



Homes
England



The Housing and Regeneration Agency

Sustainable Placemaking Guidance

Parking What Works Where: 2nd edition

March 2026

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Document owner	Homes England Sustainability and Design Team
Document author	Georgina Bignold (Proctor & Matthews) David Birkbeck (Design for Homes)
Contributors	Jon Sandford, Amy Burbidge, PJA
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Image 1 Cover: Thaxted, Abode, Great Kneighton, and Cottam Meadow, Preston.

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Foreword

Car parking is a perennial problem, evidenced in the most recent National Housing Design Audit¹. This guide does not specify how much car parking should be provided, but focuses on making it efficient, attractive, safe and multi-functional. Inefficient car parking can use 25-50% of land, so one of the main purposes of this guide is to help you reduce the amount of land lost to poorly organised car parking. This will have the benefit of enabling greater density.

The original 'Car Parking What Works Where' was published by Homes England's predecessor, English Partnerships, in 2006. The guide focused on common car parking treatments and reviewed how successful they were in providing adequate levels of safe car parking within a high quality environment.

This update addresses changes in policy focus, notably to:

1. Consider a Vision Led Transport Planning Approach, as cited in the National Planning Policy Framework (NPPF).
2. Create compact places that support an increased housing density, lessen the car parking demand and use land efficiently.
3. Enable active transport, in terms of walking and wheeling and integrate good cycle parking and storage.
4. Take into consideration the impact of climate change, the biodiversity crisis, surface water flooding and overheating mitigation, along with health and well-being considerations.

1. National Housing Design Audit January 2020. Image 2: Abode, Great Kneighton. Well integrated car parking and cycle storage.

Key Elements Of The Guide

Within this guidance there are the following elements:

- The Golden Rules for parking
- Parking Strategies - these take into account the updated policy focus and should be incorporated into the design process to enable successful placemaking
- Selected Treatments - the guide does not cover all car parking treatments in detail, just those that are hard to get right, are often unsuccessful and need to be handled with care
- Residential cycle parking and storage.
- 19 case studies (Chapter 5)- these are ordered by their location types and demonstrate a mix of car parking treatments, which are analysed for the advantages and draw backs

Acknowledgements

Project Team

This document was produced by a team led by Proctor & Matthews Architects on behalf of Homes England. It follows a review of Car Parking What Works Where by BDP. The core team comprised of (in alphabetical order):

- Amy Burbidge (Homes England)
- Annabel Keegan (PJA)
- Andrew Matthews (Proctor & Matthews Architects)
- Blazej Czuba (Maccreeanor Lavington Architects & Urbanists)
- David Birkbeck (Design for Homes)
- Georgina Bignold (Proctor & Matthews Architects)
- Husam AlWaer (Proctor & Matthews Architects and the University of Dundee)
- Jon Sandford (Homes England)
- Kevin Logan (Maccreeanor Lavington Architects & Urbanists)
- Matt Wykes (PJA)
- Matt McFeat (PJA)

- Neil Swanson (Landscape Projects)
- Phil Jones (PJA)
- Stephen Proctor (Proctor & Matthews Architects)

Sounding Board

Further advice was received from an invited Sounding Board consisting of:

- Kevin McGeough (Ebbsfleet Development Corporation)
- David Milner (Create Streets)

Points on the parking treatments for rear courts, front courts, undercroft and podiums are based on the Ebbsfleet Parking Guidance and replicated with thanks to Ebbsfleet Development Corporation.

Case Studies and Precedent Examples

A number of case studies were investigated in the compilation of the document. The examples included have been chosen because they represent good practice in the car or cycle parking typology illustrated.

Listed below are the individuals who provided assistance:

- Miles Price (British Land)
- Jonny Anstead (TOWN)
- Will Elliott (Active Travel England)

Photography

All photography has been taken by Homes England unless otherwise credited.

Diagrams

All of the diagrams have been created by Maccreeanor Lavington Architects & Urbanists unless otherwise credited.

All of the case study site plans have been created by Proctor & Matthews Architects.

Maps

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1 Introduction



1.1 | Parking design and sustainable places

Homes England champions increased residential density, with appropriate levels of well-designed car parking, supported by a Vision Led Transport Planning Approach. It does not recommend zoning areas of land for single uses, creating isolated developments or low-density sprawl. This makes public transport unviable, challenges walkability and creates car dependency.

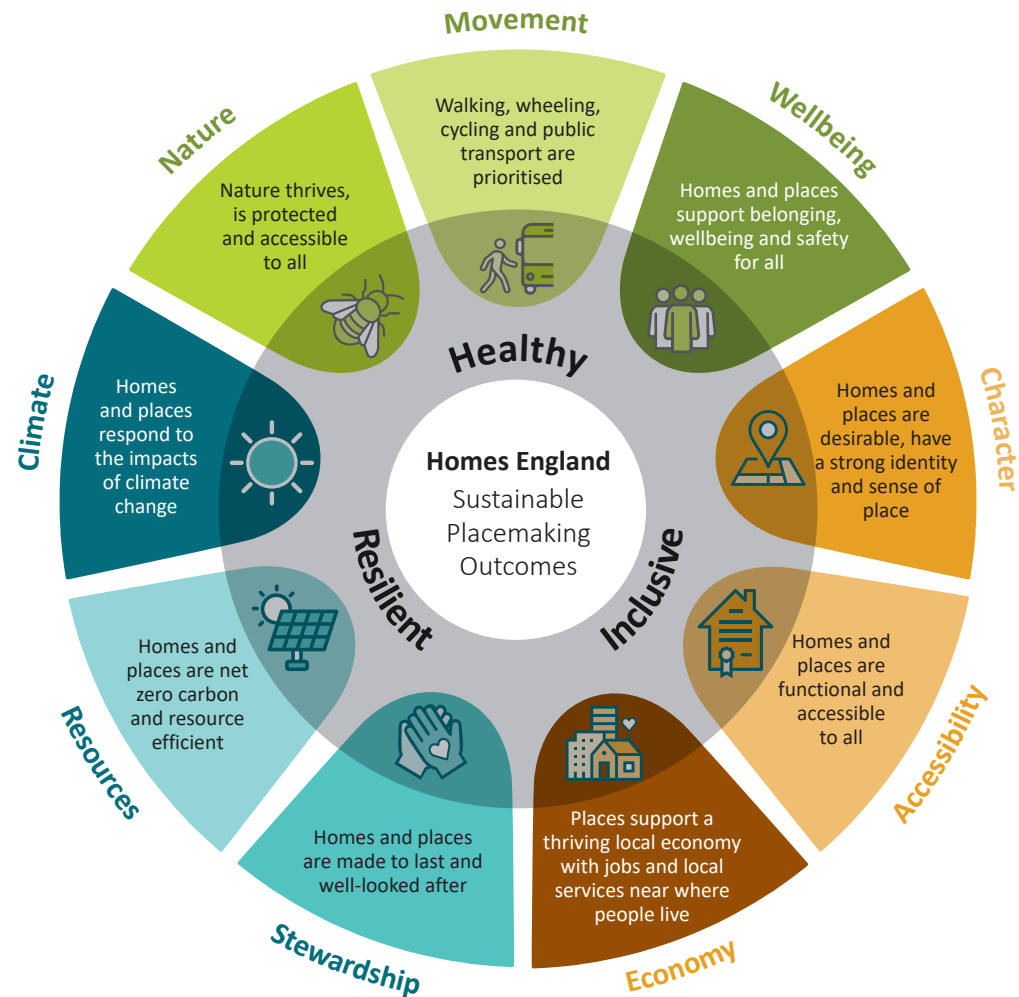


Figure 1: Homes England's Sustainable Placemaking Outcomes.
Image 3 Introduction: Pedestrian priority at Cottam Meadow, Preston.

Policy context

*The National Planning and Policy Framework (NPPF)*² now promotes Vision Led Transport Planning and many local authorities promote '20 minute neighbourhoods'.³ These approaches seek to create sufficient density to enable walking and cycling to services and amenities, which in turn supports a reduced car parking demand. As local authorities look to tackle climate change, air pollution and promote healthier lifestyles, they want to develop places where people can live well locally.

Connected places encourage active transport, promote social cohesion and health, while reducing carbon emissions from transport.

2. Paragraph 109 of the NPPF

3. Understanding the 20-minute neighbourhood. University of Dundee, Dr. Husam AlWaer, April 2024

4. Source: Public Health England - Spatial Planning for Health, Public Health England – Healthy Places and TRUUD Phase 1 Report February 2024

5. Source: Climate Change Commission 7th Carbon Budget

6. Source: Department for Transport (2020). Gear Change. A bold vision for cycling and walking

Health and wellbeing

There is now a substantial and increasing body of evidence that you can tackle preventable diseases by shaping the built environment, so that healthy activities and experiences are integral to people's everyday lives. The health outcomes of not creating walkable, compact, well connected places that enable social interaction and provide access to the natural environment are stark. Recent analysis from TRUUD⁴ shows that health outcomes are interconnected and inseparable from place and housing, and therefore parking.

Climate crisis

Surface transport is currently the highest carbon emitting sector in the UK economy, and it has been since 2015. In 2023, surface transport accounted for 24% of UK emissions.⁵ Mode shift to active transport is one of the most cost effective ways of reducing transport emissions.⁶

BNG and surface water mitigation

Mandatory Biodiversity Net Gain legislation requires a development that will result in a better quality natural habitat than was there prior to development. This requires land use to be carefully considered so that hard landscape for car parking does not dominate. As flooding risk continues to rise, it is important to moderate the amount of hard surfacing for car parking (and car parking access) within development and to leave space for surface water runoff to be managed.

Resources

Land is a finite resource and car parking is often vacant and unused for long periods of time, so car parking needs to be multi-functional. Some car parking structures can have a large carbon footprint, which needs to be a consideration in the design of new developments.

The cycle of induced demand

Almost twenty years have passed since *'Manual for Streets' (MfS)* and *'Car Parking: What Works Where'* were first published. Going back to 2007, MfS stresses that car parking should not dominate the streetscape, and designs should encourage walkability, safety, and a pleasant environment. Parking should be integrated into the development, in a way that does not compromise the quality of the public realm.

However, the location and design of new development, has increasingly locked residents into car dependency, increased car ownership and compromised the public realm.

This cycle of induced demand leads to ever more cars on the roads, and increased demand to park them. Developments which are remote with limited public transport will inevitably have even greater pressure. So, whilst this document is about how to manage parking, it cannot be underestimated the importance of choosing sustainable locations for new developments, that do not promote car dependency.

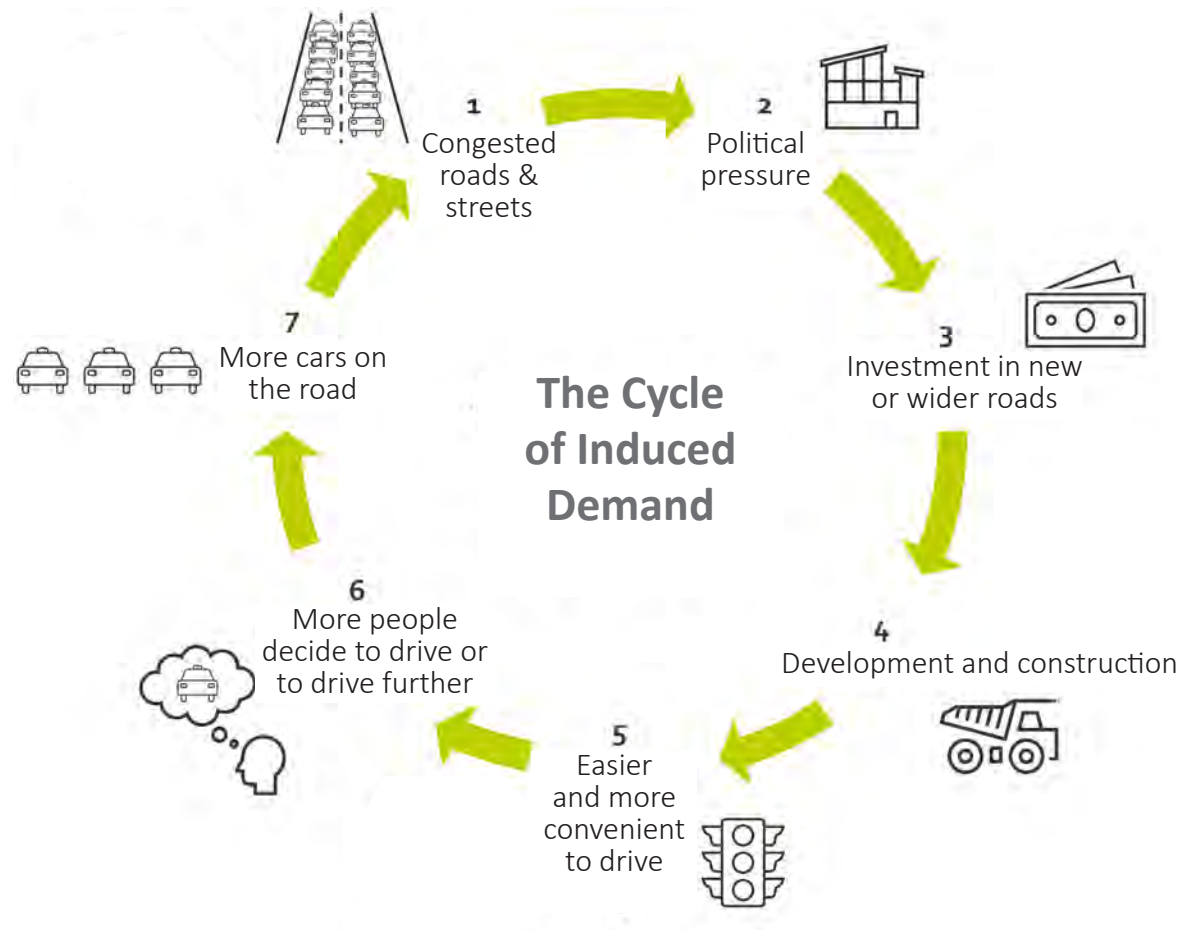


Figure 2: The Cycle of Induced Demand.

Image 4 next page: A new development where vehicles are given priority.



Some residential developments have been designed around the needs of vehicles rather than people.



See Streets for a Healthy Life for more information on streets that support walking and cycling

1.2 | Car ownership trends

Ownership levels

Policy says reduce cars and their dominance, however reality shows more cars need to be accommodated. Census data converted to heatmaps shows the difference between 2001 and 2021.

In order to understand the changing average car ownership levels in England over a thirty year time period, PJA obtained census data from the Office of National Statistics (ONS). Looking at a typical 3-bedroom owner occupied house, the census data shows that the average number of cars and / or vans owned has increased over the period.

Data showing the 2001, 2011 and 2021 census average ownership is shown on Figures 3-5. Looking at the change in car and / or van ownership as a percentage over the thirty year period it is clear that the majority of England has seen increases in average car and / or van ownership, and by 2021 large areas of England now have average car ownership of > 1.5 cars and/or vans per household (in a 3 bedroom house).



Figure 3: 2001 Census

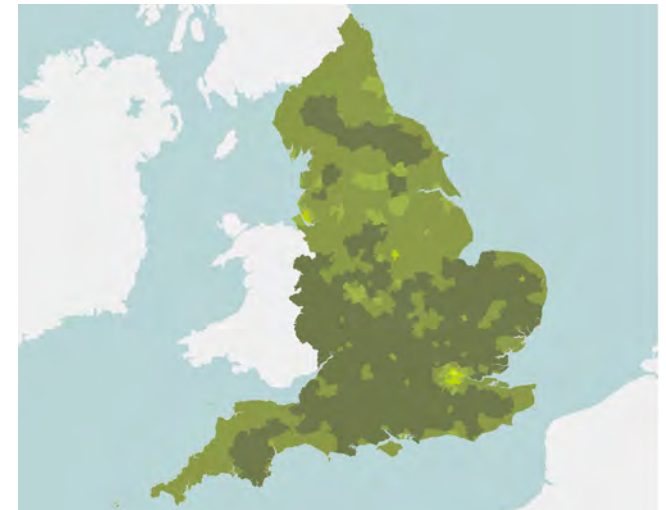


Figure 4: 2011 Census

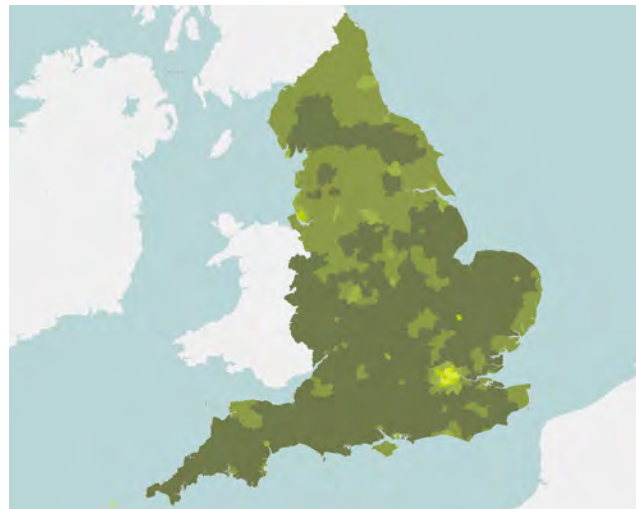
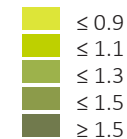


Figure 5: 2021 Census

Census 2001, 2011, 2021
Owned, 3 Bedroom House*
Average No. Cars/Vans shown

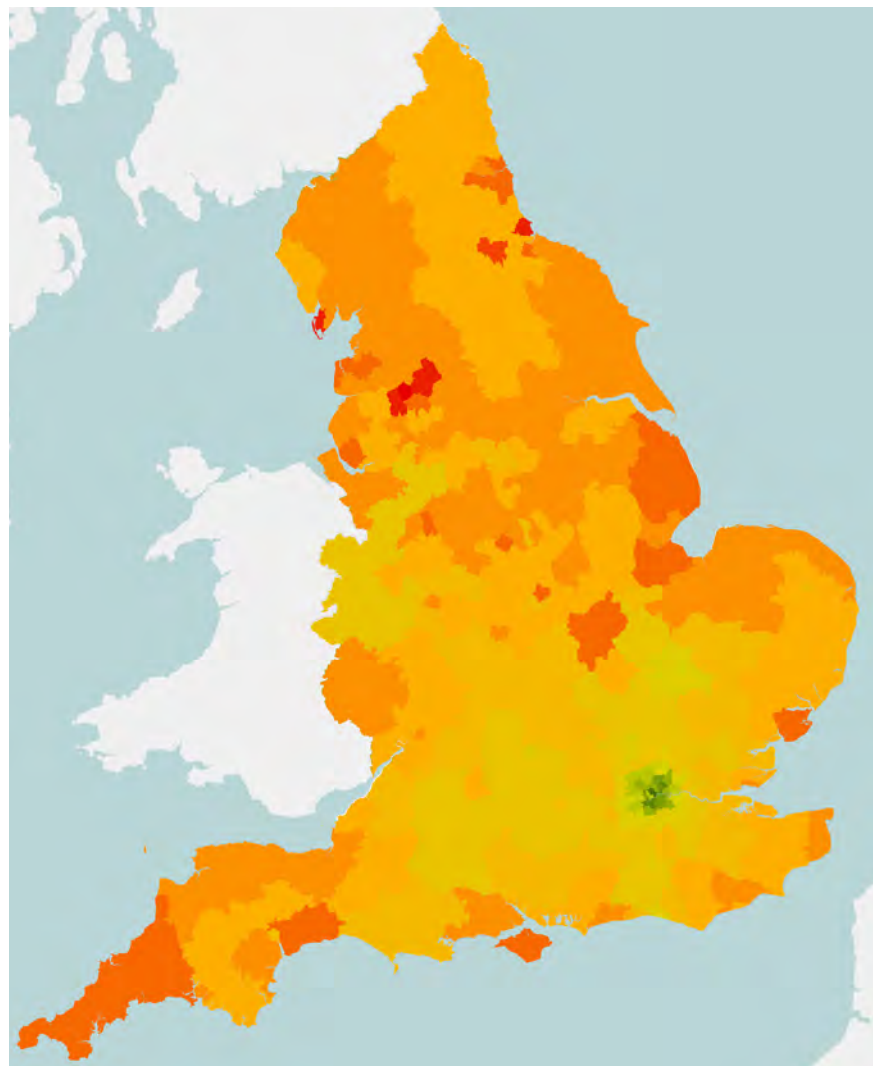
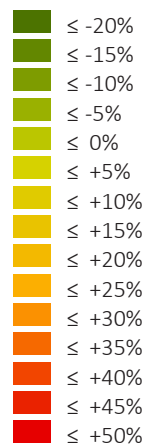


*2001 data only available by rooms and therefore assumes a 5 habitable room property equates to a 3 bedroom property.

Geographic trends

Figure 6 illustrates the percentage change in ownership over the same time period. This shows that more rural locations have seen larger increases (as shown in orange and red). In contrast London and the Greater London Boroughs have seen reductions in ownership over the same period (as shown in green).

Change in Car / Van Ownership 2001-2021



Car ownership has increased everywhere but London

Figures 6: Change in car / van ownership (2001- 2021) (Figures 3-6: © PJA)

Car ownership by tenure

The census data for the average car ownership for 3-bedroom houses and flats are shown in the table and graphs to the right. The data is separated out by tenure.

Car ownership is higher in houses compared to flats. Ownership is higher for those who own their own homes. Rented and shared ownership properties have lower car ownership.

Car ownership has increased over time for houses, but remains generally consistent for flats.

PROPERTY TYPE	TENURE	AVERAGE CAR OWNERSHIP		
		2001 CENSUS	2011 CENSUS	2021 CENSUS
3 Bedroom House	Owned Outright	1.21	1.40	1.48
	Shared Ownership	1.11	1.28	1.44
	Rented	0.72	0.89	1.09
3 Bedroom Flat	Owned Outright	1.00	1.05	1.03
	Shared Ownership	0.75	0.78	0.74
	Rented	0.61	0.64	0.69

Figure 7: Census Data table showing average cars by tenure

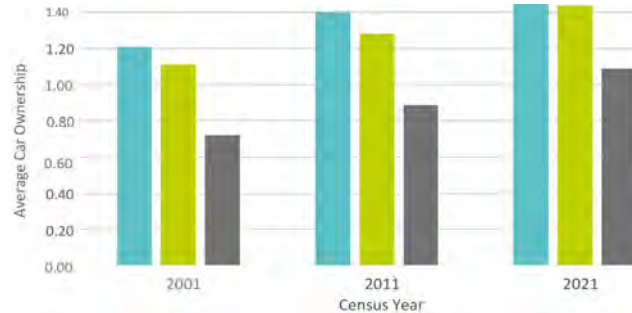


Figure 8: Average cars by tenure - three bedroom house

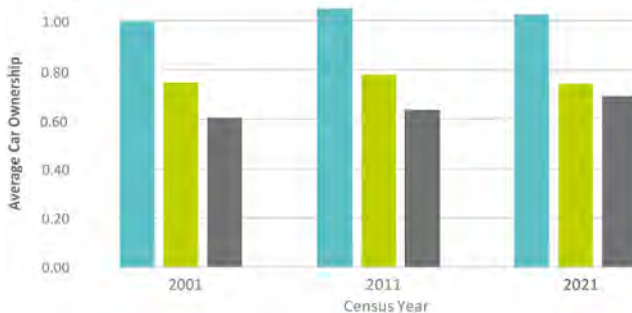


Figure 9: Average cars by tenure - three bedroom flat

Owned Outright
Shared Ownership
Rented

2 The Golden Rules

The Golden Rules apply to all locations.



2.1 | The Golden Rules

The Golden Rules explain the best way to deliver parking on residential schemes.

1. Target flexible ownership

Unallocated car parking is the most efficient, as it helps balance the needs of households with different levels of car ownership. If a car parking bay is no longer needed for an occupant, someone else can use it, which is best delivered by taking some car parking bays off plot.

3. Get the streets right first

Get the streets right before the car parking. A clear street hierarchy is needed for placemaking, way-finding and will help you plan different types of homes. Having a variety of streets with a good sense of enclosure is less costly than trying to create character by spending on the buildings. Streets and spaces should not be dominated by car parking, so they can also be places for social interaction.

2. Make walking and cycling easy

Make walking and cycling easy, with greater density and compactness to reduce the need for cars. Making connections to places and public transport services in the most direct way by walking and cycling, can lessen the car parking demand for the site. Provide safe, secure and easy to access cycle parking. Cycle parking should be a pleasure not a struggle.

4. Use a range of car parking treatments

A broad range of house types and car parking treatments is key to placemaking. There isn't a single best solution. Each car parking treatment should reflect the density of a development, the particularity of a place, how busy the street is and how it contributes to a compact walkable layout.

5. Efficient car parking raises density

Raise density by reducing land dedicated to highways and car parking, not the size of homes. Car parking and streets typically take up about a quarter of the land on site, with about 8-9% of the land budget being car parking alone, and this can be considerably more, depending on house and parking types. Most schemes in this guide raise density by shrinking the set backs of buildings to the street, not surrounding buildings with an apron of surface car parking. This maintains good-sized homes with direct street access and reduces dependence on apartments for density.

6. Avoid single purpose land use

Avoid dedicating land to a single purpose, especially to car parking. Land that contributes a range of requirements as well as parking, such as helping manage surface water management, incorporating leisure and play space and supporting biodiversity, is efficient land use.

7. Think about landscape

Convert the look and feel of parking by investing more in landscape, such as street trees, hedges and planting. Alongside the improved appearance, landscape brings much needed shade to reduce the build-up of heat on streets and in cars and helps to manage surface water and air quality too. Use specialists to advise on the design, maintenance, and adoption.

8. Consider grouped car parking

Grouped car parking requires less circulation and access space and is often more efficient in land use terms. Grouped car parking could be on the periphery or where the streets widen out, such as in squares.

