65	0	0	0	0
3 Bed	80		0	0	0
4 Bed +	96	0	0	0	0
TOTAL		9	21	450	9

DENSITY

SITE AREA	NET	GROSS
HA	0.0485	0.0625
Units/Ha	186	144
Hab Rm/Ha	433	336
Area/Ha	9,278	7,200

OPTION 2 - Enhanced design + Reduced Park.
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HAB.RM. NOS.	AREA SQ.M.	PARKING NOS
Studio	40	0	0	0	0
1 Bed	50	12	24	600	6
2 Bed	65	0	0	0	0
3 Bed	80		0	0	0
4 Bed +	96	0	0	0	0
TOTAL		12	24	600	6

DENSITY

SITE AREA	NET	GROSS
HA	0.0485	0.0625
Units/Ha	247	192
Hab Rm/Ha	495	384
Area/Ha	12,371	9,600

OPTION 3 - Nil Parking
DEVELOPMENT MIX

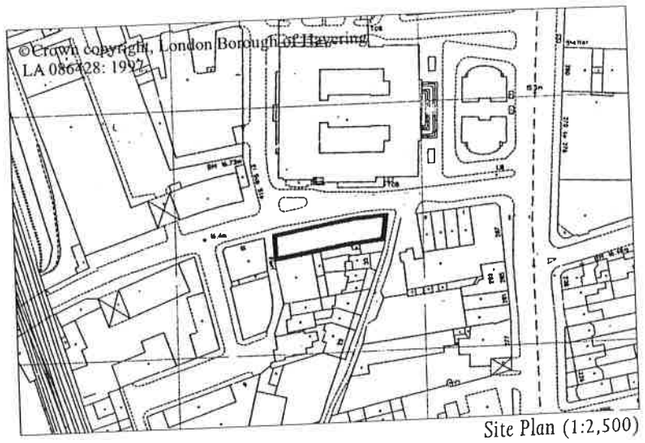
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HAB.RM. NOS.	AREA SQ.M.	PARKING NOS
Studio	40	0	0	0	0
1 Bed	50	15	30	750	0
2 Bed	65	0	0	0	0
3 Bed	80		0	0	0
4 Bed +	100		0	0	0
TOTAL		15	30	750	0

DENSITY

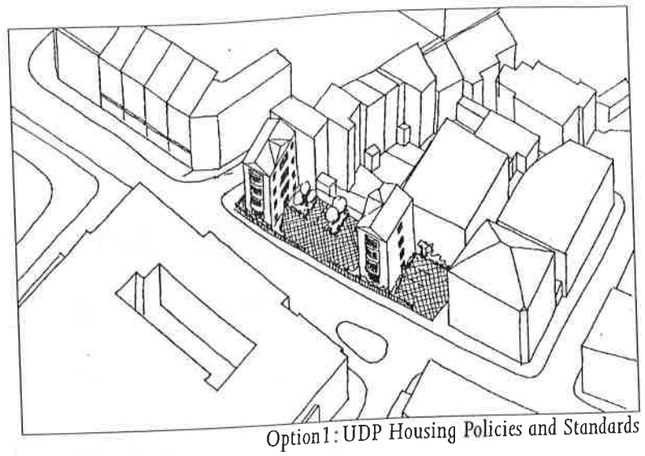
SITE AREA	NET	GROSS
HA	0.0485	0.0625
Units/Ha	309	240
Hab Rm/Ha	619	480
Area/Ha	15,464	12,000

Design Exercise 7
Vacant Site on Side Street Next to Town Centre

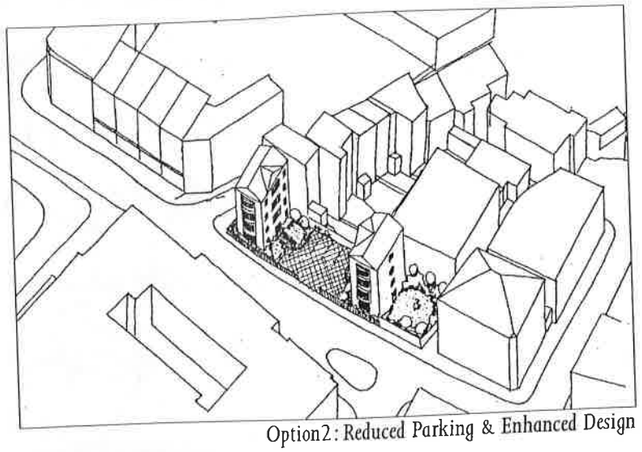
- Surrounded by a mix of large commercial and public buildings and some four storey residential buildings.
- Site is constrained and very narrow.
- Overlooking requirements affect the location of windows and habitable rooms.
- **Options one** and **two** restrict development to two blocks and face onto a central parking court.
- **Option three** comprises three blocks, with controlled overlooking, which are located against the street boundary, with private gardens to the side and rear.



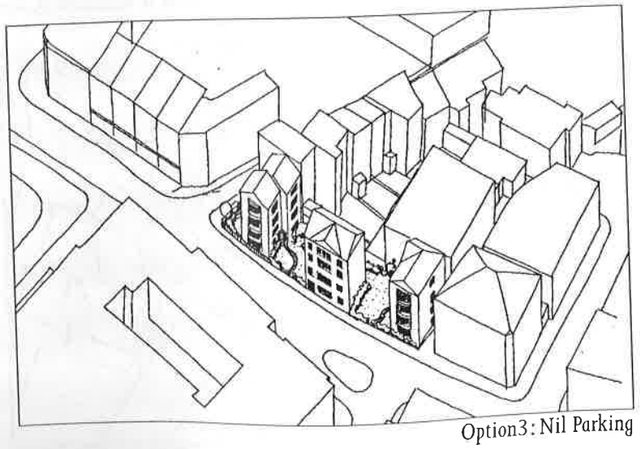
Site Plan (1:2,500)



Option1: UDP Housing Policies and Standards



Option2: Reduced Parking & Enhanced Design



Option3: Nil Parking

OPTION 1 - Complies with UDP Standards

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	8	24	520	8
3 Bed	80	0	0	0	0
4 Bed +	96	0	0	0	0
TOTAL		8	24	520	8

DENSITY

SITE AREA	NET	GROSS
HA	0.05	0.09
Units/Ha	160	89
Hab Rm/Ha	480	267
Area/Ha	10,400	5,778

OPTION 2 - Enhanced design + Reduced Park.

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	8	24	520	4
3 Bed	80		0	0	0
4 Bed +	96	0	0	0	0
TOTAL		8	24	520	4

DENSITY

SITE AREA	NET	GROSS
HA	0.05	0.09
Units/Ha	160	89
Hab Rm/Ha	480	267
Area/Ha	10,400	5,778

OPTION 3 - Nil Parking

DEVELOPMENT MIX

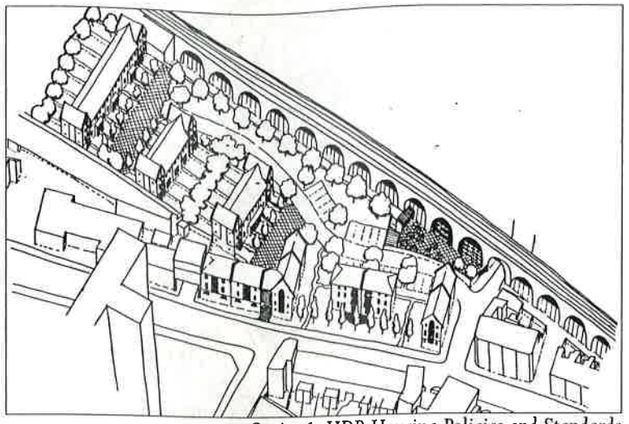
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	8	8	320	0
1 Bed	50	0	0	0	0
2 Bed	65	8	24	520	0
3 Bed	80		0	0	0
4 Bed +	100		0	0	0
TOTAL		16	32	840	0

DENSITY

SITE AREA	NET	GROSS
HA	0.05	0.09
Units/Ha	320	178
Hab Rm/Ha	640	356
Area/Ha	16,800	9,333

Design Exercise 8
Under-used Town Centre Car Park

- Development of the site is possible with better management of existing car parking.
- A railway line forms the site boundary, necessitating special attention to acoustic detailing.
- In **option one**, development is located away from the railway to reduce the need for acoustic specification. Houses face onto the street and are given a mews layout to the rear, with a landscaped buffer to the railway line.
- A new square is created in **option two**, with flats and houses surrounding.
  A well-defined street frontage is achieved in **option three**, together with blocks of single aspect flats facing away from the railway line in the inner site.



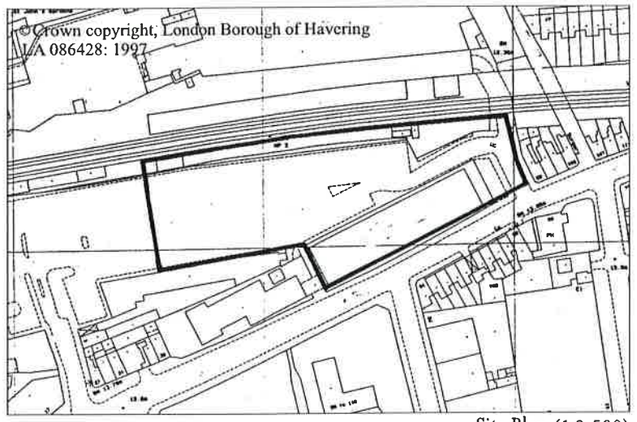
Option1: UDP Housing Policies and Standards

OPTION 1 - Complies with UDP Standards
DEVELOPMENT MIX

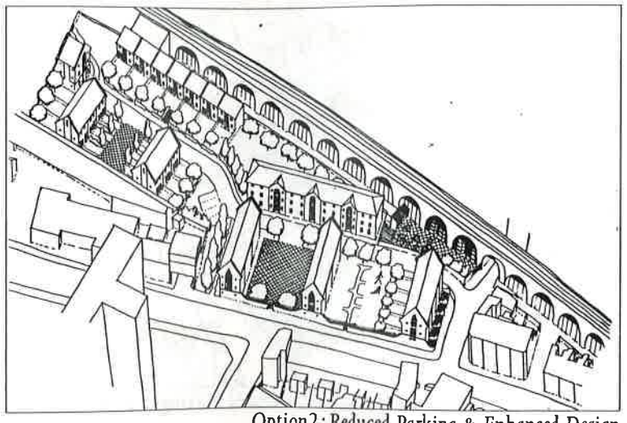
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	8	16	400	8
2 Bed	65	16	48	1040	16
3 Bed	80	12	60	960	12
4 Bed +	96	6	36	576	6
TOTAL		42	160	2976	42

DENSITY

SITE AREA	NET	GROSS
HA	0.64	0.71
Units/Ha	66	59
Hab Rm/Ha	250	225
Area/Ha	4,650	4,192



Site Plan (1:2,500)



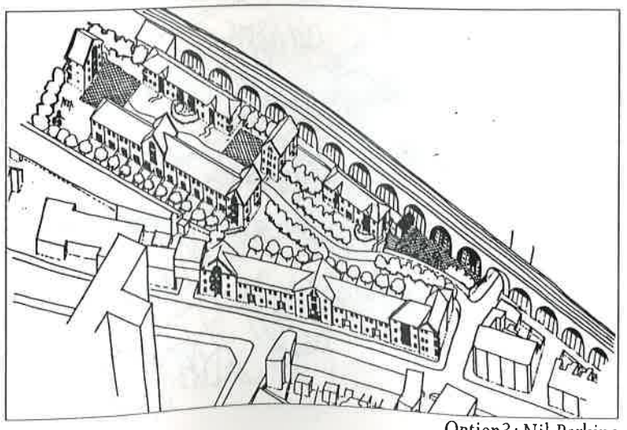
Option2: Reduced Parking & Enhanced Design

OPTION 2 - Enhanced design + Reduced Park.
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	21	42	1050	10
2 Bed	65	22	66	1430	11
3 Bed	80	6	30	480	3
4 Bed +	96	5	30	480	3
TOTAL		54	168	3440	27

DENSITY

SITE AREA	NET	GROSS
HA	0.64	0.71
Units/Ha	84	76
Hab Rm/Ha	263	237
Area/Ha	5,375	4,845



Option3: Nil Parking

OPTION 3 - Nil Parking
DEVELOPMENT MIX

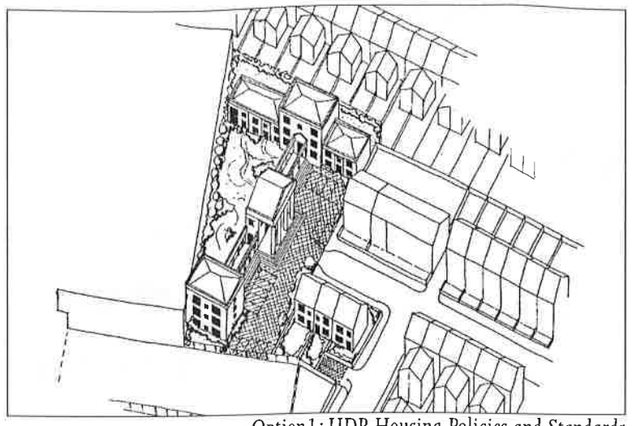
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	5	5	200	0
1 Bed	50	18	36	900	0
2 Bed	65	18	54	1170	0
3 Bed	80	17	85	1360	0
4 Bed +	100	5	30	500	0
TOTAL		63	210	4130	0

DENSITY

SITE AREA	NET	GROSS
HA	0.64	0.71
Units/Ha	98	89
Hab Rm/Ha	328	296
Area/Ha	6,453	5,817

Design Exercise 9
Unique Development Incorporating Historic Monument

- Monument occupies an irregular site due to the location of a school playing field and provides a high quality aspect to the street.
- Layout includes an in-fill site.
- The main portico is converted into residential units, whilst new housing is created at the ends of the monument colonnade.
- The parking requirement of **option one** has a detrimental effect on the appearance of the monument.
- **Option two** provides the optimum solution for car parking.
- **Option three** shows that no car parking provision enables landscaping to add to the high amenity value of this building.



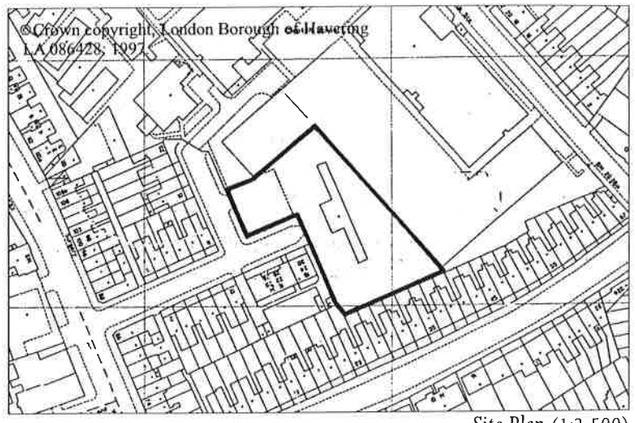
Option1: UDP Housing Policies and Standards

OPTION 1 - Complies with UDP Standards
DEVELOPMENT MIX

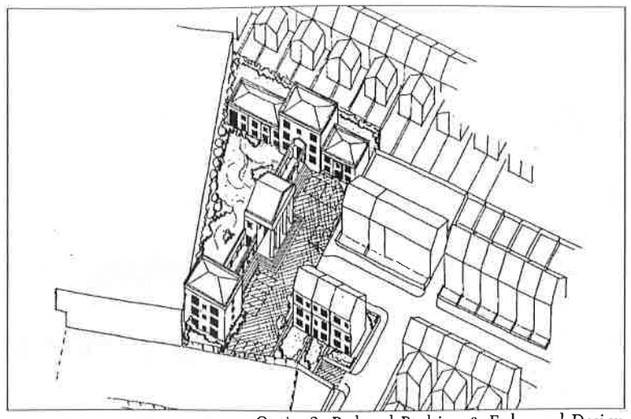
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40		0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	12	36	780	12
3 Bed	80	4	20	320	4
4 Bed +	100	5	30	500	5
TOTAL		21	86	1600	21

DENSITY

SITE AREA	NET	GROSS
HA	0.3115	0.3445
Units/Ha	67	61
Hab Rm/Ha	276	250
Area/Ha	5,136	4,644



Site Plan (1:2,500)



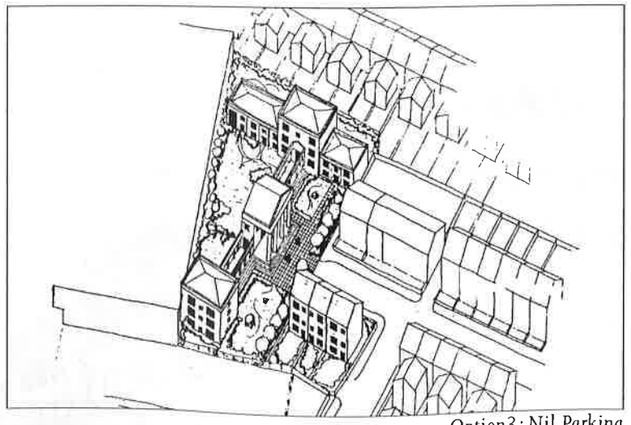
Option2: Reduced Parking & Enhanced Design

OPTION 2 - Enhanced design + Reduced Park.
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	4	4	160	2
1 Bed	50	0	0	0	0
2 Bed	65	25	75	1625	11
3 Bed	80	3	15	240	3
4 Bed +	100	2	12	200	1
TOTAL		34	106	2225	17

DENSITY

SITE AREA	NET	GROSS
HA	0.3115	0.3445
Units/Ha	109	99
Hab Rm/Ha	340	308
Area/Ha	7,143	6,459



Option3: Nil Parking

OPTION 3 - Nil Parking
DEVELOPMENT MIX

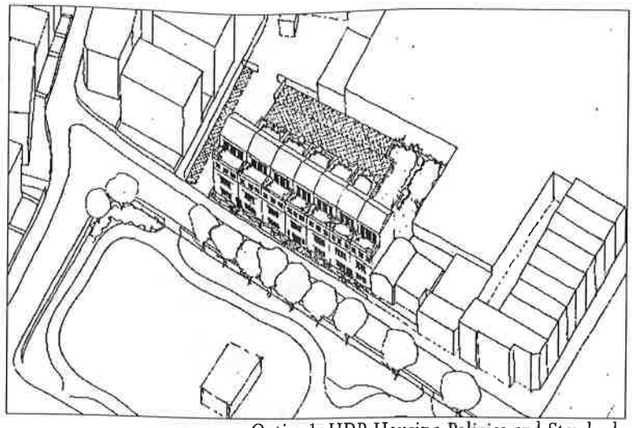
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	4	4	160	0
1 Bed	50	3	6	150	0
2 Bed	65	37	111	2405	0
3 Bed	80	0	0	0	0
4 Bed +	100	0	0	0	0
TOTAL		44	121	2715	0

DENSITY

SITE AREA	NET	GROSS
HA	0.3115	0.3445
Units/Ha	141	128
Hab Rm/Ha	388	351
Area/Ha	8,716	7,881

Design Exercise 10
Site with Temporary Uses Next to City Square Recreation Facilities

- Temporary offices currently occupying the site are incorporated into the ground floor of the new residential development, forming a mixed-use block.
- In **options one** and **two** a car park is provided to the rear, shared between residents and office users. Layouts follow the street pattern and provide a strong aspect towards the public square. Deep balconies are provided on the top floor, with views over the square.
- Options **two** and **three** comprise single aspect flats to the rear, facing onto the central open green space.



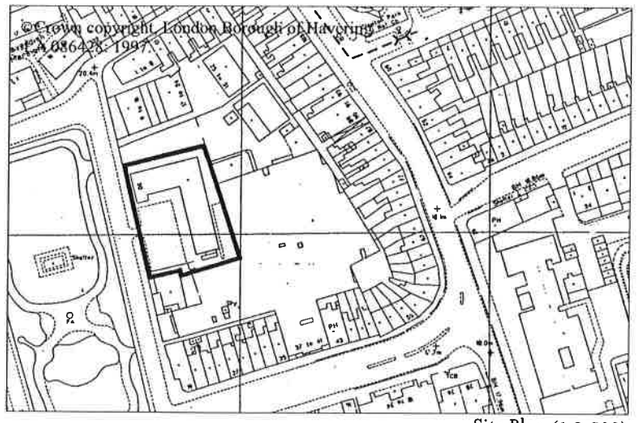
Option1: UDP Housing Policies and Standards

OPTION 1- Complies with UDP Standards
DEVELOPMENT MIX

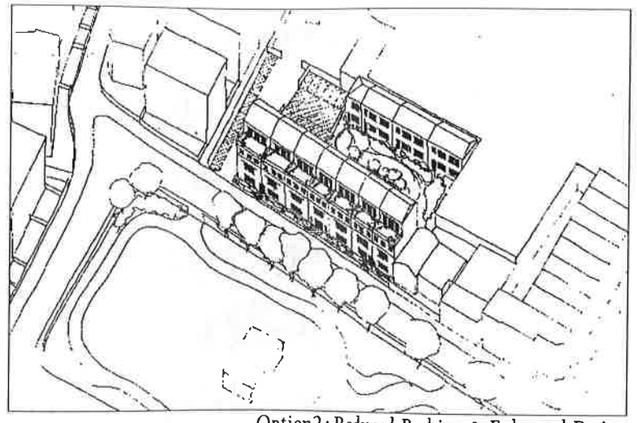
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40		0	0	0
1 Bed	50	7	14	350	7
2 Bed	65	7	21	455	7
3 Bed	80	0	0	0	0
4 Bed +	96	0	0	0	0
offices	864			864	6
TOTAL		14	35	805	14

DENSITY

SITE AREA	NET	GROSS
HA	0.21	0.24
Units/Ha	67	58
Hab Rm/Ha	167	146
Area/Ha	3,833	3,354



Site Plan (1:2,500)



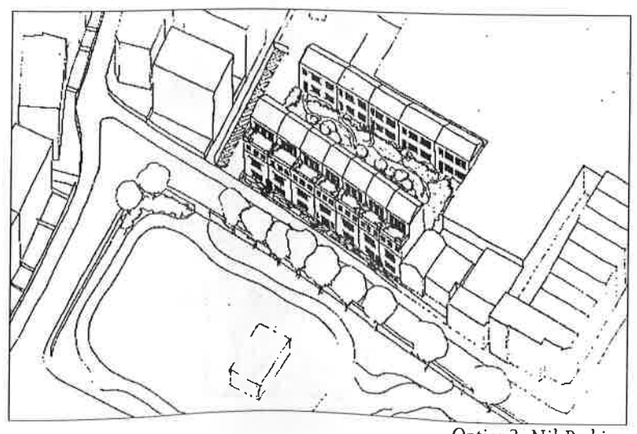
Option2: Reduced Parking & Enhanced Design

OPTION 2 - Enhanced design + Reduced Park.
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40		0	0	0
1 Bed	50	9	18	450	4.5
2 Bed	65	13	39	845	6.5
3 Bed	80		0	0	0
4 Bed +	100		0	0	0
offices	864			864	6
TOTAL		22	57	1295	16

DENSITY

SITE AREA	NET	GROSS
HA	0.21	0.24
Units/Ha	105	92
Hab Rm/Ha	271	238
Area/Ha	6,167	5,396



Option3: Nil Parking

OPTION 3 - Nil Parking
DEVELOPMENT MIX

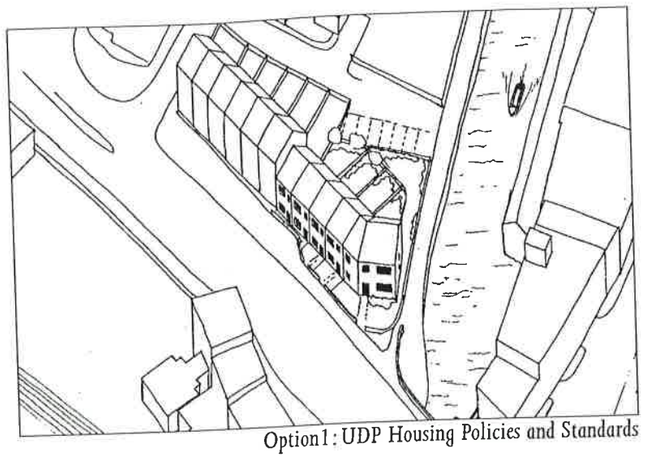
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	7	14	350	0
2 Bed	65	17	51	1105	0
3 Bed	80		0	0	0
4 Bed +	100		0	0	0
offices	864			864	
TOTAL		24	65	1455	0

DENSITY

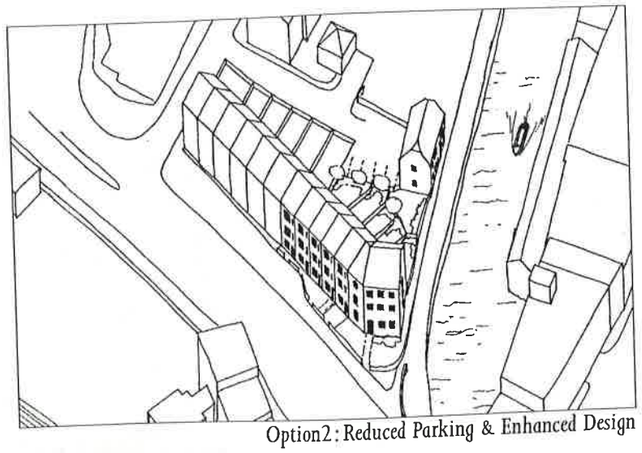
SITE AREA	NET	GROSS
HA	0.21	0.24
Units/Ha	114	100
Hab Rm/Ha	310	271
Area/Ha	6,929	6,063

Design Exercise 11
Vacant Land at Junction of Canal and Main Street

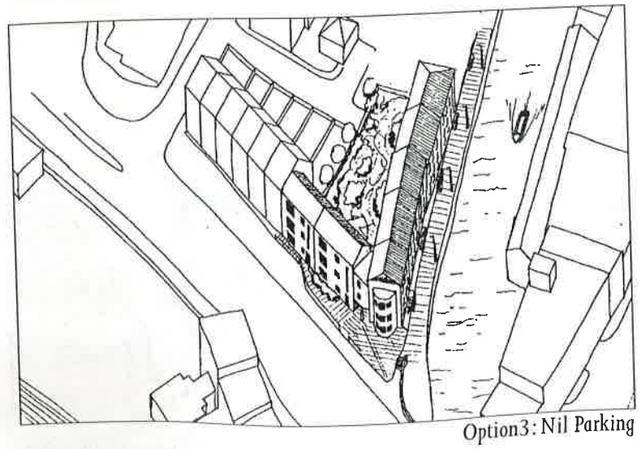
- Layout follows existing street pattern, with houses facing onto main street and access gained from the existing rear service lane.
- **Options one** and **two** comprise rear car parking and enhance the potential high amenity value of the canal.
- Aspects are provided onto the canal and towpath, providing overlooking that contributes to a feeling of greater safety.
- Overlooking is developed further in **options two** and **three**, where the towpath becomes a street.