9. Include integral garages

Integral garage and courtyard house types that include parking within the footprint of the dwelling help increase density and provide a more secure solution for EV car charging. These designs need to be wider than most current house types, with additional width to allow for secure bike storage. However, the use of a wider house plan, with an integral garage and a minimal set back from the road can lead to achieving a greater density.

10. Avoid narrow frontages

Over dependence on narrow-fronted house types with car parking perpendicular to the carriageway (to the front or side of the curtilage) generally challenges the above rules.

2.2 | Building for a Healthy Life

'Building for a Healthy Life' is a design toolkit for neighbourhoods, streets, homes and public places. Organised across three headings: Integrated Neighbourhoods, Distinctive Places and Streets for All, it guides you from strategic to detailed scale considerations. This chart shows the Golden Rules and other site planning considerations arranged under the three headings, and the Parking Strategies that follow are arranged in a similar order.

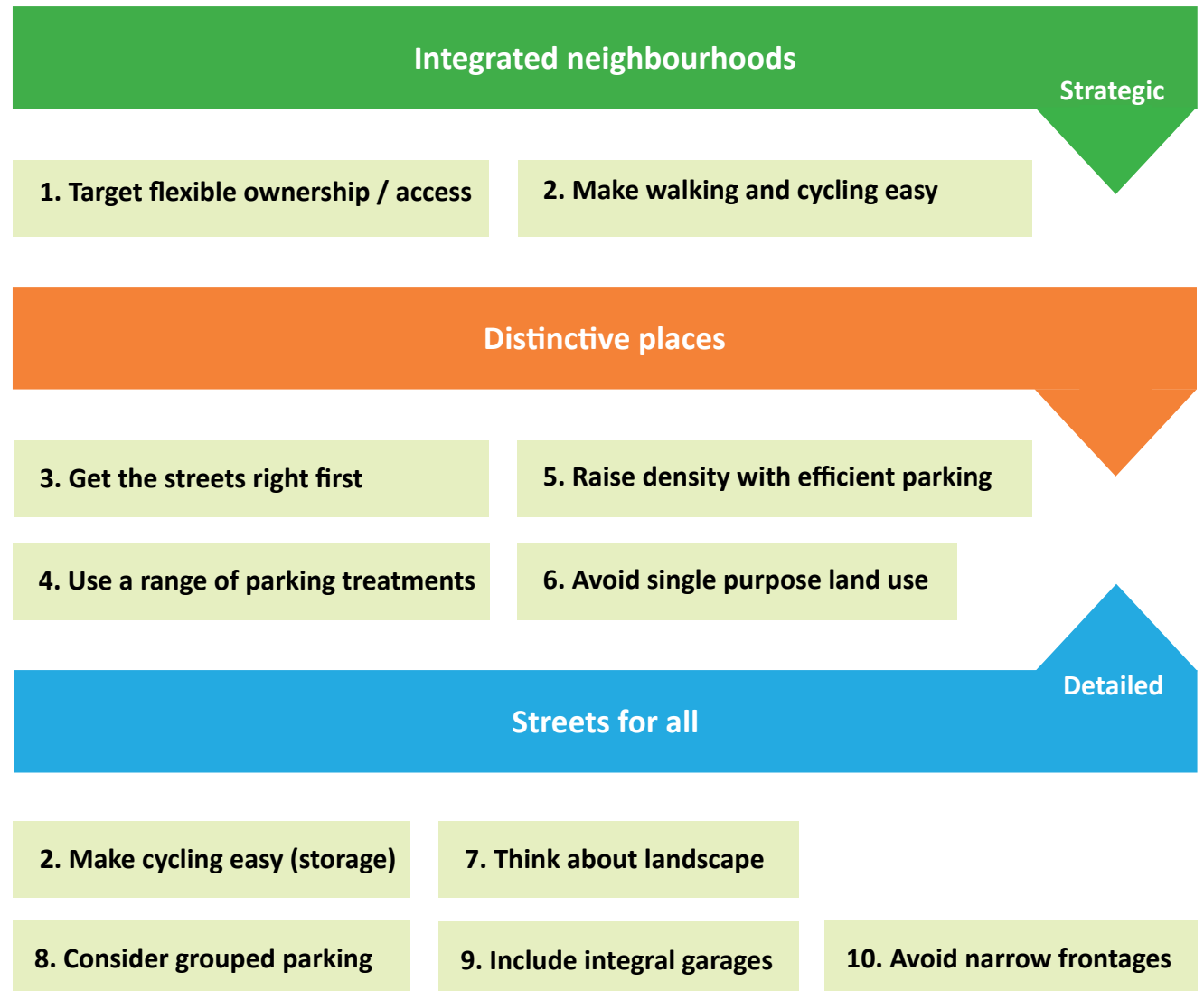


Figure 10: Building for a Healthy Life diagram. Image 6 next page Parking Strategies: Goldsmith Street, Norwich.

3 Parking Strategies

This chapter sets out parking strategies that should be incorporated into the design to enable successful placemaking.



3.1 | Target flexible ownership and access to reduce car parking

Overview

Car parking provision should be based on the expected demand in the locality. Unallocated communal car parking should be included in most residential layouts, together with some allocated parking. It is beneficial because it only needs to provide for average levels of car ownership. It allows for changing demand over time and provides both for visitors and residents. It can accommodate car parking demand from non-residential uses in mixed-use areas, which will tend to peak during the daytime when residential demands are lowest.

Allocated versus unallocated

The key difference between allocated and unallocated relates to whether specific car parking spaces are reserved for particular residents or vehicles (allocated), or whether car parking spaces are shared and available to any vehicle (unallocated).

Target flexible ownership of each bay, where possible as not all car parking spaces need to be allocated to individual properties. Unallocated car parking provides a common resource for a neighbourhood or a specific development and can provide greater flexibility and more efficient use of space. However, allocated car parking may be necessary in certain circumstances, particularly in developments with higher car parking demand.

Target flexible access to car parking bays so that car parking can be used by others at different times of the day.



Image 7: Allocated parking, Barton Park, Oxford.



Image 8: S Telford Millennium Community. Shared unallocated courtyard. Image 9 next page: Allocated parking, Colchester.



Every bay in some developments is allocated, which doesn't leave any space for visitors or any other form of flexibility

Advantages and disadvantages of allocated and unallocated car parking

Unallocated car parking is the most efficient, as it helps balance the needs of households with different levels of car ownership. 'Manual for Streets 2'⁷ and 'Car Parking: What Works Where' set out the advantages of using allocated versus unallocated car parking in new developments. It is still recommended that these principles are adopted.

Allocated car parking

Defined Spaces: In allocated car parking, each residential unit (such as a house or apartment) is assigned a specific car parking space.

Advantages:

- It guarantees a car parking space for each resident.
- It can reduce the likelihood of car parking congestion, as everyone has their own space.
- It can accommodate the Part S EV charging requirement.
- It is better for accessible homes.

Disadvantages:

- It may lead to inefficient use of space if a resident with an allocated space doesn't use it, while others who don't have allocated spaces struggle to find car parking.
- It can result in a greater amount of land being used for car parking rather than for other amenities.

Unallocated car parking

Shared Spaces: Unallocated car parking means that there are shared spaces, and any resident or visitor can park their car in any available space.

Advantages:

- It makes better use of the car parking spaces because there is more flexibility for residents and visitors to park.
- It allows for a more efficient use of land, as car parking spaces are used as needed rather than being locked to individual residents.
- There may be fewer spaces overall, but they can be better utilised.

Disadvantages:

- There's a risk of car parking congestion or residents being unable to park their cars close to their homes if spaces are full.
- It can lead to difficulties in managing the allocation of spaces if demand exceeds supply.

7. Manual for Streets 2. Department for Transport. Published 29 September 2010

Towards a hybrid approach

Rigidly applying the same quantum of car parking for each dwelling does not reflect need. For example, Applying a 200% car parking ratio will only reflect the need of 1 in 3 households. Looking in more detail at a typical 3-bedroom owner occupied house the 2021 census shows that there is significant variation in the number of cars / vans owned by different households.

This data shows us that:

- 11% have 0 cars
- 43% have 1 car
- 35% have 2 cars
- 8% have 3 cars
- 3% have 4 or more cars

Looking at a representative sample of 10 homes, the data shows us that:

- 1 home = 0 cars
- 4 homes = 1 car
- 4 homes = 2 cars
- 1 home = 3 cars
- 0 homes = 4 or more cars
- **Total 10 homes = 15 cars**

Scenario 1: allocated car parking

Applying a typical 'allocated' approach to car parking in a new development would need to provide the following car parking provision (assuming 2 no. allocated car parking spaces per household):

- 1 home = 2 x allocated spaces
- Total 10 homes = 20 allocated parking spaces

Based on the ownership levels from the 2021 census we know that these homes on average own 15 cars / vans. Therefore based on the scenario above:

- **Total 10 homes = 15 cars owned**

Summary:

- **6 no. unused allocated car parking spaces**
- **Additional demand for 1 no. car parking bay**
- **21 car park spaces provided**

	House 1	House 2	House 3	House 4	House 5	House 6	House 7	House 8	House 9	House 10
Allocated	No car	1 car	1 car	1 car	1 car	1 car	1 car	1 car	1 car	1 car
Additional	No car	No car	No car	No car	No car	1 car	1 car	1 car	1 car	1 car

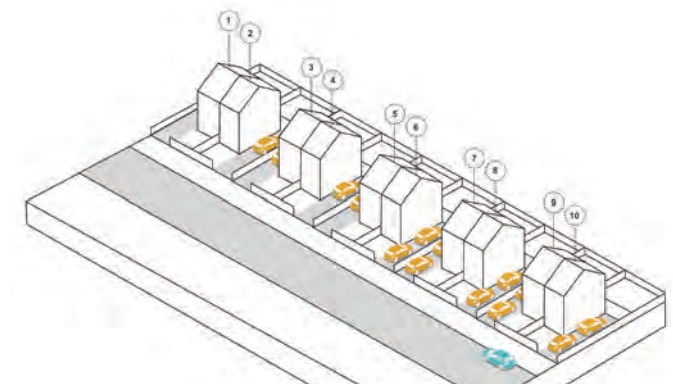
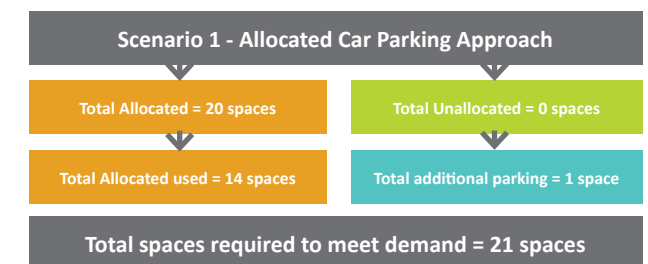


Figure 11: Scenario 1 - Allocated parking approach

Scenario 2: hybrid car parking

Applying a 'hybrid' approach to car parking, where one allocated car parking bay is provided per house and some unallocated (shared) parking is also provided, will result in significant efficiencies.

- 10 homes = 1 x allocated spaces / household
- **Total 10 homes = 15 cars owned**

Summary:

Based on the ownership levels from the 2021 census we know that these homes on average own 1.5 cars / vans. Therefore:

- **10 homes = 10 x allocated spaces**
- **1 no. allocated space unutilised** (household with zero car ownership)
- **6 no. unallocated car parking spaces**
- **16 car park spaces required**

The scenarios show that a hybrid approach is more land efficient without impacting the parking requirement.

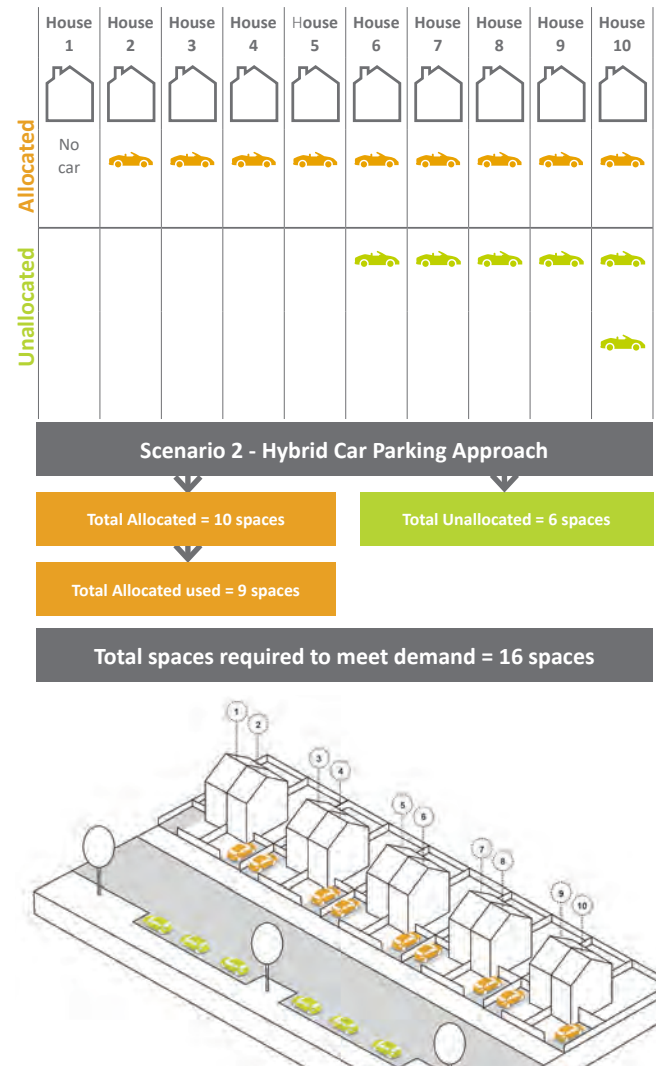
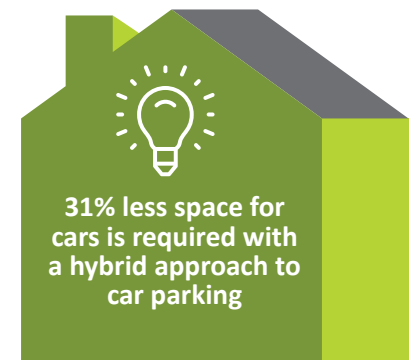


Figure 12 Scenario 2 - Hybrid car parking approach



Alternatives to on-plot car parking: allocation in the public realm

While unallocated off-plot car parking is the most land efficient type of parking, many developers cite a need to be able to offer a home with dedicated on-plot car parking.

Other options exist:

1. Allocate one space, rent other spaces from the Highways Authority via a Controlled Parking Zone (CPZ).
2. Renting spaces rather than selling them.
3. Allocating spaces off-plot within the street but not within the adopted highway (see right).



Example: Horsted Park, Kent

At Horsted Park, Kent, the developer moved away from the usual approach to selling on-plot parking. The parking is in the shared surface right angled to the carriageway but the pavement sweeps behind the back of it and separates the house from the parking bay, so the car parking bay is demised in the public realm. See case study 14.

Image 10: Horsted Park, Kent. Parking bays are demised in the public realm in front of the homes.



Example: Mulberry Park, Bath

At Mulberry Park, Bath, the on-street bays are allocated to the property, despite the fact that the street where they are located also contains a bus route. The on street parking spaces are numbered on the paving as well as in signage on the front railings for each home.

Image 11: Mulberry Park, Bath. Parallel bays are allocated in the public realm.

3.2 I Get the streets and spaces right before the car parking arrangement

Overview

Places with character, that have a strong identity and sense of place, include a wide range of streets and spaces. Work out the hierarchy of squares, boulevards, streets, lanes and mews before the parking arrangement. They each demand a different parking approach, so that parking does not dominate the streets and spaces, to enable them to be places for social interaction.

It's a balancing act

The requirement to control the impact of the car for pedestrian friendly streets has to be offset against the need to keep the street active, which parking in the street does. Few residents prefer the aesthetic of a car-free street to easy access from car to home.

Prioritising streetscapes can lead to over-dependence on rear courts. One challenge with this approach is that residents will still park near their front doors and ignore the rear court bays. An element of well-designed on-street car parking is the only answer to this demand. But this does not equate to monotonous on-plot frontage car parking. Cycle parking for visitors should also be well integrated into the streetscape.

Off-the-shelf highway designs do not create attractive environments. Neither does adopting a single urban design solution – it is not appropriate for a particular parking treatment to become the new default setting. This guidance recommends that schemes employ a range of car parking solutions and consider incorporating some degree of well-designed on street car parking. Particular attention should be paid to the case studies that illustrate considerations that need to be taken into account.



People friendly spaces and streets should be considered before the car parking

3.3 I Make sure the parking supports street enclosure

Overview

A sense of place is fundamental to a richer and more fulfilling environment. It comes largely from creating a strong relationship between the street and the buildings and spaces that frame it. Streets with a sense of enclosure, that are sheltered with little passing traffic support neighbourliness and are more pedestrian and cycle friendly. Streets are important places and tighter streets are easier to cross and encourage slower vehicle speeds. Landscape and tree cover will help make wider streets feel more enclosed.

Example: Abode, Great Kneighton, Cambridge

The residential street (right), is 10.5m wide with two-storey homes either side. This street contains landscaped privacy strips, parallel car parking in some locations and street trees, which are used to traffic calm, while also allowing for the refuse vehicle. The mews (bottom right) is also 10.5m wide between the buildings with a shared surface containing a privacy strip (and visibility zone) to one side with parallel parking, interspersed with street trees on the other. See case study 15.

Example: Goldsmith Street, Norwich

See next page and see case study 6. In the development there is less than 15m between the building façades and a 5.5m carriageway, including parking car parallel on either side with pavements and street trees. It works well, as the street has a very domestic and familiar feel with a good sense of enclosure. The Goldsmith Street development in Norwich includes a Controlled Parking Zone, to allow only residents (or other valid permit holders), parking spaces.



Image 13: Abode, Cambridge. A narrow residential street.



Image 14: Abode, Cambridge. A mews street. Image 15 next page: Goldsmith Street, Norwich. A street with good enclosure.



Streets with parallel car parking can have a good sense of enclosure

3.4 | Maximise activity in the street

Overview

Through traffic should be accommodated but not dominate residential streets, making them feel unsafe for pedestrians. Instead refocus local residential streets to the needs of the people living there – for play, socialising and the provision of landscape - alongside the functions of access and some parking.

Key features of streets for living and play:

- They are narrow, reducing forward visibility by using variable carriageway widths and features, to slow vehicular speeds
- Design speeds of 10mph
- Very low traffic movements, but they are connected into the network
- Carefully located street trees, landscaping or in line car parking bays can help narrow streets and slow speeds
- Include benches or play on the way elements in the street, that encourage people to dwell

Example: Newhall, Harlow

The design drew inspiration from the traditional morphology of English rural settlements and in particular the role of the 'garden wall', to provide spatial containment and street frontage continuity. The inclusion of this continuous architectural device enables the careful integration of surface level car parking behind garden boundaries, within discrete garages or tucked beneath principal living levels.



Image 16: Newhall, Harlow. A shared surface for living and play.

Cul-de-sacs create disconnected places

The standard response in the UK to reduce through traffic used to be the cul-de-sac. Yet an over-reliance on cul-de-sacs has created disconnected places, where it is neither convenient or easy for pedestrians or car users to get around. These disconnected street patterns make walking routes more convoluted and longer than they need to be. When routes are long and convoluted, people's desire to walk between places is reduced. Instead, create connected streets but manage out problematic traffic, to allow for traffic to come through, but very slowly.

Image 17 next page: Cottam Meadow, Preston. Pedestrian priority design.



Widen the street to accommodate car parking and then narrow it again to reduce speed

3.5 | There isn't a single best car parking treatment, so provide a mix

Overview

The 2019 National Housing Design Quality Audit concluded that the least successful design elements nationally relate to overly engineered highways infrastructure and the poor integration of storage, bins and car parking. Striking the balance between the demands of convenience with car domination remains hard to get right. The most successful schemes used a mix of on-plot provision with direct access, alongside car parking on street integrated within landscape and tree planting.

Case study examples

The case studies show that mixing parking treatments helps to ensure sufficient variety, related to the street type and housing type. Use a combination of on plot, off plot and on street, according to location, house type, topography and street type.

- **Horsted Park, Chatham, Kent**

The cars parking on the right of the photo are on-plot with the additional space in garage or car port, while the houses on the left have car parking allocated in the street.

- **Kidbrooke, London (right)**

The cars are parked perpendicular to the street screened with hedges, parallel to the street, or under podiums to the apartments.

- **Kelham Island, Sheffield**

The cars are parked in integral garages and in a podium.

- **Aura and Abode, Great Kneighton**

The cars are parked in the street in line with the pavement and perpendicular to the pavement, in integral garages, in courts and in FOGs.



Image 18: Kidbrooke, London. A street with a good sense of enclosure, provided by the trees and the ratio of street to buildings.

Image 19: Horsted Park, Chatham, Kent. A range of parking treatments.



A range of car parking treatments more closely matches need and creates better streets

3.6 I Choose a treatment that suits the density of a development

Overview

Some treatments work well in most locations, but be alert to the limits of others. The traffic lights indicate how well a treatment will fit within the urban design of a central, urban or suburban location. As always, there are other considerations which are explored in the case studies. Cycle storage and visitor cycle parking provision should be universal.

Why traffic lights?

Traffic light symbols indicate the suitability of each treatment in a given location. For example, the podium car park gets a amber light in suburban locations, not least on cost considerations. By contrast, the parking square gets a green light for each location because it can be scaled up according to whether it is in a village, town or city to accommodate more spaces. Traffic lights are not definitive. For example, the use of right angled on street parking with two-storey houses will exaggerate the wider street needed to accommodate it. Right angled parking will usually work, but only if building heights are scaled up to compensate. As always, there are other considerations which are shown in the case studies.

Most car parking treatments have clear locations. Some treatments, when applied with care, can be made to work in locations where they are not best suited. The guide urges care with these treatments in these locations. An amber signal means, of course, proceed with caution.

EV charging

EV charging needs to be appropriately integrated into the street or on plot. Where parking is at the kerbside, then appropriate conduits and connections need to be provided across the public domain. Refer to the Approved Document Part S: Infrastructure for charging electric vehicles.

Accessible parking

For accessible car parking and drop-off refer to the Approved Document Part M: access to and use of buildings. Check local planning policy for on street accessible parking quantum.

Bay sizes

Check whether your local authority has a requirement for a non-standard bay size.

Mobility hubs, cycle hubs and car clubs

These can support a shift away from private car use to embrace active travel and sustainable transport by providing a flexible service to fulfil occasional trips. They lead to more efficient use of a smaller number of newer and greener vehicles freeing up space for the creation of higher quality liveable neighbourhoods.

	Off plot (structure)					Off plot (court)			On street				On plot					FOGs		
	Multi-storey (multi use)	Car barn	Underground	Undercroft	Podium	Front court	Rear court	Parking square	Central reservation	Right angled	In line	Integral garage	Attached garage	Car port	Hardstanding	Detached garage	Mews court	Chaffeur unit	Flat over garage	Cycle storage
Central																				
Urban																				
Suburban																				

Figure 13: What treatment works where

- Red: rarely suitable in that location
- Amber: can be made to work in that location provided care is taken
- Green: is appropriate in that location at all times

NB. An Off plot: front court differs from On street: right angled in that it is partly enclosed by buildings or walls. An Off plot: car parking square has parking arranged around a central landscaped space. Further parallel car parking may be located to the other side of surrounding streets.

3.7 I Make the car parking efficient - on street car parking can be better than rear courts

Overview

Car parking in rear courts, which requires dedicated access routes and manoeuvring space, often results in smaller gardens and more hard landscape. It is usually better to integrate car parking well into a multi-functional street and square. It is possible to design rear car parking courts as spaces with generous landscape and for social interaction, but this is rare, so be cautious in using this treatment. Design courts to minimise hard surfaces and manoeuvring areas for cars.

Learning from Upton versus Kew, London

At Kew, the parking ratio is at 1.4 spaces per dwelling and there is a net density of 43dph. In Upton, Northampton, is a scheme that is comprised of large perimeter blocks containing rear courts with a 1.6 spaces per dwelling (only 0.2 more than Kew).

At Kew, the total garden and landscape area (including front and back gardens and street trees) is nearly 50% of the site and the development area is about 20% of the site. In Upton, hard landscape makes up about 50% and the amount of soft landscaping has dropped to around a quarter. Therefore the soft landscaping, that would absorb water and mitigate the impact of climate change, has been replaced with hard surfaces for rear court parking. Overall Upton devotes 27% more land to roads and parking than Kew but provides only 0.2 of an extra space per home.



Figure 14 Kew (top) and Upton (below) - area of analysis
Image 20 next page: Great Kneighton, Cambridge. Rear Car Parking Court / Front Car Parking Court.



Car parking within the block can work when properly animated and landscaped

3.8 I Limit the visual impact of car parking with landscaping



Use soft landscape to subdivide and screen car parking

Extensive areas of hard paving are visually unattractive, impermeable for surface water and less resilient to heating and cooling, unlike planted areas. They can provide increased surface porosity or rain gardens, as part of a SuDS solution. Hedges provide visual screening; when clipped to 1450mm they will screen most cars, but allow views. Single species of hedge are valuable habitats but for maximum biodiversity value use a mix of native species.

Image 21: Trees and thick hedges between car parking bays.



Integrate car parking into the existing landscape setting

Existing trees, hedges and other landscape features are valuable as established greenery in new developments. They will likely have high biodiversity value which would take years to replace and therefore should be retained and integrated into site designs. Car parking spaces should be carefully positioned in relation to existing landscape features, making use of porous surfaces and 'no-dig' construction to avoid impact on root-zones.

Image 22: Edgware Green, London with cars parked near existing trees and grassed banks.



Locate car parking within a framework of green infrastructure

Areas of car parking can provide opportunities for developments to meet their planning obligations for urban greening, sustainable drainage (SuDS), biodiversity improvement, play and amenity space provision. Design the parking as part of the landscape strategy - by allowing for planted and porous surfaces, hedges and tree planting, opportunities for green infrastructure can be maximised.

Image 23: Roussillon Park, Chichester. Cars parked under trees. Image 24 next page: A Cambridge street lined with trees.



Limit the visual
impact of the car
parking with
landscape and
street trees

3.9 | Incorporate integral garage house-types

Overview

Terraces are often associated in new development with on plot perpendicular car parking to the frontage, creating wide car dominated streets. House types that integrate garages can help to create successful schemes. They can be compact, retain an active frontage and use land efficiently, enabling higher densities to be achieved. As the parking does not need to be located in the street, narrower street widths can be achieved, which also contributes to efficient land use.



Image 25: Brabazon, Bristol. House with integrated garage.



Image 27: Horsted, Chatham, Kent. House with integrated garage.



Image 26: Edgware Green, London. House with carport.



Image 28: Kelham Island, Sheffield. Block with integrated garages.
Image 29: Accordia, Cambridge. House with integrated garages.

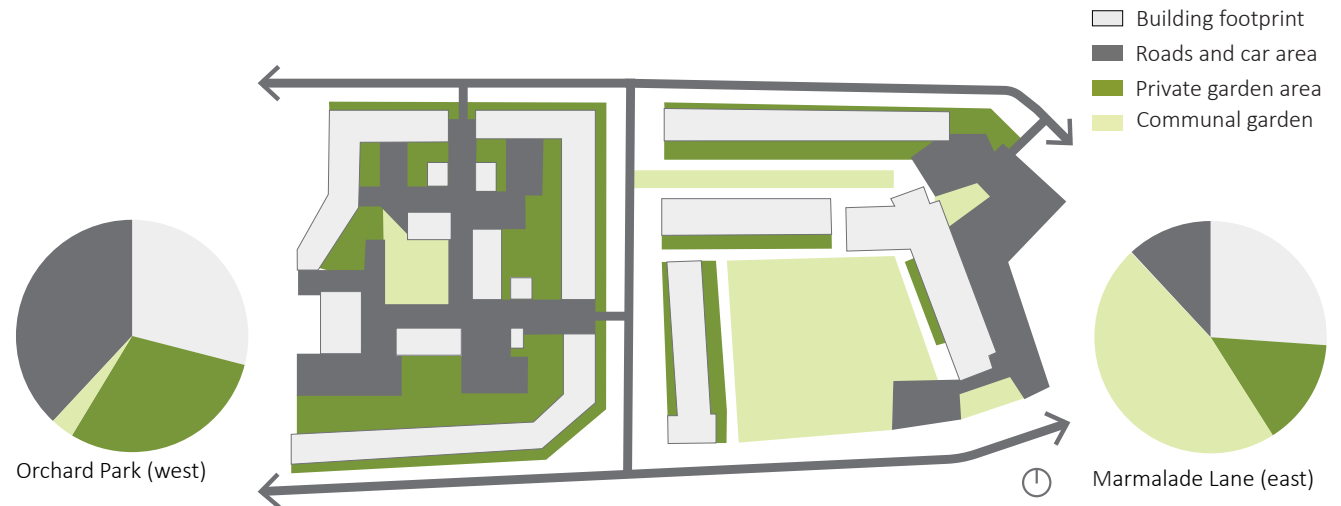


A home in a mews street with an integral garage and minimal set back can help achieve a greater density

3.10 Consider grouped car parking or a 'car barn'

Grouped car parking

Grouped car parking can allow for terraces, tight streets and create more homes. The car parking can be in the most efficient form with direct access from the road network, thereby not requiring land for access routes or on plot car parking spaces. Landscaping should be used to mitigate the visual impact of the parking. This arrangement can also enable the land for parking to be repurposed in the future. In larger developments grouped parking could be one of a number of parking strategies employed in the neighbourhood design.



Example: Marmalade Lane, Cambridge

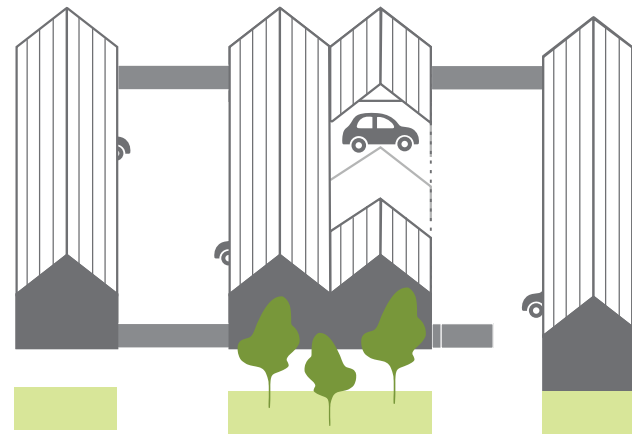
The scheme is located on the edge of the city, so it is well connected but it is still a suburban site. The car parking ratio is low at 1.25 spaces per dwelling. Car parking is concentrated to the periphery, allowing the rest of the public space to be just for shared and private gardens, and an internal car-free pedestrian street.

The diagram above shows how much space is given over to parking, releasing land for the communal garden. For comparison, on the left is the adjacent development, Orchard Park. The development density and car parking ratios are pretty similar, so the efficient use of land is down to how the parking is designed and located.

Figure 15: Marmalade Lane compared to Orchard Park to the west - diagram based on an image provided by Town.

Car Barns

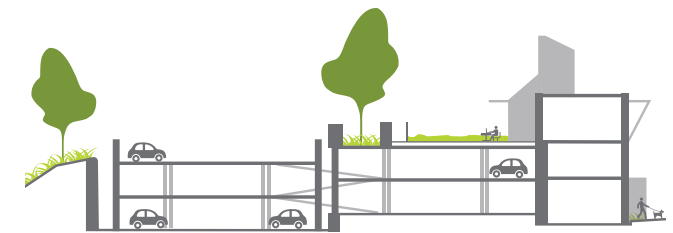
Car barns, like grouped parking, are remote from the home within a new development but are covered, secure parking locations. Both types of grouped parking represent a challenge to the traditional car-house relationship. Having to walk a couple of minutes to your car will encourage more people to choose to walk or cycle for short trips. Mobility hub elements can be integrated into a car barn.



Example: Hill Rise, Woodstock, Oxford

The Blenheim Estate's brief to challenge car-dominated suburbs, results in fewer car-dictated roads and mostly terraced houses, allowing for tighter knit and more sociable car-free streets. Car infrastructure typically takes up 40% of a residential development area but in Hill Rise it's closer to 14%, with the car barns as part of the solution. Improved density and reduced infrastructure allow for more open space in the development. The car barn design references local farm buildings and can be adapted for other uses, as needs change in future.

Figure 16: Diagram of car barn based on Hill Rise.



Example: Greenwich Millennium Village, London

The parking is located at the edge of the site, in a two-storey car barn. Inspired by the neighbourhoods of Bloomsbury and Ladbroke Grove, the design establishes a spatial hierarchy of streets, squares, communal gardens and parks. The location of the car barn allows the shared surface streets to be narrow with a sense of enclosure, be pedestrianised and used for play. The car park is naturally lit and includes bike storage and a car washing bay and the ground is banked and landscaped to screen the structure.

Figure 17: Diagram section of the Greenwich Millennium Village car barn, taken from the case study in CPWWW 2006.

3.11 | Incorporate cycle storage and make it secure and easy to access

Overview

Making active travel a part of everyday life requires cycle storage that is usable, easy to access, safe and secure. The high cost of cycles, in particular E-bikes, means that security is the number one priority when people choose where to store their bikes. Houses need different solutions for cycle parking from apartment blocks.



Terraced housing

- Avoid narrow alleys to access back garden cycle storage. Instead build it into the home itself in an integral porch or tucked in a wider secure alley behind. If the cycle storage is in the front garden space, it can be hidden behind or incorporated into the front boundary wall.

Semi-detached or detached homes

- Incorporate integral garages or car ports that include cycle storage and allow adequate space for it. If the cycle storage is in the back garden, it should be a secure store with a simple direct and convenient way out to the street, not a complicated rear alley.

Apartments

- Communal stores are not well used because they are not considered secure enough for residents to store their cycles. Well overlooked external storage or secure individual lockers are a better option.
- Large ground floor cycle stores can lead to blank walls onto the street. An option is to provide cycle storage at every level within smaller storage rooms accessible from the circulation, however, maintenance and access need to be considered.

Cycle Storage - What works well:

- Location: You will be asking too much from the resident if the cycle store is more than 50m from the entrance door.
- Security: Would the owner of the property feel comfortable leaving their cycle in the store - does it feel safe?
- Spacing: Have stands 1m apart and 60cm away from the wall, with aisles 3m wide. Show the cycle on the plan and think about the cycle manoeuvring requirements.
- Variety: Don't forget spaces for large cycles, such as cargo bikes, mobility scooters and E-scooters and allow for visitor cycle parking.

Examples of cycle storage in houses

The following examples all have easy to access storage at the frontage. In the second example the storage is integral to the façade and in the third example there is storage at the frontage as well as a rear communal store for cargo and other non-standard bikes. Key features include:

- Bespoke timber store to the hard-standing of the houses.
- There is direct access to the store from the communal garden.
- The cars are parked in a group, so the houses look out onto a car free central courtyard.
- Integral store to the front of the house to provide direct street access and security.
- The store doors are balanced out by large areas of fenestration.



Image 30: More's Meadow. Bespoke timber store to the hard-standing of the houses.



Image 31: Cala at Waterbeach. Integral store to the front of the house.



Figure 18: diagram showing the cycle parking location for a house based on More's Meadow.



Figure 19: diagram of integral cycle parking in a house based on Cala at Waterbeach.

A further example of cycle storage in houses

The development encourages sustainable transport through reduced car-use and increased cycle storage options including for cargo bikes. Key features include:

- Bespoke cycle store to the front of the homes.
- In addition, a rear garden cycle store is combined with an Air Source Heat Pump store.
- A communal shared, lockable store provides for larger cycles such as cargo bikes.



Image 32: Duncombe Square. Front garden store.



Image 33: Duncombe Square. Shared communal store.



Figure 20: diagram showing cycle parking locations for a house based on Duncombe Square.

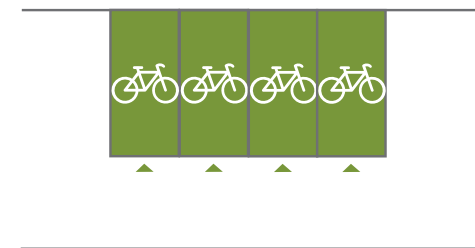


Figure 21: diagram showing communal cargo cycle parking based on Duncombe Square.

External cycle storage for apartments

The following apartment blocks at North West Cambridge include external cycle storage. Internal communal cycle stores include cycle circulation requirements and can waste floor area. Key features include:

- The cycle parking is located just behind the railings to the courtyard, so it is secure, safe, easily accessible, covered and well overlooked.
- The space saved by including an external cycle store at Rubicon, meant that a communal room could be placed at the ground floor.
- Free-standing shared cycle shelter accessed from communal garden, which forms one of the garden boundary walls.
- Shed is well overlooked, easily accessible and secure.
- Shed is integrated into the garden with climbing plants and has a green roof.



Image 34: Rubicon, Cambridge. Apartment cycle parking in the courtyard behind the front railings.



Image 35: Ryle Lane, Cambridge. Apartment external cycle storage pavilion.

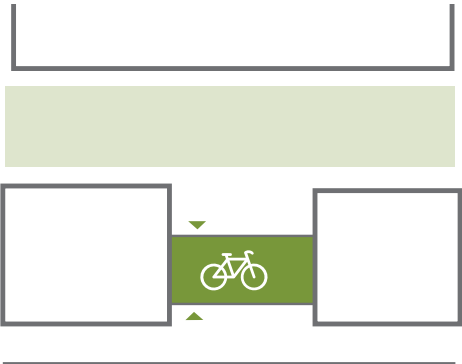


Figure 22: diagram of apartment cycle storage based on Rubicon.



Internal cycle storage in apartments

In an apartment block keep the ground floor active and do not line your frontage with cycle parking. Include a dedicated cycle access, provide cycle lifts and stairs and a good proportion of stacking stands along side Sheffield stands and mobility scooter provision. At planning stage, exemplar submissions and drawings (for example by British Land) show cycles, to indicate how the circulation is appropriately sized. Key features of internal cycle storage in apartments include:

- The cycle storage is located to one side of the communal courtyard. An active frontage wraps around the ground floor.
- The cycle storage is secured with metal railings, so you can see who is in there, but you can't just wander in.
- Nile Street (bottom right) includes a dedicated access to cycle parking located away from the frontage.

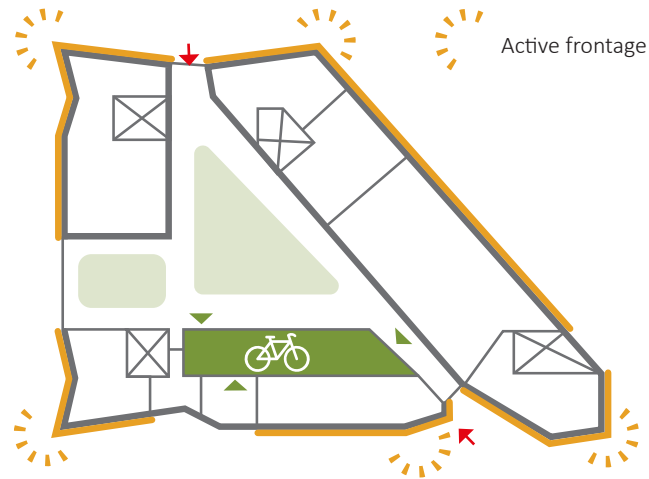


Figure 23: Diagram showing cycle storage behind active frontages based on Dockley Street, London.



Image 36: Nile Street, London. A dedicated cycle access.

Barriers to cycling related to parking

Sustrans was supported by Cyclehoop to undertake research⁸ into cycle parking for those on low incomes:

- 15% of respondents had their own, or knew someone who had their cycle stolen from where they lived in the past 12 months.
- People who live in a flat are far less likely to have a secure (27%) or accessible (23%) place to store a cycle than people who live in a detached house (60% and 58% respectively).
- 'Poor cycle parking is a barrier to cycling, where it prevents people from owning and using a cycle. At a national scale, addressing the issue of poor cycle parking has the potential to unlock a significant latent demand for cycling.'

8. Source: Sustrans, 2024

Image 37: Selected Car Parking Treatments: Abode, Cambridge.

4 Selected Car Parking Treatments

This chapter sets out in detail some car parking treatments that are hard to get right and need to be handled with care.



4.1 | Making integral garage parking work

Overview

Integrated garages can be found in a number of different house types and work best in a low speed, low traffic street like a mews or tertiary street. Whilst not a common 'standard house type', they are great at solving parking problems and maintaining a medium density. See 'Strategy 9: Incorporate integral garage house-types' for examples. There are a few versions:

- Terraced homes with a double garage accessed from the rear mews street, whilst the house fronts the main street. There could be an annex or terrace above the garage. This typology can provide high density large family houses. It also works where direct access to parking from the front street isn't allowed due to highways regulations.
- Houses with a side drive through (tandem) integral garage with accommodation above.
- Houses with a single integral garage with accommodation above.
- Wide fronted town houses over a double or triple garage.
- Courtyard houses that have a courtyard space behind a side garage.
- Flats Over Garages (FOGS).
- Side carports with a garden terrace above.

Integral Garages - What works well

- Side garages with accommodation above, should not extend beyond the front elevation or the rear elevation.
- Single garages should be a minimum of 3.6m wide x 6m deep.
- Tandem garages should be 3.6m wide and 11m deep. This ensures that passengers can enter and exit the car easily when it is parked.
- If bins or bikes are accommodated an additional width of 300mm- 450mm should be added.
- Perforated doors are preferred over blank garage doors, and to prevent the garage for being used as a general store. Aim for 50% of the door to be visually open. This applies also to drive-through parking.
- Garage doors should be automated to make it easier to park.
- Garden terraces can be provided over garages or car ports.
- A mews street needs a 500mm visibility strip outside the front door.
- If you set the garage back be careful that residents don't use the minimal driveway to park on, thereby blocking the pavement.
- Ground floor rooms should be habitable, with well sized windows, to provide active frontage and visual connection from the home to the street. Alternatively have large first floor windows overlooking the street.
- An elevation with continuous garage doors should be minimised in schemes - and used only on a short mews street.
- Consider architectural detailing and materiality that complements the homes.
- Tandem parking should never be triple tandem.
- Consider providing EV charging in garages.

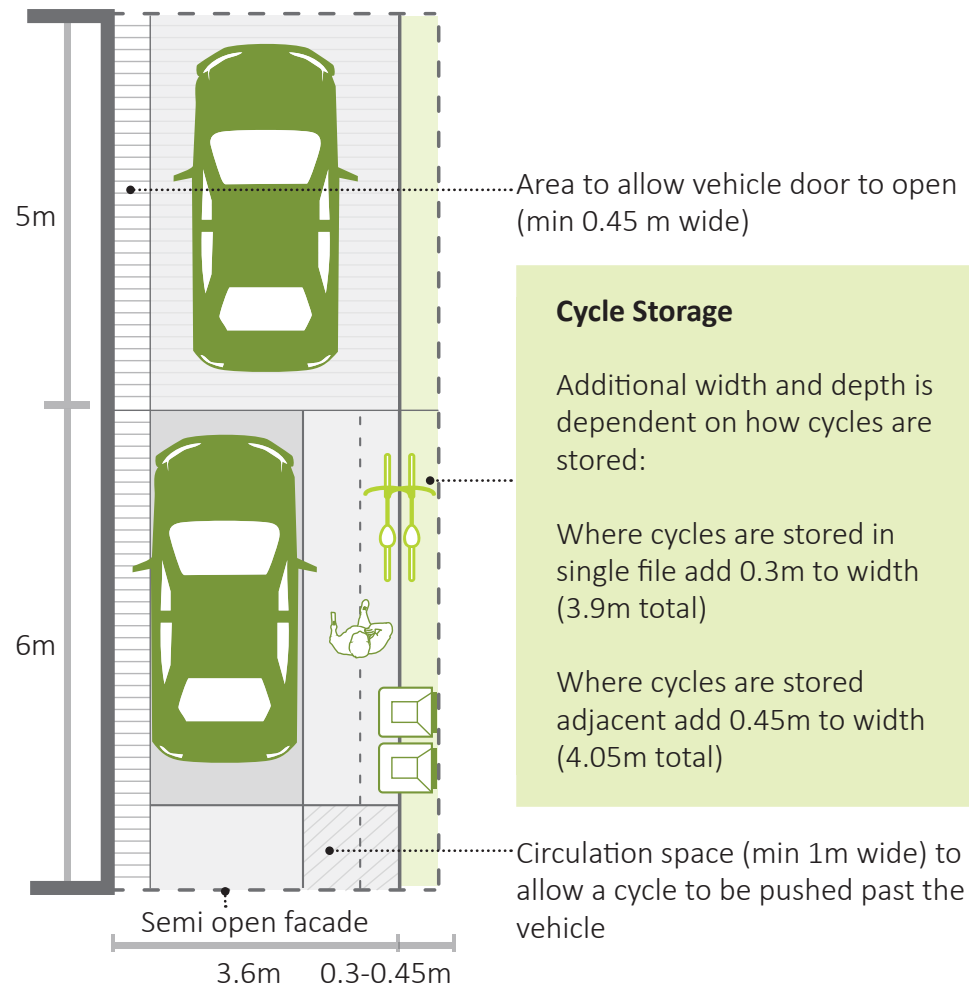


Figure 24: Side drive through or integral garage (tandem)

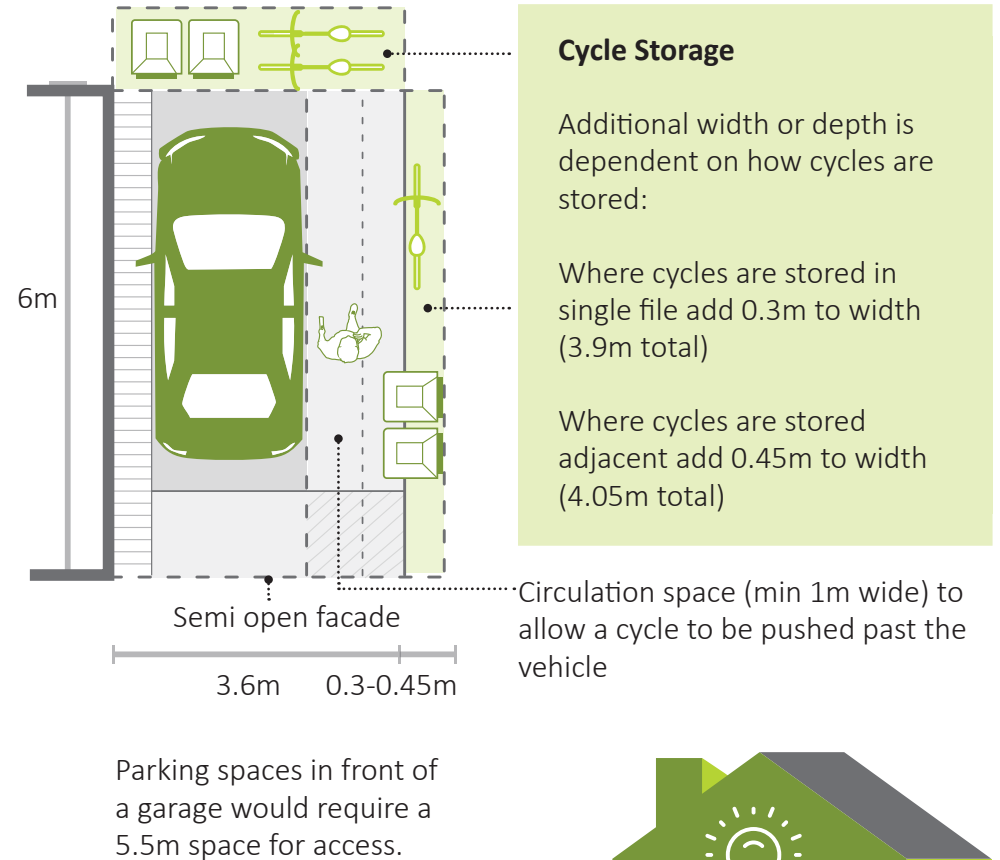
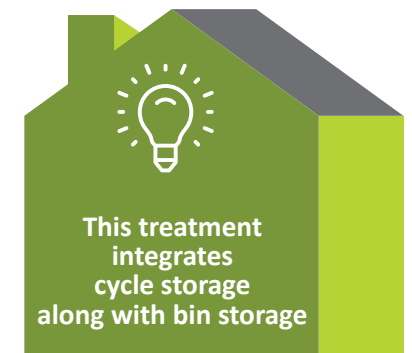


Figure 25: Single integral garage



4.2 | Making flats over garages (FOGs) work

Overview

FOGs- sometimes also called 'carriage-houses'- are a useful car parking type. They can increase density and provide for a mix of homes, while meeting the car parking standards, but care needs to be taken in their application. FOGs come with an inherent risk of providing no active frontage or surveillance on the ground floor, so they should be used sparingly. FOGs work best in a street, particularly in a mews and where they are sandwiched between or opposite housing with active ground floors. The following pages shows good and poor examples

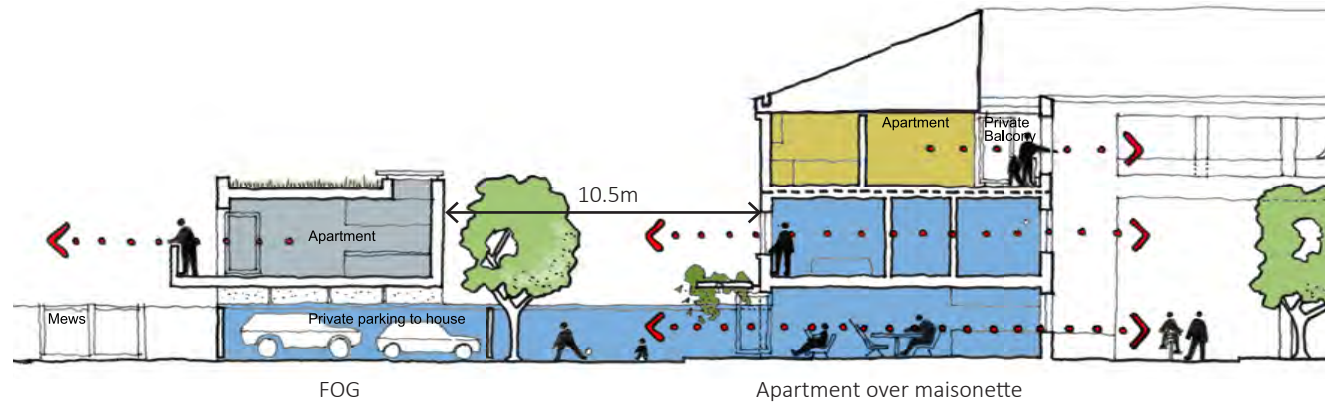
FOGs - What works well

- Make FOGs part of a street. FOGs work best in a narrow mews street that has a sense of enclosure.
- Use FOGs to frame spaces, at the end of a street or mews street.
- If you do use FOGs in a parking court, make sure you can see them from the street, to frame a view, and so that people know there are homes in the court.
- Make sure the other side of the street has ground floor front doors and windows, otherwise both sides of the street are deactivated at ground floor.
- Provide deck access, balconies or terraces for surveillance, activity and to provide a proper amenity space.
- Break up runs of FOGs with conventional ground floor entry to homes, to activate the (semi) public realm at ground floor level.
- Provide windows to the accommodation, for an improved sense of overlooking.
- Provide closed garage doors on ground floors, to avoid an undercroft open void.
- Consider using detailing to the garage door that is complementary to the architectural language of the development.
- Use soft landscape in the street, particularly trees, to limit the visual impact of the garage doors.