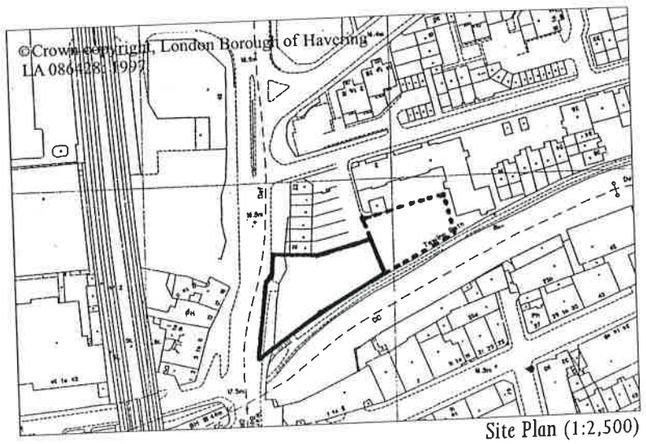
Option1: UDP Housing Policies and Standards



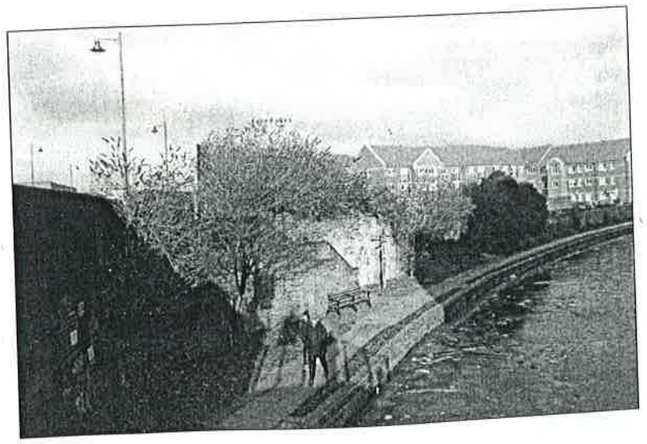
Option2: Reduced Parking & Enhanced Design



Option3: Nil Parking



Site Plan (1:2,500)



OPTION 1 - Complies with UDP Standards

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	3	9	195	3
3 Bed	80	4	20	320	4
4 Bed +	100	0	0	0	0
TOTAL		7	29	515	7

DENSITY

SITE AREA	NET	GROSS
HA	0.1	0.12
Units/Ha	70	58
Hab Rm/Ha	290	242
Area/Ha	5,150	4,292

OPTION 2 - Enhanced design + Reduced Park.

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	1	2	50	0.5
2 Bed	65	4	12	260	2
3 Bed	80	0	0	0	0
4 Bed +	100	5	30	500	2.5
TOTAL		10	44	810	5

DENSITY

SITE AREA	NET	GROSS
HA	0.1	0.12
Units/Ha	100	83
Hab Rm/Ha	440	367
Area/Ha	8,100	6,750

OPTION 3 - Nil Parking

DEVELOPMENT MIX

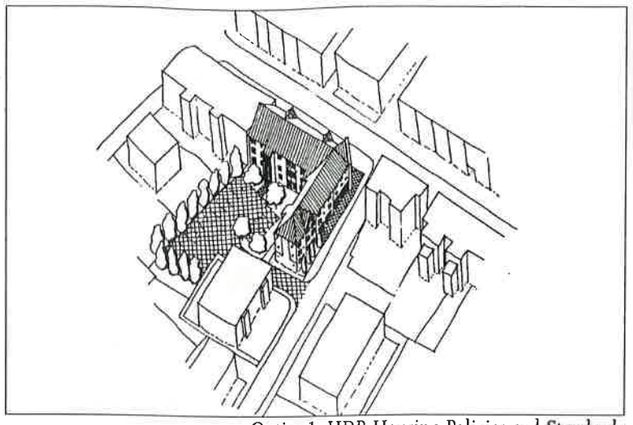
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	4	8	200	0
2 Bed	65	18	54	1170	0
3 Bed	80	0	0	0	0
4 Bed +	100	0	0	0	0
TOTAL		22	62	1370	0

DENSITY

SITE AREA	NET	GROSS
HA	0.1	0.12
Units/Ha	220	183
Hab Rm/Ha	620	517
Area/Ha	13,700	11,417

Design Exercise 12
Corner with Retail Ground Floor

- *Vacant corner site at the end of a parade of local shops.*
- *Developed to a height to suit context of high street.*
- *Vertical mix of uses incorporates shop space on the ground floor.*
- *Special detailed corner layouts are used to respond positively to the street and provide the landmark presence demanded of this location.*
- *Most of the rear space of* **option one** *comprises parking with small courtyard gardens.*
- **Option two** *has a similar form, but with increased garden space to the rear.*
- **Option three** *prevents vehicular access to the rear and provides a courtyard garden as a central feature.*



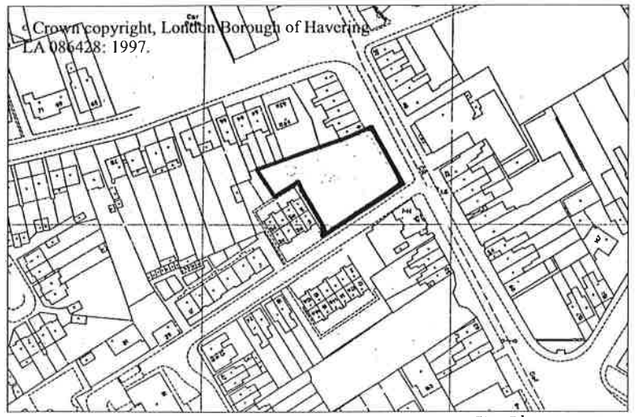
Option1: UDP Housing Policies and Standards

OPTION 1 - Complies with UDP Standards
DEVELOPMENT MIX

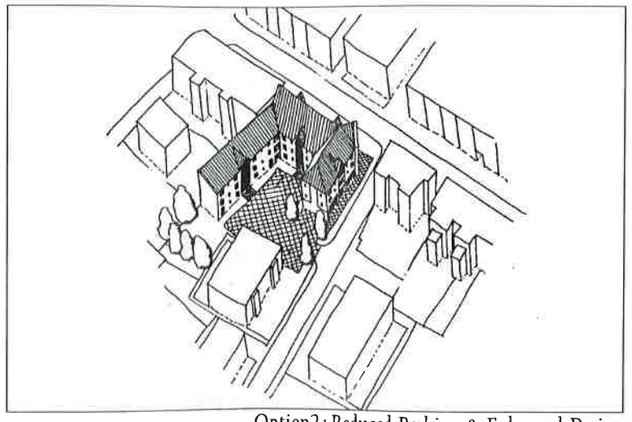
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40		0	0	0
1 Bed	50	3	6	150	3.6
2 Bed	65	10	30	650	12
3 Bed	80		0	0	0
4 Bed +	100		0	0	0
Retail	300	4		300	0
TOTAL		17	36	1100	15.6

DENSITY

SITE AREA	NET	GROSS
HA	0.1	0.16
Units/Ha	170	106
Hab Rm/Ha	360	225
Area/Ha	11,000	6,875



Site Plan (1:2,500)



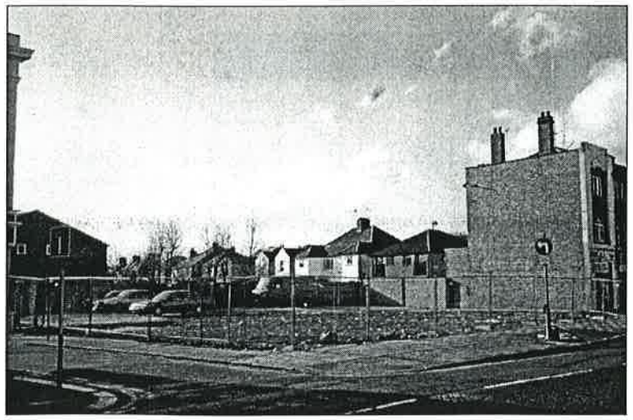
Option2: Reduced Parking & Enhanced Design

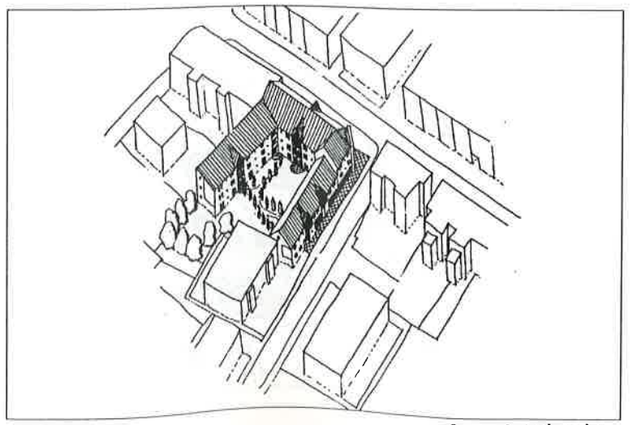
OPTION 2 - Enhanced design + Reduced Park.
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40		0	0	0
1 Bed	50	2	4	100	2
2 Bed	65	14	42	910	14
3 Bed	80		0	0	0
4 Bed +	100		0	0	0
Retail	300	4		300	0
TOTAL		20	46	1310	16

DENSITY

SITE AREA	NET	GROSS
HA	0.1	0.16
Units/Ha	200	125
Hab Rm/Ha	460	288
Area/Ha	13,100	8,188





Option3: Nil Parking

OPTION 3 - Nil Parking
DEVELOPMENT MIX

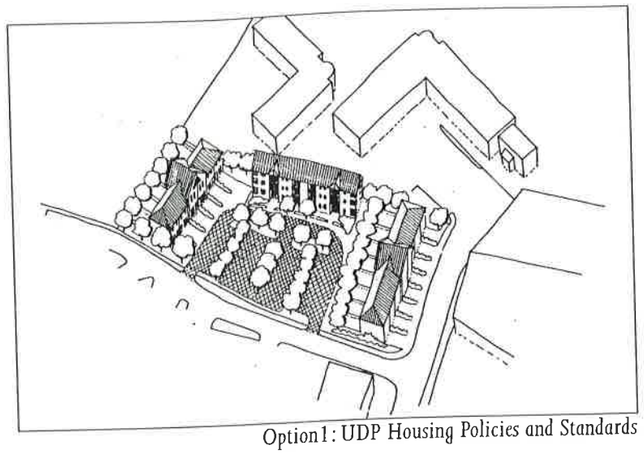
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40		0	0	0
1 Bed	50	5	10	250	0
2 Bed	65	15	45	975	0
3 Bed	80		0	0	0
4 Bed +	100		0	0	0
Retail	300	4		300	0
TOTAL		24	55	1525	0

DENSITY

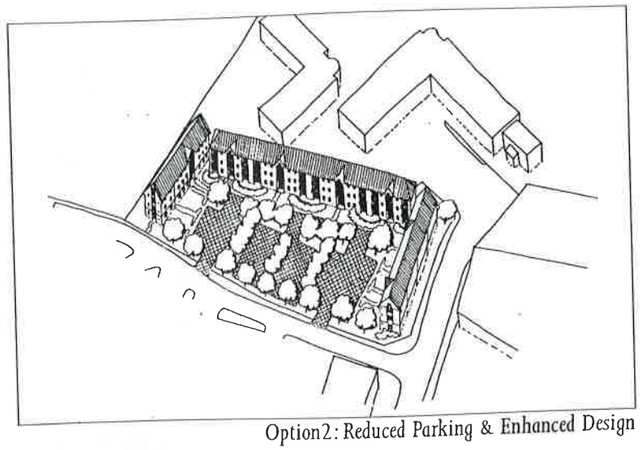
SITE AREA	NET	GROSS
HA	0.1	0.16
Units/Ha	240	150
Hab Rm/Ha	550	344
Area/Ha	15,250	9,531

Design Exercise 13
Large Vacant Corner Site Close to Town Centre

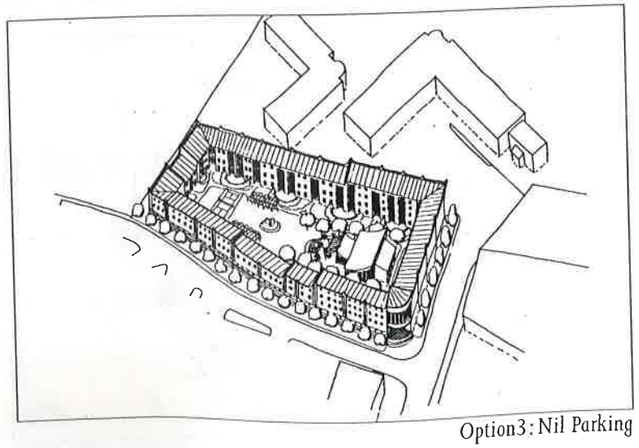
- Comprises a perimeter form, with main frontage onto the central area and dual aspects on the most public side.
- **Option one** provides a mix of houses and flats, whose density is restricted by the required expanse of car parking, which is landscaped and centrally placed.
- **Option two** caters for the same number of cars, but increases the number of units by converting houses into flats.
- **Option three** encloses the central private space, producing a robust urban form. Aspects are provided towards the street and central landscaped space, which becomes multi-functional, including children's play areas.



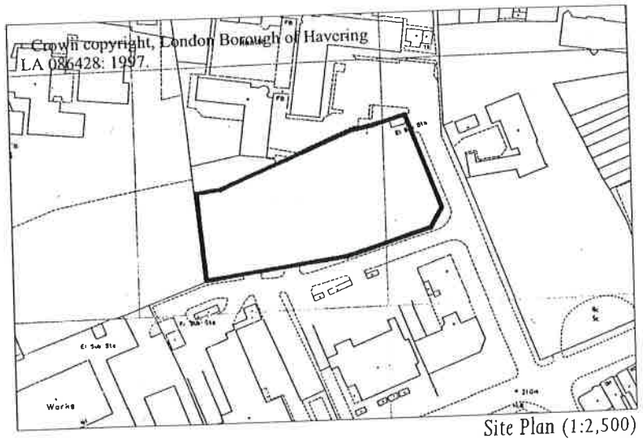
Option1: UDP Housing Policies and Standards



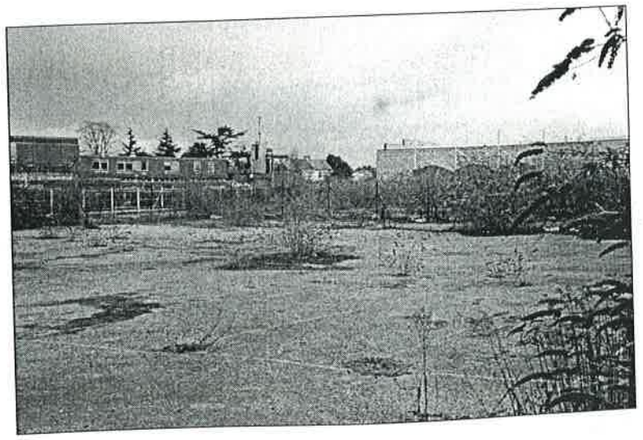
Option2: Reduced Parking & Enhanced Design



Option3: Nil Parking



Site Plan (1:2,500)



OPTION 1 - Complies with UDP Standards

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40		0	0	0
1 Bed	50	6	12	300	7.2
2 Bed	65	6	18	390	7.2
3 Bed	80	10	50	800	21
4 Bed +	100	4	24	400	8.4
TOTAL		26	104	1890	51

DENSITY

SITE AREA	NET	GROSS
HA	1.14	1.4
Units/Ha	23	19
Hab Rm/Ha	91	74
Area/Ha	1,658	1,350

OPTION 2 - Enhanced design + Reduced Park.

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40		0	0	0
1 Bed	50	18	36	900	18
2 Bed	65	27	81	1755	27
3 Bed	80	0	0	0	0
4 Bed +	100		0	0	0
TOTAL		45	117	2655	45

DENSITY

SITE AREA	NET	GROSS
HA	1.14	1.4
Units/Ha	39	32
Hab Rm/Ha	103	84
Area/Ha	2,329	1,896

OPTION 3 - Nil Parking

DEVELOPMENT MIX

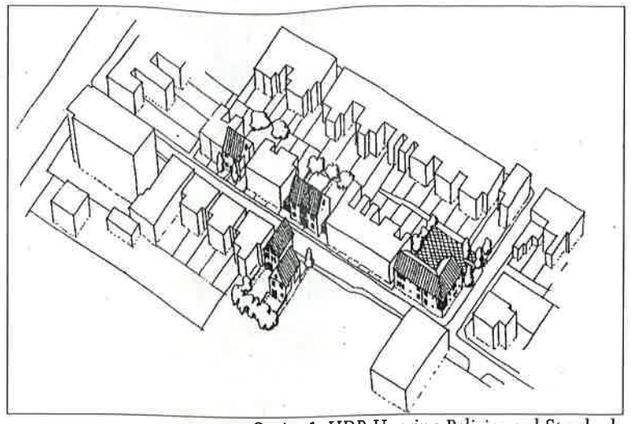
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40		0	0	0
1 Bed	50	34	68	1700	0
2 Bed	65	43	129	2795	0
3 Bed	80	0	0	0	0
4 Bed +	100		0	0	0
TOTAL		77	197	4495	0

DENSITY

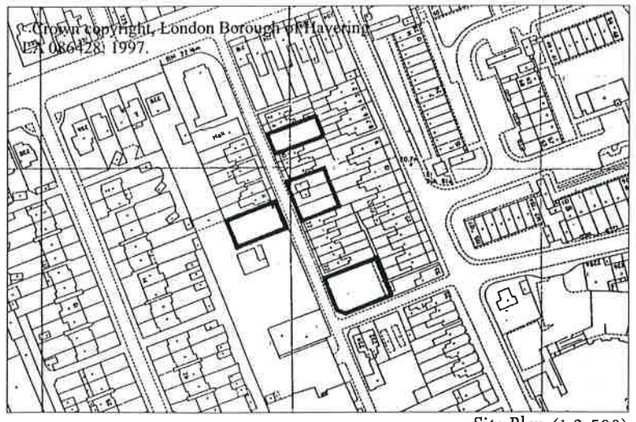
SITE AREA	NET	GROSS
HA	1.14	1.4
Units/Ha	68	55
Hab Rm/Ha	173	141
Area/Ha	3,943	3,211

Design Exercise 14
Residential Development Through Site Assembly

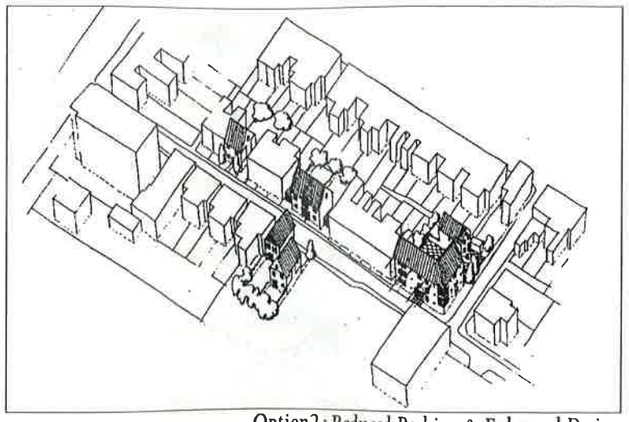
- *The street is predominately three storeys, with a mix of residential and commercial uses, a series of gap sites, open corners and derelict warehouse units.*
- *Proposals reorganise these uses - consolidating employment uses and developing newly available land for residential purposes.*
- *The resulting design layout follows the street pattern, with aspects towards the road and private gardens to the rear.*
- ***Option three** is developed to three-storeys, with an increased ratio of flats to houses.*



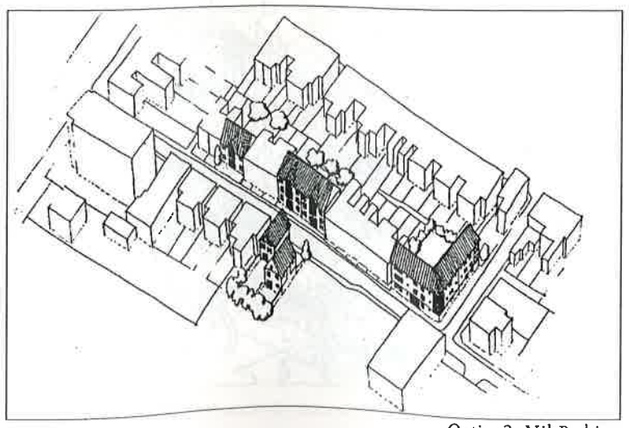
Option1: UDP Housing Policies and Standards



Site Plan (1:2,500)



Option2: Reduced Parking & Enhanced Design



Option3: Nil Parking

OPTION 1 - Complies with UDP Standards
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40		0	0	0
1 Bed	50		0	0	0
2 Bed	65	6	18	390	7.2
3 Bed	80	3	15	240	6.3
4 Bed +	100		0	0	0
TOTAL		9	33	630	13.5

DENSITY

SITE AREA	NET	GROSS
HA	0.3	0.35
Units/Ha	30	26
Hab Rm/Ha	110	94
Area/Ha	2,100	1,800

OPTION 2 - Enhanced design + Reduced Park.
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40		0	0	0
1 Bed	50		0	0	0
2 Bed	65	3	9	195	3
3 Bed	80	8	40	640	8
4 Bed +	100	1	6	100	1
TOTAL		12	55	935	12

DENSITY

SITE AREA	NET	GROSS
HA	0.3	0.35
Units/Ha	40	34
Hab Rm/Ha	183	157
Area/Ha	3,117	2,671

OPTION 3 - Nil Parking
DEVELOPMENT MIX

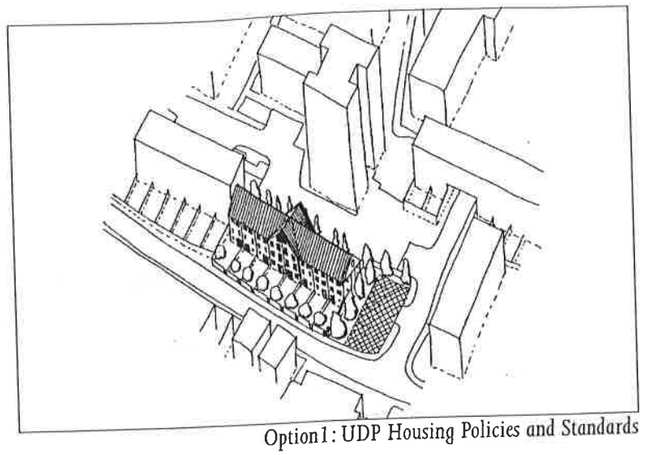
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40		0	0	0
1 Bed	50		0	0	0
2 Bed	65	10	30	650	0
3 Bed	80	2	10	160	0
4 Bed +	100	5	30	500	0
TOTAL		17	70	1310	0

DENSITY

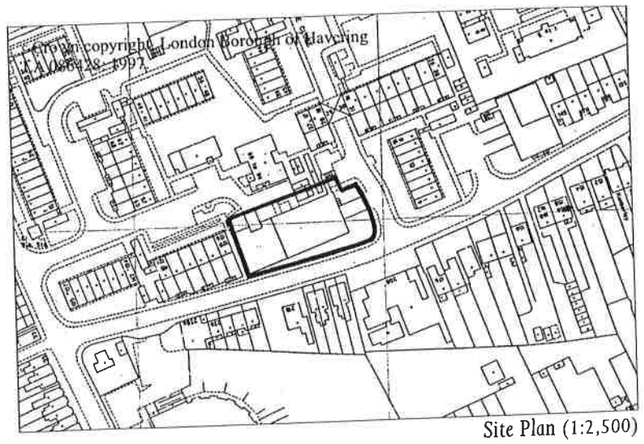
SITE AREA	NET	GROSS
HA	0.3	0.35
Units/Ha	57	49
Hab Rm/Ha	233	200
Area/Ha	4,367	3,743

Design Exercise 15
Under-used Decked Parking as Part of Estate

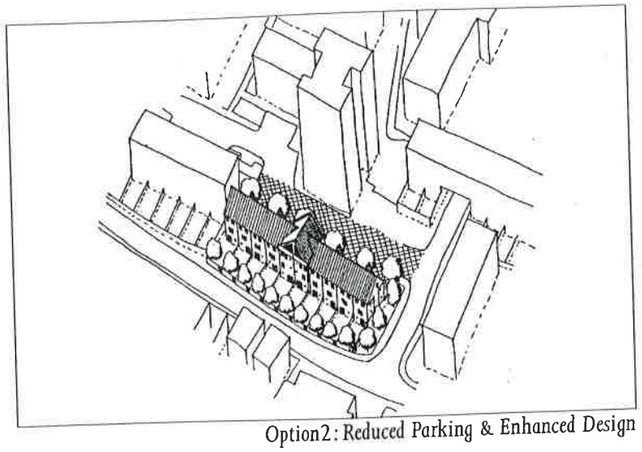
- **Options one** and **two** follow existing street pattern, with two-storey houses with front gardens and rear parking.
- **Option one** includes a component of parking for the existing estate.
- In **option two** estate parking is removed.
- The form of **option three** is organised to admit most sun penetration from the south and includes a central green open space.



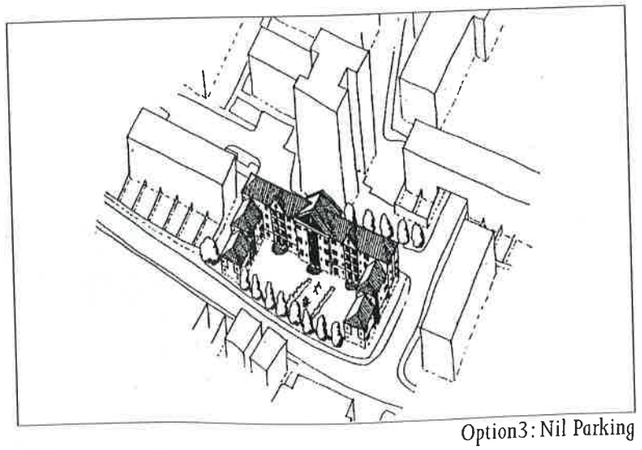
Option1: UDP Housing Policies and Standards



Site Plan (1:2,500)



Option2: Reduced Parking & Enhanced Design



Option3: Nil Parking

OPTION 1 - Complies with UDP Standards

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40		0	0	0
1 Bed	50		0	0	0
2 Bed	65		0	0	0
3 Bed	80	6	30	480	12.6
4 Bed +	100	2	12	200	4.2
TOTAL		8	42	680	16.8

DENSITY

SITE AREA	NET	GROSS
HA	0.38	0.49
Units/Ha	21	16
Hab Rm/Ha	111	86
Area/Ha	1,789	1,388

OPTION 2 - Enhanced design + Reduced Park.

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40		0	0	0
1 Bed	50		0	0	0
2 Bed	65		0	0	0
3 Bed	80	8	40	640	8
4 Bed +	100	2	12	200	2
TOTAL		10	52	840	10

DENSITY

SITE AREA	NET	GROSS
HA	0.38	0.49
Units/Ha	26	20
Hab Rm/Ha	137	106
Area/Ha	2,211	1,714

OPTION 3 - Nil Parking

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40		0	0	0
1 Bed	50	18	36	900	0
2 Bed	65	13	39	845	0
3 Bed	80		0	0	0
4 Bed +	100		0	0	0
TOTAL		31	75	1745	0

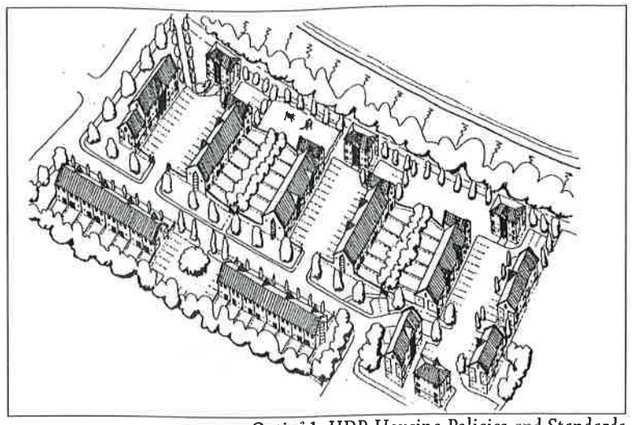
DENSITY

SITE AREA	NET	GROSS
HA	0.38	0.49
Units/Ha	82	63
Hab Rm/Ha	197	153
Area/Ha	4,592	3,561

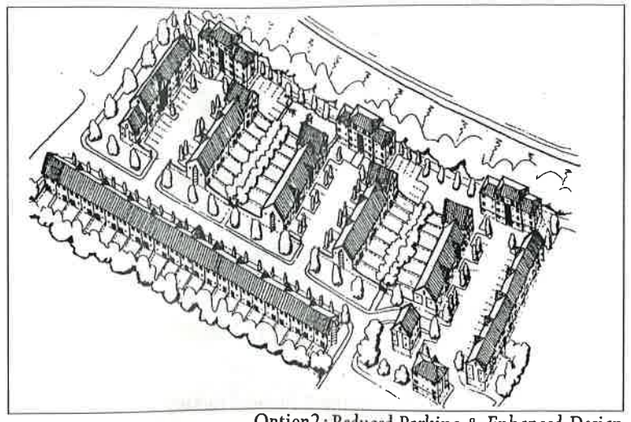
Design Exercise 16
Derelict School Site

- Located close to town centre.
- Bounded on northern side by railway line and a town centre car park to the south.
- The design seeks to provide a range of layouts, from street terraces to mews or court type developments.
- In **option three**, service vehicle access is still provided but in a landscaped setting.

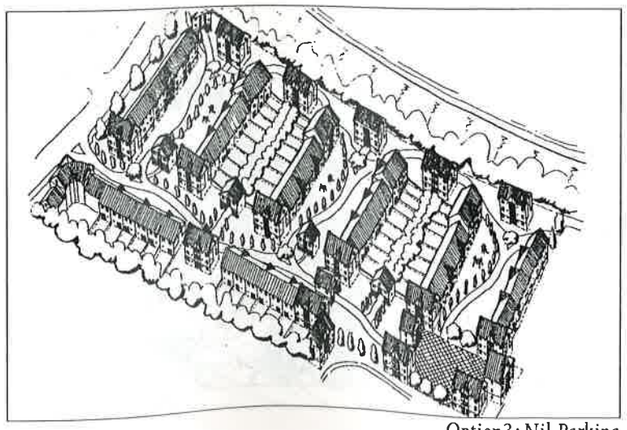
Site Plan (1:2,500)



Option1: UDP Housing Policies and Standards



Option2: Reduced Parking & Enhanced Design



Option3: Nil Parking

OPTION 1 - Complies with UDP Standards
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK. NOS
Studio	40		0	0	0
1 Bed	50		0	0	0
2 Bed	65	43	129	2795	51.6
3 Bed	80	25	125	2000	52.5
4 Bed +	100	6	36	600	12.6
TOTAL		74	290	5395	116.7

DENSITY

SITE AREA	NET	GROSS
HA	1.3	1.45
Units/Ha	57	51
Hab Rm/Ha	223	200
Area/Ha	4,150	3,721

OPTION 2 - Enhanced design + Reduced Park.
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK. NOS
Studio	40		0	0	0
1 Bed	50		0	0	0
2 Bed	65	30	90	1950	30
3 Bed	80	28	140	2240	28
4 Bed +	100	29	174	2900	29
TOTAL		87	404	7090	87

DENSITY

SITE AREA	NET	GROSS
HA	1.3	1.45
Units/Ha	67	60
Hab Rm/Ha	311	279
Area/Ha	5,454	4,890

OPTION 3 - Nil Parking
DEVELOPMENT MIX

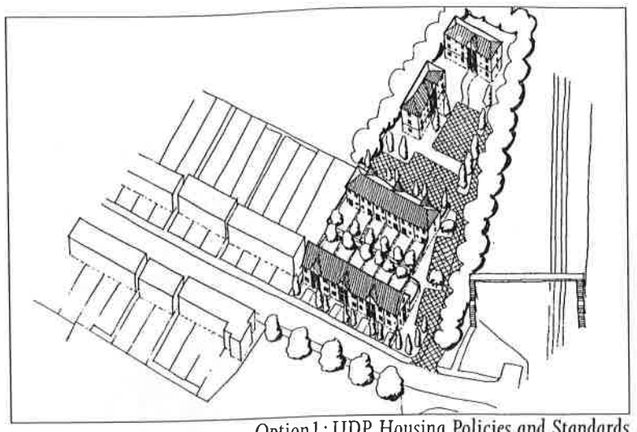
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK. NOS
Studio	40		0	0	0
1 Bed	50	4	8	200	0
2 Bed	65	40	120	2600	0
3 Bed	80	97	485	7760	0
4 Bed +	100	28	168	2800	0
TOTAL		169	781	13360	0

DENSITY

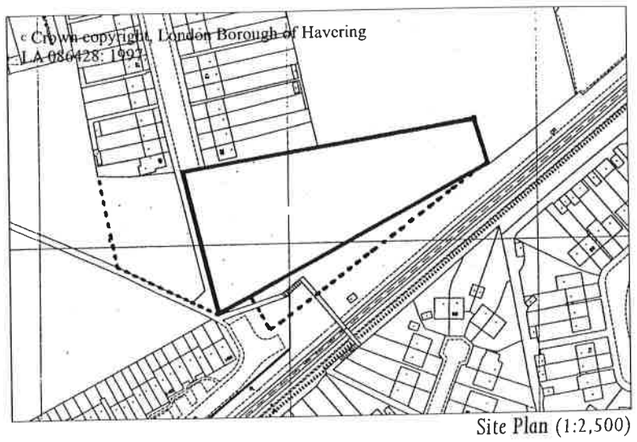
SITE AREA	NET	GROSS
HA	1.3	1.45
Units/Ha	130	117
Hab Rm/Ha	601	539
Area/Ha	10,277	9,214

Design Exercise 17
Under-utilised Allotment

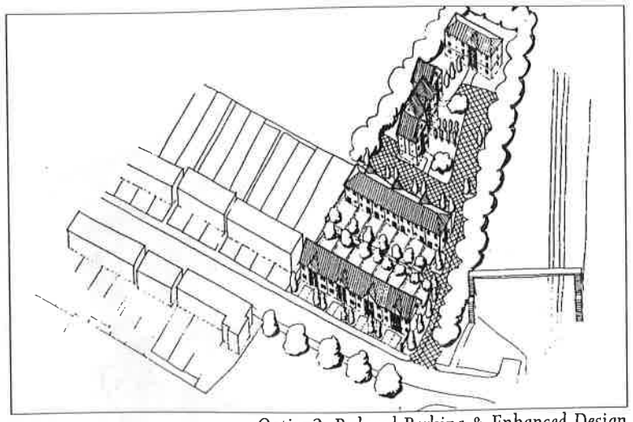
- Site bounded by railway to south, parkland to east and west and terraced housing to north.
- Designs continue existing street pattern.
- Parking is provided to the front of the property and private gardens to the rear.
- In each option, the eastern part of the site forms a south-facing courtyard.
- The central car parking space progressively diminishes through the three options.



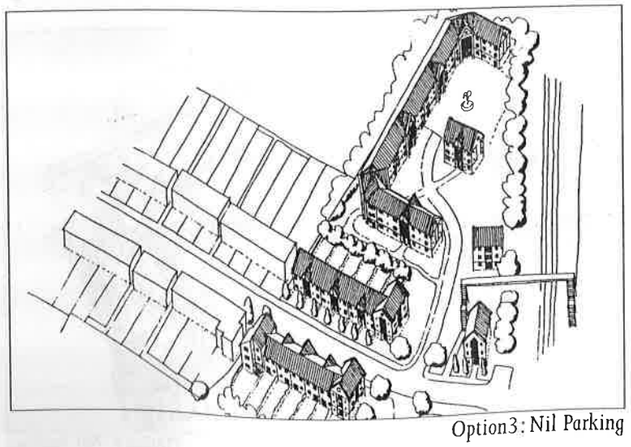
Option1: UDP Housing Policies and Standards



Site Plan (1:2,500)



Option2: Reduced Parking & Enhanced Design



Option3: Nil Parking

OPTION 1 - Complies with UDP Standards

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40		0	0	0
1 Bed	50	6	12	300	7.2
2 Bed	65	6	18	390	7.2
3 Bed	80	13	65	1040	27.3
4 Bed +	100		0	0	0
Other			0	0	0
TOTAL		25	95	1730	41.7

DENSITY

SITE AREA	NET	GROSS
HA	0.44	0.47
Units/Ha	57	53
Hab Rm/Ha	216	202
Area/Ha	3,932	3,681

OPTION 2 - Enhanced design + Reduced Park.

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40		0	0	0
1 Bed	50	9	18	450	9
2 Bed	65	6	18	390	6
3 Bed	80	15	75	1200	15
4 Bed +	100		0	0	0
Other			0	0	0
TOTAL		30	111	2040	30

DENSITY

SITE AREA	NET	GROSS
HA	0.44	0.47
Units/Ha	68	64
Hab Rm/Ha	252	236
Area/Ha	4,636	4,340

OPTION 3 - Nil Parking

DEVELOPMENT MIX

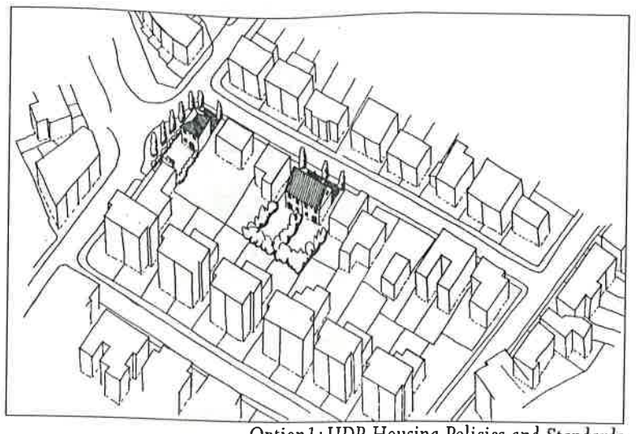
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40		0	0	0
1 Bed	50	12	24	600	0
2 Bed	65	39	117	2535	0
3 Bed	80	11	55	880	0
4 Bed +	100		0	0	0
Other			0	0	0
TOTAL		62	196	4015	0

DENSITY

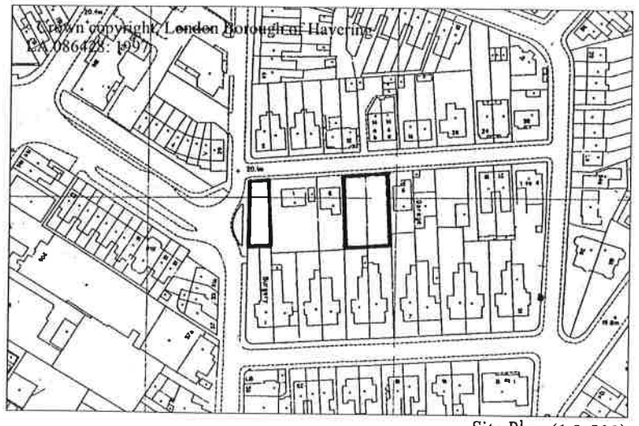
SITE AREA	NET	GROSS
HA	0.69	0.75
Units/Ha	90	83
Hab Rm/Ha	284	261
Area/Ha	5,819	5,353

Design Exercise 18
Incremental Infill on a Residential Street

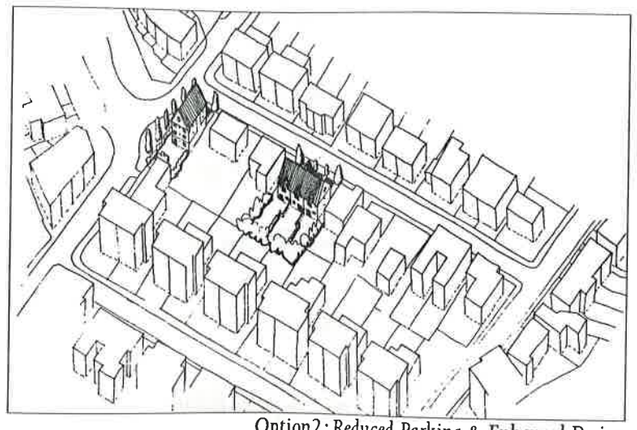
- *In **options one** and **two** the residential units are set back from the building line to achieve forecourt parking.*
- *The buildings of each option form have similar footprints but in **option three** all units are flats rather than houses and the building line is restored.*
- *Designs respect the mature back gardens that exist in this street and avoid rear parking.*



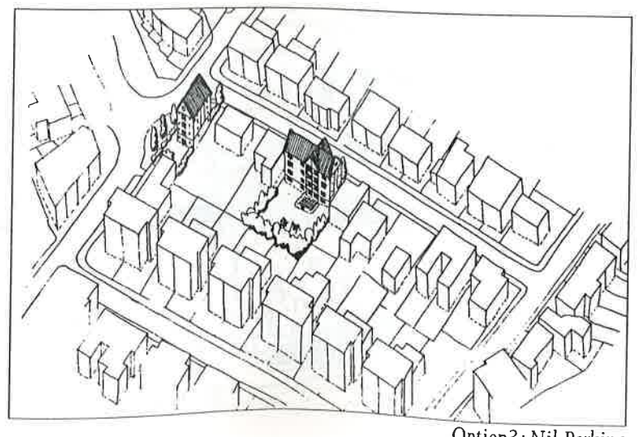
Option1: UDP Housing Policies and Standards



Site Plan (1:2,500)



Option2: Reduced Parking & Enhanced Design



Option3: Nil Parking

OPTION 1 - Complies with UDP Standards
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs. NOS.	AREA SQ.M.	PARK. NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	0	0	0	0
3 Bed	80	0	0	0	0
4 Bed +	100	3	18	300	6.3
TOTAL		3	18	300	6.3

DENSITY

SITE AREA	NET	GROSS
HA	0.08	0.1
Units/Ha	38	30
Hab Rm/Ha	225	180
Area/Ha	3,750	3,000

OPTION 2 - Enhanced design + Reduced Park.
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK. NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	3	9	195	3
3 Bed	80	3	15	240	3
4 Bed +	100	0	0	0	0
TOTAL		6	24	435	6

DENSITY

SITE AREA	NET	GROSS
HA	0.08	0.1
Units/Ha	75	60
Hab Rm/Ha	300	240
Area/Ha	5,438	4,350

OPTION 3 - Nil Parking
DEVELOPMENT MIX

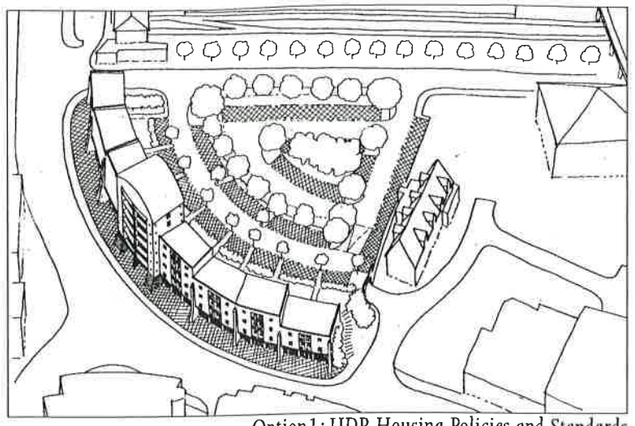
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs. NOS.	AREA SQ.M.	PARK. NOS
Studio	40	0	0	0	0
1 Bed	50	4	8	200	0
2 Bed	65	8	24	520	0
3 Bed	80	0	0	0	0
4 Bed +	100	0	0	0	0
TOTAL		12	32	720	0

DENSITY

SITE AREA	NET	GROSS
HA	0.08	0.1
Units/Ha	150	120
Hab Rm/Ha	400	320
Area/Ha	9,000	7,200

Design Exercise 19
Large Site with Curved Perimeter

- Forms an opportunity site for a landmark building.
- The off-street car parking requirement provides the main constraint on development.
- In each option strong architectural forms address the public realm.
- Option one includes retail provision at ground level, with flats above. All backland space is occupied by parking.
- In option two, car parking is reduced - providing a greater opportunity for freeing up the landscape and a more massive architectural form that harmonises with the surrounding context.
- **Option three** forms a perimeter block, enclosing a private square, which is adaptable for a variety of uses.



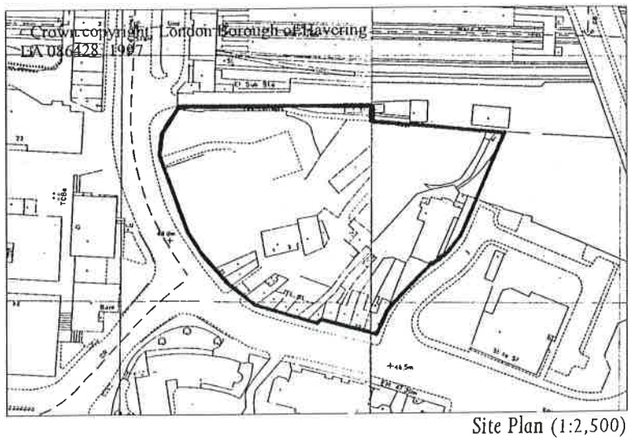
Option1: UDP Housing Policies and Standards

OPTION 1 - Complies with UDP Standards
DEVELOPMENT MIX

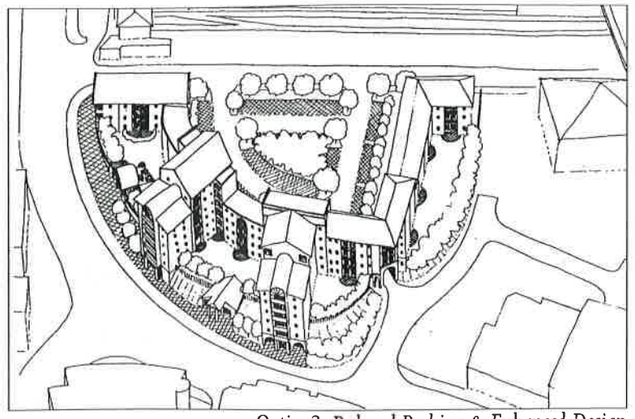
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	42	126	2730	84
3 Bed	80	12	48	960	24
4 Bed +	100	0	0	0	0
Retail				1600	
TOTAL		54	174	5290	108

DENSITY

SITE AREA	NET	GROSS
HA	0.8	1
Units/Ha	68	54
Hab Rm/Ha	218	174
Area/Ha	6,613	5,290



Site Plan (1:2,500)



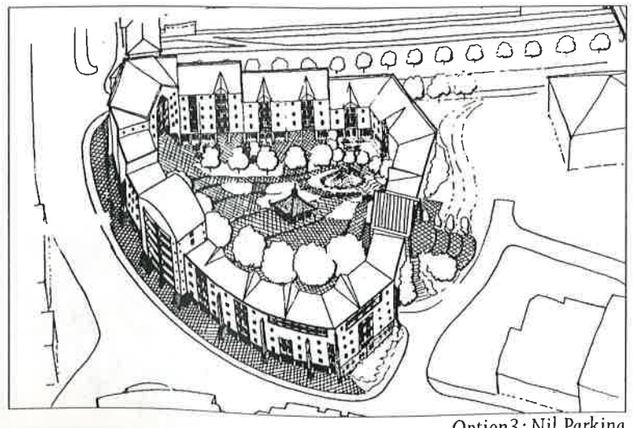
Option2: Reduced Parking & Enhanced Design

OPTION 2 - Enhanced design + Reduced Park.
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	12	24	600	12
2 Bed	65	94	282	6110	94
3 Bed	80	20	80	1600	20
4 Bed +	100	0	0	0	0
Retail				800	
TOTAL		126	386	9110	126

DENSITY

SITE AREA	NET	GROSS
HA	0.8	1
Units/Ha	158	126
Hab Rm/Ha	483	386
Area/Ha	11,388	9,110



Option3: Nil Parking

OPTION 3 - Nil Parking
DEVELOPMENT MIX

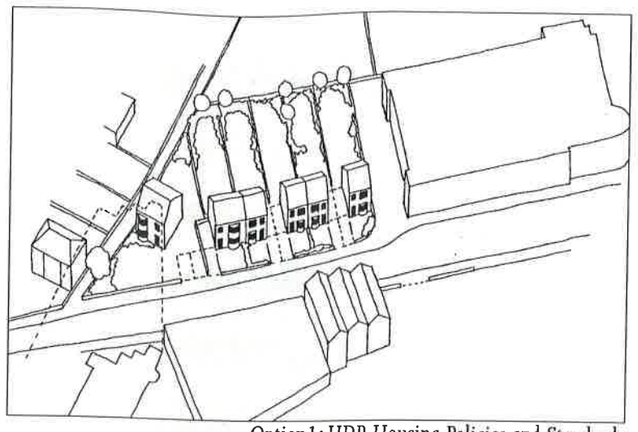
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	65	130	3250	0
2 Bed	65	99	297	6435	0
3 Bed	80	0	0	0	0
4 Bed +	100	0	0	0	0
Retail				2500	
TOTAL		164	427	12185	0

DENSITY

SITE AREA	NET	GROSS
HA	0.8	1
Units/Ha	205	164
Hab Rm/Ha	534	427
Area/Ha	15,231	12,185

Design Exercise 20
Ex-industrial Site Next to a Footpath

- *Vacant industrial infill site.*
- *Local boroughs density requirement is the biggest constraint to development on this site.*
- ***Option one** begins to reinstate the street frontage. Conventional three and four bedroom houses are provided, with car parking to the front and side and with both front and back gardens.*
- *In **option two**, front car parking enables a much higher density with a continuous street frontage to be achieved. This provides greater street surveillance and respects the desire for private rear gardens.*
- ***Option three** provides single aspect flats arranged around a mews courtyard at the back of the plot. This may be suitable for sheltered housing.*



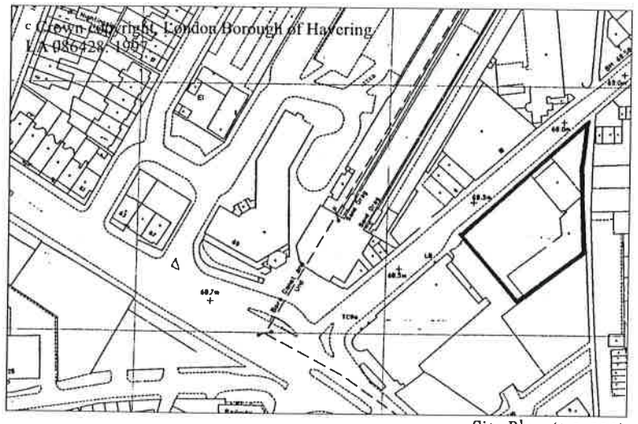
Option1: UDP Housing Policies and Standards

OPTION 1A - Complies with UDP Standards
DEVELOPMENT MIX

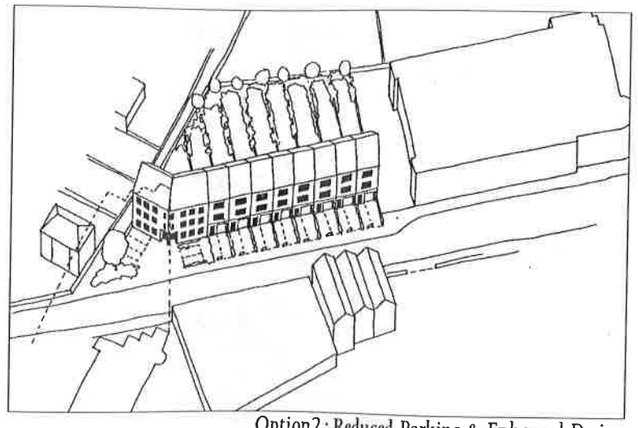
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	0	0	0	0
3 Bed	80	4	20	320	8
4 Bed +	100	2	12	200	6
TOTAL		6	32	520	14

DENSITY

SITE AREA HA	NET 0.18	GROSS 0.22
Units/Ha	33	27
Hab Rm/Ha	178	145
Area/Ha	2,889	2,364



Site Plan (1:2,500)



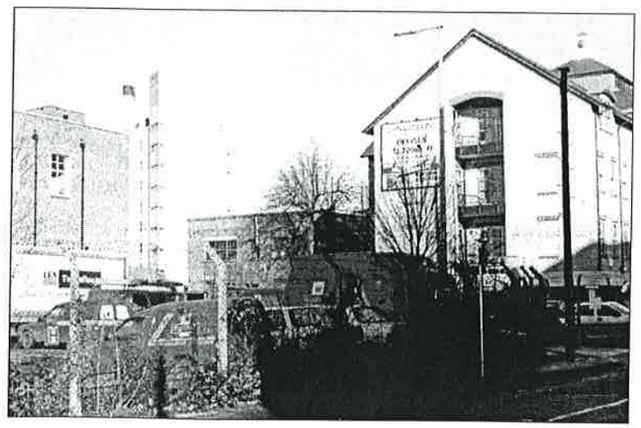
Option2: Reduced Parking & Enhanced Design

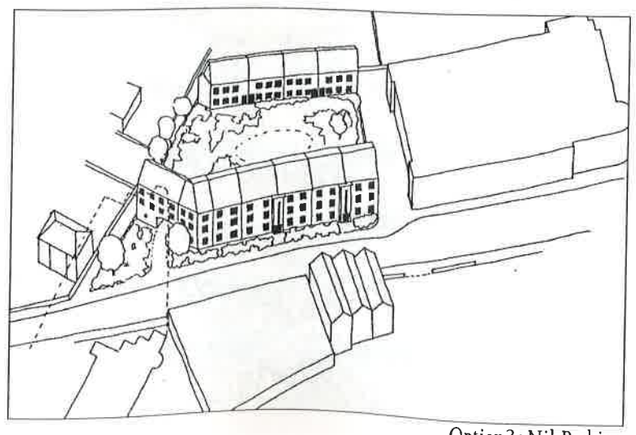
OPTION 2 MEWS - Enhanced design + Reduced P
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	6	18	390	6
3 Bed	80	8	40	640	8
4 Bed +	100	0	0	0	0
TOTAL		14	58	1030	14

DENSITY

SITE AREA HA	NET 0.18	GROSS 0.22
Units/Ha	78	64
Hab Rm/Ha	322	264
Area/Ha	5,722	4,682





Option3: Nil Parking

OPTION 3 -Town Houses - reduced parking
DEVELOPMENT MIX

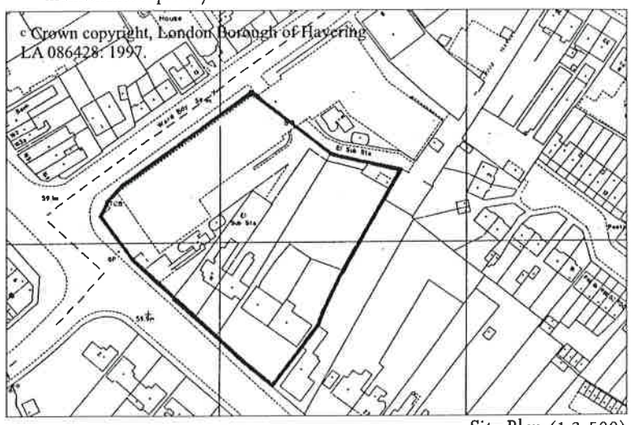
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	3	3	120	0
1 Bed	50	3	6	150	0
2 Bed	65	22	66	1430	0
3 Bed	80	4	20	320	0
4 Bed +	100	0	0	0	0
TOTAL		32	95	2020	0

DENSITY

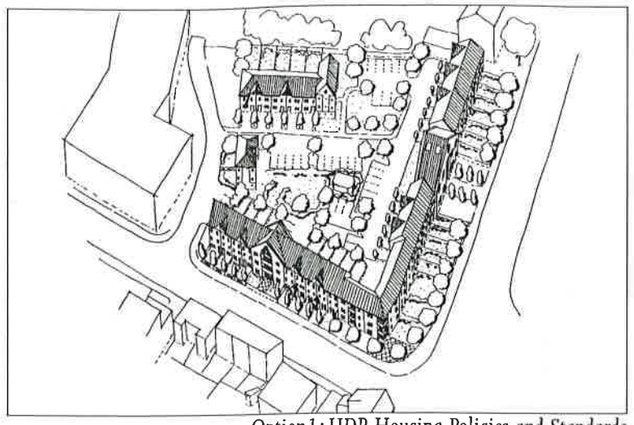
SITE AREA HA	NET 0.18	GROSS 0.22
Units/Ha	178	145
Hab Rm/Ha	528	432
Area/Ha	11,222	9,182

Design Exercise 21
Redevelopment of Existing Housing and Offices

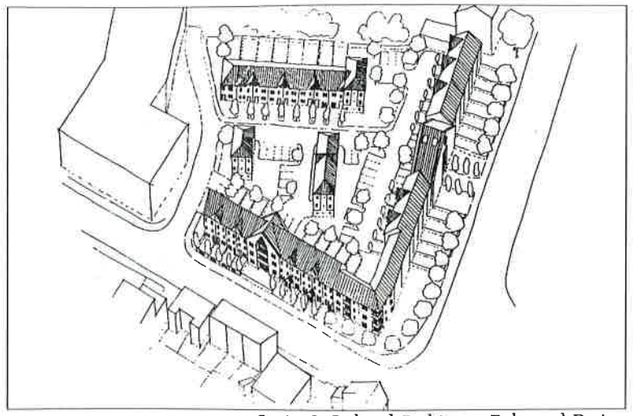
- Corner site of a demolished 1960's office block andVictorian housing.Situated at the intersection of two busy roads, within a mixed commercial, retail and residential area.
- **Option one** provides a street edge consistent with surrounding context, includes backlands development and accommodates the existing sub-station. Communal parking is provided within a generous back of block space, such that the development is dominated by parking.
- In **option two** the sub-station is removed. Backland development is increased and the central open space reduced.
- **Option three** also removes the sub-station. A large internal garden and play area is provided and form arranged around hard and soft courtyards. Service access is retained on hard surfaces. A greater density is achieved at the risk of overshadowing and overlooking.
- Further resolution is needed to access requirements, project identity and maintenance of privacy.