Image 38 next page: Abode, Great Kneighton, Cambridge. House with an integral garage also includes undercroft parking for nearby apartments, located off a front / rear car parking court.



Integrated car parking
and FOGS can solve
parking problems and
maintain medium
density



Successful FOGs at Great Kneighton, Cambridge

- FOGs provide for car parking at the rear of other houses, as well as parking for themselves.
- Dwellings on the opposite side of the narrow street provide surveillance and security, as they have doors and windows at ground floor to add to the activation of the street.
- Enhanced surveillance and activation of the elevation is provided by the balconies above the garages.
- Garage doors are provided in a material (timber) that is used elsewhere on the scheme and perforation is incorporated in the door design to avoid the space being used for storage.
- Pedestrian routes provide a short walk from your car to front door.

Image 39: Abode, Great Kneighton. FOGs with balconies above, so that the street is well overlooked and activated.

Image 40: Abode, Great Kneighton. Section. Image 41 next page: Abode, Great Kneighton. The FOGs are to one side of the mews.



Windows and doors activate the streetscene, which includes integral garages and FOGs



Marleigh, Cambridge

- Landscape has been used to limit the visual impact of the garage doors and enhance the streetscape.
- Dwellings on the opposite side of the street provide surveillance and security.
- Enhanced surveillance and activation of the elevation is provided by the balconies above the garages.
- Garages set back in between the FOGs provide parking for the rear properties.

Image 42 above: Marleigh, Cambridge. The FOGs are shown on the right hand side of the street.



Papermill Mews, Ingress Park, Greenhithe

- FOGs in a shared surface mews street provide rear access car parking to homes on the main street.
- Dwellings on the opposite side of the narrow street provide surveillance and security.
- Large first floor bay windows, juliet balconies and roof terraces enhance the surveillance of the mews and offset the blank ground floor.
- Garage doors provided with glazed areas.

Image 43 above: Papermill Mews. The FOGs are animated with balconies and roof terraces.



Shackerstone Close, Milton Keynes

- FOGs in a shared surface mews street provide car parking access with accommodation above.
- The FOG can be seen from the street.
- The trees and fencing at the entrance make it clear that this is a semi-private space as well as the mews street surface material.
- Pedestrian routes across the shared surface provide a short walk from your car to your front door.

Image 44 above: Shackerstone Close, Milton Keynes. The FOG is visible from the street and in a shared surface mews.



Hanham Hall, Bristol

- FOGs with deck access above to activate the elevation and provide surveillance.
- Short runs of FOGs are broken up by ground floor front doors and windows.
- The design of the frontage with projecting features prevents the garage doors from dominating.
- Garage doors are provided in a material (timber) used elsewhere on the frontage.

Image 45 above: Hanham Hall, Bristol. The impact of the FOGs is reduced through the frontage design.



The Chocolate Works, York

- Standalone FOG set along a secondary street.
- Large balcony across the frontage minimises the impact of the garage doors, which are in shadow.
- Entrance door is outside of the shadow of the balcony.

Image 46 above: The Chocolate Works, York. The garages are set underneath the balcony.



Mulberry Park, Bath

- FOGs are located on a narrow shared surface mews street at the end of the secondary street.
- Large door and window composition provides activation of the elevation and overlooks the street.
- Garage doors are provided, rather than leaving open voids.
- The building line of the FOGs is consistent.

Image 47 above: Mulberry Park, Bath. The FOGs are shown at the head of the street.

FOGs - What doesn't work

- A FOG floating on its own in a car park separated from other built form should be avoided. It has no association with the street and a car park doesn't create a good route to your front door.
- Very long rows of FOGs create a dead frontage to the street on the ground floor, as walls of garages are presented to the street or public realm. Both sides of the street should be considered.
- Open voids on the ground floor, instead of garage doors, create inactive streets on the ground floor.
- Garage doors dominating the elevation, without a balance of windows or other features, such as a balcony, creates an inactive street.
- FOGs can provide little private outdoor amenity space, unless balconies or roof terraces are provided.



Example A

- Open garages in a continuous row allow the voids to dominate the streetscene.
- The wide street provides no sense of enclosure or surveillance from properties opposite.
- No amenity space to activate the elevation and provide surveillance.
- The door is 'lost' as the only ground level element with no adjacent windows or solid building line created by garage doors.

Image 48: Example A. A poor example of a FOG with open voids on a main street.



Example B

- The FOG is on a main street, rather than a mews street.
- The ground floor facade is blank and the garage is an undercroft, creating an inactive frontage.
- No large areas of fenestration, amenity space or other features are used to balance out the garage void and activate the elevation.

Image 49: Example B. A poor example of a FOG with a blank frontage on a main street.

4.3 I Making a rear car parking court work

Overview

Rear courts should be used with care. They are commonly the car parking treatment with the least efficient use of land, due to the necessary access and circulation space requirements. However, they have their place when incorporating a range of car parking solutions. Rear courts should feel like well landscaped, pleasant, playable public realm, where the parking does not dominate. See 'Strategy 7: Make the car parking efficient - on street parking can be better than rear courts'. The following pages shows good and poor examples of rear car parking courts.

Rear Courts - What works well

- Limit application: Only use as part of a range of treatments.
- Limit size: Courts should serve no more than six homes, as this encourages better security and a stronger sense of ownership.
- Tree planting: Insert a tree at least every 4 parking bays, to break-up the parking areas.
- High quality planting: Planting should have a minimum depth of 1m, to provide sufficient space for adequate planting. If apartments face onto parking, provide them with a planting buffer for privacy and screening that is at least 900mm high. If parking is onto back gardens, make sure there is a wall as well as planting. Planting can also be used as a screen between areas of parking.
- High quality boundary treatments: Use walls not close boarded fences.
- High quality hard surfaces: Use quality hard surfaces, lighting, and street furniture to create an attractive setting and sense of address when cars are absent.
- Do not over-engineer parking bay designation: car parking bays should be demarcated subtly, to avoid cluttering the landscape. Avoid using large painted lettering and use discrete approaches such as number discs set into the hard surfacing, and hard surfacing treatments to avoid the need for white lines.
- Maximise surveillance: Provide large windows and doors within habitable rooms, and balconies / roof terraces overlooking any car parking courts, to maximise surveillance.
- Provide secure access: Limit the number of access routes into rear car parking courts, provide gates and associated digital access to enhance safety and security. Create an easy access route to an entrance door.



St Ives

- Small scale rear court.
- Landscaping is used to mitigate the impact of the car parking, provide a porous surface for water drainage and create a multi-functional space. Bays are demarcated with planting.
- Windows overlook the car parking court to maximise surveillance.
- High quality surface materials used (not blacktop) and brick boundary walls.

Image 50: St Ives. A good example of a rear court with landscape and high quality materials.



Great Kneighton, Cambridge

- Small rear court with generous landscape between bays. There is a small landscaped garden behind the bays containing seating, making this a multi-functional space.
- Minimised hard surfaces and manoeuvring areas for cars.
- Apartment habitable room windows and balconies face onto the court for surveillance.

Image 51: Abode, Great Kneighton, Cambridge. A small court which has apartments overlooking it and tree planting.



Ashby de la Zouch, Leicestershire

- A small front yard containing a couple of detached houses with integrated car parking, as an alternative to a rear car parking court.
- The front boundary greenery assists in making this space work by softening the edges of the court area.
- There is privacy and a domestic scale that you wouldn't achieve in a typical rear court, as homes are fronting into the close.

Image 52: Ashby de la Zouch. A small front yard. Image 53 next page: Morris Dance Place, Thaxted. A high quality landscape.



A well laid out car parking square considers surface materials and landscaping

Rear Courts - What doesn't work

- Rear courts that are too large in size with too many car parking bays.
- Too much hard landscaping and not enough planting, which would mitigate the impact of the car parking and provide for surface water drainage.
- Lack of surveillance from surrounding homes.
- Loss of security and privacy in rear of home.
- Difficulty in accessing homes from the parking - if car parking is at the back, make sure its easy to access your home from it.
- No low boundary separation included between the car parking and homes.
- No separate access route to the entrance to the homes.
- Unwelcoming materials such as black tarmac or overly demarcated bays.



Example A

- Difficulty in accessing homes from the car parking, with no separate access route to the entrance to the homes.
- No low boundary separation included between the car parking and homes, so the ground floor windows look directly onto parking and lose privacy.
- Unwelcoming materials such as black tarmac and overly demarcated bays.

Image 54: Example A. No separation between the cars and homes, unwelcoming materials and lack of greenery.



Example B

- Too large in size with too many parking bays.
- Too much hard landscaping and not enough planting, which would mitigate the impact of the car parking and provide for surface water drainage.
- No fenestration, amenity space or other features to balance out the garage doors and activate the elevation.

Image 55: Example B. Too many car parking bays, too much hard landscaping and little surveillance.

4.4 | Making a car parking square or front court work

Overview

Parking squares provide a useful solution for the centre of larger development blocks by sensitively incorporating parking into a designed landscape. Housing squares and front courts can contain unallocated car parking to provide a flexible solution which can respond to changing parking demand. They should include cycle parking for visitors.

Parking Square - What works well

- Parking squares which incorporate unallocated car parking are flexible to adapt in the future.
- The design of a parking square should focus in the first instance on a landscape concept that provides an attractive and characterful space that includes outdoor spaces for residents to meet and socialise.
- Aim to include trees and planting with sufficient height from installation, to structure the square and help conceal parked cars.
- The layout of hard surfaces should seek to avoid strongly defining a conventional carriageway geometry and vehicle tracking and instead support the landscape design concept.



Image 56 Great Kneighton, Cambridge. A small front court with mature trees.



Image 57: Barton Park, Oxfordshire. A triangular green with car parking around it.

4.5 | Making undercroft car parking work

Overview

Undercroft parking is located below the building within its footprint, providing a space-efficient parking solution. It needs care and attention to create active or attractive ground floor façades to the street.

Undercroft Car Parking - What works well:

- Undercroft parking is particularly appropriate for sites with sloping topography or in areas of high density, where a parking level can be used to create a level development platform, and remove parking from the public realm.
- Any elevation fronting onto a primary or secondary street should be activated through the locating of communal facilities, ground floor dwellings, and/or complimentary uses such as small commercial or retail units at the ground floor.
- Where active uses are not feasible at ground floor, extra care should be taken to create an attractive facade, through the use of architectural detailing, selection of materials, and high quality planting.
- The entrance to the undercroft parking area should be designed to create an attractive gateway.



Image 58: Redwood Park, London. Undercroft car parking is screened with trees, planting and building projections.



Image 59: Great Kneighton, Cambridge. Quality planting and feature brickwork screening the undercroft car parking.

4.6 | Making podium car parking work

Overview

Podium parking is generally located below a raised platform that provides outdoor space for dwellings within the block, and efficiently conceals the parking below. Raised gardens over parking areas screen cars from view and include planting for bio-diverse habitats, places for sitting, play and other activities.

Podium Car Parking - What works well

- Locate the podium within the centre of the site or block and maximise activity on streets around the perimeter to ensure natural surveillance and active streetscapes. Activity can be provided through the locating of communal facilities, ground floor dwellings, and / or complimentary uses such as small commercial or retail units at the ground floor.
- Podiums should provide high quality outdoor space that includes trees and planting, with sufficient soil depth to support a thriving landscape, within private or shared outdoor spaces, or a combination of the two.
- Use high quality bespoke screens or gates to create distinctive feature, and provide good natural lighting and ventilation into the parking area.
- The entrance to the undercroft parking area should be designed to create an attractive gateway.



Image 60: Brent, London. Entrance to car park below podium garden.



Image 61: Copenhagen. Car park entrance below half-level courtyard garden.

4.7 | Future proofing car parking treatments

Overview

Good design allows our buildings to be flexible and accommodate change. We also need the spaces in and around buildings to be equally flexible. Around 30m² of land is required for one car parking bay and its manoeuvring space. Future policy will likely seek to reduce the demand for parking, as land needs to be used sustainably and economically. Each parking treatment has its own set of issues and challenges with regards to re-purposing, including the legal ownership structures that will allow for change.

Re-Development of Car-Parks

In the last decade there has been increased interest and development activity in the redevelopment of car parks due to:

- Long-term declines in urban car use.
- Surplus or obsolete parking in town centres.
- An uplift in value that can be realised through development.
- The inclusion of car park sites as part of comprehensive redevelopments.
- Changing retail trends that are stimulating redevelopment of retail parks and supermarket car parks.

Re-Purposing Car Parking

■ Periphery Parking, Courts and Squares

Front housing squares and grouped parking can be re-developed in the future as a plot. Rear parking courts are harder to convert, unless you give the land over to adjacent plots.

■ On Street Parking

While it is straight forward to re-purpose on street car parking to cycle parking, EV charging stations, car clubs and green infrastructure (such as trees and flood management systems), you

can't use this space for new homes. In addition, streets cannot improve their sense of enclosure, as frontage to frontage distances are already set.

■ On Plot Parking

On plot integrated or garage parking can become extra garden space or living space. A second tandem bay can become part of a garden.

■ Parking Below a Podium Deck

A podium deck could be removed and additional residential or mixed use units could possibly be inserted.

■ Basement Parking Structure

Due to light and ventilation requirements a basement car park will be more difficult to convert. Shopping trends indicate that re-purposing basements for retail is unlikely to be a viable proposition.

■ Car Barn or Multi-Storey Parking

New homes can be designed on top of multi-storeys but converting the car park decks may be more difficult. Car park decks typically have a lower floor to ceiling height than required for other uses and their associated service zones.

5 Case Studies



5.1 | Introducing the case studies

Selection Criteria

The case studies were chosen against the following criteria:

- Medium to large scale residential projects across England.
- Show a range of well achieved car parking solutions.
- Collectively include a wide variety of car parking solutions.
- Demonstrate lessons that can be transferred to other developments.
- Include generous landscaping to mitigate the impact of car parking.
- Consider cycle storage and cycle parking.
- Meet Building for a Healthy Life criteria.

List and location of case studies

The guide illustrates parking treatments for 19 housing schemes in England:

Central	
1. Climate Innovation District, Leeds	70
2. Greenland Place and Marine Wharf, London	74 78
3. South Gardens, London	
4. Brooks Dye Works, Bristol	81
5. Little Kelham, Sheffield	85
Urban	
6. Goldsmith Street, Norwich	88
7. Kidbrooke Village, London	91
8. Stanmore Place, London	95
9. Edgware Green, London	99
10. Liberty Quarter, London	103
11. Dockwray Square, North Shields	106
12. Ingress Park, Kent	109
13. Tarporley, Cheshire	113
Suburban	
14. Horsted Park, Kent	117
15. Abode and Aura, Cambridge	120
16. Roussillon Park, Chichester	126
17. Cottam Meadow, Preston	130
18. Barton Park, Oxfordshire	133
19. Marleigh Park, Cambridgeshire	137

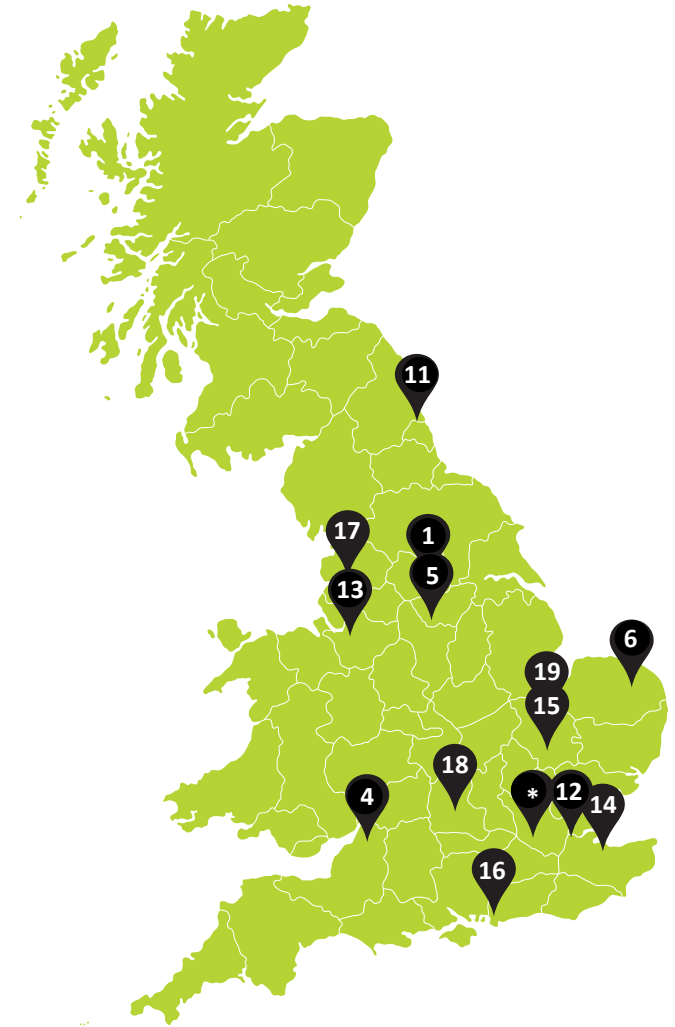


Figure 26: Case study locations.

* Case studies 2, 3, 7, 8, 9 and 10 are located in London

5.2 | How to pick a case study

Case studies are identified in the matrix (Figure 27) by treatment and scheme name. To find a scheme relevant to your criteria, look at the vertical axis to choose a car parking treatment, then follow down the vertical column to find the case study in the far left column.

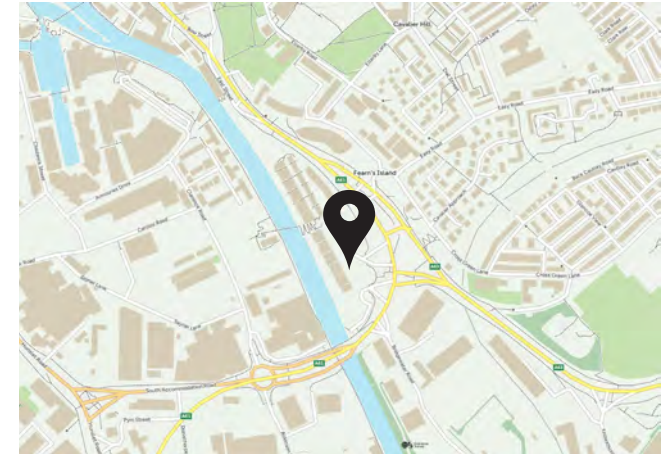
	Off plot (structure)					Off plot (court)			On street				On plot					FOGs	
	Multi-storey (multi use)	Car barn *	Underground	Undercroft	Podium	Front court	Rear court	Parking square	Central reservation	Right angled	In line	Integral garage	Attached garage	Car port	Handstanding	Detached garage	Mews court	Chaffeur unit	Flat over garage
Central																			
Climate Innovation District					●														
Greenland Place & Marine Wharf				●		●	●		●	●									
South Gardens			●							●									
Brooks Dye Works					●				●	●									
Little Kelham					●						●								
Urban																			
Goldsmith Street										●									
Kidbrooke Village					●	●									●				
Stanmore Place	●					●			●	●					●				
Edgware Green					●			●	●	●			●	●					
Liberty Quarter					●					●									
Dockwray Square																	●		
Ingress Park				●			●			●							●	●	
Tarporley							●				●			●				●	
Suburban																			
Horsted Park									●	●	●								
Abode & Aura, Great Kneighton						●	●		●	●	●								●
Roussillon Park							●	●		●		●		●					●
Cottam Meadow							●		●	●				●	●				
Barton Park					●		●		●	●	●		●	●					
Marleigh						●							●	●					●

Figure 27: Case study matrix.
 * For examples of car barns see Parking Strategy 10.

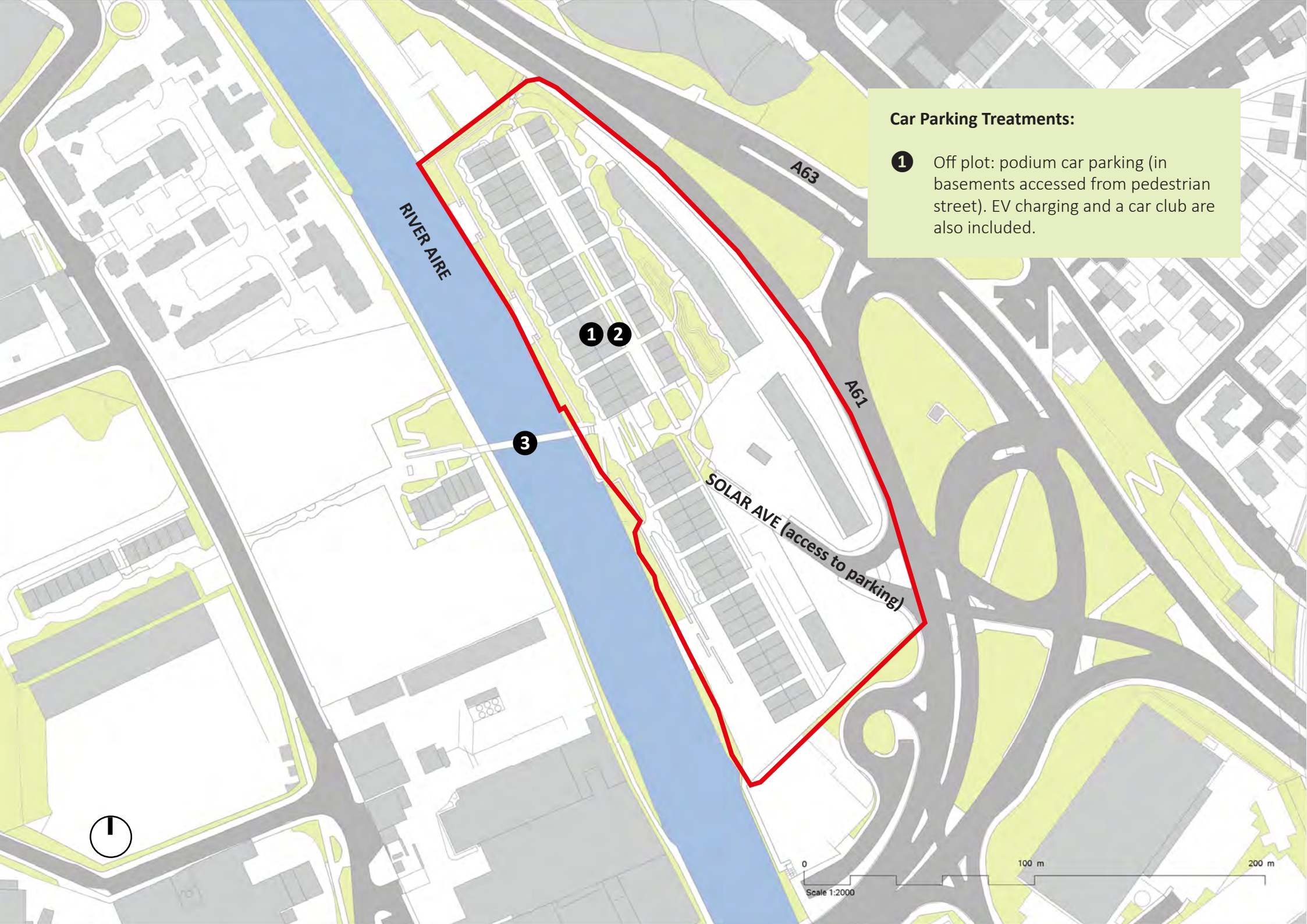
5.3 | Central

1. Climate Innovation District, Leeds

Enabling non-vehicular movement was a priority within the Climate Innovation District. The masterplan's distinctive urban design allows for a pedestrian and cycle-friendly street environment, so all needs are in reach by cycle or foot. EV charging and a car club are included.



Location	LS10 1ND
Developer	Citu
Architect	White Arkitekter
Planning Authority	Leeds City Council
Project Size	2.40 hectares
Building Form	3 storey terraced houses on a podium over parking
Dwelling Types	315 homes: 194 apartments, 121 houses
Cycle Parking Ratio	63 % (200 spaces for 315 homes)
Car Parking Ratio	0.56 (178 spaces for 315 homes)
Density	132 homes per hectare
Tenure Mix	Private leasehold sales



Car Parking Treatments:

- 1** Off plot: podium car parking (in basements accessed from pedestrian street). EV charging and a car club are also included.

RIVER AIRE

A63

A61

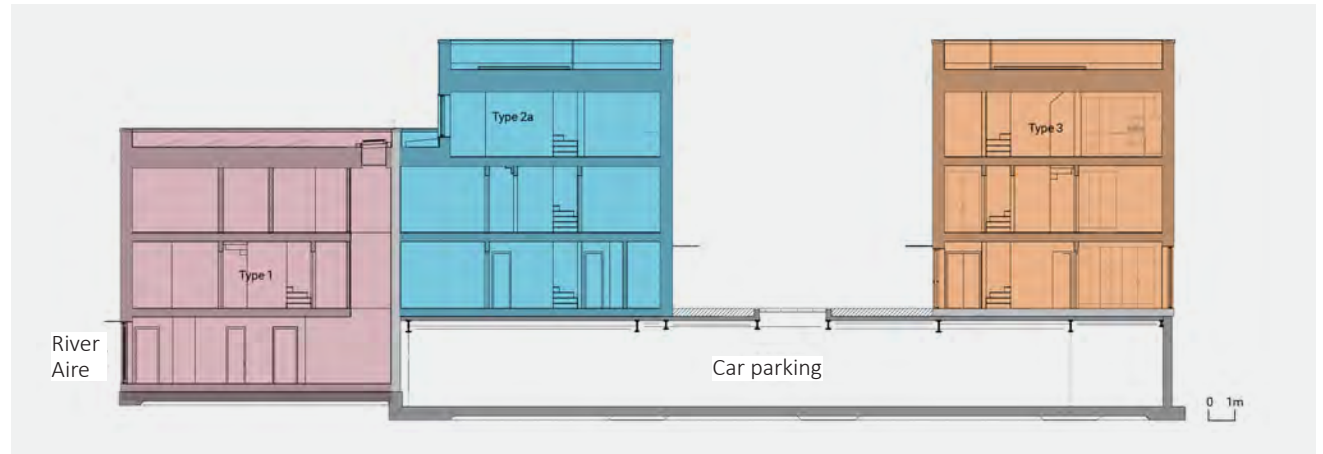
SOLAR AVE (access to parking)

1 2

3



1. Climate Innovation District, Leeds - Critical Commentary



1 Off plot: podium

- The internal street is vehicle free and has a narrow dimension across with no set backs to encourage activity: walking, cycling, social interactions and play.
- There is a maximum of one car parking space per household.
- Secure cycle parking is provided for all residents located close to the community's natural travel routes, to enable resident's to choose cycling as the easiest option.
- Cars are removed from the landscape and hidden away in secure car parking areas underneath the houses. This works on the principle of 'out of sight, out of mind', to limit the number of small, but very regular, trips taken in cars in favour of active travel or to use cars just at the weekend to drive out of the city. This means shared green space is prioritised, where people can sit, walk, play and cycle without any interruptions from traffic.
- Car parking in the podium is facilitated by a natural level change across the site. The back to back housing is created with outer housing covering the podium parking and the inner housing sitting on top of the podium car park.
- Buildings have roof lights to top light them, as they are back to back, and roof terraces for private amenity space.

Image 63 earlier page: Climate Innovation District. Extensive public realm. Image 64 previous page: Climate Innovation District. Site Plan. Image 65: Climate Innovation District. Internal street.

Image 66: Climate Innovation District. Section © White Arkitekter showing the car parking under the homes.



2 EV charging & car club

- Every car parking space has access to car-charging infrastructure, facilitating a move towards EV's.
- Shared electric vehicles via a car club scheme allow residents to give up car ownership, safe in the knowledge that they'll have access to an electric vehicle on the few occasions where they do require a car.

Image 67: Climate Innovation District. Homes without frontage parking.



3 Walkable neighbourhoods

- Key amenities, the city centre and transport links are all within walking distance.
- A bridge was built as part of the development. This provides those who live in Cross Green and the wider area with a more direct route to the local secondary school in the South Bank, or into the city centre, as previously they would have had

Image 68: Climate Innovation District. Bridge link.

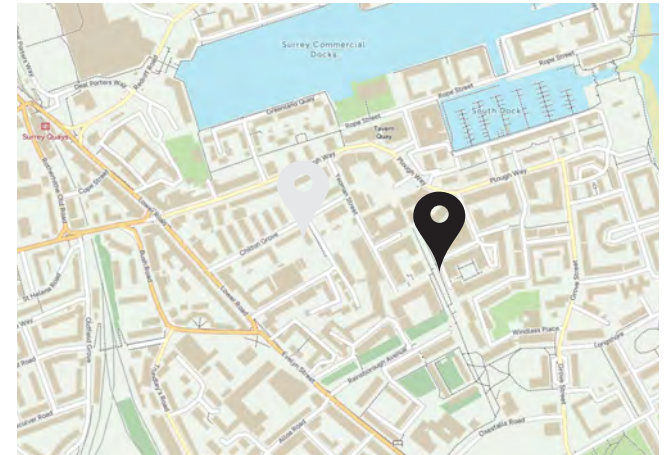


to cross twelve major roads. The bridge has already become a key route for connecting the Eastern side of the city centre via a more enjoyable route along the river.

Image 69: Climate Innovation District. Bridge link.

2. Greenland Place and Marine Wharf, London

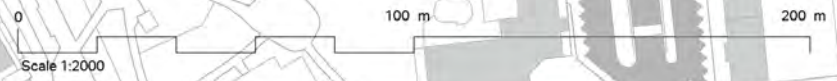
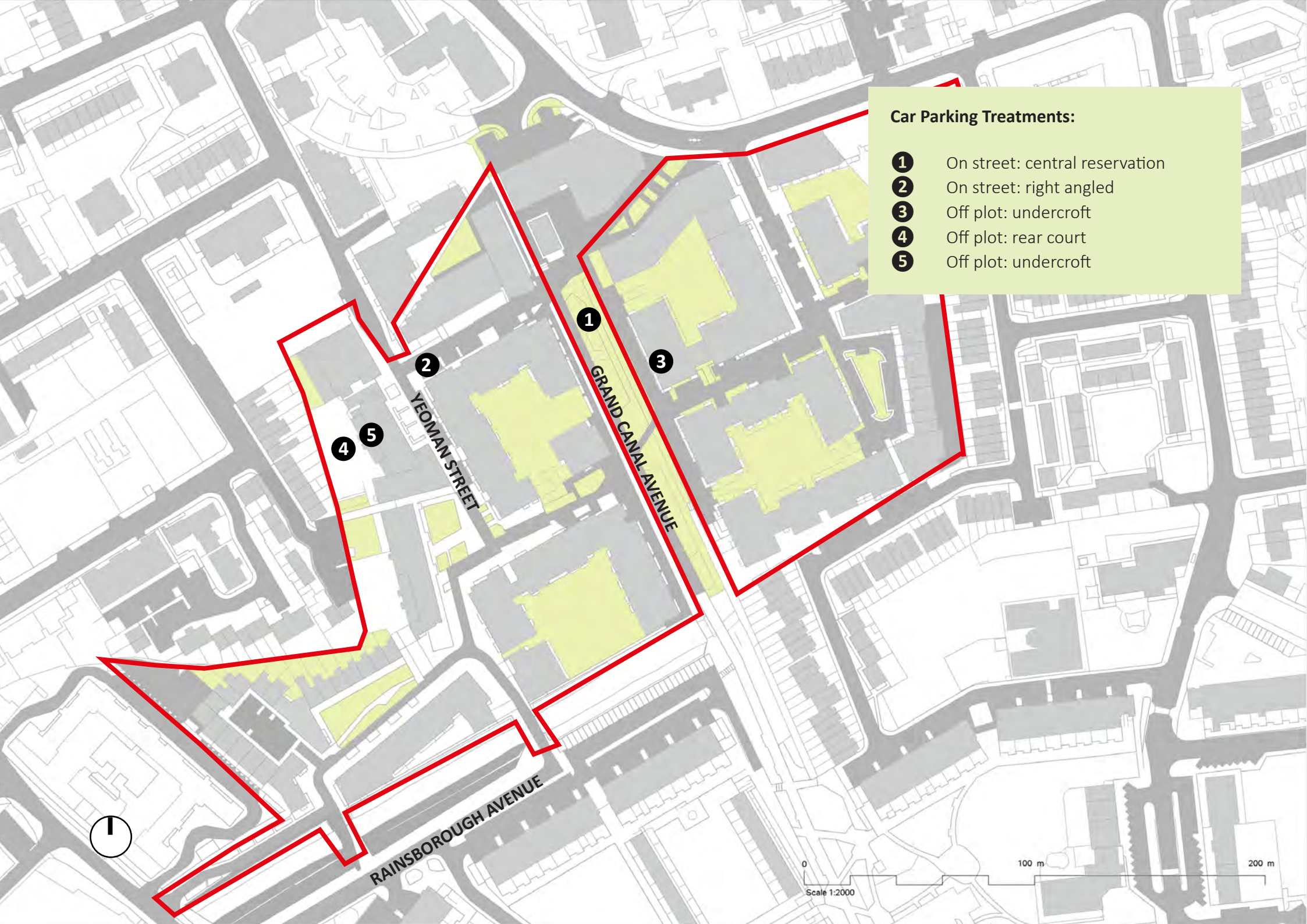
With a mix of car parking solutions and a range of housing types, Greenland Place and Marine Wharf conveys a sense of generosity in its design. High quality street surfacing, generously sized and well landscaped open spaces and unexpected public art offer inspiration.



Location	SE16 7UD
Developer	Barratt London / Berkeley Homes
Architect	RMA Architects / Grid Architects
Planning Authority	Lewisham
Project Size	1182 units
Building Form	2 towers, 4-8 storey podium blocks, houses, retail
Dwelling Types	Apartments: 37% 1 bedroom, 47% 2 bedroom, 14% 3 bedroom & 2% 4 bedroom
Cycle Parking	Internal store & external store
Car Parking Ratio	0.56 (178 for 194 apartments, 121)
Density	187 homes per hectare
Tenure Mix	19.4% affordable

Car Parking Treatments:

- ① On street: central reservation
- ② On street: right angled
- ③ Off plot: undercroft
- ④ Off plot: rear court
- ⑤ Off plot: undercroft



2. Greenland Place & Marine Wharf - Critical Commentary



1 On street: central reservation

- Landscape carries on street car parking along the edge of a linear park, created on the line of the former Grand Surrey Canal.

Image 70 earlier page: Greenland Place and Marine Wharf. Image 71 previous page: Greenland Place and Marine Wharf. Site Plan. Image 72: Greenland Place and Marine Wharf. Central reservation.



2 Off plot: front court

- Landscape is critical in the successful integration of on street car parking. Splashes of red from seasonal flowers add colour and interest.
- High quality street surfacing and generously sized, well landscaped open spaces mitigates the visual impact of the car parking.

Images 73: Greenland Place and Marine Wharf. Off plot front court, which is well landscaped with good quality street surface.



3 Off plot: undercroft

- Gates to the car parking within Greenland Place have an industrial scale echoing the site's former industrial past. The scale, materiality and detail of the gates creates a unique piece of public art.
- Mesh and open brickwork allow fresh air and natural light to enter the car park.

Image 74: Greenland Place and Marine Wharf. Undercroft car parking gates.



4 Off plot: rear court

- Note the lack of surveillance opportunity to the undercroft car parking spaces, which may encourage anti-social use.
- Generally, areas for improvement include the need to ensure strong levels of surveillance for all car and cycle parking, as some areas lack a strong surveillance opportunity.

Image 75: Greenland Place and Marine Wharf. Off plot rear court with a lack of surveillance.



5 Off plot: undercroft (in rear court)

- Design and specification are rudimentary in the rear car parking court attached to a social housing block. Monotonous asphalt and the lack of planting signal differences to car parking areas for the other tenures. No attempt is made at providing upper level windows and balconies with a better view.

Image 76: Greenland Place and Marine Wharf. Off plot undercroft with a lack of planting and poor surface materials.



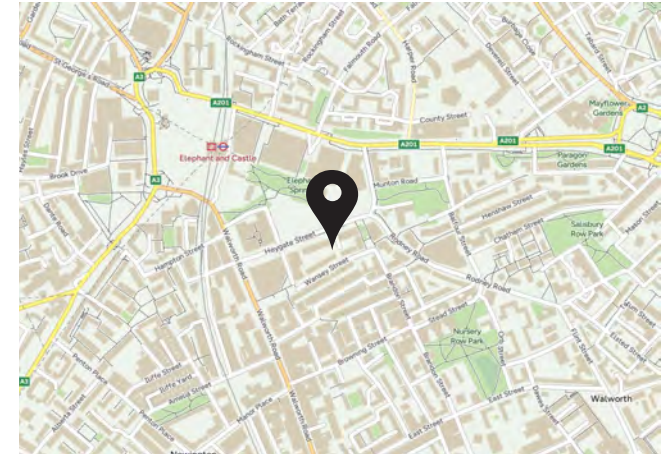
External cycle store

- An open fronted cycle store offers only partial protection, and may not be theft insurance compliant.
- Internal cycle parking (not shown) is located in a poorly lit, isolated location with little surveillance opportunity.
- Physical strength is required to lift bikes into the top racks - this may be a barrier for some cyclists.

Image 77: Greenland Place and Marine Wharf. Cycle parking which could be better located and designed to encourage cycling.

3. South Gardens, Southwark, London

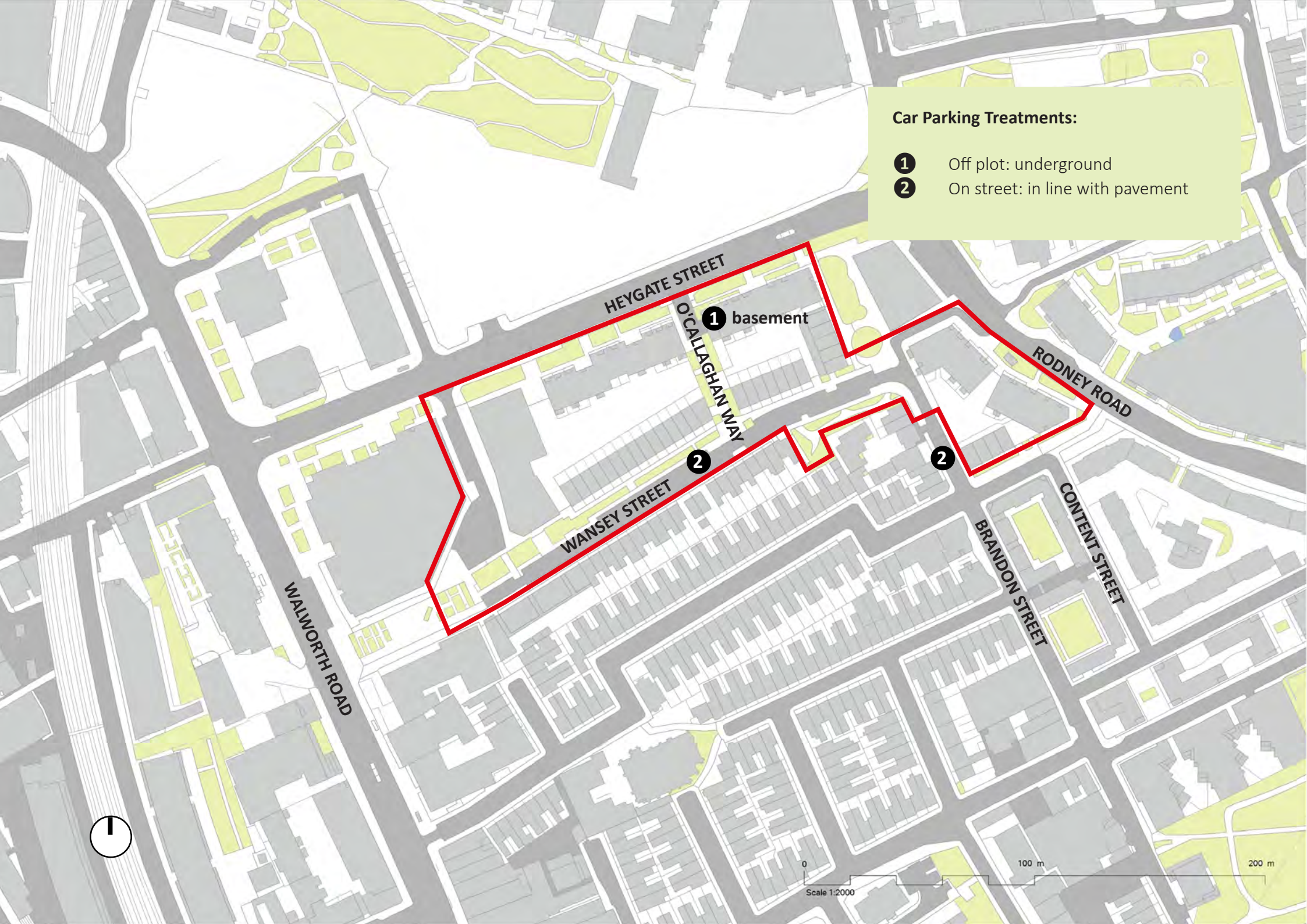
Car parking demand is reduced due to the proximity of transport routes. An underground car park is supported by parking on upgraded streets in a Controlled Parking Zone (CPZ). Cycle storage is well provided for, in internal and external stores along with visitor cycle parking in the public realm.



Location	SE17 1JP
Developer	Lendlease
Architect	Maccreeor Lavington
Planning Authority	London Borough of Southwark
Project Size	0.34 hectares (Townhouses) 2.00 hectares (Apartments)
Building Form	8 storey apartment block
Dwelling Types	Townhouses: 13 x 2 bed houses, 2 x 4 bed houses Apartments: 146 x 1 bed, 154 x 2 bed, 60 x 3 bed
Cycle Parking Ratio	100 %
Car Parking Ratio	100% (Townhouses) 38% (Apartments)
Density	43 homes per hectare (Townhouses) 180 homes per hectare (Apartments)
Tenure Mix	Market sale 100% (Townhouses) 25% Affordable rent, 75% Market sale

Car Parking Treatments:

- 1** Off plot: underground
- 2** On street: in line with pavement

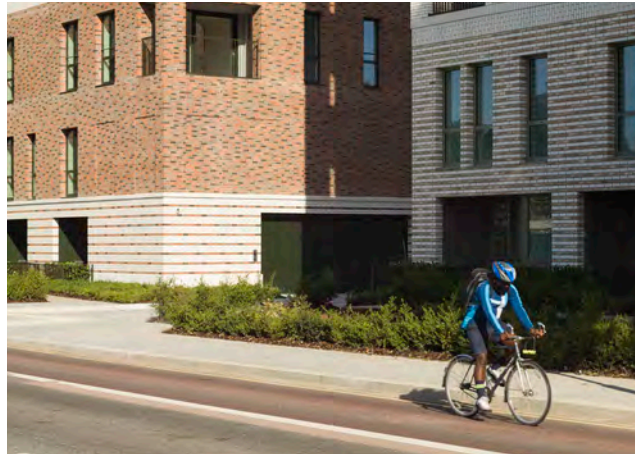


3. South Gardens, Southwark, London - Critical Commentary



1 Off plot: underground

- A shared space approach has been considered in areas of predominant pedestrian priority, where vehicles can either be limited or controlled in the hours of access. The entrance to the basement parking is at the top of O'Callaghan Way, after which the street becomes pedestrianised.



- Within the development, car parking is provided discretely off street in the basement car park, so that car parking does not dominate the scheme.
- A simple and unobstructed pavement network is promoted and any unavoidable overlap between pedestrians and vehicles is minimised.

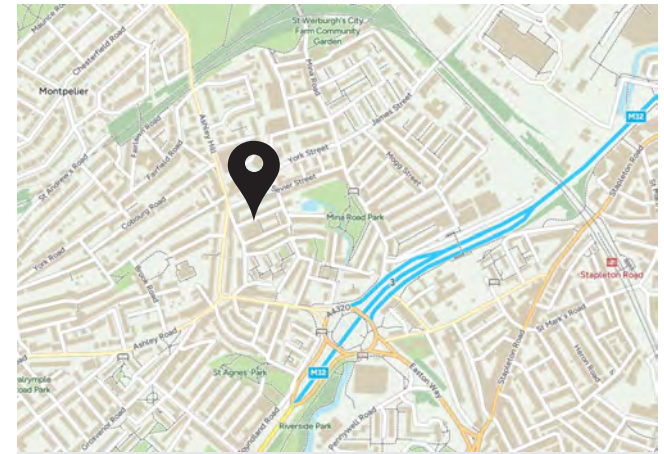


2 On street: in line with pavement

- Additional spaces are provided in the CPZ on Wansey Street, Brandon Street and Content Street.
- Existing tree planting and landscaping adjacent to the car parking bays mitigates the impact of the car parking and complements the quiet residential character of Wansey Street.

4. Brooks Dye Works, Bristol

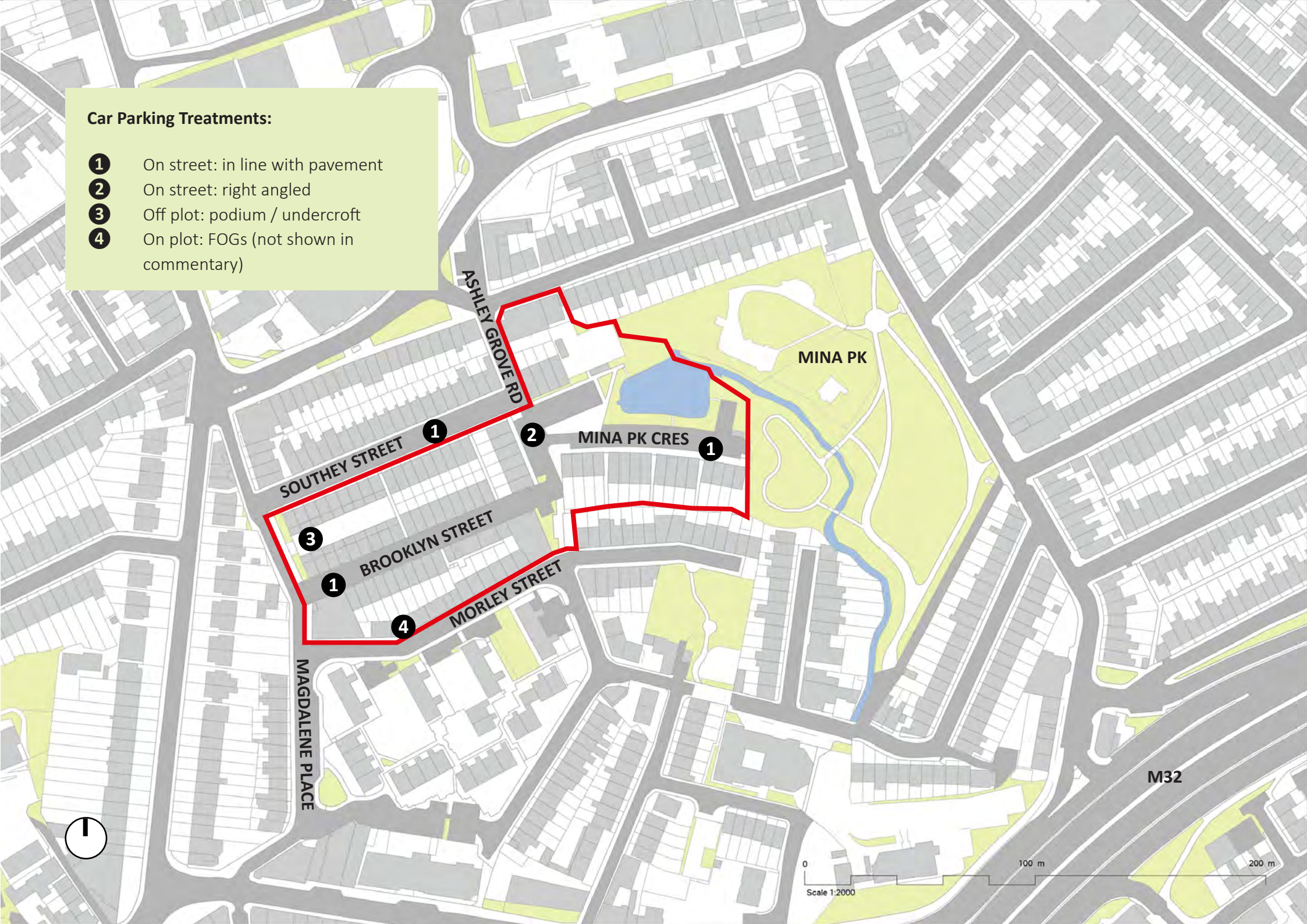
This residential development, which also includes commercial floorspace, creates a new square focused around the retained historic chimney and creates new pedestrian and street connections. It provides a significant percentage of unallocated visitor spaces on street and in the square.



Location	BS2 9RE
Developer	Acorn Property Group / Folland Ltd / Galliards
Architect	Ferguson Mann Architects
Planning Authority	Bristol City Council
Project Size	80 houses & 24 apartments
Building Form	2 & 3 storey houses 3 storey apartment blocks
Dwelling Types	1, 2, 3 & 4 bed homes
Cycle Parking	Communal cycle storage and private cycle stores
Car Parking Ratio	1 per dwelling plus 12 no. visitor
Density	64-94 homes per hectare
Tenure mix	Private sale and 23% affordable

Car Parking Treatments:

- 1 On street: in line with pavement
- 2 On street: right angled
- 3 Off plot: podium / undercroft
- 4 On plot: FOGs (not shown in commentary)



4. Brooks Dye Works, Bristol - Critical Commentary



1 On street: in line with pavement

- The scheme provides around half the car parking spaces on the streets. Every home has access to allocated parking, which is difficult to find in this area of the city.
- The development has parallel on street car parking, that mirrors the same treatment on the surrounding C.19th streets.
- The streets have a good sense of enclosure, with a narrow frontage to frontage distance of 13m across.

Image 83 earlier page: Brooks Dye Works. Image 84: previous page Site Plan. Images 85: Brooks Dye Works. The amount of car parking spaces avoids adding a burden to the surrounding local streets.



1 On street: in line with pavement

- The shared surface makes the streets people friendly, to encourage activity in the street: walking, cycling, social interactions and play.
- Landscaping is used to mitigate the impact of the car parking and the planted areas in the street are used to slow traffic speeds.
- Staggering parking from one side to another slows traffic speeds.

Image 86: Brooks Dye Works. Car parking in line with pavement.



Walkable neighbourhoods

- Pedestrian routes were designed to link the site to the surrounding areas of St Paul's and St Agnes, while integrating the previously ignored neighbouring Mina Park. This results in the development neatly integrating with the existing St Werburghs community.
- The former Victorian factory's tall chimney has been preserved, which acts as a way-finding marker.

Image 87 above: Brooks Dye Works. Pedestrian friendly streets.



1 On street: in line with pavement

- A stepped change in level between the square and the front doors sets the car parking at a lower level and obscures the view of the car parking from the homes.
- The existing trees in Mina Park mitigates the visual impact of the car parking square.

Image 88: Brooks Dye Works. Stepped level change helps obscure the car parking from the homes.