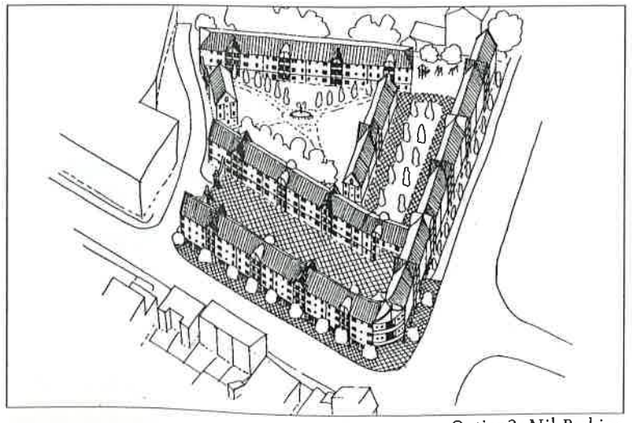
Site Plan (1:2,500)



Option1: UDP Housing Policies and Standards



Option2: Reduced Parking & Enhanced Design



Option3: Nil Parking

OPTION 1 - Complies with UDP Standards
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	6	12	300	9
2 Bed	65	21	63	1365	42
3 Bed	80	26	130	2080	52
4 Bed +	100	0	0	0	0
TOTAL		53	205	3745	103

DENSITY

SITE AREA	NET	GROSS
HA	0.75	0.9
Units/Ha	71	59
Hab Rm/Ha	273	228
Area/Ha	4,993	4,161

OPTION 2 - Enhanced design + Reduced Park.
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	6	12	300	6
2 Bed	65	27	81	1755	27
3 Bed	80	8	40	640	8
4 Bed +	100	21	126	2100	21
TOTAL		62	259	4795	62

DENSITY

SITE AREA	NET	GROSS
HA	0.75	0.9
Units/Ha	83	69
Hab Rm/Ha	345	288
Area/Ha	6,393	5,328

OPTION 3 - Nil Parking
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	56	112	2800	0
2 Bed	65	0	0	0	0
3 Bed	80	0	0	0	0
4 Bed +	100	0	0	0	0
Retail	100	8	0	800	0
TOTAL		64	112	3600	0

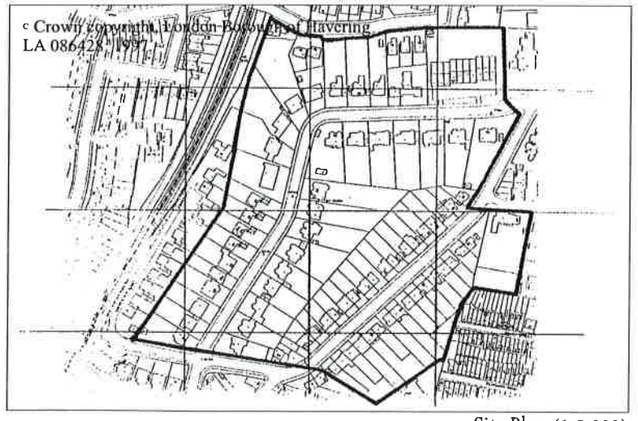
DENSITY

SITE AREA	NET	GROSS
HA	0.75	0.9
Units/Ha	85	71
Hab Rm/Ha	149	124
Area/Ha	4,800	4,000

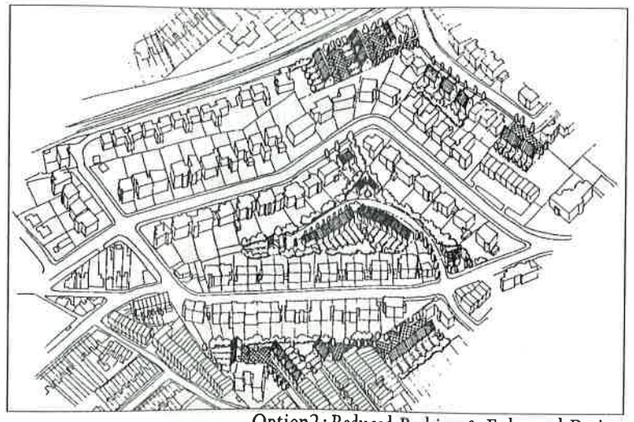
Design Exercise 22
Area Wide Backlands Study

- *Undertaken following assessment of whole nieghbourhood potential, analysing backlands, corner sites, and infill. A wide range of residential types are considered.*
- *Site is bounded by railway to the west, and dense terraced housing to south.*
- *The central backland is developed as a mews at the back of large residential houses.*
- *The scale of form is capped so as not to dominate the existing form and character.*
- ***Options one** and **two** comprise a mix of three and four bedroom houses.*
- ***Option three** retains a component of mews housing. Space made available by reduced car parking allows the development of flats.*

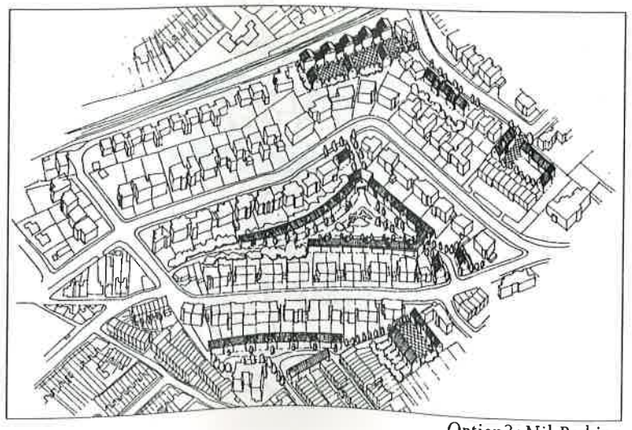
Option1: UDP Housing Policies and Standards



Site Plan (1:5,000)



Option2: Reduced Parking & Enhanced Design



Option3: Nil Parking

OPTION 1 - Complies with UDP Standards
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	0	0	0	0
3 Bed	80	25	125	2000	50
4 Bed +	100	19	114	1900	57
TOTAL		44	239	3900	107

DENSITY

SITE AREA	NET	GROSS
HA	1.89	2.02
Units/Ha	23	22
Hab Rm/Ha	126	118
Area/Ha	2,063	1,931

OPTION 2 - Enhanced design + Reduced Park.
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	4	8	200	4
2 Bed	65	0	0	0	0
3 Bed	80	56	280	4480	56
4 Bed +	100	11	66	1100	11
TOTAL		71	354	5780	71

DENSITY

SITE AREA	NET	GROSS
HA	1.99	2.08
Units/Ha	36	34
Hab Rm/Ha	178	170
Area/Ha	2,905	2,779

OPTION 3 - Nil Parking
DEVELOPMENT MIX

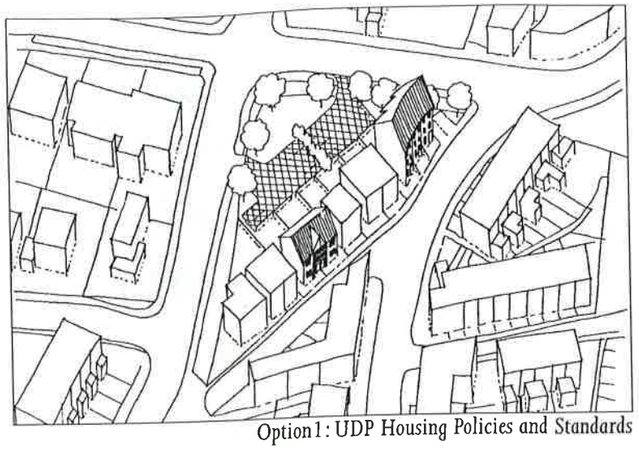
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	25	50	1250	0
2 Bed	65	73	219	4745	0
3 Bed	80	21	105	1680	0
4 Bed +	100	6	36	600	0
TOTAL		125	410	8275	0

DENSITY

SITE AREA	NET	GROSS
HA	1.94	2.08
Units/Ha	64	60
Hab Rm/Ha	211	197
Area/Ha	4,265	3,978

Design Exercise 23
Development Constrained by Road Network

- Island site consisting of a small derelict backland and infill sites.
- **Option one** continues the building line of existing development with infill and corner building types. Parking is provided to the rear.
- In **option two**, residential units are provided on the north-west corner to reinforce the street form.
- Built form in **option three** encloses a common garden and is extended to the pavement edge.



Option1: UDP Housing Policies and Standards

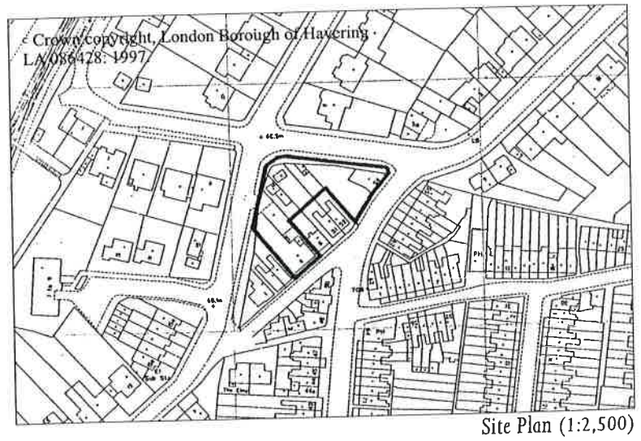
OPTION 1 - Complies with UDP Standards

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	0	0	0	0
3 Bed	80	3	15	240	6
4 Bed +	100	2	12	200	6
TOTAL		5	27	440	12

DENSITY

SITE AREA	NET	GROSS
HA	0.12	0.18
Units/Ha	42	28
Hab Rm/Ha	225	150
Area/Ha	3,667	2,444



Site Plan (1:2,500)

Option2: Reduced Parking & Enhanced Design

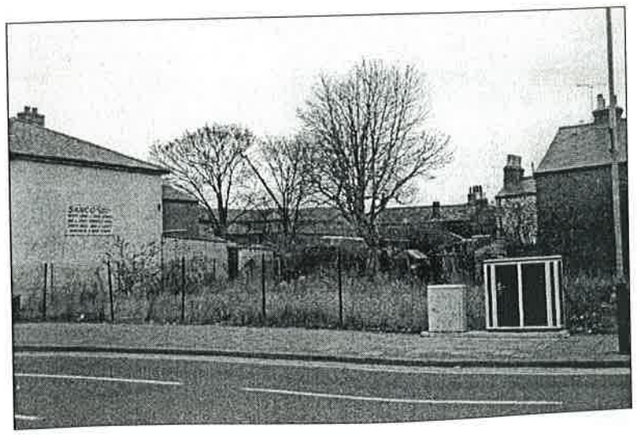
OPTION 2 - Enhanced design + Reduced Park.

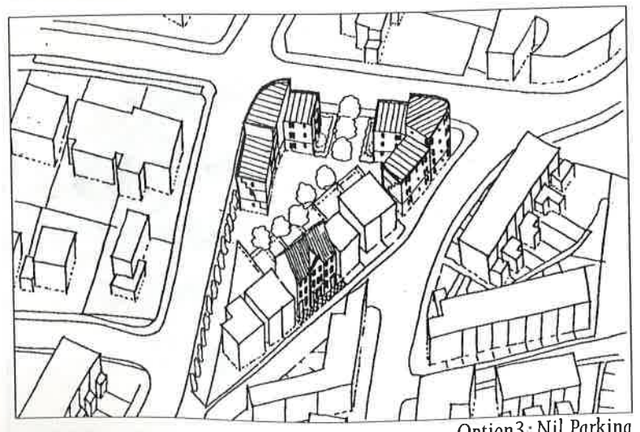
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	0	0	0	0
3 Bed	80	6	30	480	6
4 Bed +	100	2	12	200	2
TOTAL		8	42	680	8

DENSITY

SITE AREA	NET	GROSS
HA	0.12	0.18
Units/Ha	67	44
Hab Rm/Ha	350	233
Area/Ha	5,667	3,778





Option3: Nil Parking

OPTION 3 - Nil Parking

DEVELOPMENT MIX

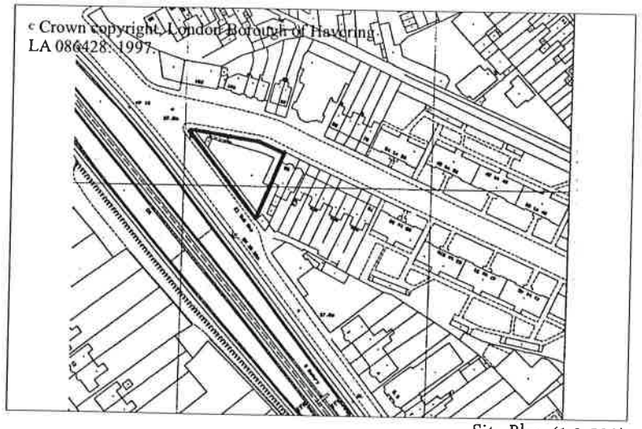
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	6	12	300	0
2 Bed	65	14	42	910	0
3 Bed	80	0	0	0	0
4 Bed +	100	3	18	300	0
TOTAL		23	72	1510	0

DENSITY

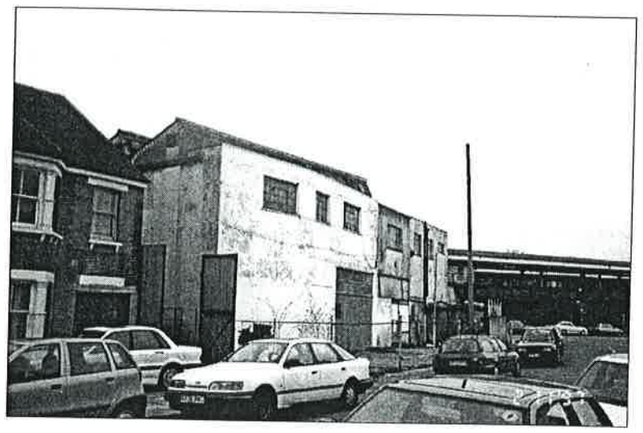
SITE AREA	NET	GROSS
HA	0.12	0.18
Units/Ha	192	128
Hab Rm/Ha	600	400
Area/Ha	12,583	8,389

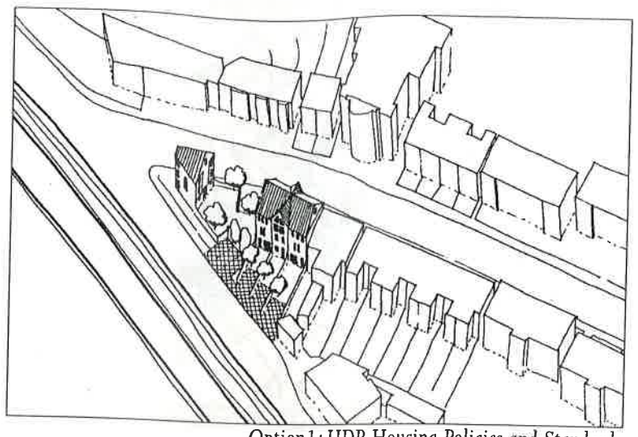
Design Exercise 24
Derelict Workshop on Corner Site

- *Site comprises derelict workshops adjacent to a raised railway station.*
- *Each option seeks to reinforce the existing residential character and includes a rear buffer space from the railway line.*
- *Flats are considered the most appropriate type of unit for this situation.*
- *The form of* ***option one*** *is determined by on-site parking and building lines*
- *In* ***option two*** *the north-western block is enlarged and in* ***option three*** *terrace flats is given a secluded back garden*

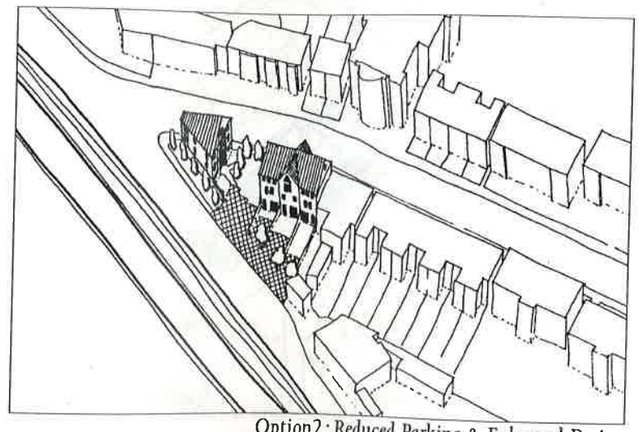


Site Plan (1:2,500)

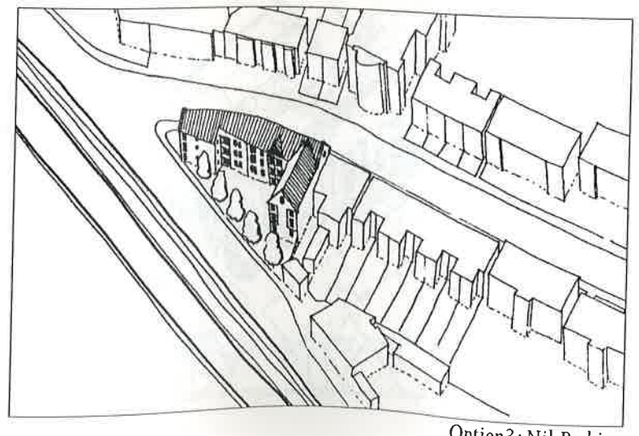




Option1: UDP Housing Policies and Standards



Option2: Reduced Parking & Enhanced Design



Option3: Nil Parking

OPTION 1 - Complies with UDP Standards
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	3	9	195	6
3 Bed	80	0	0	0	0
4 Bed +	100	1	6	100	3
TOTAL		4	15	295	9

DENSITY

SITE AREA	NET	GROSS
HA	0.06	0.12
Units/Ha	67	33
Hab Rm/Ha	250	125
Area/Ha	4,917	2,458

OPTION 2 - Enhanced design + Reduced Park.
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	5	15	325	5
3 Bed	80	1	4	80	1
4 Bed +	100	0	0	0	0
TOTAL		6	19	405	6

+ 1,200 sq.m retail and community hall
DENSITY

SITE AREA	NET	GROSS
HA	0.06	0.12
Units/Ha	100	50
Hab Rm/Ha	317	158
Area/Ha	6,750	3,375

OPTION 3 - Nil Parking
DEVELOPMENT MIX

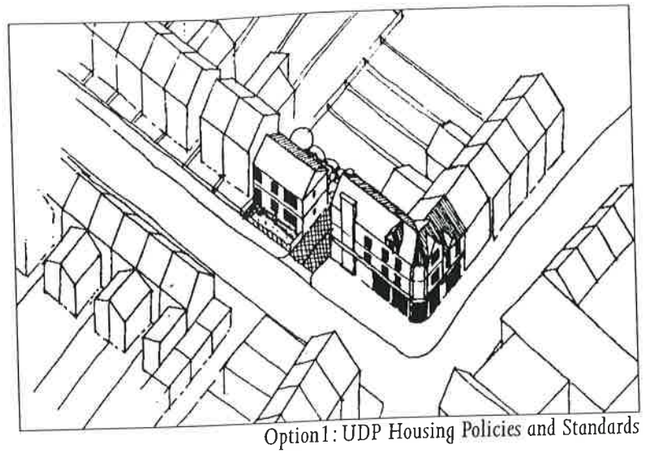
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	10	30	650	0
3 Bed	80	0	0	0	0
4 Bed +	100	0	0	0	0
TOTAL		10	30	650	0

50% surface parking, remaining 50% in semi-basem
DENSITY

SITE AREA	NET	GROSS
HA	0.06	0.12
Units/Ha	167	83
Hab Rm/Ha	500	250
Area/Ha	10,833	5,417

Design Exercise 25
Regeneration of Vacant Mixed-use Corner Site

- Designs seek to redevelop the corner site with a mix that approximates to the present situation-namely ground floor retail and residential above.
- The portion of the site targetted for redevelopment potential is greatly occupied by a single-storey row of under-used and shabby garages which undermine the quality of the local environment
- All three design scenarios provide shallow plan building types with progressively increasing densities as the need for car parking diminishes.



Option1: UDP Housing Policies and Standards

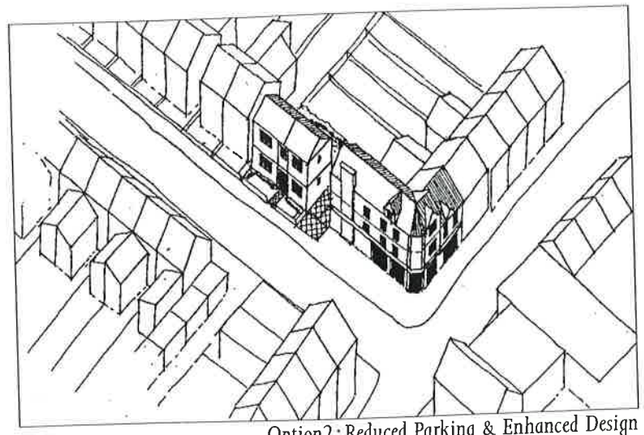
OPTION 1 - Complies with UDP Standards

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	2	6	130	2
3 Bed	80	0	0	0	0
4 Bed +	96	0	0	0	0
TOTAL		2	6	130	2

DENSITY

SITE AREA	NET	GROSS
HA	0.0414	0.0621
Units/Ha	48	32
Hab Rm/Ha	145	97
Area/Ha	3,140	2,093



Option2: Reduced Parking & Enhanced Design

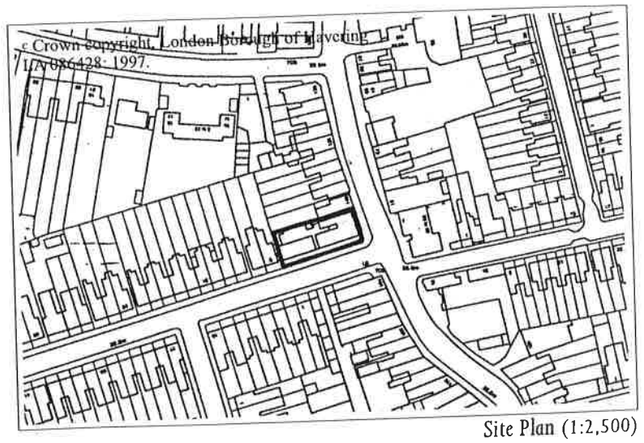
OPTION 2 - Enhanced design + Reduced Park.

DEVELOPMENT MIX

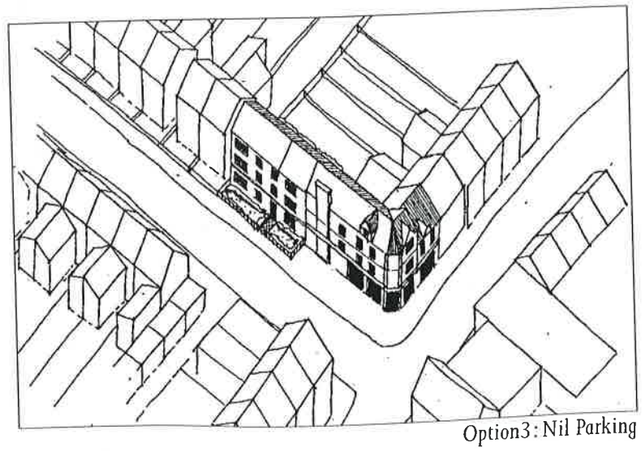
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	2	2	80	1
1 Bed	50	2	4	100	1
2 Bed	65	0	0	0	0
3 Bed	80	0	0	0	0
4 Bed +	96	0	0	0	0
TOTAL		4	6	180	2

DENSITY

SITE AREA	NET	GROSS
HA	0.0414	0.0621
Units/Ha	97	64
Hab Rm/Ha	145	97
Area/Ha	4,348	2,899



Site Plan (1:2,500)



Option3: Nil Parking

OPTION 3 - Nil Parking

DEVELOPMENT MIX

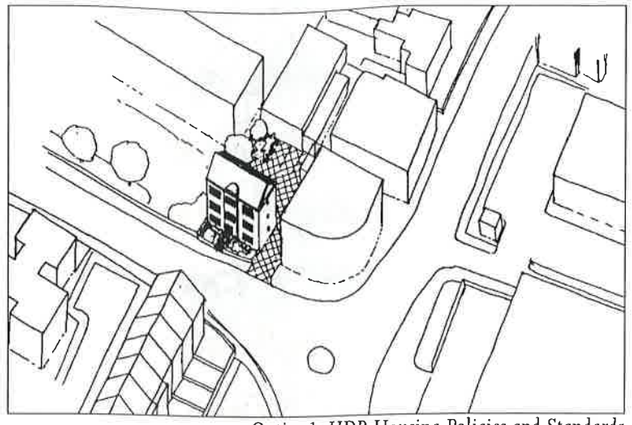
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	3	6	150	0
2 Bed	65	3	9	195	0
3 Bed	80	0	0	0	0
4 Bed +	100	0	0	0	0
TOTAL		6	15	345	0

DENSITY

SITE AREA	NET	GROSS
HA	0.0414	0.0621
Units/Ha	145	97
Hab Rm/Ha	362	242
Area/Ha	8,333	5,556

Design Exercise 26
Small Car Park Next to Public House

- Situated close to town centre adjacent to a busy road.
- A key constraint to design in this location is the position of a mature tree, which makes a positive contribution to the streetscape.
- In **options one** and **two** the location of a nearby junction makes vehicle access to / from the site unlikely.