2 On street: right angled

- Right angled car parking is located in the square with high quality surface materials used throughout the square to mitigate the impact of the car parking bays on the public realm.
- Accessible bays are provided as right angled car parking.
- Additional street trees or larger trees could have been used to further mitigate the visual impact of the car parking.

Image 89: Brooks Dye Works. Right angled car parking in the square.



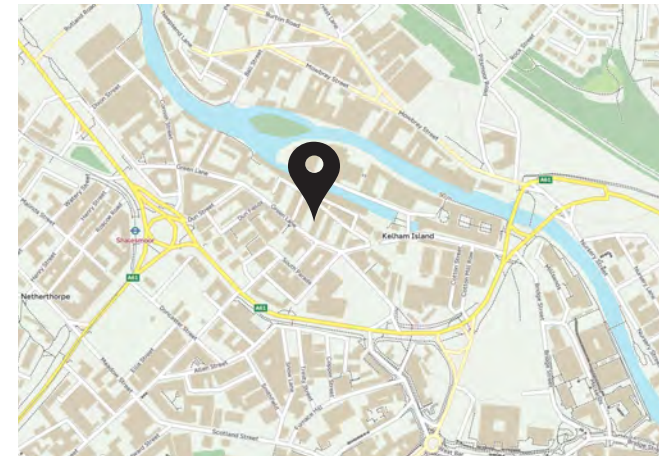
3 Off plot: podium / undercroft

- Some undercroft car parking enabling streets to become more civilised and not dominated by the car which is the case in so many surrounding streets in St Werburghs. Terrace gardens are located over the podium.
- Accessible bays are included.
- The frontage could have been more active with further gable windows or balconies.

Image 90: Brooks Dye Works. Landscaping is used to mitigate the impact of the car parking entrance and other service doors.

5. Little Kelham, Sheffield

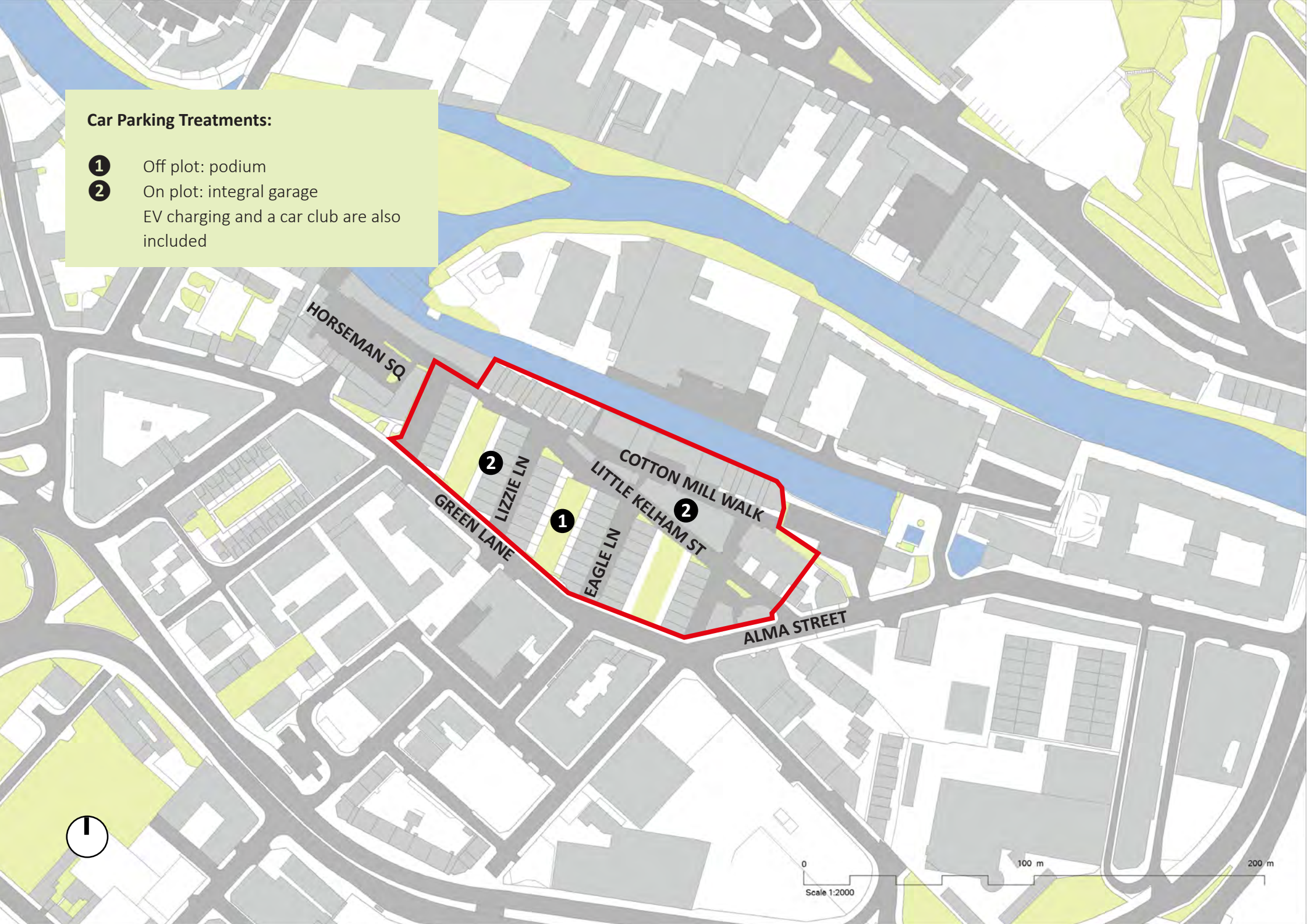
In this vibrant neighbourhood cars are removed from the public realm and hidden away in secure car parking areas underneath the houses and rear gardens. This works on the principle of ‘out of sight, out of mind’, to limit the number of small, trips taken in cars in favour of active travel.



Location	S3 8RY
Developer	Citu
Architect	CAL Architects
Planning Authority	Sheffield City Council
Project Size	105 new homes plus a variety of creative spaces, shops, cafés and galleries
Building Form	3 storey houses and 4 storey apartments
Dwelling Types	Variety of 1,2,3 and 4 bedroom homes
Cycle Parking	Secure cycle parking for all residents
Car Parking Ratio	0.58 (138 for 153 homes)
Density	102 homes per hectare
Tenure mix	100% private rent

Car Parking Treatments:

- ① Off plot: podium
 - ② On plot: integral garage
- EV charging and a car club are also included



HORSEMAN SQ

GREEN LANE

LIZZIE LN

EAGLE LN

LITTLE KELHAM ST

COTTON MILL WALK

ALMA STREET

0 100 m 200 m
Scale 1:2000



5. Little Kelham, Sheffield - Critical Commentary



Walkable neighbourhoods

- Pedestrian and cycle path access is currently available along the riverside to the east of the development.
- Secure cycle parking is provided for all residents, located close to the community's natural travel routes, to enable residents to choose cycling as the easiest option.
- There is a maximum of one car parking space per household.

Image 91 earlier page: Little Kelham. Image 92 previous page: Little Kelham. Site Plan. Images 93: Little Kelham shared surface.



1 Off plot: podium

- All houses and apartments have provision for either individual garages or park their car remotely under podium gardens.
- Shared electric vehicles via a car club scheme allows residents to give up car ownership, knowing that they'll have access to an electric vehicle on the few occasions where they do require a car.
- The podium entrances do not create attractive frontages, however activity is provided on the other side of the street.

Image 94: Little Kelham, secure car parking under podium gardens.



2 On plot: integral garage

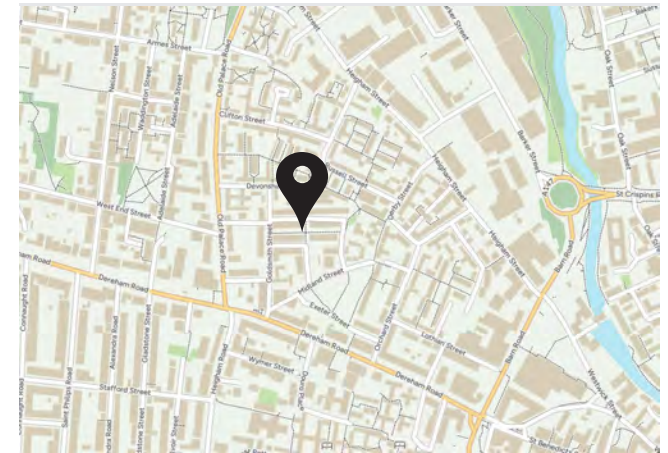
- The integral garages remove car parking from the streets to allow them to have a sense of enclosure. Streets are narrow at 8- 9m wide.
- The impact of garage doors is mitigated by large windows that animate the elevations on upper levels and windows next to entrance doors.

Image 95: Little Kelham. Integral garages in the apartment block.

5.4 | Urban

6. Goldsmith Street, Norwich

Grid approach of terraced houses with car parking to both sides of the street. The development benefited from the collaboration with the Local Authority with regards to the street adoption process, for example there are aggregates in the tarmac.



Location	NR2 4QF
Developer	Norwich City Council
Architect	Mikhail Riches & Cathy Hawley
Planning Authority	Norwich City Council
Project Size	1.28 hectares
Building Form	3 storeys
Dwelling Types	105 dwellings: Apartments: 56 x 1 bedroom, 3 x 2 bedroom, 1 x 3 bedroom. Houses: 40 x 2 bedroom, 5 x 4 bedroom
Cycle Parking	All homes have dedicated secure cycle storage
Car Parking Ratio	70-80% (75 spaces for 105 homes)
Density	83 homes per hectare
Tenure Mix	100% Social rent

Car Parking Treatments:

- 1** On street: in line with pavement in a Controlled Parking Zone (CPZ) with a 20mph speed limit
1 no. car club space



HASLIPS CLOSE

GOLDSMITH STREET

GREYHOUND OPENING

HASLIPS CLOSE

MIDLAND STREET

0 100 m 200 m
Scale 1:2000

6. Goldsmith Street, Norwich - Critical Commentary



1 On street: in line with pavement

- A car parking survey of existing roads was carried out by Norwich City Council to ascertain the current demand and capacity of car parking in the locality. The survey showed that at all times the car parking in the area was between 40% and 55% occupied. The development therefore provides 70-80% of on street car parking to the proposed 105 dwellings.

Image 96 earlier page: Goldsmith Street. Image 97: Goldsmith Street. Site Plan. Image: Goldsmith Street on street car parking.



Image 99: Goldsmith Street. Street trees.

- There is a good sense of enclosure to the street, with less than 15m between the building façades and a 5.5m carriageway, including parallel car parking on either side with pavements and street trees. The car parking was provided as unallocated on street, as allocation would have over provided the car parking.
- On street car parking is land efficient in terms of parking access and manoeuvring.

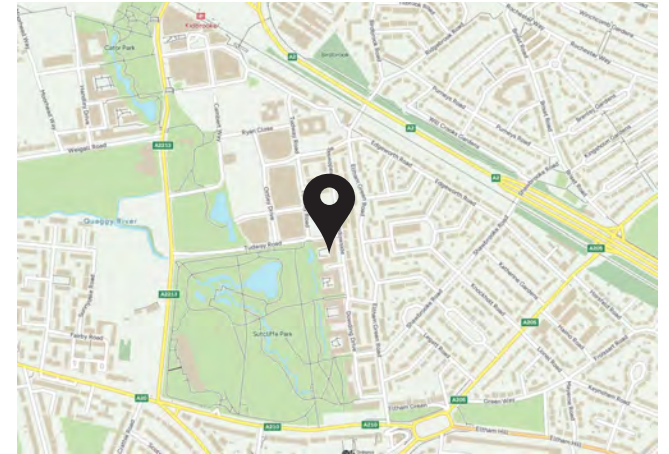


Image 100: Goldsmith Street. Public realm.

- A homezone street was created with paved parking areas to adoptable standards.
- The development includes a Controlled Parking Zone (CPZ) with a 20mph speed limit zone to allow only residents (or other valid permit holders), car parking spaces.
- Street trees break up the line of car parking and the cars are in view of the home.
- Land saved is given over to the public realm, as the car parking is on street.

7. Kidbrooke Village, Greenwich, London

Phase 1 of Kidbrooke's 109 hectare masterplan illustrates strategies to transition from disconnected estate to sustainable suburb, with distinct car parking arrangements for homes and apartments with a good balance of on street and on plot.



Location	SE9 6BB
Developer	Berkeley Group
Architect	Lifschutz Davidson Sandilands Architects
Planning Authority	London Borough of Greenwich
Project Size	109 hectare
Building Form	3 & 4 storey mansion blocks, terraced townhouses
Dwelling Types	449 units 34% 1 bedroom, 49% 2 bedroom, 15% 3 bedroom & 2% 4 bedroom
Cycle Parking	All homes have dedicated secure cycle storage
Car Parking Ratio	67% (100% ratio for homes and 60% for apartments)
Density	108 homes per hectare
Tenure Mix	50% affordable

Car Parking Treatments:

- 1** Off plot: front court
- 2** Off plot: podium
- 3** On plot: hardstanding



Scale 1:2000

100 m

200 m

7. Kidbrooke Village, Greenwich, London - Critical Commentary



1 Off plot: front court and car club bays

- Car parking bays were sold separately. One bay was allocated to each of the larger houses with the second bay available for purchase.
- Bays and buildings have a pedestrian route adjacent to a good amount of planting.
- But headlamps are likely to shine into ground floor rooms.
- Front courts are ideal for the location of car clubs that are clearly sign posted.

Image 101 earlier page: Kidbrooke Village. Image 102 previous page: Kidbrooke Village. Site Plan. Image 103: Kidbrooke Village off plot front court.



2 Off plot: podium (later phase)

- Well organised podium car parking to the ground level of each apartment block, accessed from side roads.
- Active frontage provided by windows and balconies surrounding the car park entrance gates.
- Landscaping provides an attractive car park entrance.

Image 104: Kidbrooke Village. Podium car parking.



3 On plot: hardstanding

- The driveway parking arrangement includes side bin and secure, accessible bike stores for mid-terrace houses, that lack end-of-terrace access to a ginnel for rear garden storage.

Image 105: Kidbrooke Village. Hardstanding with bin and bike store.



3 On plot: hardstanding

- Landscaping mitigates the impact of the car parking bays as you look down the street.

Image 106: Kidbrooke Village. The impact of car parking is mitigated by trees.



3 On plot: hardstanding

- Paired driveway car parking bays alternate with cars parallel parked on the carriageway, aligned to gaps between dropped kerbs.

Image 107: Kidbrooke Village. Car parking bays alternating.

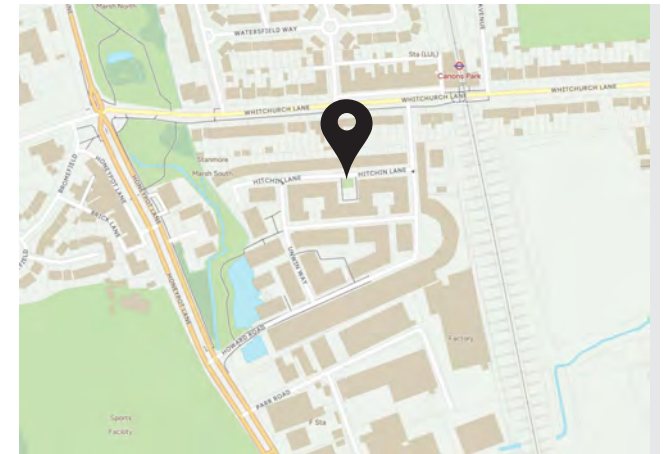


- To control vehicle speed, front gardens to some houses extend into the carriageway as pinch points.
- They are bookended by car parking bays and clearly demarcated footpaths.

Image 108: Kidbrooke Village. Front gardens to some houses extend into the carriageway.

8. Stanmore Place, London

Landscaping, Home Zones and various types of car parking combine to help shift the emphasis away from cars and instead towards pedestrians. A multi-storey car park is carefully wrapped with a commercial space to avoid the negative visual impact often associated with such structures.



Location	HA7 1BG
Developer	St Edwards / Berkeley Group
Architect	Grid Architects, Fabrik
Planning Authority	London Borough of Harrow
Project Size	798 units
Building Form	3-storey courtyard mansion blocks & 2-storey terraced houses
Dwelling Types	Apartments: 4% 1 bedroom, 36%, 2 bedroom, 13% 3 bedroom, Houses: 7% 3-5 bedroom
Cycle Parking	Cycle parking spaces per home & visitor spaces
Car Parking Ratio	87% (697 parking spaces)
Density	128 homes per hectare
Tenure Mix	40% affordable



CANONS PARK

WHITECHURCH LN

Car Parking Treatments:

- 1** Off plot: front court
- 2** Off plot: multi-storey
- 3** On plot: hardstanding
- 4** On street: in line and right angled

HITCHIN LN

LETCWORTH RD

HITCHIN LN

UNWIN WAY

HOWARD RD



8. Stanmore Place - Critical Commentary



1 Off plot: front courts

- Careful attention afforded to the visual quality of car parking courts through the use of extensive landscaping.
- They are sited to maximise overlooking and softened with trees and landscaping.
- Integrated into soft landscaping at entrances to apartment blocks and pocket parks.

Image 109 earlier page: Stanmore Place. Image 110 previous page: Stanmore Place. Site Plan. Images 111: Stanmore Place. Off plot front courts.



2 Off plot: multi-storey

- Successful integration of a multi-storey car parking structure. Multi-storey car park wrapped with commercial space to soften impact.
- Angled on street bays meet short stay car parking need.

Image 112: Stanmore Place. Multi-storey car park wrapped with commercial space.



3 On plot: hardstanding

- On plot hardstanding car parking for terraced homes. Landscape bands between and in front of car parking provides space for neatly designed waste storage containers.
- Varying the street angle and length of the bay helps prevent long terraces from appearing car dominated.
- Car parking courts on the opposite side of the street are not as well integrated.

Image 113: Stanmore Place. Hardstanding with landscape and waste storage containers between bays.



4 On street: in line and right angled

- On street car parking is visually integrated with generous soft landscaping and helps reinforce the residential character of the area.

Image 114: Stanmore Place. In line and right angled car parking.



- Pedestrian-friendly home zone streets with subtle shifts in horizontal street alignment to help contain vehicular speeds.
- Home Zones are a valuable design feature that can help shift the emphasis away from cars and instead towards pedestrians.

Image 115: Stanmore Place. Pedestrian friendly homes zone.

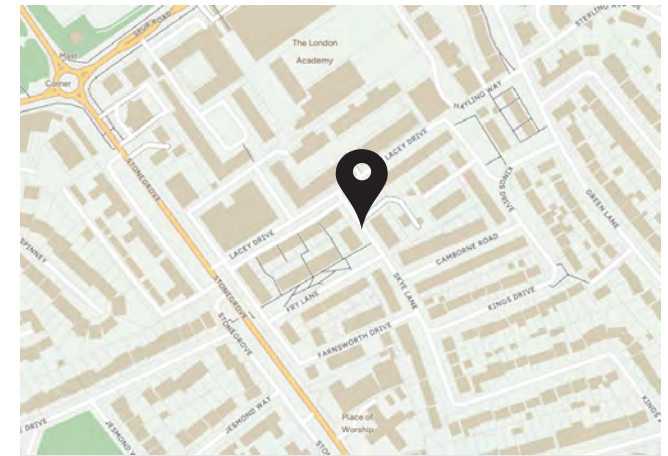


- Generous landscaping softens the visual impact of parked cars and is critical to the successful integration of on street and on plot car parking.
- Management regime prioritises car club and blue badge holder use, and prevents encroachment onto shared spaces.

Images 116: Stanmore Place. Generous landscape softens the visual impact of parked cars.

9. Edgware Green, Barnet, London

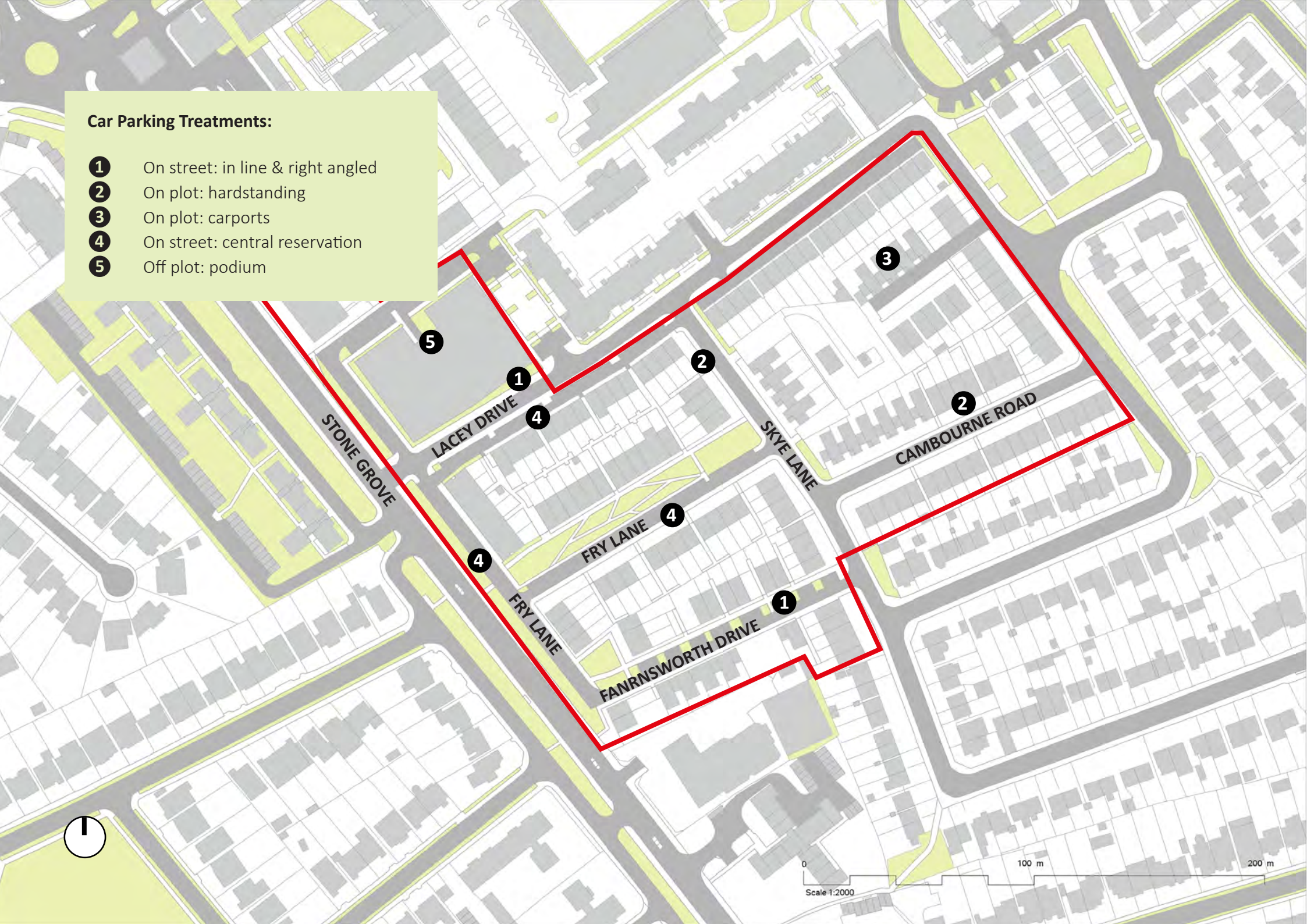
Edgware Green is a particularly good example of how to integrate on plot car parking and is a useful reminder as to the value of high quality and generous landscaping in visually integrating car parking into the street environment.



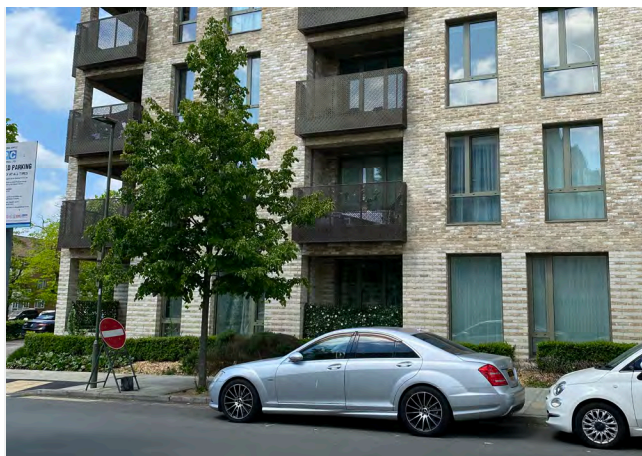
Location	HA8 8EZ
Developer	Barratt Homes
Architect	Maccreeanor Lavington
Planning Authority	London Borough of Barnet
Project Size	279 homes
Building Form	Mid-rise terraces and apartment blocks
Dwelling Types	293 units: 146 apartments, together with 147 terrace and courtyard houses
Cycle Parking	Cycle parking spaces per home & visitor spaces
Car Parking Ratio	109% (305 parking spaces)
Density	62 homes per hectare
Tenure Mix	22 shared ownership & 257 private sale

Car Parking Treatments:

- 1 On street: in line & right angled
- 2 On plot: hardstanding
- 3 On plot: carports
- 4 On street: central reservation
- 5 Off plot: podium



9. Edgware Green, Barnet, London - Critical Commentary



1 On street: in line

- The absence of breaks between parked cars can restrict cross street movement for pedestrians, particularly for those with pushchairs or mobility restrictions.
- Street trees would have greater impact if used to break up car parking into smaller groupings. Taller under-planting to trees would reduce the visual impact of parked cars.

Image 117 earlier page: Edgware Green. Images 118 previous page: Edgware Green. Site Plan. Image 119: Edgware Green. On street in line car parking.



2 On plot: hardstanding

- Landscaping is a critical factor in the successful visual integration of car parking within the street scene.
- Generous landscaping mitigates the impact of the on plot right angled car parking.

Image 120: Edgware Green. On plot hardstanding car parking with generous landscaping.



3 On plot: carports

- Well overlooked on plot car parking with around 50% of the frontage width dedicated to soft landscaping.
- Two car, tandem parking driveways to town houses enables the space between homes to be generously landscaped.
- If the width of the street or lack of other design or management control allows for on street parking, residents will tend to avoid using tandem parking.

Image 121: Edgware Green. On plot integrated carports.



4 On street: central reservation (parallel road)

- The access street is parallel to the busy Stonegrove, which is a major route through this part of North London, and provides opportunity for central reservation style car parking.
- The cars are in view from the apartment blocks in a formal arrangement.

Image 122: Edgware Green. Central reservation.



- The absence of breaks between car parking spaces can restrict cross street movement. Anticipate pedestrian desire lines and safeguard these through design, otherwise if streets are wide enough to allow side of pavement car parking, a barrier is created by parked cars, with only narrow gaps between them. These gaps may be difficult to navigate for those with visual or mobility restrictions, or for those with a pushchair.

Image 123: Edgware Green. Central reservation with no breaks between parked cars.



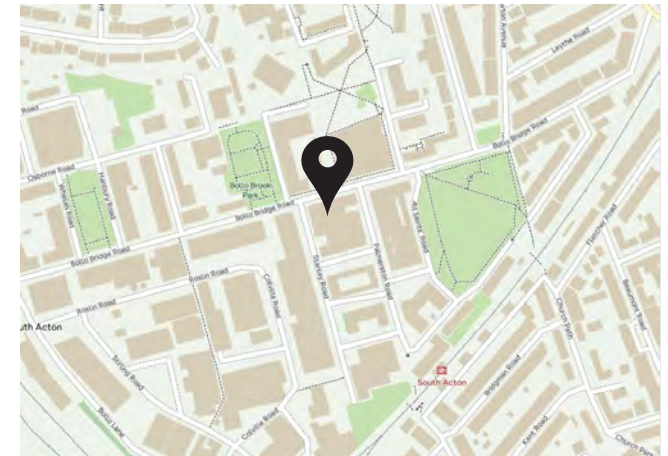
5 Off plot: podium

- Discreet access, as the podium entrance is set back from the street and ground level planting mitigates the impact of the entrance.

Image 124: Edgware Green. Discreet podium car parking.

10. Liberty Quarter, Ealing, London

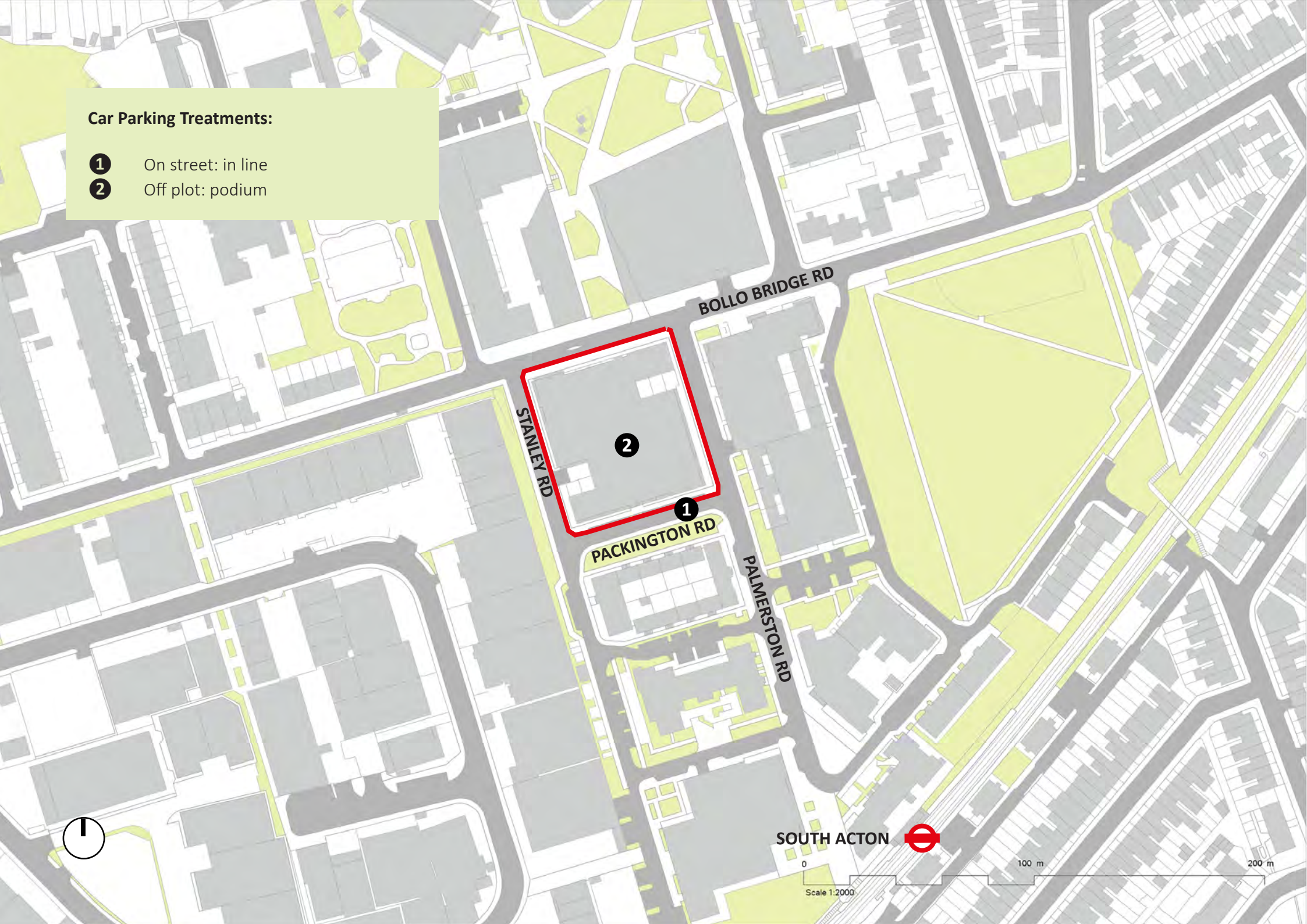
Car parking is provided around the edge of block in line with the pavement and beneath a podium deck that carries a semi-private amenity space for residents.



Location	W3 8FF
Developer	Berkeley Group
Architect	Alison Brooks Architects
Planning Authority	London Borough of Ealing
Project Size	106 units.
Building Form	2-9 storey perimeter block with maisonettes & flats
Dwelling Types	Apartments: 24% 1 bedroom, 50% 2 bedroom, 21% 3 bedroom, 5% 4 bedroom
Cycle Parking	Cycle parking spaces per home & visitor spaces
Car Parking Ratio	46% (49 parking spaces: 15 on-street, 34 undercroft)
Density	77 homes per hectare
Tenure Mix	45% affordable including shared ownership

Car Parking Treatments:

- 1** On street: in line
- 2** Off plot: podium



STANLEY RD

BOLLO BRIDGE RD

PACKINGTON RD

PALMERSTON RD

SOUTH ACTON



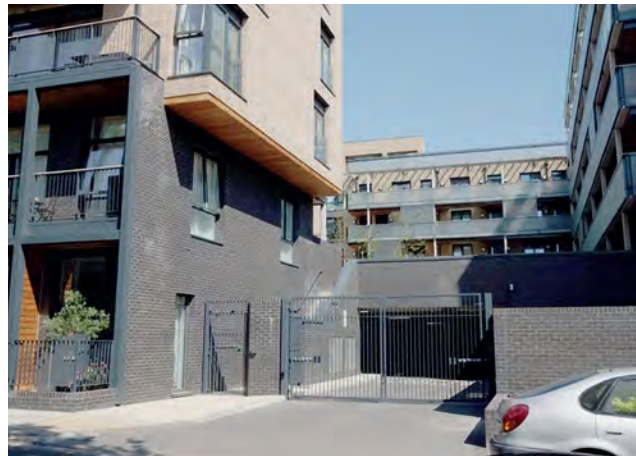
10. Liberty Quarter, Ealing, London - Critical Commentary



1 On street: in line

- On street parking is balanced with off street car parking, limiting the intrusion of cars within streets and public spaces.
- Trees soften the urban environment, distracting the eye from parked cars.
- Pedestrian desire lines across the street are anticipated and protected from car parking.
- Street trees positioned on street corners make it easier for pedestrians to see approaching traffic and cross the street.

Image 125 earlier page: Liberty Quarter. Image 126 previous page: Liberty Quarter. Site Plan. Image 127: Liberty Quarter. On street car parking with street trees that create 'breathing space' to cross.



2 Off plot: podium

- The entrance to the car parking underneath the podium is functional, yet good surveillance opportunities are provided.
- The entrance area to the podium car parking structure might feel less welcoming at night due to lack of low level lighting and the recessed positioning of the gates.
- Pedestrian priority could be reinforced by changing the surface material at the mouth of the entrance to the car parking area.

Image 128: Liberty Quarter. Podium car parking entrance.



- Above the podium is an elegantly designed area of communal open space for residents.
- In addition to the front yard facing the street, ground floor maisonettes surrounding the undercroft car parking also benefit from a personal outdoor space accessed from the podium.

Image 129: Liberty Quarter. Podium car parking entrance.

11. Dockway Square, North Shields

This original case study from Car Parking What Works Where has been reused here as it stands the test of time well.

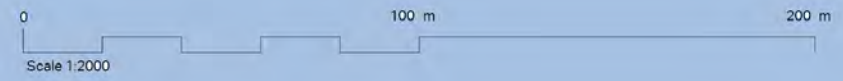
A few minutes walk from Meadowell, an estate synonymous in the 1990s with car crime, Dockway Square had to offer safe car parking. One on plot car parking treatment supplements on street in a car parking square, which echoes the areas Georgian Northumberland Square.



Location	NE30 1JZ
Developer	Persimmon Homes / Gordon Durham & Co
Architect	JDDK, Napper
Planning Authority	London Borough of Ealing
Project Size	24 dwellings
Building Form	Terraced two and three storey, Two story villas and semis
Dwelling Types	3 & 4 bedroom houses
Cycle Parking	Not known
Car Parking Ratio	200%
Density	45-75 homes per hectare
Tenure Mix	Not known

Car Parking Treatments:

- 1** On plot: mews court (garages accessed off a yard)



11. Dockwray Square, North Shields - Critical Commentary



1 On plot: mews court

- Excellent example showing combination of a well designed mews court supplemented with on street.
- Car parking courts ingeniously planned, work as informal social space for neighbours.
- Presence of cars a positive quality, complementary to traditional benefits of square design.

Image 130 earlier page: Dockwray Square. Image 131 previous page: Dockwray Square. Site Plan. Image 132: Dockwray Square. On street car parking supplementing the mews court car parking.



Image 133: Dockwray Square. Mews court entrance.

- Good visual surveillance of residents' vehicles.
- Integral garages to dwellings on Beacon Street.
- Garages are designed for smaller cars than we tend to have now and do not incorporate cycle parking.



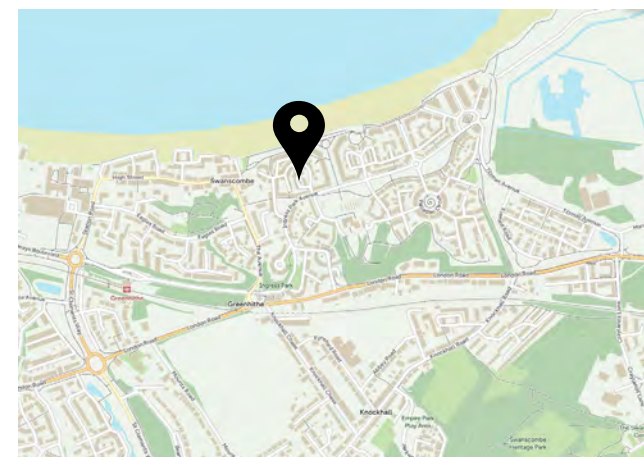
Image 134 above: Dockwray Square. Lanes between housing blocks.

- Lanes between housing grid cut across the whole urban block.

12. Ingress Park, Greenhithe, Kent

This original case study from Car Parking What Works Where has been reused here as it stands the test of time well.

Design quality brought house buyers to a Thames Gateway site next to the Dartford Crossing. Some areas dependent on allocated spaces have faced car parking issues, but treatments are diverse including amenity over garages.



Location	DA9 9NP
Developer	Crest Nicholson
Architect	Gardner Stewart, Tibbalds (Urban Design), TM2 (urban design)
Planning Authority	Dartford Borough Council
Project Size	950 homes
Building Form	2, 2 1/2, 3, 3 1/2 storey terraces; 4 1/2 storey apartment block with basement
Dwelling Types	1 and 2 bed flats; 3 and 4 bed townhouses
Cycle Parking	Not known
Car Parking Ratio	160%
Density	40-150 homes per hectare
Tenure Mix	Mixed

Car Parking Treatments:

- 1** Off plot: rear court
- 2** On plot: mews court
- 3** On street: in line
- 4** On plot: chauffeur unit
- 5** Off plot: undercroft



THE AVENUE

MERIEL WALK

INGRESS PARK AVE

INGRESS PARK AVE

0 100 m 200 m
Scale 1:2000

12. Ingress Park, Greenhithe, Kent - Critical Commentary



1 Off plot: rear court

- Garages off carriageway access to court may cause congestion.
- Access to court through archway creates defensible space.
- The court is small enough to encourage a sense of ownership. Court is well looked over by adjoining properties.
- High quality materials appropriate to context.

Image 135 earlier page: Ingress Park. Image 136 previous page: Ingress Park. Site Plan. Image 137: Ingress Park. Off plot rear court.



2 On plot: mews court

- Requirement to access homes from street rather than mews court makes street active.
- Small scale of court encourages sense of ownership. Court is well looked over by adjoining properties.
- High quality materials appropriate to context.

Image 138: Ingress Park. Off plot mews court.



3 On street: in line

- Excellent provision of well designed on street unallocated car parking to supplement on plot solutions.
- Island separation between layby offers opportunity to provide planting space for semi-mature trees.
- Simple materials and sensible dimensions provide effective on street car parking and adds animation to the streetscape.
- Good surveillance of cars from properties.

Image 139: Ingress Park. On street in line car parking with good surveillance of cars from adjoining properties.



4 On plot: chauffeur unit

- Restricted in its usage due to potential overlooking issues.
- Ground floor surveillance to street is limited.
- Use of roof as amenity space a positive contribution to plot, allowing higher density by exploiting typography.
- Garage doors close to highway ensure cars are not parked in front of doors.

Image 140: Ingress Park. On plot chauffeur unit.



- Big windows and bays create interest while a terrace adds to their high level surveillance. Restricted in its usage due to potential overlooking issues.

Image 141: Ingress Park. On plot chauffeur unit.



5 Off plot: undercroft

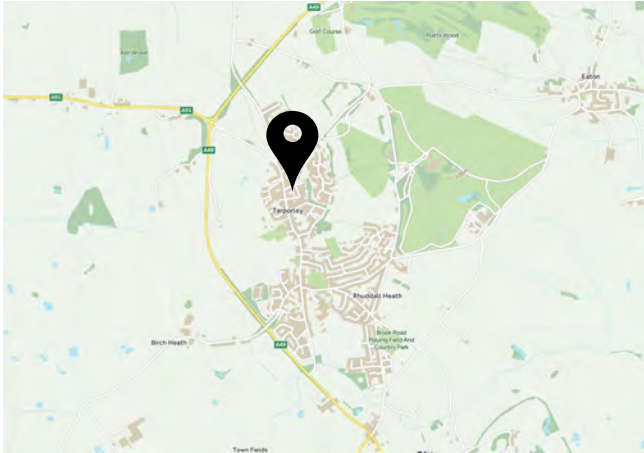
- Limited appeal of view from apartments into car parking court.
- Access from car parking to apartments is limited.
- Good balance of natural surveillance and defensible space at ground level achieved through plinth design.
- Placing car parking in the undercroft improves attractiveness of landscaped environment.

Image 142: Ingress Park. Off plot undercroft car parking solution that is lit and ventilated naturally.

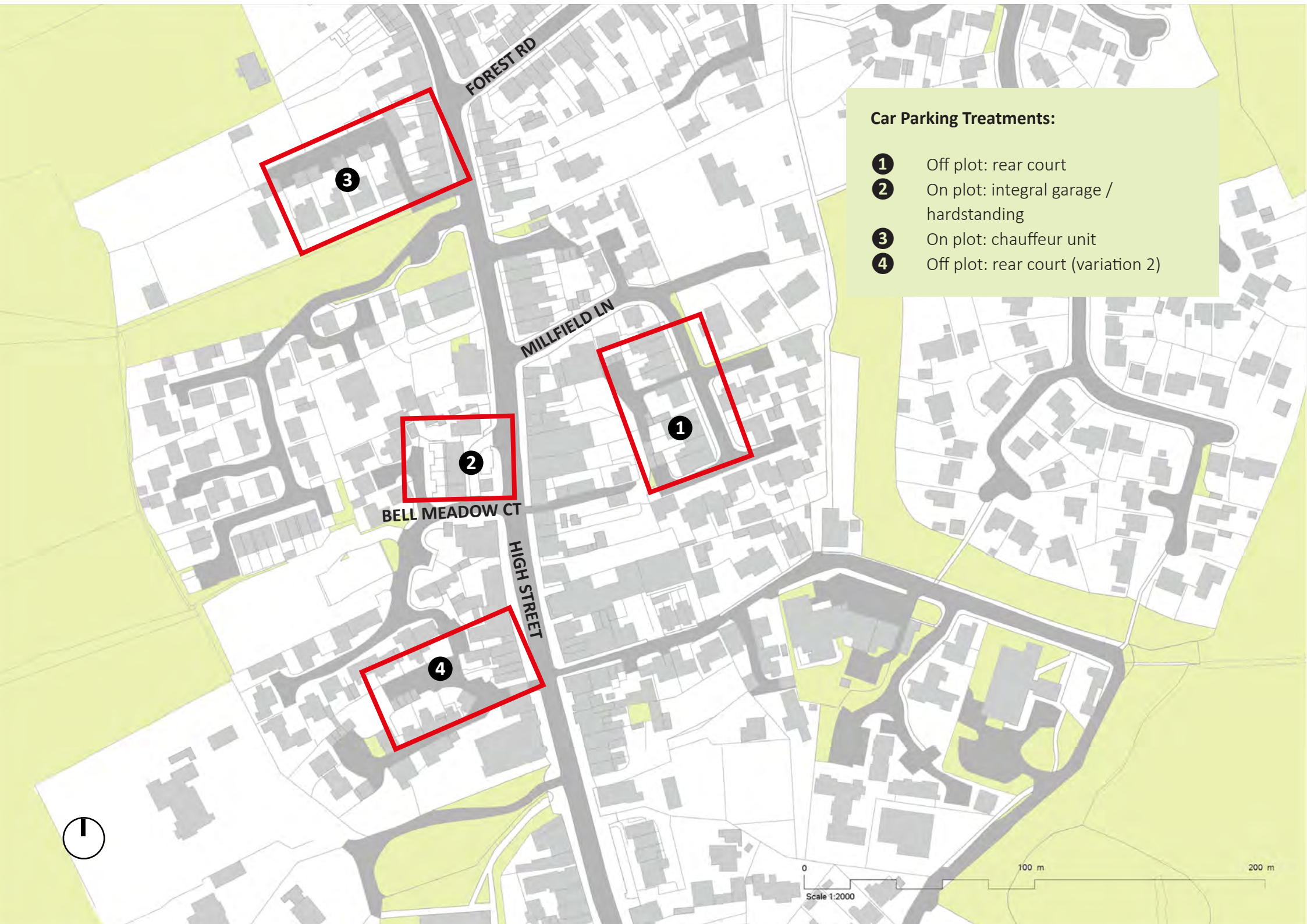
13. Tarporley, Cheshire

This original case study from Car Parking What Works Where has been reused here as it is a really good example of parking for infill development.

Redevelopment of infill plots around Tarporley combine as a lesson in adapting parking treatments according to each site's potential. An eye for formal composition, classic materials and exploiting existing landscaping underpins four schemes worth analysis.



Location	CW6 0DX
Developer	Bell Meadow Ltd (A,B and C)
Architect	Joe Jessop (with J Pritchard and E Lord, designers) (A,B and C)
Planning Authority	Cheshire West and Chester Council
Project Size	4 no. infill sites
Building Form	Straight terraces, detached houses
Dwelling Types	2 or 3 storey cottages, maisonettes, townhouses and villas
Cycle Parking	Not known
Car Parking Ratio	160%
Density	40-65 homes per hectare
Tenure Mix	Private housing



FOREST RD

MILLFIELD LN

BELL MEADOW CT

HIGH STREET

Car Parking Treatments:

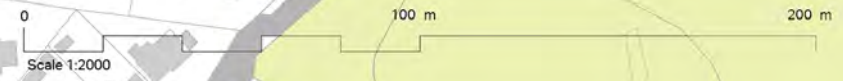
- 1** Off plot: rear court
- 2** On plot: integral garage / hardstanding
- 3** On plot: chauffeur unit
- 4** Off plot: rear court (variation 2)

3

1

2

4



13. Tarporley, Cheshire - Critical Commentary



1 Off plot: rear court

- Garage courts offer limited visual surveillance of residents' vehicles.
- High quality constructional and detail design of garages.
- Access to courts from rear gardens practical; works well in context with overall architectural language.



- Rear court supplemented by on street car parking encourages activity to street.
- Restriction of car parking to six homes encourages sense of ownership while narrow lane makes it defensible space.
- Formal composition hides access to rear court to left.



2 On plot: integral garage / hardstanding

- Limited surveillance at ground floor level.
- Excellent solution for serving flats above retail.
- Retail served by layby to front allows more positive relationship between maisonettes and street.
- Use of garage roofs as amenity.
- 200% car parking for maisonettes in an efficient and economical solution.

Image 143 earlier page: Tarporley. Image 144 previous page: Tarporley. Site Plan. Image 145: Tarporley. Off plot rear court.

Images 146: Tarporley. On street car parking supplements the rear court car parking.

Image 147 above: Tarporley. On plot integral garage and hardstanding car parking.



3 On plot: chauffeur unit

- Garage cannot be reached directly from the house.
- Cost of single-sided access road.
- Good provision of both secure hardstanding and guest car parking.
- Accommodation over garages encourages flexible living and provides surveillance of mews street.
- Quality materials encourages personalisation of street.

Image 148: Tarporley. On plot chauffeur unit.



- Parking to rear supports idyllic front lane views to landscape.
- Rear court creates pedestrian-only lane (see above).

Image 149: Tarporley. Pedestrian only lane.



4 Off plot: rear court (variation 2)

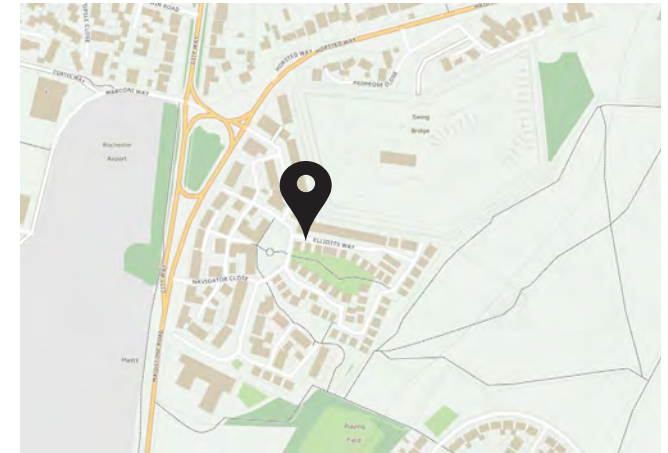
- Poor ground floor surveillance of car parking.
- Some spaces relatively remote from homes, although direct access to most units.
- High quality materials exploiting existing landscape create a very positive environment.
- Access from high street through archway creates defensible space. Efficient use of site allows for a delightful street.

Image 150: Tarporley. Rear court car park.

5.5 | Suburban

14. Horsted Park, Chatham, Kent

Horsted Park incorporates a shared surface with pedestrian priority. A hierarchy of 'streets', 'lanes' and 'courts' define a sequence of public realm spaces. There are a range of parking solutions and it is an example of where the house builder allocated car parking in the shared surface.



Location	ME4 6BF
Developer	Countryside Properties
Architect	Proctor & Matthews Architects
Planning Authority	Medway
Project Size	8.1 hectares
Building Form	2-3 storey housing with 3-4 storey apartment buildings
Dwelling Types	106 houses & 48 apartments with retail, commercial, extra care accommodation and community facilities
Cycle Parking Ratio	1 x 1 bed & 2 x 2 bed apartment / per house
Car Parking Ratio	1.9% (292 for 154 homes)
Density	37 homes per hectare
Tenure Mix	25% affordable, 75% private

Car Parking Treatments:

- 1** On street: right angled
- 2** On street: in line
- 3** On plot: integral garage



14. Horsted Park, Chatham, Kent - Critical Commentary



1 Off plot: right angles

- The streets and spaces were set out before the car parking.
- Activity is maximised in the streets with a shared surface.
- Car parking spaces in the shared surface street are allocated to the homes so the pavement is in front of the properties.

Image 151 earlier page: Horsted Park. Image 152 previous page: Horsted Park. Site Plan. Image 153: Horsted Park. On plot, right angled car parking.



2 Off plot: in line with pavement

- The car parking is well overlooked as it is located in the street.
- The street incorporates landscape which minimises the visual impact of the car parking. Trees are placed to screen the car parking.
- In some areas of the layout there are long strips of right angled car parking to both sides of the street. Further integral garage house types would have prevented this.