Option 1: UDP Housing Policies and Standards

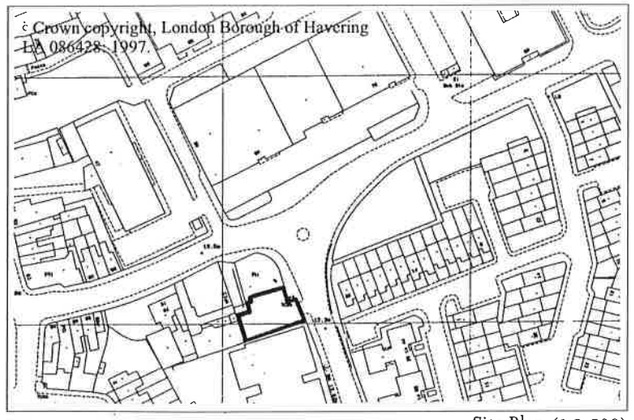
OPTION 1 - Complies with UDP Standards

DEVELOPMENT MIX

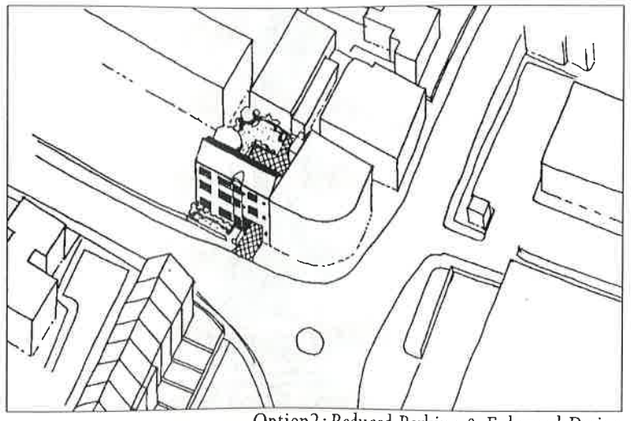
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	3	3	120	3
1 Bed	50	3	6	150	4
2 Bed	65	0	0	0	0
3 Bed	80	0	0	0	0
4 Bed +	96	0	0	0	0
TOTAL		6	9	270	7

DENSITY

SITE AREA	NET	GROSS
HA	0.04	0.05
Units/Ha	150	120
Hab Rm/Ha	225	180
Area/Ha	6,750	5,400



Site Plan (1:2,500)



Option2: Reduced Parking & Enhanced Design

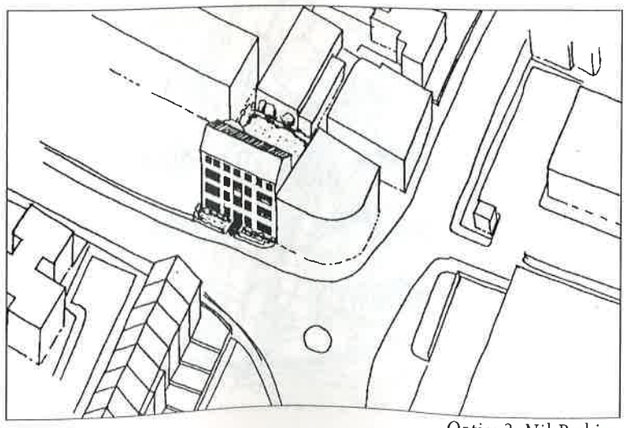
OPTION 2 - Enhanced design + Reduced Park.

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	3	6	150	3
2 Bed	65	4	12	260	4
3 Bed	80	0	0	0	0
4 Bed +	96	0	0	0	0
TOTAL		7	18	410	7

DENSITY

SITE AREA	NET	GROSS
HA	0.04	0.05
Units/Ha	175	140
Hab Rm/Ha	450	360
Area/Ha	10,250	8,200



Option3: Nil Parking

OPTION 3 - Nil Parking

DEVELOPMENT MIX

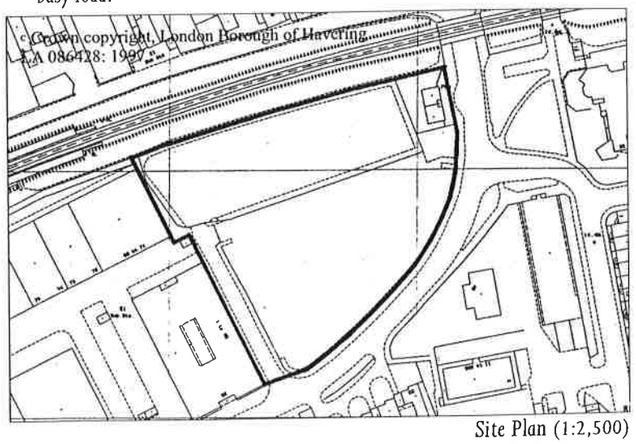
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HAB.RM NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	4	8	200	0
2 Bed	65	4	12	260	0
3 Bed	80		0	0	0
4 Bed +	100		0	0	0
TOTAL		8	20	460	0

DENSITY

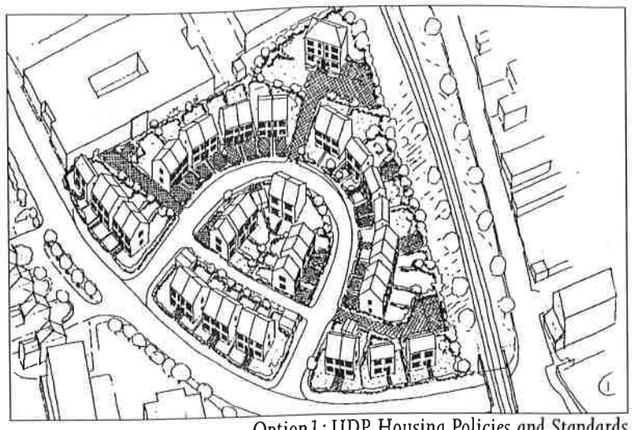
SITE AREA	NET	GROSS
HA	0.04	0.05
Units/Ha	200	160
Hab Rm/Ha	500	400
Area/Ha	11,500	9,200

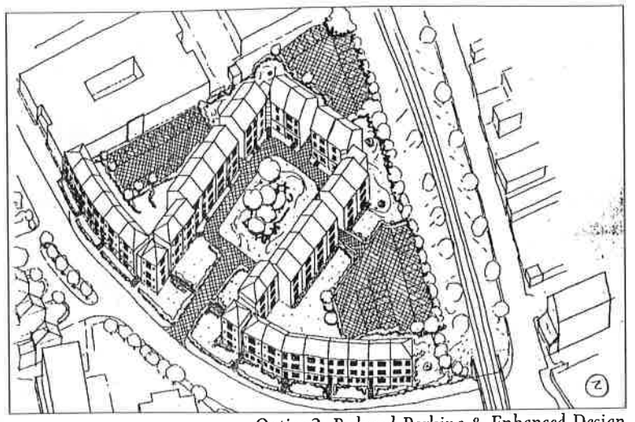
Design Exercise 27
Large Site Backing on to Railway Line

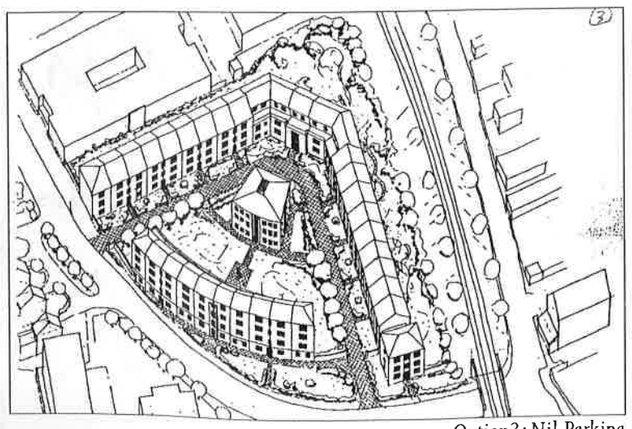
- Existing car/lorry park which is under-utilised due to a more conveniently placed nearby multi-storey car park. Generous site dimensions mean that a variety of design solutions are possible.
- **Option one** provides a residential crescent where the majority of dwellings are three and four bedroom and face the main road, with car parking towards the rear.
- In **option two** blocks of flats are organised to extend the perimeter of development so that a semi-public square is incorporated into the design, from which rear car parks are accessed. A strong building frontage is provided to the main road, uninterrupted by parking.
- **Option three** provides a symmetrical solution, consisting of a mix of perimeter tenements and an apartment block. Special attention to detailing of the north block is required due to the location of the nearby railway line.
- Both **options two** and **three** contain communal outdoor spaces away from the busy road.



Site Plan (1:2,500)


Option1: UDP Housing Policies and Standards


Option2: Reduced Parking & Enhanced Design


Option3: Nil Parking

OPTION 1 - Complies with UDP Standards
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	6	12	300	7
2 Bed	65	0	0	0	0
3 Bed	80	23	115	1840	39.1
4 Bed +	96	17	102	1632	28.9
TOTAL		46	229	3772	75

DENSITY

SITE AREA	NET	GROSS
HA	0.986	1.088
Units/Ha	47	42
Hab Rm/Ha	232	210
Area/Ha	3,826	3,467

OPTION 2 - Enhanced design + Reduced Park.
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	60	120	3000	60
2 Bed	65	48	144	3120	48
3 Bed	80	0	0	0	0
4 Bed +	96	0	0	0	0
TOTAL		108	264	6120	108

DENSITY

SITE AREA	NET	GROSS
HA	0.986	1.088
Units/Ha	110	99
Hab Rm/Ha	268	243
Area/Ha	6,207	5,625

OPTION 3 - Nil Parking
DEVELOPMENT MIX

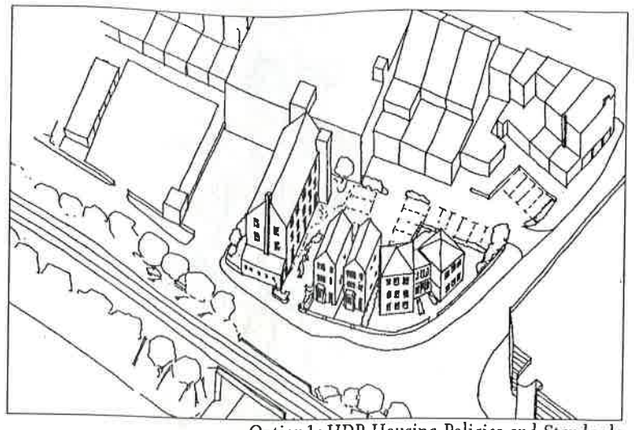
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	19	38	950	0
2 Bed	65	105	315	6825	0
3 Bed	80	0	0	0	0
4 Bed +	100	0	0	0	0
TOTAL		124	353	7775	0

DENSITY

SITE AREA	NET	GROSS
HA	0.986	1.088
Units/Ha	126	114
Hab Rm/Ha	358	324
Area/Ha	7,885	7,146

Design Exercise 28
Corner Site with Victorian Warehouse

- The context is provided here for a high quality Victorian warehouse conversion - producing a layout which essentially faces outwards from the corner.
- Within this, the possible number of units is limited by car parking and borough density standards.
- With reduced car parking in **option two** the building footprint remains approximately the same as **option one** but more units are possible because of the release of one set of parking bays.
- In **option three**, with car parking reduced altogether a private backland landscape can be produced. If parking is required, designated space can be provided in the multi-storey car park less than 20m away.



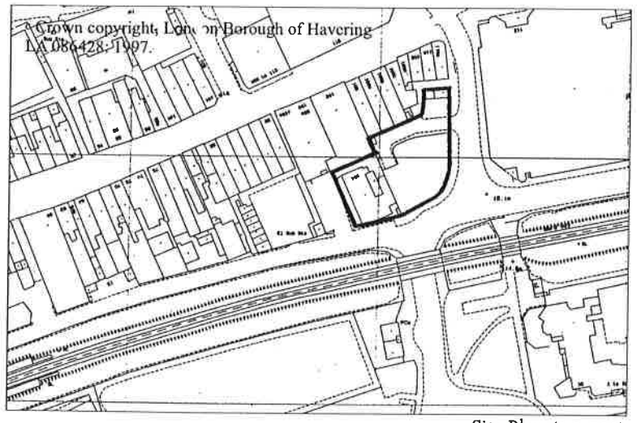
Option 1: UDP Housing Policies and Standards

OPTION 1 - Complies with UDP Standards
DEVELOPMENT MIX

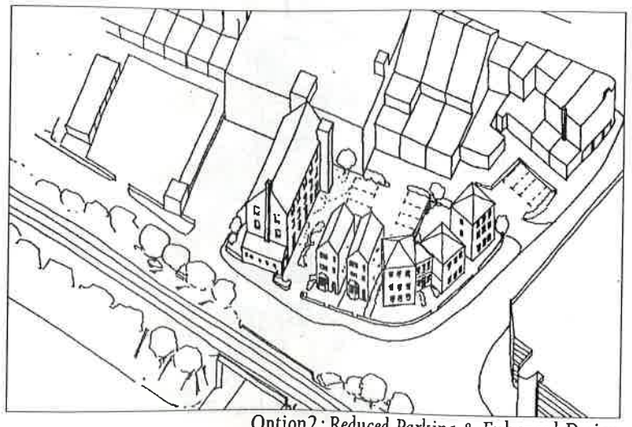
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	5	10	250	6
2 Bed	65	0	0	0	0
3 Bed	80	0	0	0	0
4 Bed +	96	2	12	192	3
conversion	57	9	27	513	9
TOTAL		16	49	955	18

DENSITY

SITE AREA	NET	GROSS
HA	0.162	0.2125
Units/Ha	99	75
Hab Rm/Ha	302	231
Area/Ha	5,895	4,494



Site Plan (1:2,500)



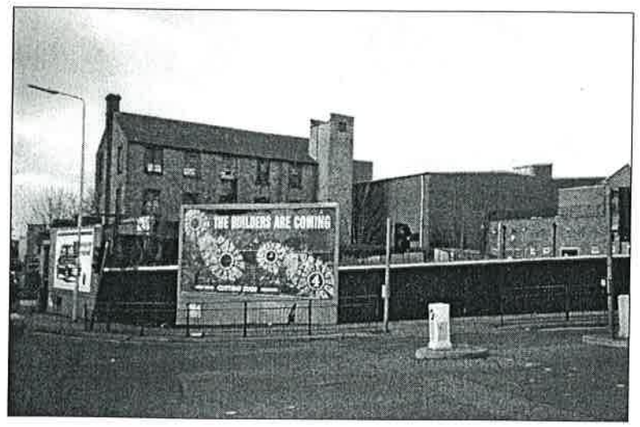
Option2: Reduced Parking & Enhanced Design

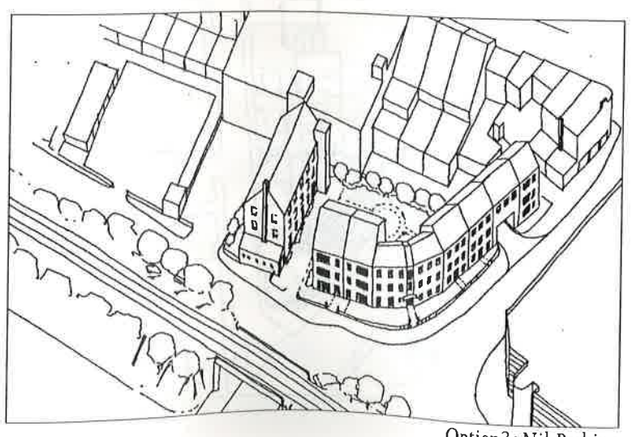
OPTION 2 - Enhanced design + Reduced Park.
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	9	18	450	5
2 Bed	0	0	0	0	0
3 Bed	80	0	0	0	0
4 Bed +	96	2	12	192	2
conversion	57	9	27	513	5
TOTAL		20	57	1155	12

DENSITY

SITE AREA	NET	GROSS
HA	0.162	0.2125
Units/Ha	123	94
Hab Rm/Ha	352	268
Area/Ha	7,130	5,435





Option3: Nil Parking

OPTION 3 - Nil Parking
DEVELOPMENT MIX

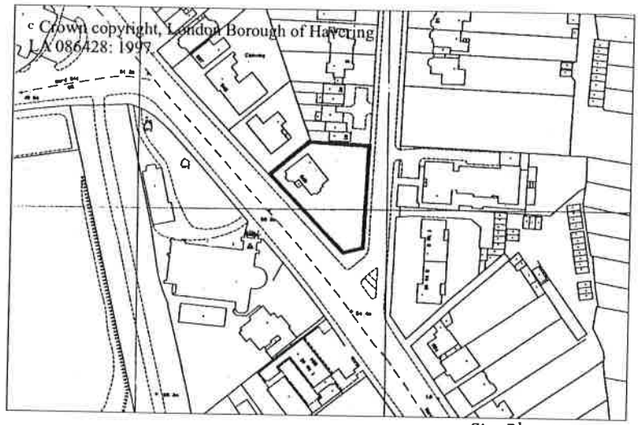
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	9	9	360	0
1 Bed	50	8	16	400	0
2 Bed	65	6	18	390	0
3 Bed	80	0	0	0	0
4 Bed +	100	0	0	0	0
conversion	57	9	27	513	0
TOTAL		32	70	1663	0

DENSITY

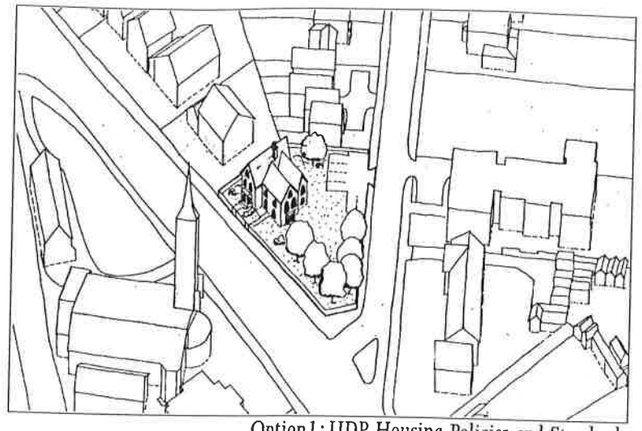
SITE AREA	NET	GROSS
HA	0.162	0.213
Units/Ha	198	151
Hab Rm/Ha	432	329
Area/Ha	10,265	7,826

Design Exercise 29
Corner Site with Derelict House

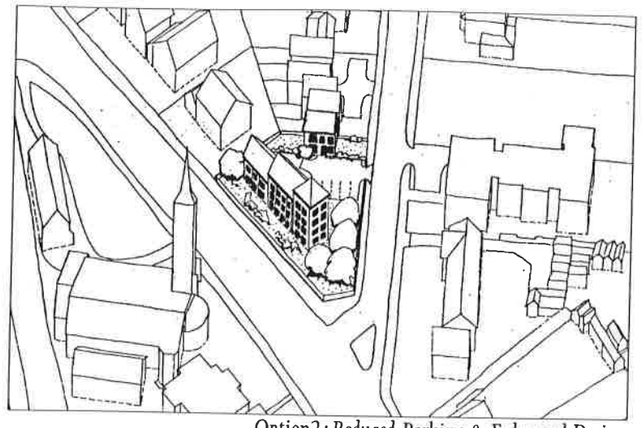
- *Situated in between a busy main road and a quieter residential street lined with large detached 2-storey houses and 3 to 4-storey flats.*
- *In* **option one**, *the existing house is retained and sub-divided into five two bedroom flats.*
- *With redevelopment, in* **option two** *the potential for ten units is possible with car parking access from the residential street.*
- **Option three** *reinforces the corner of the two roads by developing a combination of single and double aspect units, which wrap around the corner. Special unit layouts are required for this configuration.*



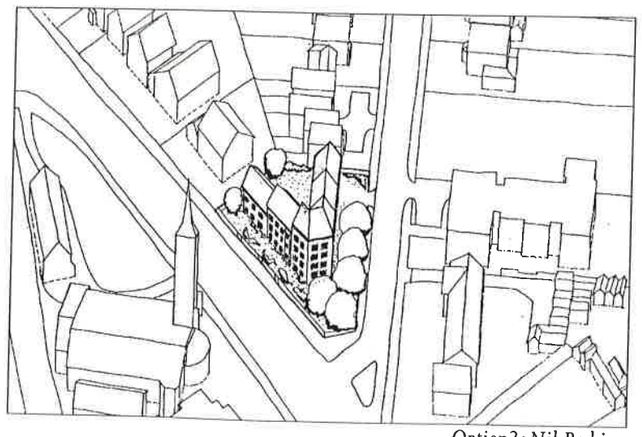
Site Plan (1:2,500)



Option1: UDP Housing Policies and Standards



Option2: Reduced Parking & Enhanced Design



Option3: Nil Parking

OPTION 1 - Complies with UDP Standards
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	5	15	325	6
3 Bed	80	0	0	0	0
4 Bed +	100	0	0	0	0
TOTAL		5	15	325	6

DENSITY

SITE AREA	NET	GROSS
HA	0.12	0.19
Units/Ha	42	26
Hab Rm/Ha	125	79
Area/Ha	2,708	1,711

OPTION 2 - Enhanced design + Reduced Park.
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	4	8	200	2
2 Bed	65	5	15	325	3
3 Bed	80	1	5	80	1
4 Bed +	100	0	0	0	0
TOTAL		10	28	605	6

DENSITY

SITE AREA	NET	GROSS
HA	0.12	0.19
Units/Ha	83	53
Hab Rm/Ha	233	147
Area/Ha	5,042	3,184

OPTION 3 - Nil Parking
DEVELOPMENT MIX

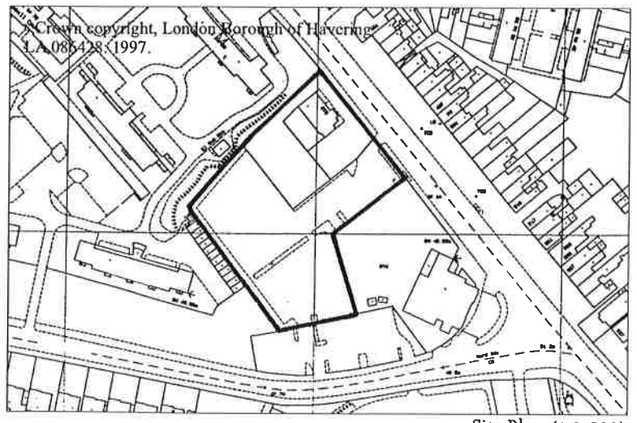
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	14	42	910	0
3 Bed	80	0	0	0	0
4 Bed +	100	0	0	0	0
TOTAL		14	42	910	0

DENSITY

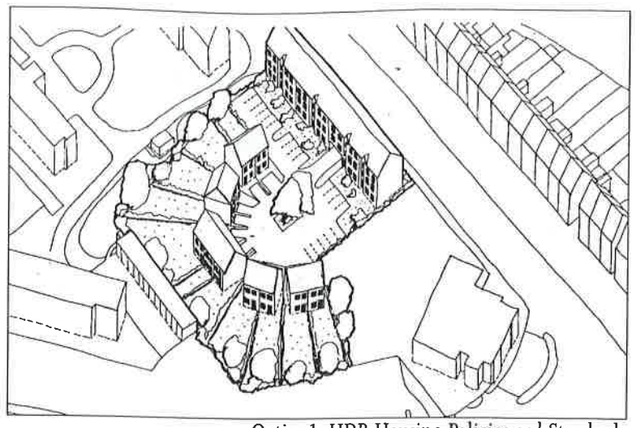
SITE AREA	NET	GROSS
HA	0.12	0.19
Units/Ha	117	74
Hab Rm/Ha	350	221
Area/Ha	7,583	4,789

Design Exercise 30
Under-used overflow Car Park

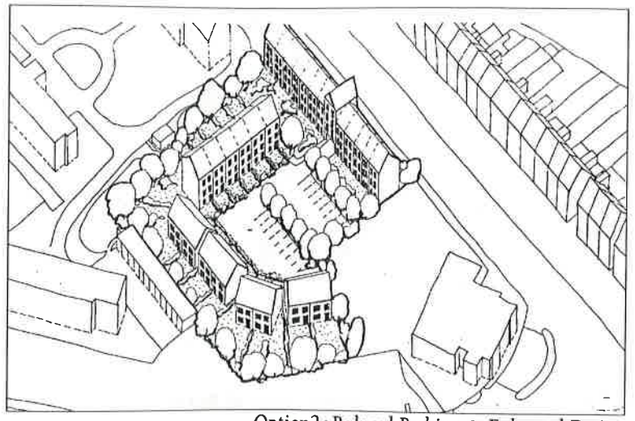
- *Adjacent large corner site occupied by a pub dominates surrounding context. 6-storey flats wrap around the western boundary and constrain potential layout.*
- *Busy roads along north-east and southern boundary so that each option is developed around the idea of a courtyard or mews.*
- *Each option continues the street line and provide private gardens to most properties.*
- ***Option one** has a housing:flats ratio of 60/40%.The two proposed building types (terraced townhouses/flats and semi-detached houses) appear incompatible in terms of scale, composition and front/back distinctions.The terrace of townhouses does, however, successfully reinforce the street.*
- *In **option two**, public/private distinctions are still not fully-resolved. Parking spaces are consolidated into one central car park.This facilitates phased incremental growth, so that this space could be replaced with an additional block should demand for parking reduce.*



Site Plan (1:2,500)



Option1: UDP Housing Policies and Standards



Option2: Reduced Parking & Enhanced Design

OPTION 1 - Complies with UDP Standards
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	7	14	350	7.7
2 Bed	65	10	30	650	11
3 Bed	80	5	25	400	5.5
4 Bed +	100	6	36	600	6.6
TOTAL		28	105	2000	31

DENSITY

SITE AREA	NET	GROSS
HA	0.48	0.51
Units/Ha	58	55
Hab Rm/Ha	219	206
Area/Ha	4,167	3,922

OPTION 2 - Enhanced design + Reduced Park.
DEVELOPMENT MIX

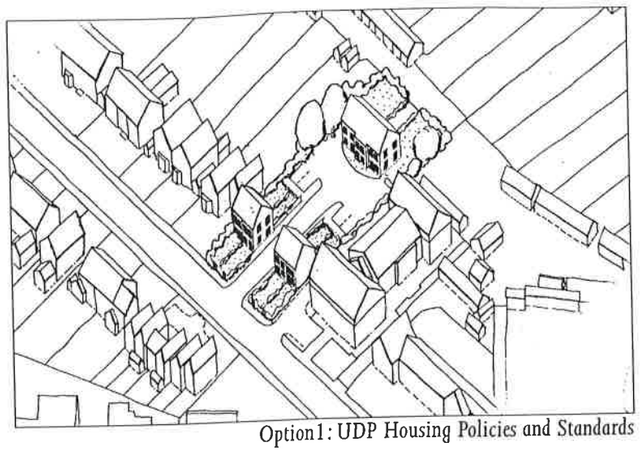
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	9	27	585	9
3 Bed	80	16	80	1280	16
4 Bed +	100	8	48	800	8
TOTAL		33	155	2665	33

DENSITY

SITE AREA	NET	GROSS
HA	0.48	0.51
Units/Ha	69	65
Hab Rm/Ha	323	304
Area/Ha	5,552	5,225

Design Exercise 31
Infill of Vacant Residential Plots

- Vacant double plot in residential street consisting of large 4-storey semi-detached converted houses.
- Designs provide both street frontage and backland development within the same plot.
- Both options provide a centre axis into the site's interior.
- **Option two** is densified so that flats straddle the internal access.



Option1: UDP Housing Policies and Standards

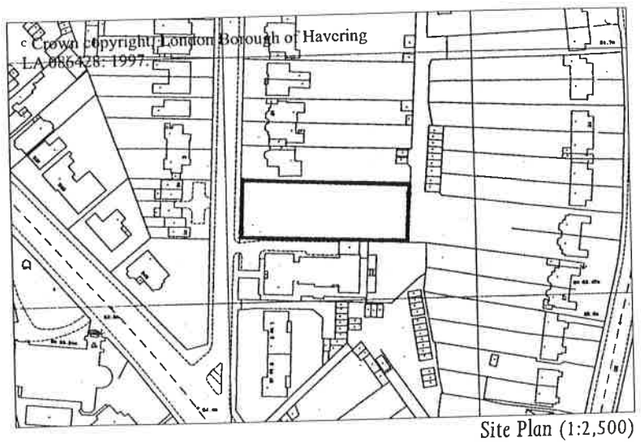
OPTION 1 - Complies with UDP Standards

DEVELOPMENT MIX

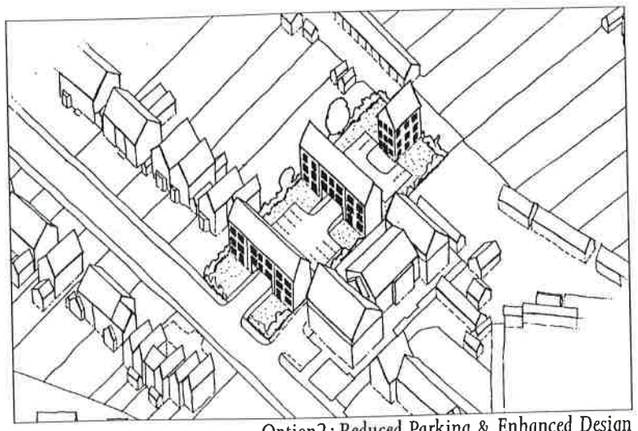
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	0	0	0	0
3 Bed	80	0	0	0	0
4 Bed +	100	7	42	700	8
TOTAL		7	42	700	8

DENSITY

SITE AREA	NET	GROSS
HA	0.18	0.2
Units/Ha	39	35
Hab Rm/Ha	233	210
Area/Ha	3,889	3,500



Site Plan (1:2,500)



Option2: Reduced Parking & Enhanced Design

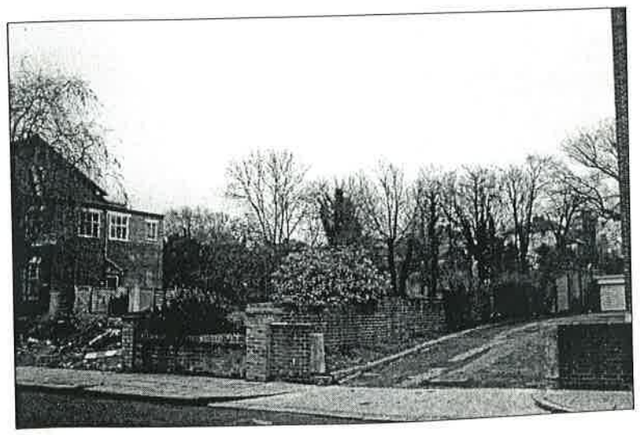
OPTION 2 - Enhanced design + Reduced Park.

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	8	24	520	8
3 Bed	80	4	20	320	4
4 Bed +	100	0	0	0	0
TOTAL		12	44	840	12

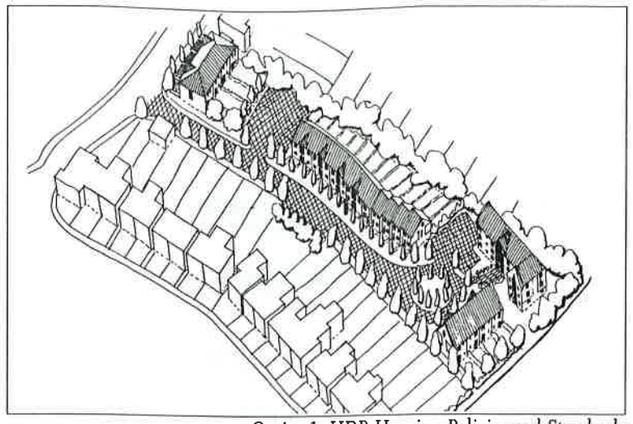
DENSITY

SITE AREA	NET	GROSS
HA	0.18	0.2
Units/Ha	67	60
Hab Rm/Ha	244	220
Area/Ha	4,667	4,200



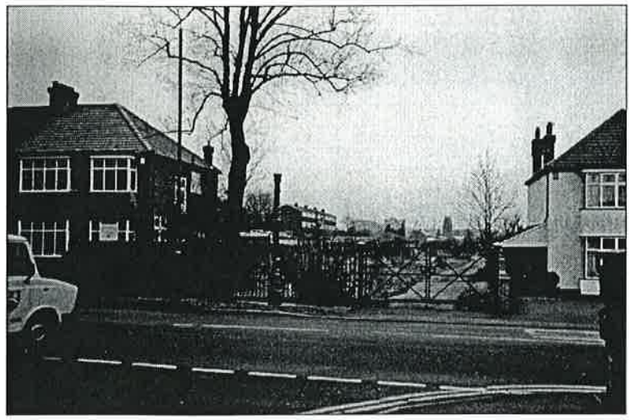
Design Exercise 32
Backland Development

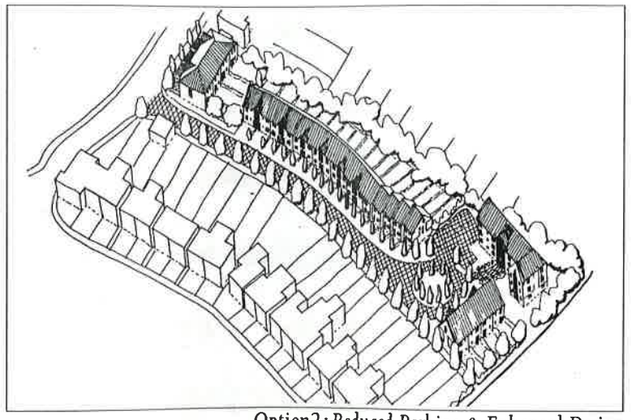
- *Designs seek to maintain the existing fronts and backs that are characteristic of the area.*
- **Options one** *and* **two** *provide parking courts off the main circulation into the backlands.*
- **Option three** *provides both a hard landscaped courtyard and a soft landscaped garden whilst reinforcing the building edge to the street.*



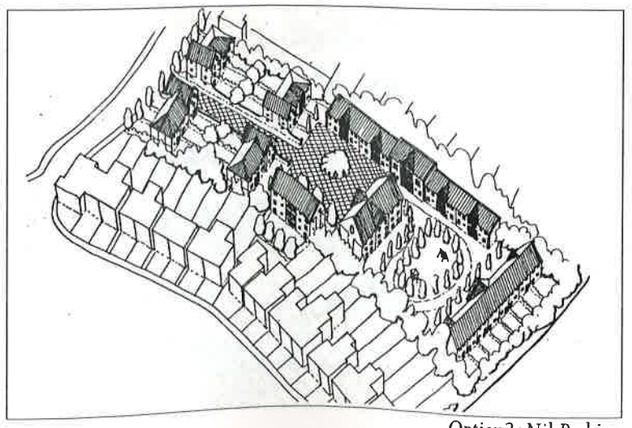
Option1: UDP Housing Policies and Standards

Site Plan (1:2,500)





Option2: Reduced Parking & Enhanced Design



Option3: Nil Parking

OPTION 1 - Complies with UDP Standards
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs. NOS.	AREA SQ.M.	PARK. NOS
Studio	40		0	0	0
1 Bed	50		0	0	0
2 Bed	65	22	66	1430	26.4
3 Bed	80	8	40	640	16.8
4 Bed +	100		0	0	0
TOTAL		30	106	2070	43.2

DENSITY

SITE AREA	NET	GROSS
HA	0.51	0.54
Units/Ha	59	56
Hab Rm/Ha	208	196
Area/Ha	4,059	3,833

OPTION 2 - Enhanced design + Reduced Park.
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK. NOS
Studio	40		0	0	0
1 Bed	50		0	0	0
2 Bed	65	24	72	1560	24
3 Bed	80	10	50	800	10
4 Bed +	100		0	0	0
TOTAL		34	122	2360	34

DENSITY

SITE AREA	NET	GROSS
HA	0.51	0.54
Units/Ha	67	63
Hab Rm/Ha	239	226
Area/Ha	4,627	4,370

OPTION 3 - Nil Parking
DEVELOPMENT MIX

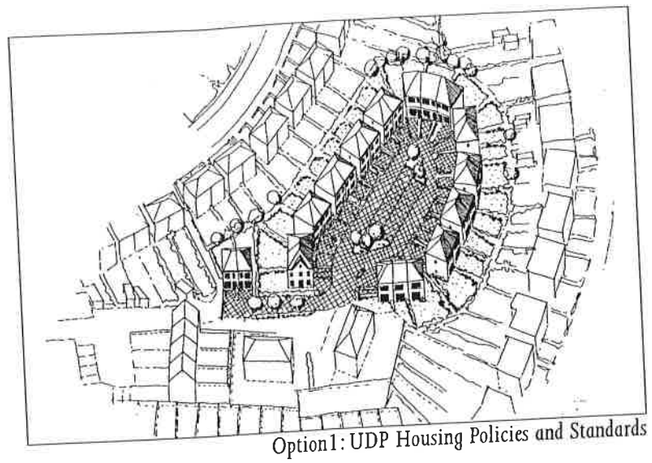
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs. NOS.	AREA SQ.M.	PARK. NOS
Studio	40		0	0	0
1 Bed	50		0	0	0
2 Bed	65	13	39	845	0
3 Bed	80	16	80	1280	0
4 Bed +	100	6	36	600	0
TOTAL		35	155	2725	0

DENSITY

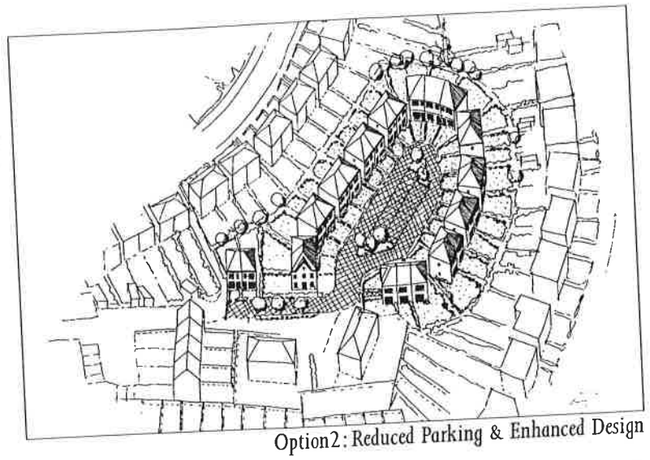
SITE AREA	NET	GROSS
HA	0.51	0.54
Units/Ha	69	65
Hab Rm/Ha	304	287
Area/Ha	5,343	5,046

Design Exercise 33
Backland Development

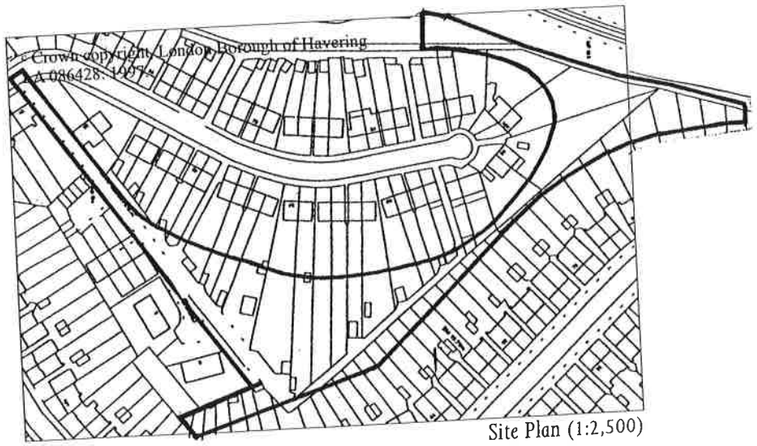
- Close to underground line to west and town centre to south.
- Designs seek to maintain the existing fronts and backs that are characteristic of the area.
- **Options one** and **two** provide parking courts off the main circulation into the backlands.
- **Option three** provides both a hard landscaped courtyard and a soft landscaped garden whilst reinforcing the building edge to the street.



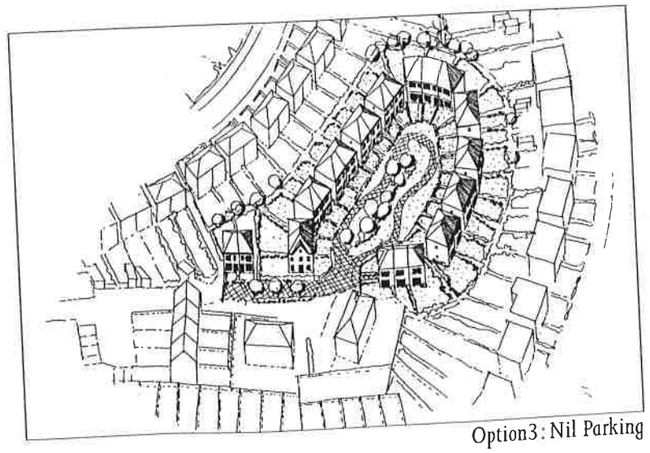
Option1: UDP Housing Policies and Standards



Option2: Reduced Parking & Enhanced Design



Site Plan (1:2,500)



Option3: Nil Parking

OPTION 1 - Complies with UDP Standards

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40		0	0	0
1 Bed	50		0	0	0
2 Bed	65		0	0	0
3 Bed	80	18	90	1440	36
4 Bed +	100	8	48	800	16
Other			0	0	0
TOTAL		26	138	2240	52

DENSITY

SITE AREA	NET	GROSS
HA	0.57	0 0
Units/Ha	46	0
Hab Rm/Ha	242	0
Area/Ha	3,930	0

OPTION 2 - Enhanced design + Reduced Park.

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40		0	0	0
1 Bed	50		0	0	0
2 Bed	65		0	0	0
3 Bed	80	18	90	1440	18
4 Bed +	100	8	48	800	8
Other			0	0	0
TOTAL		26	138	2240	26

DENSITY

SITE AREA	NET	GROSS
HA	0.57	0 0
Units/Ha	46	0
Hab Rm/Ha	242	0
Area/Ha	3,930	0

OPTION 3 - Nil Parking

DEVELOPMENT MIX

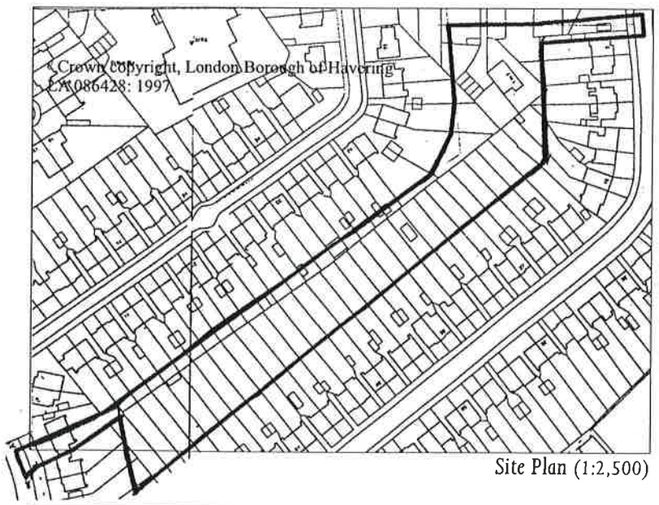
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40		0	0	0
1 Bed	50	6	18	450	0
2 Bed	65	30	120	1950	0
3 Bed	80		0	0	0
4 Bed +	100		0	0	0
Other			0	0	0
TOTAL		36	138	2400	0

DENSITY

SITE AREA	NET	GROSS
HA	0.57	0
Units/Ha	63	0
Hab Rm/Ha	242	0
Area/Ha	4,211	0

Design Exercise 34
Backland Development

- One dwelling is demolished to enable access standards to be maintained.
- **Option one** forms a cul-de-sac, whereas **options two** and **three** facilitate through-movement.
- **Options one** and **two** provide parking courts off the main circulation into the backlands.
- **Option three** provides both a hard landscaped courtyard and a soft landscaped garden whilst reinforcing the building edge to the street.



Site Plan (1:2,500)

Option1: UDP Housing Policies and Standards

Option2: Reduced Parking & Enhanced Design

Option3: Nil Parking

OPTION 1 - Complies with UDP Standards
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs. NOS.	AREA SQ.M.	PARK. NOS
Studio	40		0	0	0
1 Bed	50		0	0	0
2 Bed	65	0	0	0	0
3 Bed	80	7	35	560	14.7
4 Bed +	100	14	84	1400	29.4
TOTAL		21	119	1960	44.1

DENSITY

SITE AREA	NET	GROSS
HA	0.6	0.6
Units/Ha	35	35
Hab Rm/Ha	198	198
Area/Ha	3,267	3,267

OPTION 2 - Enhanced design + Reduced Park.
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK. NOS
Studio	40		0	0	0
1 Bed	50		0	0	0
2 Bed	65	0	0	0	0
3 Bed	80	21	105	1680	21
4 Bed +	100	12	72	1200	12
TOTAL		33	177	2880	33

DENSITY

SITE AREA	NET	GROSS
HA	0.6	0.6
Units/Ha	55	55
Hab Rm/Ha	295	295
Area/Ha	4,800	4,800

OPTION 3 - Nil Parking
DEVELOPMENT MIX

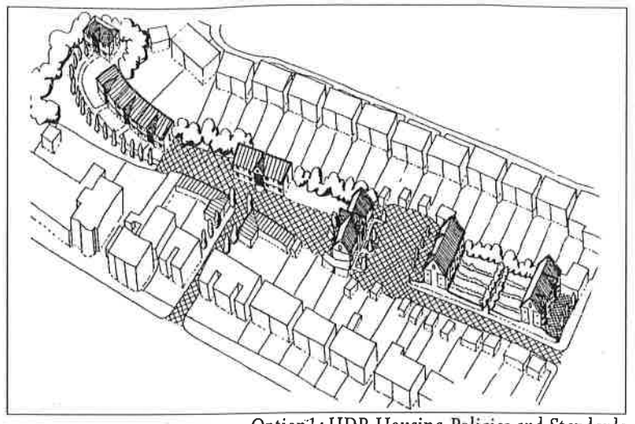
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs. NOS.	AREA SQ.M.	PARK. NOS
Studio	40		0	0	0
1 Bed	50		0	0	0
2 Bed	65	21	63	1365	0
3 Bed	80	23	115	1840	0
4 Bed +	100	2	12	200	0
TOTAL		46	190	3405	0

DENSITY

SITE AREA	NET	GROSS
HA	0.6	0.6
Units/Ha	77	77
Hab Rm/Ha	317	317
Area/Ha	5,675	5,675

Design Exercise 35
Backland Development

- Long, narrow backlands comprising back gardens of semi-detached houses located close to town centre.
- Designs aim to produce an incremental approach to backlands development which combine existing backlands uses such as access to replacement garages for existing properties with new residential units.
- The layout remains essentially the same, with increasing numbers of flats throughout the options, including providing dwellings above rebuilt garages to existing dwellings in **option three**.



Option1: UDP Housing Policies and Standards

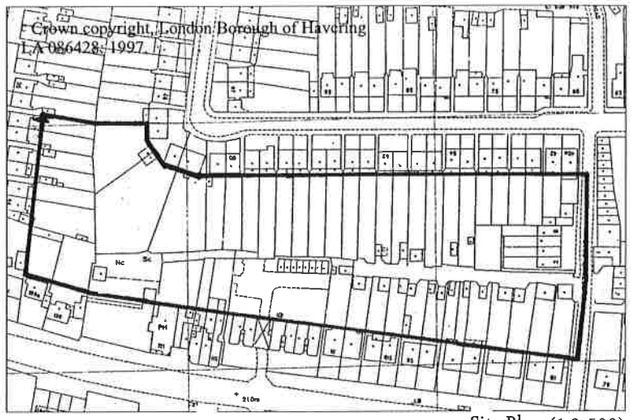
OPTION 1 - Complies with UDP Standards

DEVELOPMENT MIX

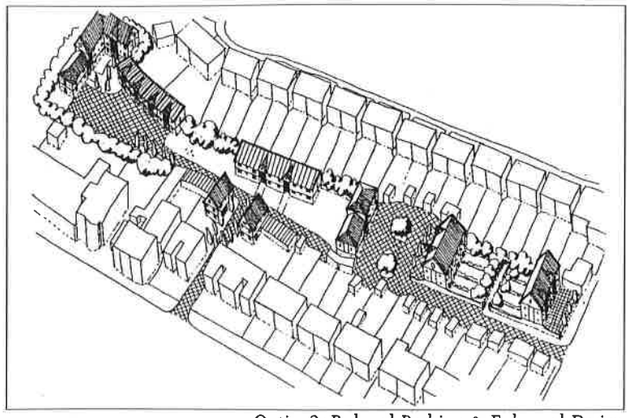
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs. NOS.	AREA SQ.M.	PARK. NOS
Studio	40	0	0	0	0
1 Bed	50	1	2	50	1.2
2 Bed	65	16	48	1040	19.2
3 Bed	80	4	20	320	8.4
4 Bed +	100	0	0	0	0
TOTAL		21	70	1410	28.8

DENSITY

SITE AREA	NET	GROSS
HA	0.43	1.2
Units/Ha	49	18
Hab Rm/Ha	163	58
Area/Ha	3,279	1,175



Site Plan (1:2,500)



Option2: Reduced Parking & Enhanced Design

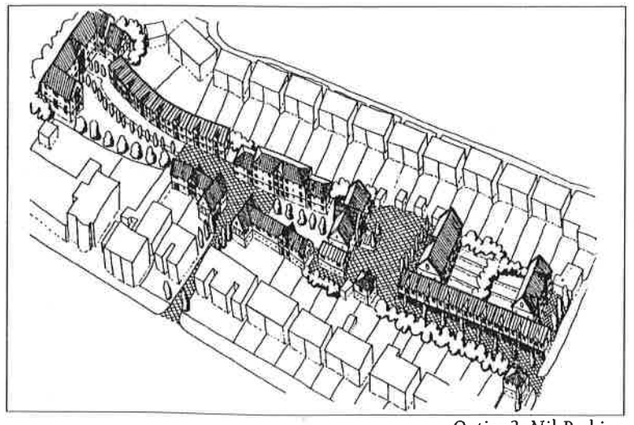
OPTION 2 - Enhanced design + Reduced Park.

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK. NOS
Studio	40	0	0	0	0
1 Bed	50	5	10	250	5
2 Bed	65	23	69	1495	23
3 Bed	80	4	20	320	4
4 Bed +	100	0	0	0	0
TOTAL		32	99	2065	32

DENSITY

SITE AREA	NET	GROSS
HA	0.43	1.2
Units/Ha	74	27
Hab Rm/Ha	230	83
Area/Ha	4,802	1,721



Option3: Nil Parking

OPTION 3 - Nil Parking

DEVELOPMENT MIX

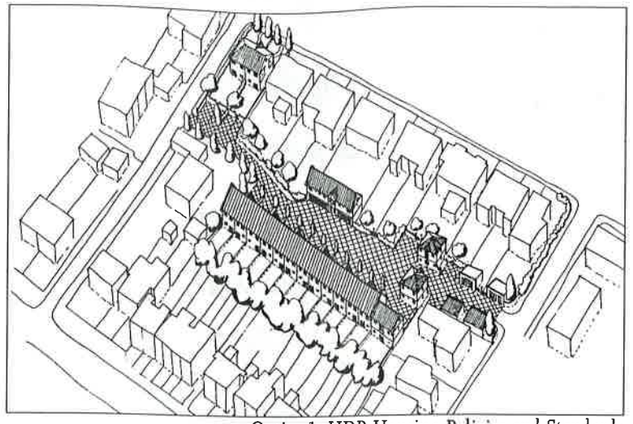
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs. NOS.	AREA SQ.M.	PARK. NOS
Studio	40	2	2	80	0
1 Bed	50	18	36	900	0
2 Bed	65	32	96	2080	0
3 Bed	80	0	0	0	0
4 Bed +	100	5	30	500	0
TOTAL		57	164	3560	0

DENSITY

SITE AREA	NET	GROSS
HA	0.43	1.2
Units/Ha	133	48
Hab Rm/Ha	381	137
Area/Ha	8,279	2,967

Design Exercise 36
Backland Development

- Designs seek to maintain the existing fronts and backs that are characteristic of the area.
- **Options one** and **two** provide parking courts off the main circulation into the backlands.
- **Option three** provides both a hard landscaped courtyard and a soft landscaped garden whilst reinforcing the building edge to the street.
- **Options two** and **three** have components of live/work units. This reduces the number of habitable rooms.



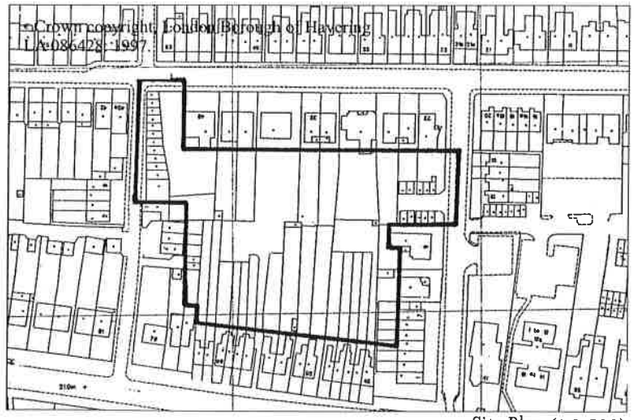
Option1: UDP Housing Policies and Standards

OPTION 1 - Complies with UDP Standards
DEVELOPMENT MIX

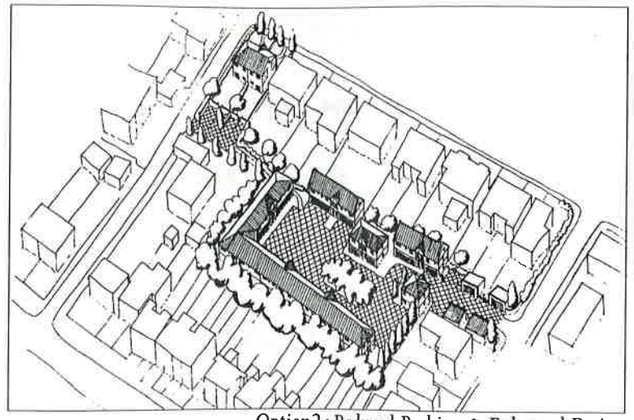
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs. NOS.	AREA SQ.M.	PARK. NOS
Studio	40	0	0	0	0
1 Bed	50	6	12	300	7.2
2 Bed	65	2	6	130	2.4
3 Bed	80	14	70	1120	29.4
4 Bed +	100	0	0	0	0
TOTAL		22	88	1550	39

DENSITY

SITE AREA	NET	GROSS
HA	0.34	0.68
Units/Ha	65	32
Hab Rm/Ha	259	129
Area/Ha	4,559	2,279



Site Plan (1:2,500)



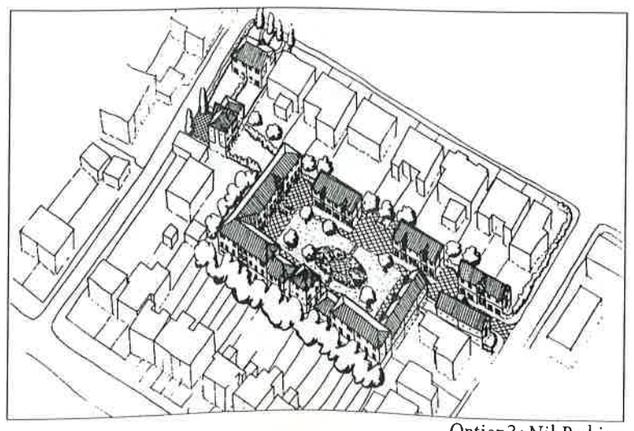
Option2: Reduced Parking & Enhanced Design

OPTION 2 - Enhanced design + Reduced Park.
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	8	24	520	8
3 Bed	80	4	20	320	4
4 Bed +	100	0	0	0	0
TOTAL		12	44	840	12

DENSITY

SITE AREA	NET	GROSS
HA	0.18	0.2
Units/Ha	67	60
Hab Rm/Ha	244	220
Area/Ha	4,667	4,200



Option3: Nil Parking

OPTION 3 - Nil Parking
DEVELOPMENT MIX

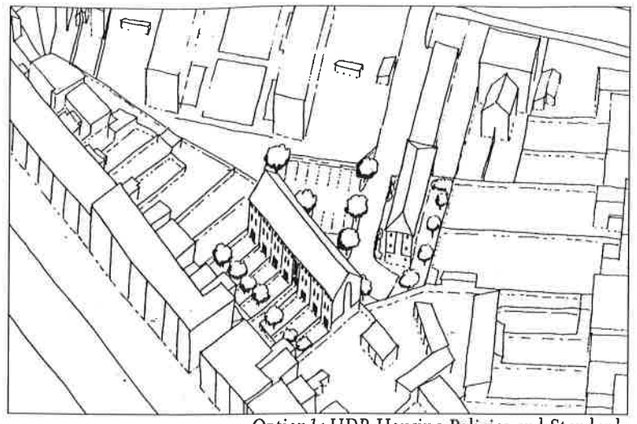
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs. NOS.	AREA SQ.M.	PARK. NOS
Studio	40	4	4	160	0
1 Bed	50	4	8	200	0
2 Bed	65	16	48	1040	0
3 Bed	80	0	0	0	0
4 Bed +	100	2	12	200	0
Commercial				1300	
TOTAL		26	72	2900	0

DENSITY

SITE AREA	NET	GROSS
HA	0.34	0.68
Units/Ha	76	38
Hab Rm/Ha	212	106
Area/Ha	8,529	4,265

Design Exercise 37
Redevelopment of Vacant Yard

- Disused equipment hire yard situated behind a shopping parade.
- Designs exploit the existence of two access ways into this backlands site.
- This enables fronts and backs to be clearly separated in **option one**, whereas these distinctions blur in **options two**, which consists exclusively of flats and **option three** which has a slightly expanded site area that enables the development to better integrate with the surrounding context.



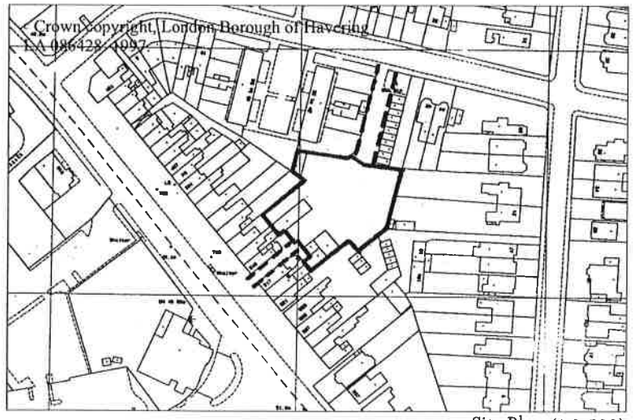
Option1: UDP Housing Policies and Standards

OPTION 1 - Complies with UDP Standards
DEVELOPMENT MIX

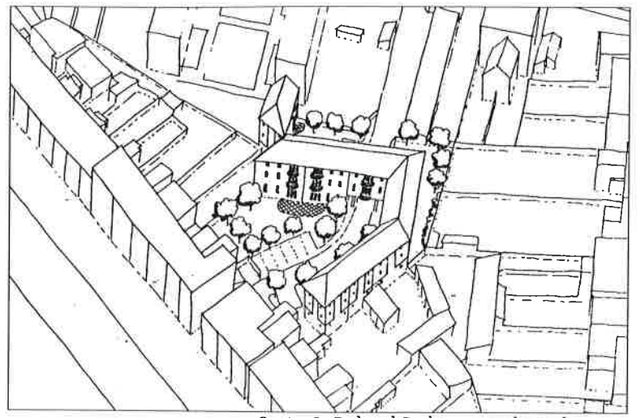
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	10	30	650	11
3 Bed	80	0	0	0	0
4 Bed +	100	3	18	300	3
TOTAL		13	48	950	16

DENSITY

SITE AREA	NET	GROSS
HA	0.19	0.23
Units/Ha	68	57
Hab Rm/Ha	253	209
Area/Ha	5,000	4,130



Site Plan (1:2,500)



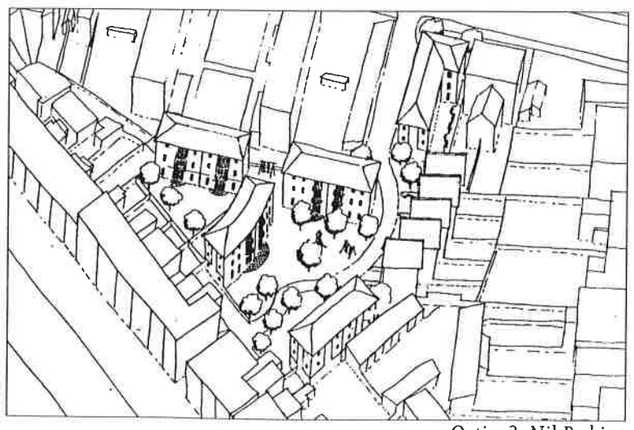
Option2: Reduced Parking & Enhanced Design

OPTION 2 - Enhanced design + Reduced Park.
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	18	36	900	18
2 Bed	65	8	24	520	8
3 Bed	80	0	0	0	0
4 Bed +	100	0	0	0	0
TOTAL		26	60	1420	26

DENSITY

SITE AREA	NET	GROSS
HA	0.19	0.23
Units/Ha	137	113
Hab Rm/Ha	316	261
Area/Ha	7,474	6,174



Option3: Nil Parking

OPTION 3 - Nil Parking
DEVELOPMENT MIX

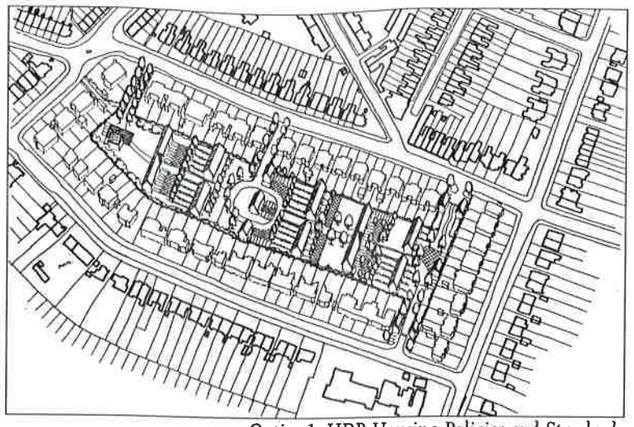
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	9	18	450	0
2 Bed	65	24	72	1560	0
3 Bed	80	0	0	0	0
4 Bed +	100	5	30	500	0
TOTAL		38	120	2510	0

DENSITY

SITE AREA	NET	GROSS
HA	0.19	0.23
Units/Ha	200	165
Hab Rm/Ha	632	522
Area/Ha	13,211	10,913

Design Exercise 38
Backland Development

- *Design layouts seek to provide central access for pedestrian circulation and lateral access for vehicles.Three access points are possible without demolition of existing buildings.*
- *A clear definition of private and public space is maintained.*
- **Option one** *comprises a series of terraces set at right angles to existing neighbouring houses to minimise visual impact.* **Option two** *is similarly configured, with additional units added.*



Option1: UDP Housing Policies and Standards

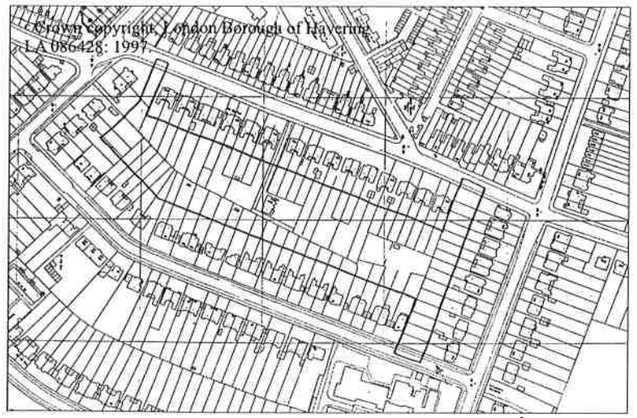
OPTION 1 - Complies with UDP Standards

DEVELOPMENT MIX

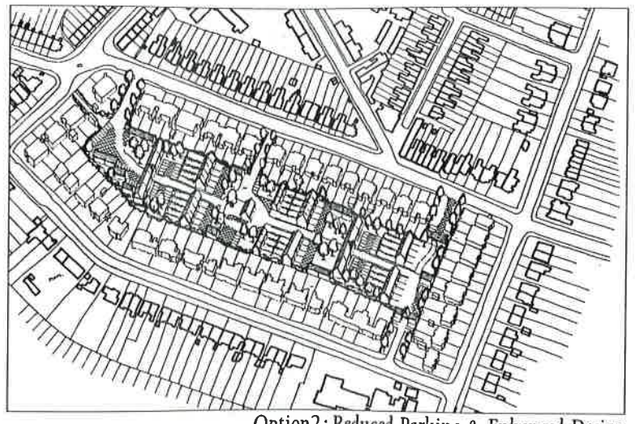
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	36	108	2340	72
3 Bed	80	30	150	2400	60
4 Bed +	150	4	24	600	12
TOTAL		70	282	5340	144

DENSITY

SITE AREA	NET	GROSS
HA	1.64	1.65
Units/Ha	43	42
Hab Rm/Ha	172	171
Area/Ha	3,256	3,236



Site Plan (1:5,000)



Option2: Reduced Parking & Enhanced Design

OPTION 2 - Enhanced design + Reduced Park.

DEVELOPMENT MIX

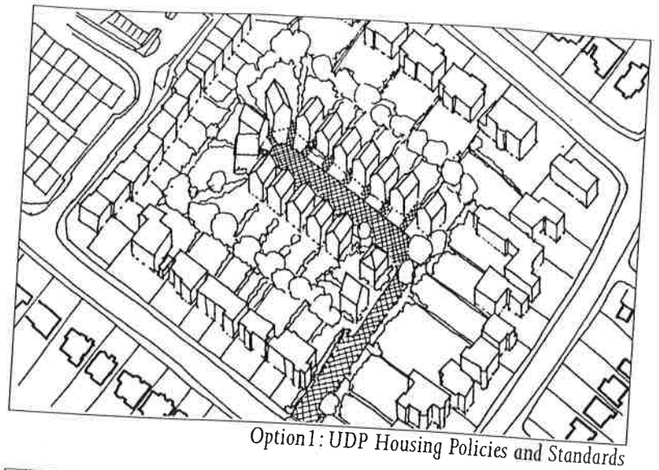
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	6	6	240	6
1 Bed	50	0	0	0	0
2 Bed	65	68	204	4420	68
3 Bed	80	30	150	2400	30
4 Bed +	100	0	0	0	0
TOTAL		104	360	7060	104

DENSITY

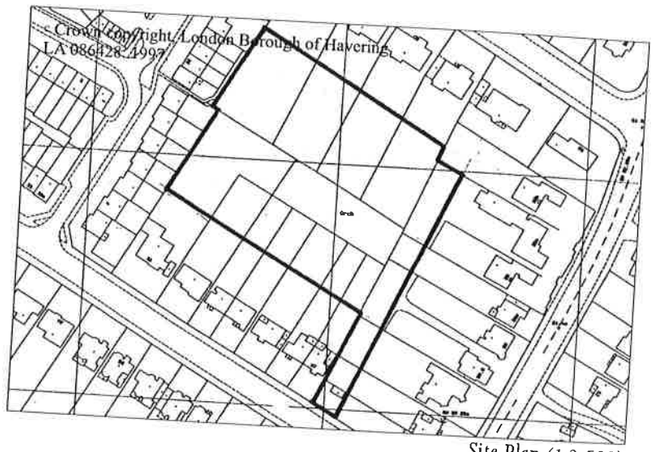
SITE AREA	NET	GROSS
HA	1.64	1.65
Units/Ha	63	63
Hab Rm/Ha	220	218
Area/Ha	4,305	4,279

Design Exercise 39
Backland Development

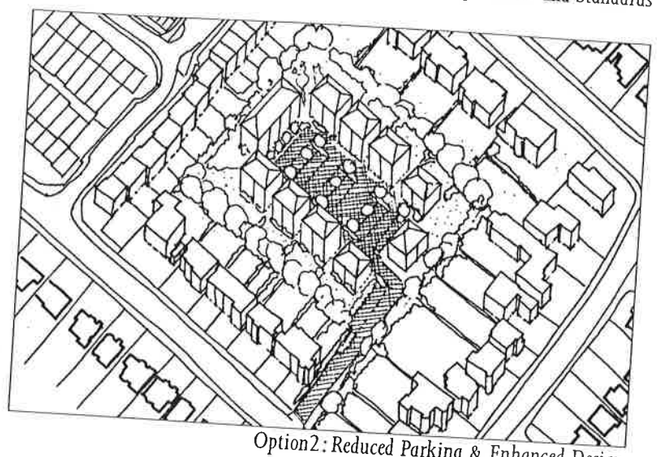
- *Designs seek to create a comprehensive and legible backland which is compatible with the character to the surrounding context.*
- *Three and four bedroom houses are provided.*
- *In both* **options one** *and* **two** *a central formal space is provided.*



Option1: UDP Housing Policies and Standards



Site Plan (1:2,500)



Option2: Reduced Parking & Enhanced Design

OPTION 1A - Complies with UDP Standards

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	0	0	0	0
3 Bed	80	0	0	0	0
4 Bed +	100	17	119	1700	51
TOTAL		17	119	1700	51

DENSITY

SITE AREA	NET	GROSS
HA	0.82	0.83
Units/Ha	21	20
Hab Rm/Ha	145	143
Area/Ha	2,073	2,048

OPTION 2 - Enhanced design + Reduced Park.

DEVELOPMENT MIX

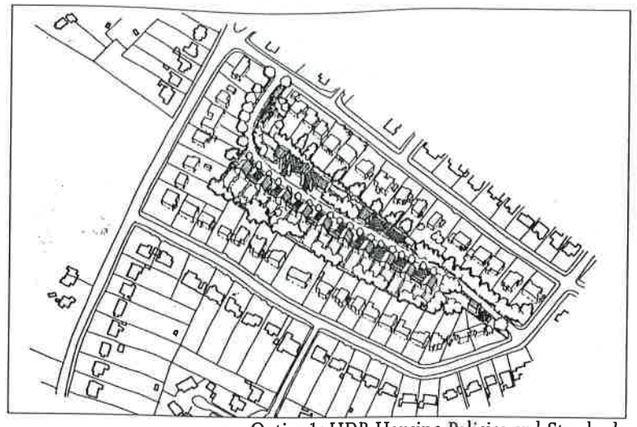
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	60	180	3900	60
3 Bed	80	0	0	0	0
4 Bed +	100	0	0	0	0
TOTAL		60	180	3900	60

DENSITY

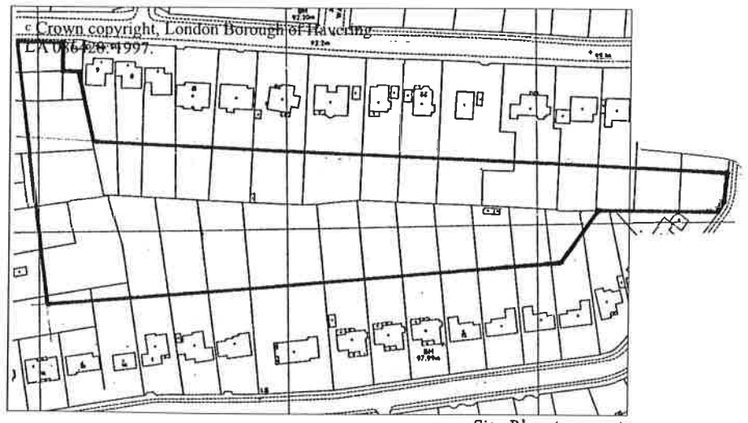
SITE AREA	NET	GROSS
HA	0.82	0.83
Units/Ha	73	72
Hab Rm/Ha	220	217
Area/Ha	4,756	4,699

Design Exercise 40
Backland Development

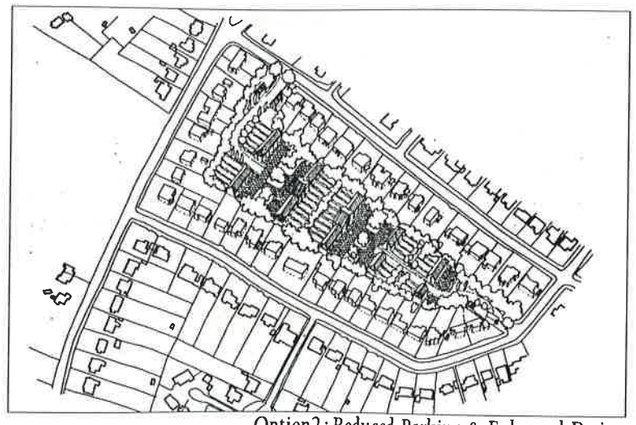
- Backlands site is created out of a 70-90m rear garden space. Two potential access points are provided without the need for demolition, facilitating through movement.
- Designs seek to maintain the existing fronts and backs that are characteristic of the area.
- **Options one** and **two** provide parking courts off the main circulation into the backlands.
- In **option one**, the need to maintain overlooking distances leads to a low density development.
- **Option two** comprises terraced family houses set at right angles to those existing to maximise the open nature of development.



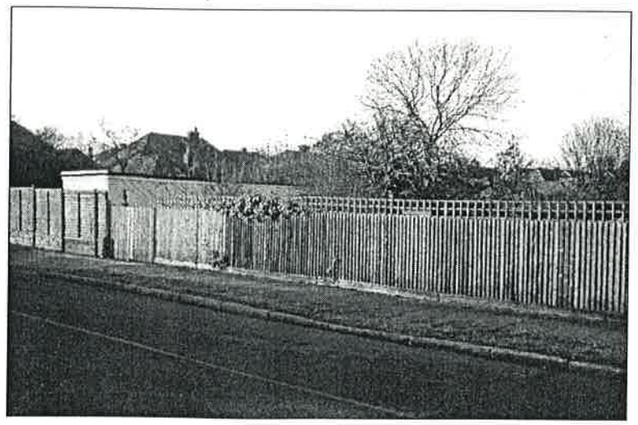
Option1: UDP Housing Policies and Standards



Site Plan (1:2,500)



Option2: Reduced Parking & Enhanced Design



OPTION 1 - Complies with UDP Standards

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	0	0	0	0
3 Bed	80	10	50	800	20
4 Bed +	100	20	120	2000	40
TOTAL		30	170	2800	60

DENSITY

SITE AREA	NET	GROSS
HA	1.4	2.59
Units/Ha	21	12
Hab Rm/Ha	121	66
Area/Ha	2,000	1,081

OPTION 2 - Enhanced design + Reduced Park.

DEVELOPMENT MIX

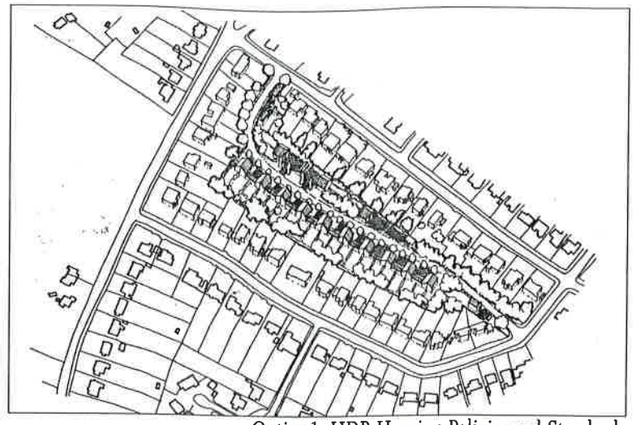
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	0	0	0	0
3 Bed	80	39	195	3120	39
4 Bed +	100	9	54	900	9
TOTAL		48	249	4020	48

DENSITY

SITE AREA	NET	GROSS
HA	1.4	2.59
Units/Ha	34	19
Hab Rm/Ha	178	96
Area/Ha	2,871	1,552

Design Exercise 40
Backland Development

- Backlands site is created out of a 70-90m rear garden space. Two potential access points are provided without the need for demolition, facilitating through movement.
- Designs seek to maintain the existing fronts and backs that are characteristic of the area.
- **Options one** and **two** provide parking courts off the main circulation into the backlands.
- In **option one**, the need to maintain overlooking distances leads to a low density development.
- **Option two** comprises terraced family houses set at right angles to those existing to maximise the open nature of development.



Option1: UDP Housing Policies and Standards

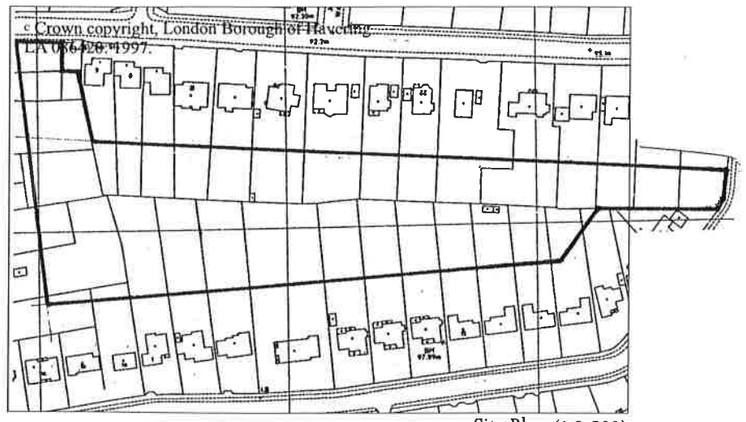
OPTION 1 - Complies with UDP Standards

DEVELOPMENT MIX

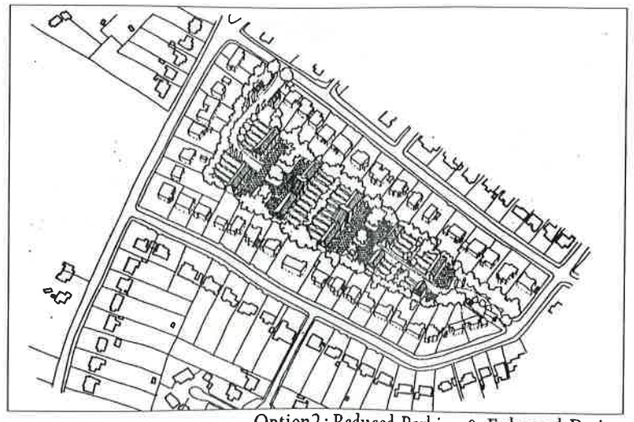
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	0	0	0	0
3 Bed	80	10	50	800	20
4 Bed +	100	20	120	2000	40
TOTAL		30	170	2800	60

DENSITY

SITE AREA	NET	GROSS
HA	1.4	2.59
Units/Ha	21	12
Hab Rm/Ha	121	66
Area/Ha	2,000	1,081



Site Plan (1:2,500)



Option2: Reduced Parking & Enhanced Design

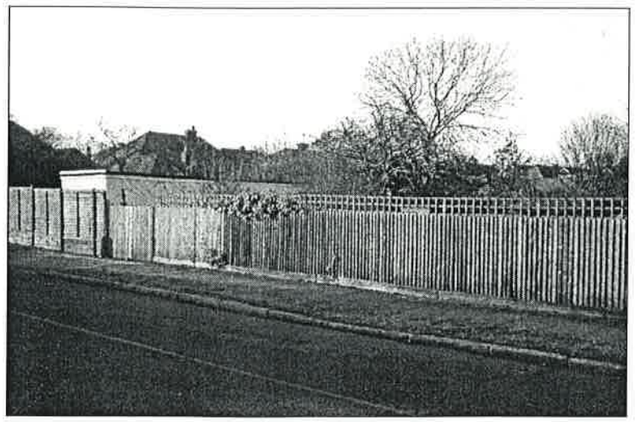
OPTION 2 - Enhanced design + Reduced Park.

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	0	0	0	0
3 Bed	80	39	195	3120	39
4 Bed +	100	9	54	900	9
TOTAL		48	249	4020	48

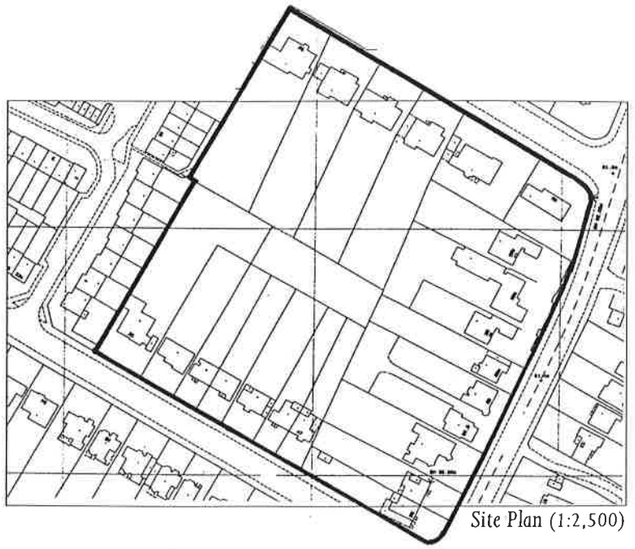
DENSITY

SITE AREA	NET	GROSS
HA	1.4	2.59
Units/Ha	34	19
Hab Rm/Ha	178	96
Area/Ha	2,871	1,552

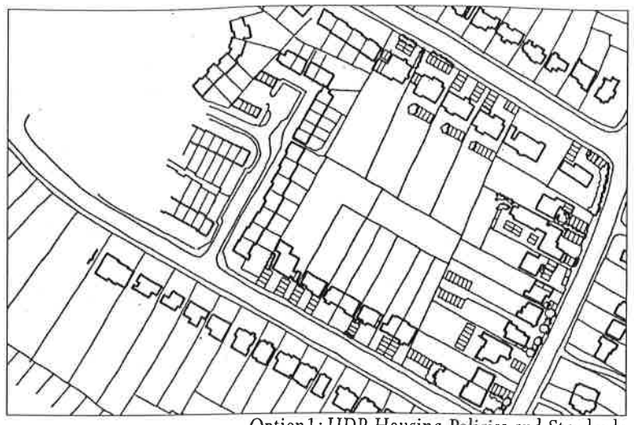


Design Exercise 41
Large Scale Conversion of Existing Houses into Flats

- The potential for conversion is limited by the number of car parking spaces required off-street.
- These houses have generous forecourts, but conversion of front gardens into parking areas leads to a loss of aesthetic and environmental quality
- In both **options one** and **two** lateral parking produces the most efficient use of fore court space, but with reduced car parking standards more landscaping can be used to buffer the visual impact of car parking.



Site Plan (1:2,500)



Option1: UDP Housing Policies and Standards

Option2: Reduced Parking & Enhanced Design

OPTION 1 - Complies with UDP Standards

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	32	64	1600	48
2 Bed	65	44	132	2860	88
3 Bed	80	0	0	0	0
4 Bed +	100	0	0	0	0
Other	152	2	14	304	0
TOTAL		78	210	4764	136

DENSITY

SITE AREA	NET	GROSS
HA	2.234	2.821
Units/Ha	35	28
Hab Rm/Ha	94	74
Area/Ha	2,132	1,689

OPTION 2 - Enhanced design + Reduced Park.

DEVELOPMENT MIX

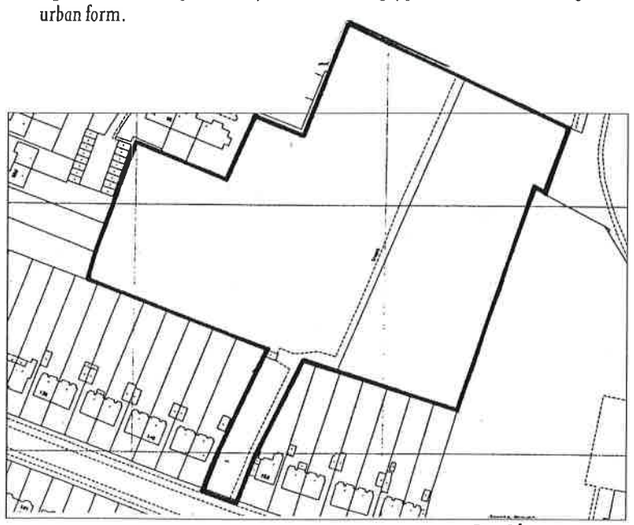
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	42	84	2100	42
2 Bed	65	55	165	3575	55
3 Bed	80	0	0	0	0
4 Bed +	100	0	0	0	0
TOTAL		97	249	5675	97

DENSITY

SITE AREA	NET	GROSS
HA	2.234	2.821
Units/Ha	43	34
Hab Rm/Ha	111	88
Area/Ha	2,540	2,012

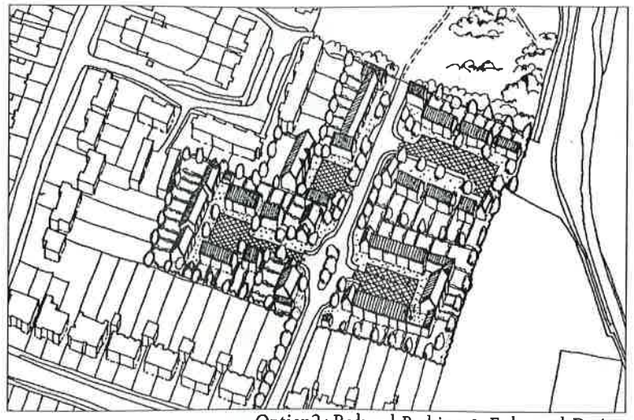
Design Exercise 42
Redevelopment of Under-used Allotments

- Site covers an area of under-used allotments.
- Each option represents a backlands development comprising a series of enclaves around branching cul-de-sac courtyards.
- The through-movement of pedestrians/cyclists to the park at the rear of the site adds some vitality.
- Street-facing fronts and private backs are consistently applied.
- The main approach is weakly defined due to the length of existing back gardens.
- **Option one** takes on a pseudo-village morphology with irregularly placed buildings that provide weak definition to the public realm.
- **Option two** uses higher density terraced housing types that create a more regular, urban form.



Site Plan (1:2,500)

Option1: UDP Housing Policies and Standards



Option2: Reduced Parking & Enhanced Design

OPTION 1 - Complies with UDP Standards
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	0	0	0	0
3 Bed	80	15	75	1200	30
4 Bed +	100	30	180	3000	90
TOTAL		45	255	4200	120

DENSITY

SITE AREA	NET	GROSS
HA	1.75	1.76
Units/Ha	26	26
Hab Rm/Ha	146	145
Area/Ha	2,400	2,386

OPTION 2 - Enhanced design + Reduced Park.
DEVELOPMENT MIX

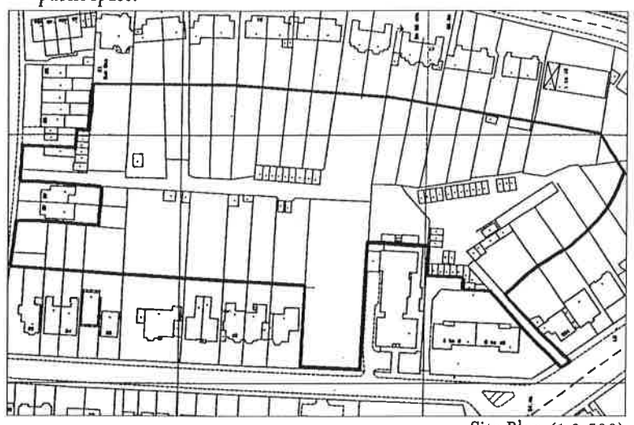
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	10	30	650	10
3 Bed	80	40	200	3200	40
4 Bed +	100	40	240	4000	40
TOTAL		90	470	7850	90

DENSITY

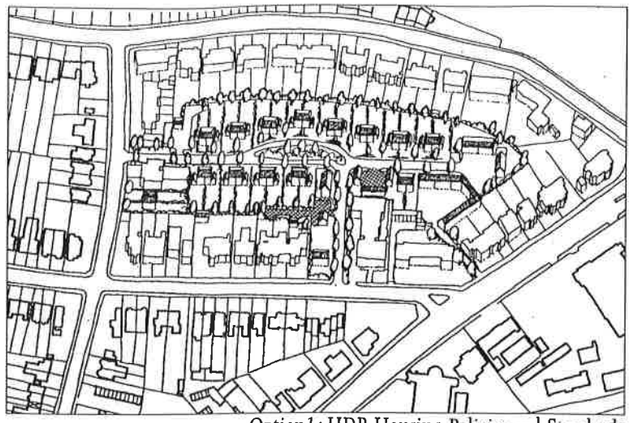
SITE AREA	NET	GROSS
HA	1.75	1.76
Units/Ha	51	51
Hab Rm/Ha	269	267
Area/Ha	4,486	4,460

Design Exercise 43
Backland Development

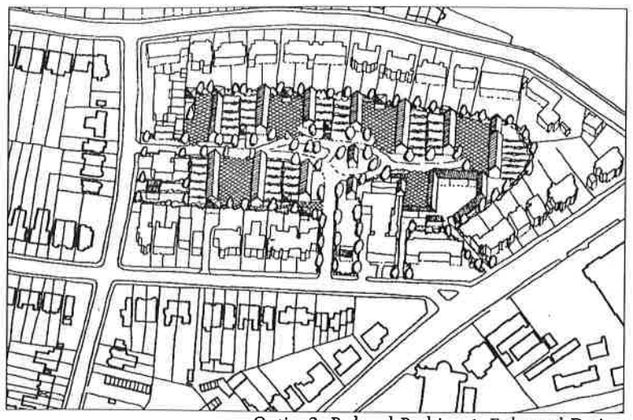
- The deep space between facing backs of existing houses facilitates backlands development.
- Existing rear access to garages is of variable quality (*Patrick to check).
- Through circulation is possible, though the approach is weak due to the length of existing back gardens and their side boundary treatment.
- **Option one** is preferred to **option two**.The lower density positioning of large houses in **option one** enables consistent fronts and backs to be maintained, consistent with the existing street pattern and essentially creates two new perimeter blocks from the one existing.
- **Option two** provides a much harder landscape, consisting of smaller units, that is detrimental to the character of the existing block.The orientation of houses perpendicular to internal streets provides poor definition to this public space.



Site Plan (1:2,500)



Option1: UDP Housing Policies and Standards



Option2: Reduced Parking & Enhanced Design

OPTION 1 - Complies with UDP Standards

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	9	9	360	0
1 Bed	50	0	0	0	0
2 Bed	65	15	45	975	16.5
3 Bed	80	14	70	1120	15.4
4 Bed +	100	14	84	1400	15.4
TOTAL		52	208	3855	47.3

DENSITY

SITE AREA	NET	GROSS
HA	1.26	2.2
Units/Ha	41	24
Hab Rm/Ha	165	95
Area/Ha	3,060	1,752

OPTION 2 - Enhanced design + Reduced Park.

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	7	7	280	7
1 Bed	50	15	30	750	15
2 Bed	65	16	48	1040	16
3 Bed	80	44	220	3520	44
4 Bed +	100	8	48	800	8
TOTAL		90	353	6390	90

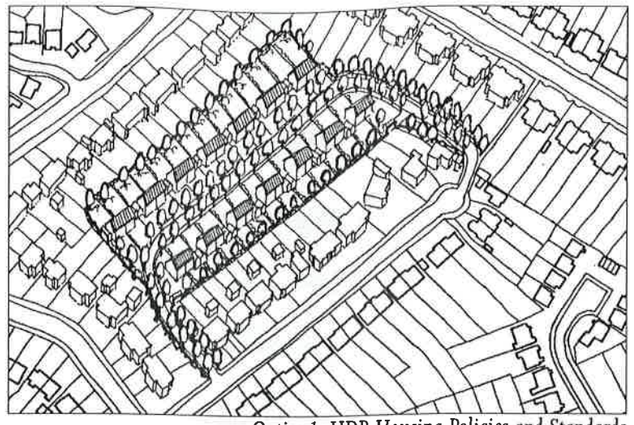
DENSITY

SITE AREA	NET	GROSS
HA	1.26	2.2
Units/Ha	71	41
Hab Rm/Ha	280	160
Area/Ha	5,071	2,905

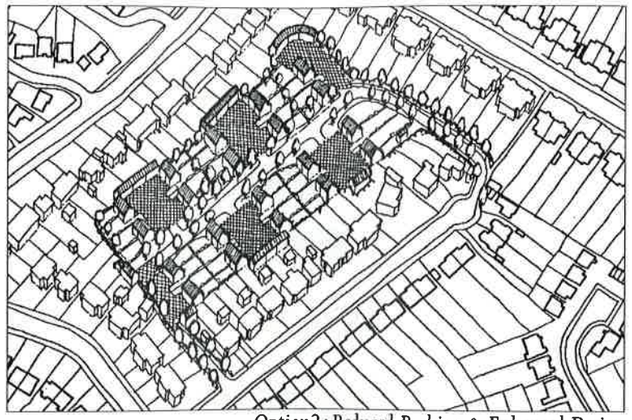
Design Exercise 44
Backland Development

- Progressive backlands infill is intrinsic to the character of this area as the two existing cul-de-sacs that have been inserted into the original block demonstrate.
- Generous dimensions between backs of houses create the potential for an inner circulation loop.
- **Option one** is preferred to **option two**. The lower density of **option one** enables consistent fronts and backs to be maintained and essentially creates two new perimeter blocks from the one existing.
- **Option two** provides a much harder landscape, with houses arranged around courtyards, that is detrimental to the character of the existing block. The orientation of houses perpendicular to the internal streets provides poor definition to this public space. Flats are provided over garages to the rear of existing properties. A minimum 21m overlooking distance is maintained.

Site Plan (1:2,500)



Option1: UDP Housing Policies and Standards



Option2: Reduced Parking & Enhanced Design

OPTION 1 - Complies with UDP Standards
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	0	0	0	0
3 Bed	80	14	70	1120	28
4 Bed +	100	14	84	1400	42
TOTAL		28	154	2520	70

DENSITY

SITE AREA	NET	GROSS
HA	0.98	2
Units/Ha	29	14
Hab Rm/Ha	157	77
Area/Ha	2,571	1,260

OPTION 2 - Enhanced design + Reduced Park.
DEVELOPMENT MIX

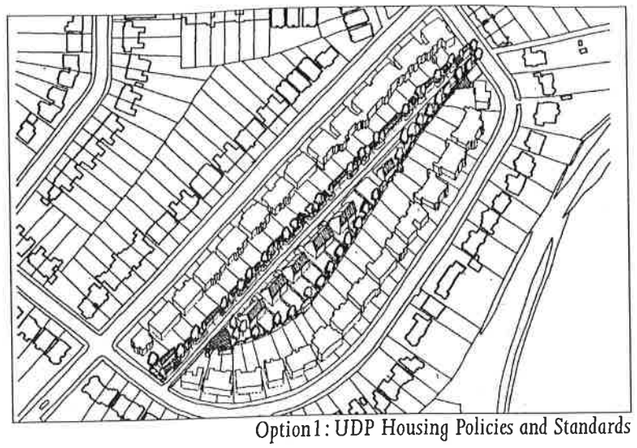
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	9	9	360	9
1 Bed	50	2	4	100	2
2 Bed	65	0	0	0	0
3 Bed	80	20	100	1600	20
4 Bed +	100	20	120	2000	20
TOTAL		51	233	4060	51

DENSITY

SITE AREA	NET	GROSS
HA	0.98	2
Units/Ha	52	26
Hab Rm/Ha	238	117
Area/Ha	4,143	2,030

Design Exercise 45
Backland Development

- Limited dimensions between house backs constrains backlands possibilities.
- **Option one** provides a legible access route that essentially splits the existing block into two. However, the single row of large semi-detached dwellings face the backs of existing houses - compromising environmental quality and privacy.
- The mews arrangement of smaller dwellings in **Option two** provides a much harder landscape that is detrimental to the character of the existing block. The orientation of houses provides poor definition to this public space. Further, the convoluted alignment of this through-route provides illegible and inefficient access.



Option1: UDP Housing Policies and Standards

OPTION 1 - Complies with UDP Standards

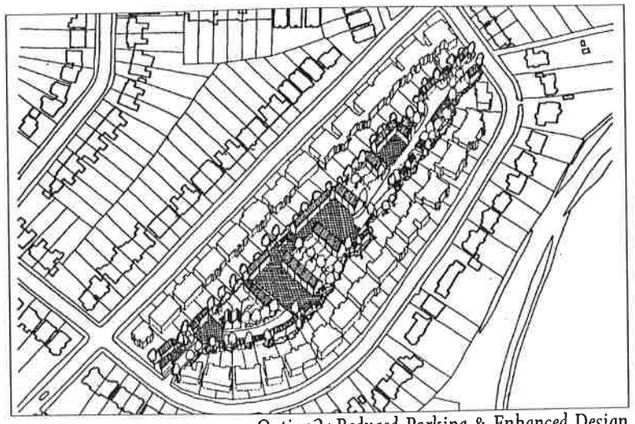
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	4	4	160	4
1 Bed	50	4	8	200	4
2 Bed	65	2	6	130	4
3 Bed	80	0	0	0	0
4 Bed +	100	6	36	600	12
5 bed	200	5	35	1000	10
TOTAL		21	89	2090	34

DENSITY

SITE AREA	NET	GROSS
HA	0.5	1.8
Units/Ha	42	12
Hab Rm/Ha	178	49
Area/Ha	4,180	1,161

Site Plan (1:5,000)



Option2: Reduced Parking & Enhanced Design

OPTION 2 - Enhanced design + Reduced Park.

DEVELOPMENT MIX

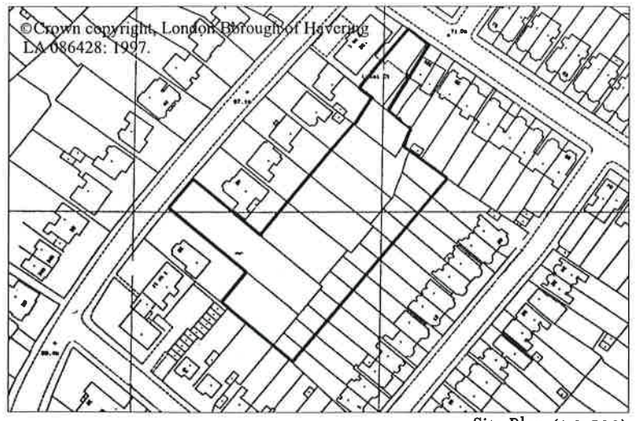
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	7	7	280	7
1 Bed	50	16	32	800	16
2 Bed	65	24	72	1560	24
3 Bed	80	0	0	0	0
4 Bed +	100	0	0	0	0
TOTAL		47	111	2640	47

DENSITY

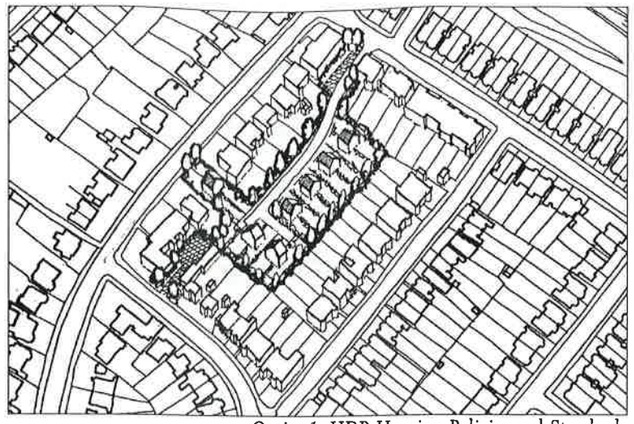
SITE AREA	NET	GROSS
HA	0.5	1.8
Units/Ha	94	26
Hab Rm/Ha	222	62
Area/Ha	5,280	1,467

Design Exercise 46
Backland Development

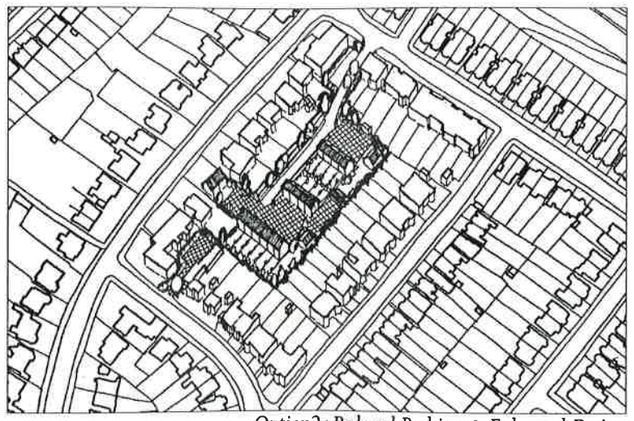
- No through-route for cul-de-sac, lined with buildings with ambiguous fronts and backs.
- Existence of terraced garages provides a constraint that prevents through access.
- **Option one** is preferred to **option two**. The lower density of **option one** enables consistent fronts and backs to be maintained in line with the existing street pattern and essentially creates two new perimeter blocks from the one existing.
- **Option two** provides a harder landscape and internal streets are lined by garden boundaries.



Site Plan (1:2,500)



Option1: UDP Housing Policies and Standards



Option2: Reduced Parking & Enhanced Design

OPTION 1 - Complies with UDP Standards
DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	0	0	0	0
3 Bed	80	0	0	0	0
4 Bed +	100	14	84	1400	28
TOTAL		14	84	1400	28

DENSITY

SITE AREA	NET	GROSS
HA	0.5	0.98
Units/Ha	28	14
Hab Rm/Ha	168	86
Area/Ha	2,800	1,429

OPTION 2 - Enhanced design + Reduced Park.
DEVELOPMENT MIX

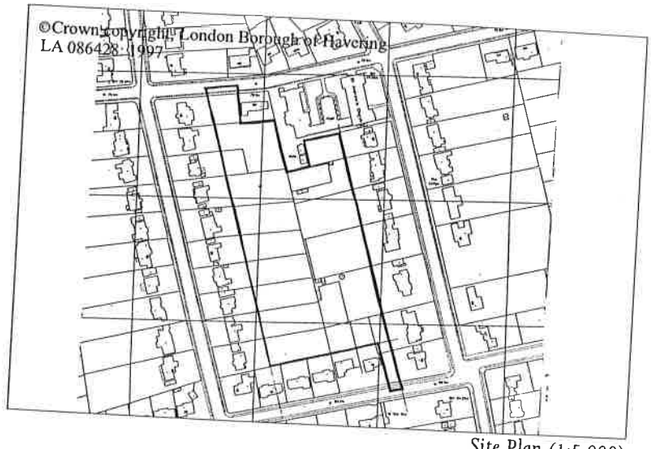
UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	2	2	80	2
1 Bed	50	2	4	100	2
2 Bed	65	15	45	975	15
3 Bed	80	14	70	1120	14
4 Bed +	100	0	0	0	0
TOTAL		33	121	2275	33

DENSITY

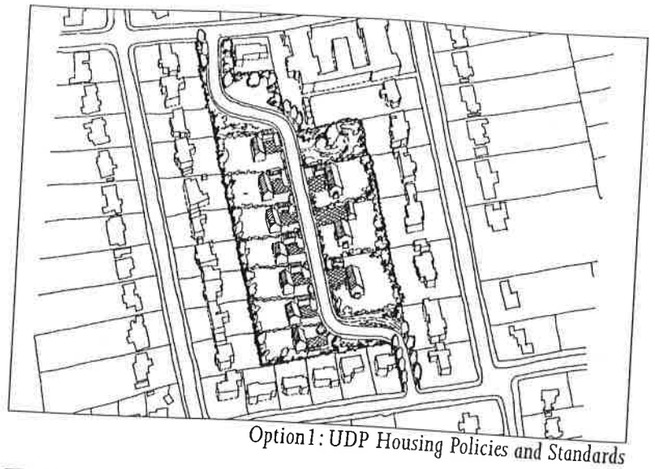
SITE AREA	NET	GROSS
HA	0.5	0.98
Units/Ha	66	34
Hab Rm/Ha	242	123
Area/Ha	4,550	2,321

Design Exercise 47
Backland Development

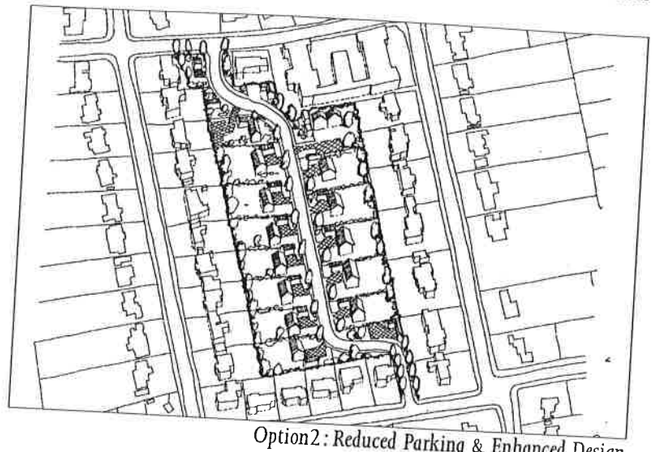
- Two points of access, available without demolition, determine the cross-block circulation alignment, which is cranked to provide regular plot sub-divisions. This calms traffic, but provides an illegible route that discourages through movement to the detriment of street vitality.
- The deep space between facing backs of existing houses provides backlands opportunities.
- The main access approach is weak due to the length of existing back gardens and their side boundary treatment.
- There is minimal variation between options. **Option one** comprises large houses with communal recreational areas and in **option two** more large houses are added with smaller plots, together with 'granny flats' and mews housing.



Site Plan (1:5,000)



Option1: UDP Housing Policies and Standards



Option2: Reduced Parking & Enhanced Design

OPTION 1 - Complies with UDP Standards

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	0
1 Bed	50	0	0	0	0
2 Bed	65	0	0	0	0
3 Bed	80	0	0	0	0
4 Bed +	150	7	42	1050	14
5 bed	200	3	21	600	9
TOTAL		10	63	1650	23

DENSITY

SITE AREA	NET	GROSS
HA	2.15	2.2
Units/Ha	5	5
Hab Rm/Ha	29	29
Area/Ha	767	750

OPTION 2 - Enhanced design + Reduced Park.

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	0	0	0	1
1 Bed	50	1	2	50	12
2 Bed	65	12	36	780	3
3 Bed	80	3	15	240	7
4 Bed +	150	7	42	1050	4
5 bed	200	4	28	800	0
TOTAL		27	123	2920	27

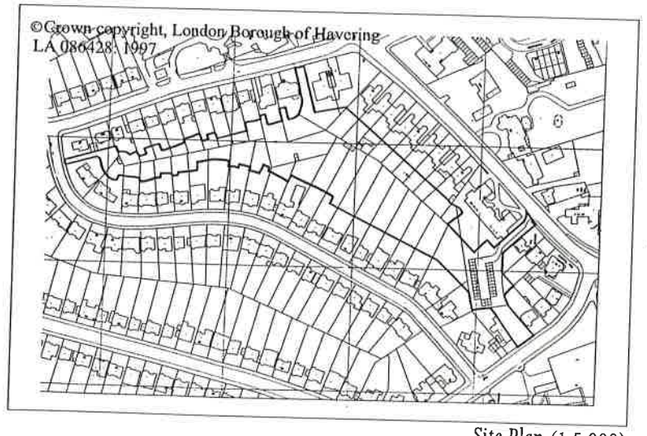
DENSITY

SITE AREA	NET	GROSS
HA	2.15	2.2
Units/Ha	13	12
Hab Rm/Ha	57	56
Area/Ha	1,358	1,327

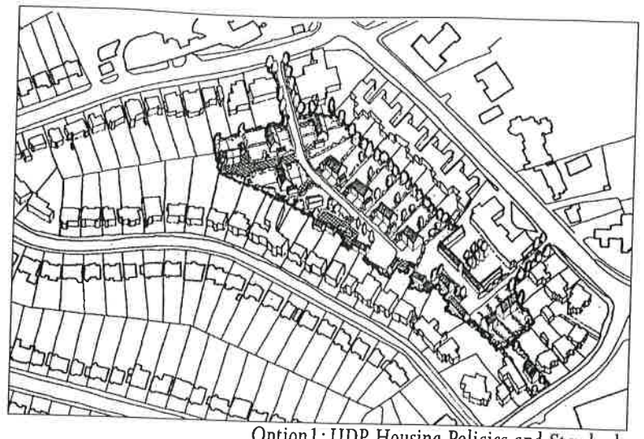
Design Exercise 48
Backland Development

- The main access approach is weak due to the length of existing back gardens and their side boundary treatment.
- Through circulation is provided in **option two**, whereas only pedestrians/cyclists are able to pass between the two cul-de-sacs in **option one**.
- **Option one** is preferred to **option two**. The lower density of **option one** enables consistent fronts and backs to be maintained and essentially creates two new perimeter blocks from the one existing.
- **Option two** provides a much harder landscape that is detrimental to the character of the existing block. The orientation of houses perpendicular to the internal streets provide poor definition to this public space.

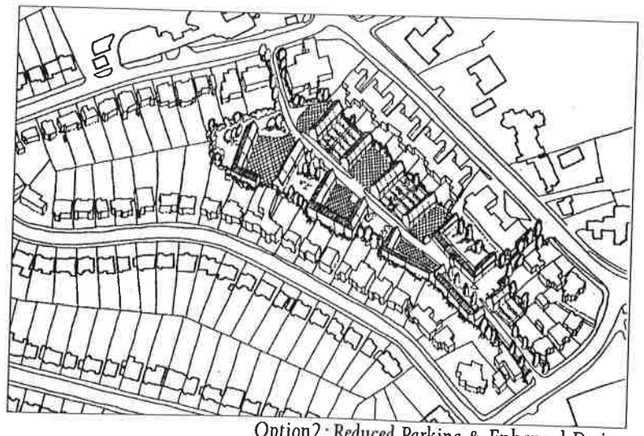
  In both options, the resulting form is fragmented and through-access inefficient and illegible. Current parking facilities in the block interior for existing houses need to be re-organised.



Site Plan (1:5,000)



Option1: UDP Housing Policies and Standards



Option2: Reduced Parking & Enhanced Design

OPTION 1 - Complies with UDP Standards

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	6	6	240	7
1 Bed	50	0	0	0	0
2 Bed	65	7	21	455	12
3 Bed	80	2	10	160	4
4 Bed +	100	19	114	1900	38
TOTAL		34	151	2755	61

DENSITY

SITE AREA	NET	GROSS
HA	1.2	2.5
Units/Ha	28	14
Hab Rm/Ha	126	60
Area/Ha	2,296	1,102

OPTION 2 - Enhanced design + Reduced Park.

DEVELOPMENT MIX

UNIT TYPE	UNIT SQ. M.	UNIT NOS.	HRs NOS.	AREA SQ.M.	PARK NOS
Studio	40	19	19	760	19
1 Bed	50	10	20	500	10
2 Bed	65	28	84	1820	28
3 Bed	80	23	115	1840	23
4 Bed +	100	0	0	0	0
TOTAL		80	238	4920	80

DENSITY

SITE AREA	NET	GROSS
HA	1.2	2.5
Units/Ha	67	32
Hab Rm/Ha	198	95
Area/Ha	4,100	1,968