Image 154: Horsted Park. Off plot car parking in line with pavement.



3 On plot: integrated garages

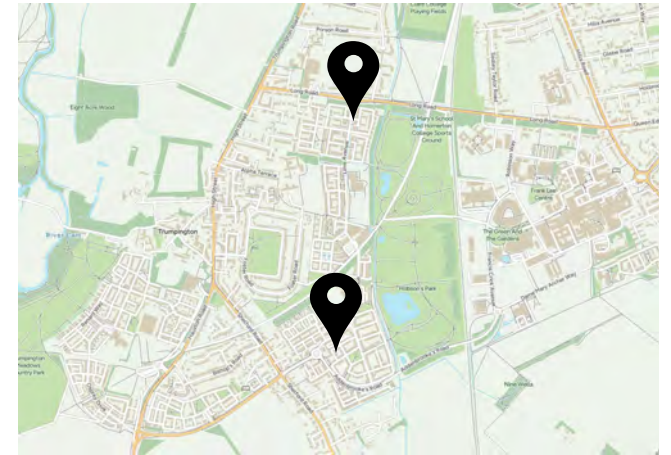
- Four bed homes have an integral double garage or a double tandem garage within the home.
- The garage or car-port includes cycle parking (or else it is in cycle parking stores to rear gardens).
- A door leads from the garage car parking space into the hallway of the house.

Image 155: Horsted Park. On plot integral garages which remove car parking from the street to enable streets with a good sense of enclosure.

15. Abode and Aura at Great Kneighton, Cambridge

Abode contains integral garages in a number of different house types, where the garages are also designed for storing cycles. There are attractive parking courts (front and rear) and streets exhibit a clear hierarchy and sense of enclosure.

Aura contains townhouses (with no setbacks) that have mechanised garage doors to encourage car parking. A good example of a front court is included which consists of a compact courtyard with very shallow and broad house types.



Location	CB2 9AS
Developer	Countryside Properties
Architect	Aura: Tate Hindle Abode: Proctor & Matthews - as below
Planning Authority	Cambridge City Council
Project Size	Abode: 9.2 hectares & 308 homes
Building Form	2 & 3 storey houses and apartment blocks
Dwelling Types	Apartments: 27 x 1 bedroom, 97 x 2 & 3 bedroom. Houses: 34 x 2 bedroom, 93 x 3 bedroom, 51 x 4 bedroom, 6 x 5 bedroom
Cycle Parking	To communal stores, rear garden stores and in the integral garages.
Car Parking Ratio	150%
Density	48 homes per hectare
Tenure Mix	40% affordable

Car Parking Treatments:

Abode

- ① On street: right angled / Off plot: front courts
 - ② On street: in line
 - ③ On street: in line
 - ④ On plot: integral garage
 - ⑤ Off plot: rear court
 - ⑥ Off plot: rear / front court
- FOGs (see Selected Treatments)



15. Abode and Aura at Great Kneighton, Cambridge - Critical Commentary



1 On street: right angled / Off plot: front courts

- The sequence of streets and spaces was set out before the car parking.
- There are only small areas of right angled car parking across the development.
- There are some small front courts as part of the 'Great Court' entry square.
- Spaces are subtly demarcated.

Image 156 earlier page: Abode. Image 157 previous page: Abode. Site Plan. Image 158: Abode. On street: right angled / off plot, front courts.



2 On street: in line

- The 'Green Lanes' streets have in line car parking to maintain narrow frontage to frontage dimensions.
- The homes overlook their additional car parking bay.
- Good amounts of planting across the development soften it and prevent any car parking that is in the public realm from dominating the street.

Image 159: Abode. The car parking is subtly demarcated. Homes in the 'Green Lanes' area also have integral tandem garages and this allows the shared surface streets to be very narrow.



3 On street: in line

- The mews streets have in line car parking to maintain narrow frontage to frontage dimensions.
- Car parking is subtly demarcated with a minimal kerb.
- Planting and street trees in between the car parking soften it and prevent any car parking that is in the public realm from dominating the street. It also prevents unwanted car parking in front of entrances.

Image 160: Abode. On street car parking, see 'Parking Strategies' Strategy 3: Make sure the parking supports street enclosure.



4 On plot: integral garage

- Mews street terraced homes have integral tandem garages.
- Cycle storage is located in the integral garages (as well as bin storage).
- The garage door opening is automated.
- The door material (timber) is perforate to prevent these garages from being used for storage.

Image 161: Abode. Mews street with terraced houses that have integral garages.



5 Off plot: rear court

- Small rear court, screened by a garden wall.
- Doors and deck balconies overlook the car parking court to maximise surveillance.
- High quality hard surfaces and subtly demarcated car parking bays.
- Landscaping used to mitigate the impact of the car parking.
- Dedicated access route to the home.

Image 162: Abode. Off plot rear court.



6 Off plot: rear / front court

- Small, efficiently laid out rear court.
- Homes are 'double fronted' so they address both the street and the court, so this feels like a front court. These homes have 1 no. integral garage and 2 no. undercroft bays for the adjacent apartments.
- Landscaping including trees and rain gardens used to mitigate the car parking.
- Terraces overlook the car parking court to maximise surveillance.

Image 163: Abode. High quality hard surfaces and subtly demarcated car parking bays.

Car Parking Treatments:

Aura

- 7** Off plot: front court
- 8** On plot: integral garage





7 Off plot: front court

- Three front squares are included in the development with housing that overlooks the car parking.
- To the west is a front square with houses to two sides and traffic stopped with bollards at one end of the street.
- To the east are two ultra compact courtyards with very shallow broad house types to the rear side with integral parking.

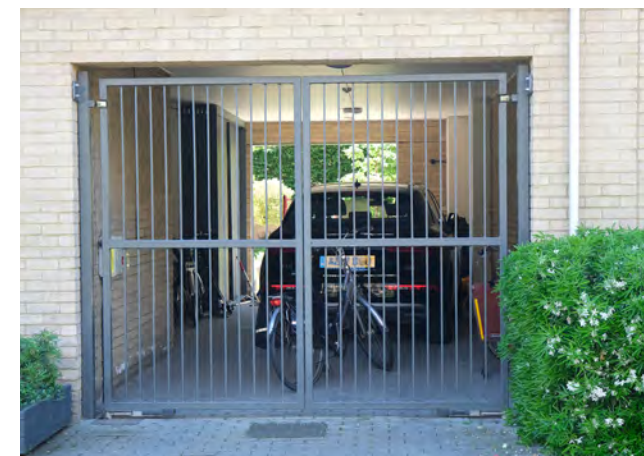
Image 164 previous page: Aura. Site Plan. Image 165: Aura. Large landscaped areas and street trees are included in the court which feels like a playable space.



8 On plot: integral garage

- Large terraced homes have integral tandem garages.
- The garage door opening is automated.
- This removes the car parking from the mews streets and where the homes overlook green spaces.

Image 166: Aura. On plot integral garage with automated doors.

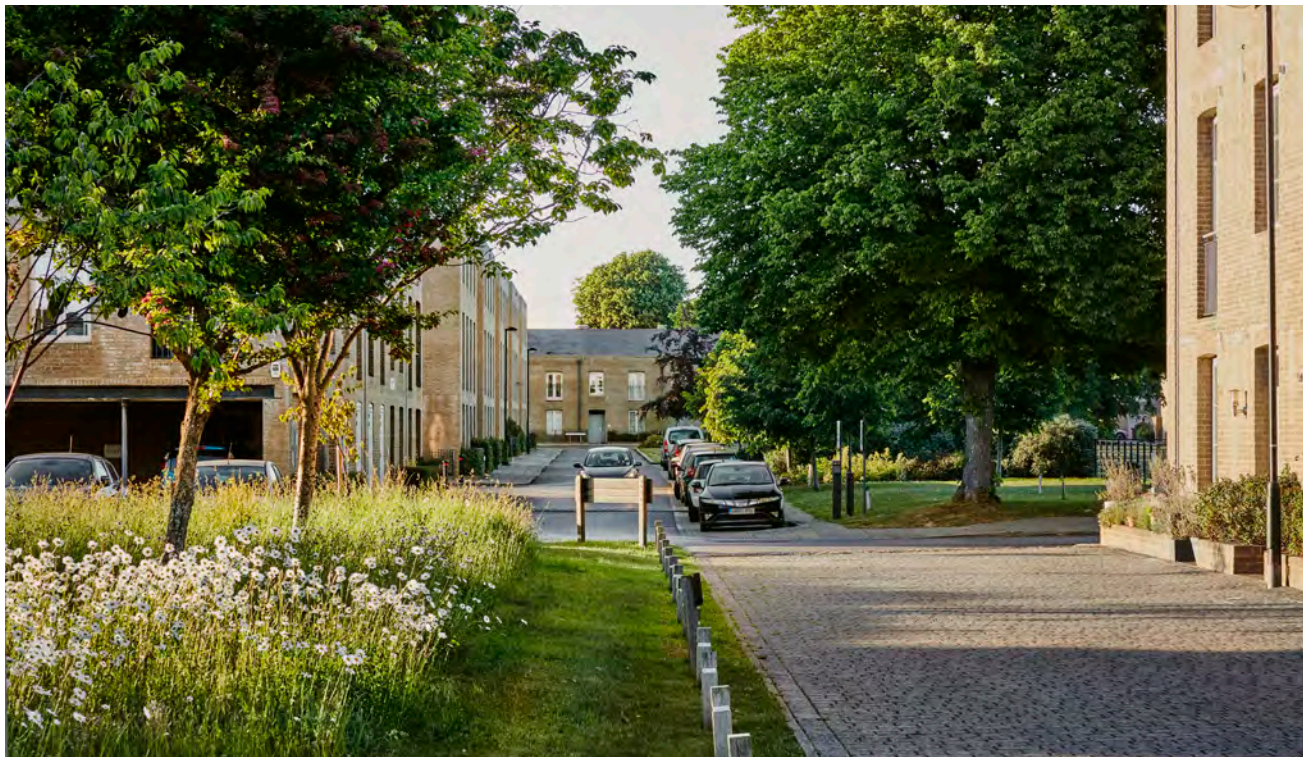
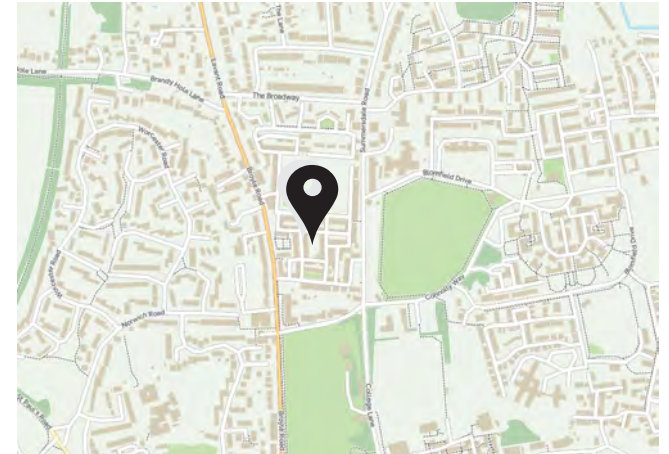


- Cycle storage is located in the integral garages.
- The garage doors are a little too perforate and some owners have added screens, however the perforate screen does prevent owners using the garage for storage.

Image 167: Aura. The cycle storage is in the integral garages.

16. Roussillon Park, Chichester

Good mix of car parking showing different treatments for each street type and around a well landscaped square to provide car parking to the affordable properties on Rendell Gardens. There is on street car parking along Whistler Avenue to balance parking in the mews behind.



Location	PO19 6BL
Developer	ZeroC/Homes and Communities
Architect	Ben Pentreath
Planning Authority	Chichester District Council
Project Size	6.5 hectares
Building Form	Terraces, villas and apartment blocks
Dwelling Types	252 Homes: Terraces, villas and apartment blocks
Cycle Parking	594 allocated cycle storage spaces & 64 visitor cycle racks
Car Parking	150%
Density	39 homes per hectare
Tenure Mix	50% private sale & 50% affordable



Car Parking Treatments:

- ① On street: in line
- ② Off plot: parking square
- ③ On plot: attached garage
- ④ On plot: hardstanding
- ⑤ Off plot: rear court
- ⑥ FOGs

OSBORN MEWS

⑥

RICHMOND AVE

③

④

ROUSSILLON PARK

FLETCHER AVE

④

③

WHISTLER AVE

①

⑥

MCNAIR WAY

①

⑥

①

①

CARTER RD

①

FOSTER RD

BURDEN MEWS

②

⑤

①

CHARLOTTE AVE

④

③

RENDELL GDS

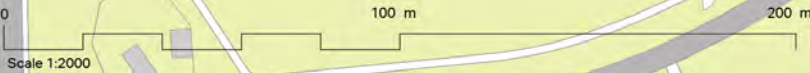
①

A286

BROYLE ROAD

DONEGALL AVE

SUMMERSDALE RD



16. Roussillon Park, Chichester - Critical Commentary



1 On street: in line

- The building scale is increased around the car park which supports parking on both sides of the street.
- Existing landscape and green square along with new street trees mitigates the impact of the car parking.
- Car parking is clearly denoted by the kerb-line and the arrangement is formal so residents abide by it.

Image 168 earlier page: Roussillon Park. Image 169 previous page: Roussillon Park. Site Plan. Images 170: Roussillon Park. Homes overlooking the on street car parking and visitor car parking.



- A traditional street layout that responds to the historic street patterns within Chichester was incorporated. A narrow, gridded street pattern links a series of green public spaces.
- Some mews streets to the rear of properties only have FOGs to create street surveillance.

Image 171: Roussillon Park. Responding to the historic street patterns in Chichester.



2 Off plot: front square

- A well organised on street front square solution to provide car parking to the affordable properties that are terraced.
- Houses overlook the car parking.
- The square contains a well landscaped communal garden, which is the focus rather than the car parking arranged around it.

Image 172: Roussillon Park. Off plot, front square which is well landscaped which mitigates the car parking that surrounds it.



3 On plot: attached garage
4 / On plot: hardstanding

- The side garage is set back from the street to minimise the visual impact of the garage doors and allow a full bay in front of it.
- The shared surface street has a high quality material which is contrasted with the material of the bay to designate it as private.
- In some instances there is a double garage located on its own.

Image 173: Roussillon Park. The houses along the secondary and tertiary routes are of two storeys, to create a more informal mews.



5 On plot: rear / front court

- The rear court is small and this treatment is only used once in the scheme.
- Rear of houses to one side and FOGs to the other means this is a combination of a rear and front court.
- The garden walls are of high quality brick and have gates from the rear gardens to access the court.
- There could have been further landscaping.

Image 174: Roussillon Park. The rear car parking court has a high quality surface material.



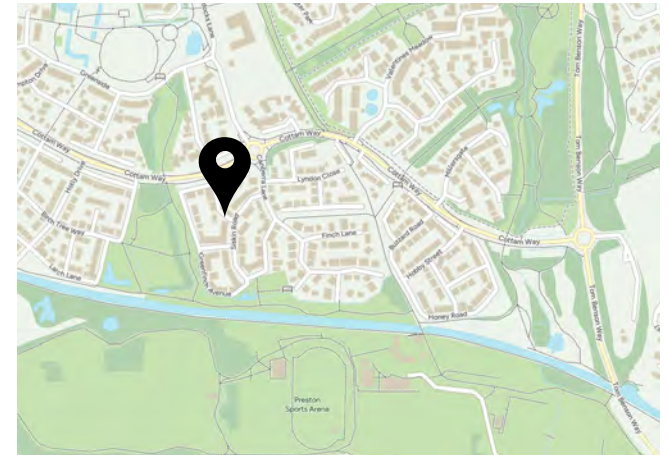
6 FOGs

- Excellent FOGs are located in Osborn Mews, as there are only two no. and they have a good amount of private amenity in the form of terraces that activate the mews, along with large windows on the first floor.
- FOGs are located behind the large houses that front the park.

Image 175 above: Roussillon Park. FOGs.

17. Cottam Meadow, Preston, Lancashire

The street hierarchy is reinforced with high quality street detailing and landscape to create walkable, low speed streets with car parking that is well integrated. A homezone approach is taken across the development, to encourage family friendly streets and spaces.



Location	PR4 OPE
Developer	Barratt Homes (Manchester)
Architect	DK-Architects
Planning Authority	Preston City Council
Project Size	2.7 hectares
Building Form	2 & 3 storey houses and apartment blocks
Dwelling Types	214 homes: Apartments: 12 x 1 bed & 2 bedroom. Houses: 23 x 2 bed, 25 x 3 bedroom, 38 x 4 bedroom
Cycle Parking	Not known
Car Parking Ratio	2.45 (241 for 98 homes)
Density	36 homes per hectare
Tenure Mix	77% open market, & 23% affordable

Car Parking Treatments:

- 1** On street: right angled
- 2** On street: in line
- 3** On plot: hardstanding
- 4** On plot: detached garage
- 5** Off plot: rear court (not shown in the commentary)



0 100 m 200 m
Scale 1:2000

17. Cottam Meadow, Preston, Lancashire - Critical Commentary



1 On street: right angled

- A mix of right angled and in line on street car parking is used throughout the scheme according to the form of the shared surface, which provides a high-quality scheme.
- Car parking on street is also used to control the geometry of the streets, control vehicular speed and forward visibility.
- The bays are subtly demarcated. Access routes between car parking bays are denoted in a white tile in the surface.

Image 176 earlier page: Cottam Meadow. Image 177 previous page: Cottam Meadow. Site Plan. Image 178: Cottam Meadow shared surfaces throughout provides playable streets.



2 On street: in line

- Landscape that includes street trees ensures that all car parking is actually a contributory feature to an overall design, rather than an unwanted nuisance within the spaces.
- Visitor car parking has been set within the street scene to keep control of the spaces and to ensure that the day to day practicalities of life do not detract from the use of the pedestrian biased streets.

Images 179: Cottam Meadow. On street, in line car parking.



3 On plot: garage

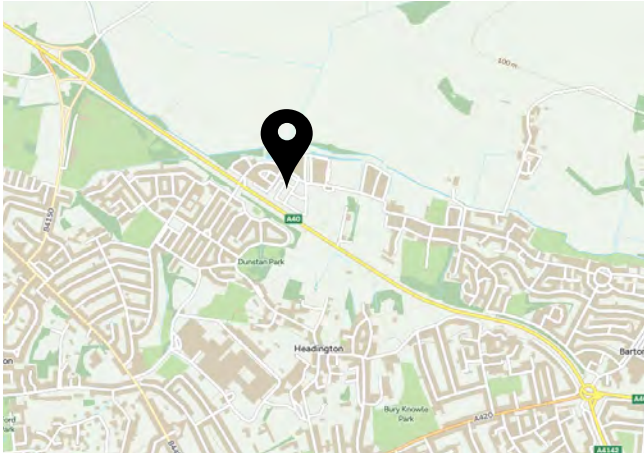
4 On plot: hardstanding - tandem

- Garages are used to some larger properties only.
- Integral garages could have been used to tighten streets and increase density.
- Hardstanding with tandem in line car parking rather than double car parking is used between detached and semi detached homes in some locations.

Image 180: Cottam Meadow. On plot garages.

18. Barton Park, Oxfordshire

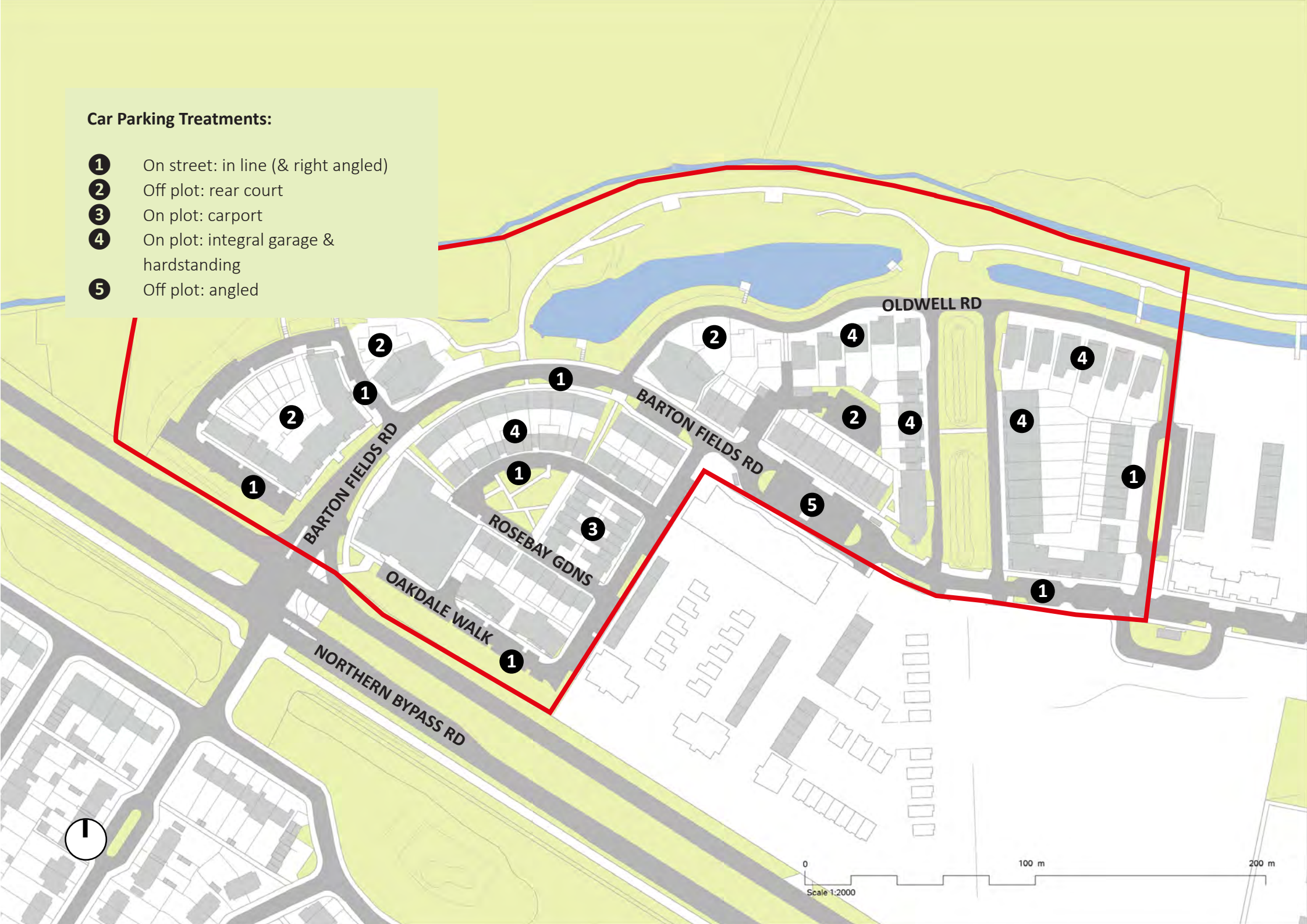
A mixture of car parking solutions have been provided to respond to the constraints of the various areas within the masterplan. Where car parking courts have been provided, buildings provide overlooking and landscaping is designed to discourage crime and soften these areas.



Location	OX3 9FX
Developer	Hill
Architect	Alison Brooks Architects & PTE
Planning Authority	Oxford City Council
Project Size	4.2 hectares & 237 homes
Building Form	2 and 3 storey homes with 4 & 5 storey apartment blocks
Dwelling Types	Apartments: 142 x 1,2 & 3 bedroom Houses: 13 x 2 bedroom, 66 x 3 bedroom, 12 x 4 bedroom, 4 x 5 bedroom houses
Cycle Parking	Communal store, rear garden store and in the integral garage
Car Parking Ratio	137% (325 for 237 homes)
Density	47/67 homes per hectare
Tenure Mix	40% of Phase 1 will be affordable social rent

Car Parking Treatments:

- 1 On street: in line (& right angled)
- 2 Off plot: rear court
- 3 On plot: carport
- 4 On plot: integral garage & hardstanding
- 5 Off plot: angled



18. Barton Park, Oxfordshire - Critical Commentary



1 On-street: in line (and right angled)

- All tertiary streets have been designed to promote lower vehicle speeds and prioritise pedestrian and cycle movement.
- Every two to three in line car parking bays are separate by a street tree.
- In line car parking is predominantly used, with right angled car parking used sparingly, so that mews streets are narrow and car parking does not interrupt the view to the outer landscape.

Image 181 earlier page: Barton Park. Image 182 previous page: Barton Park. Site Plan. Image 183: Barton Park. On street in line and right angled car parking.



1 On-street: in line

- The communal gardens have a small amount of in line car parking around them to supplement the car-port parking to houses that face onto the gardens.

Image 184: Barton Park. On street in line car parking around a communal garden.



2 Off plot: rear court

- The development has four small courts only: two front / side courts near the outer landscape for the apartment blocks and two rear courts. Some contain undercroft car parking to apartment buildings.
- Good quality surface materials continue from the mews into the car parking courts, which are not overly demarcated.
- The outer courts could benefit from trees and further landscape / planting.

Image 185: Barton Park. Off plot, rear court, buildings provide overlooking for natural surveillance.



3 On plot: integral garage and hardstanding

- A number of different house types have integral garage parking which removes car parking off the street. Often these also have 1 no. car parking bay on plot in front of the garage door.
- Generous planting is introduced between homes.
- There are some wide fronted homes with 2 no. integral garages.

Image 186: Barton Park. On plot, integral garage and hardstanding car parking.



4 On plot: carport

- A car port house type is included close to the communal gardens.
- Larger individual homes have integral garages which have additional space for cycle storage. If the bicycles are not within the footprint of the buildings, they are in covered lockable enclosures at the rear of gardens.

Image 187: Barton Park. On plot carports.



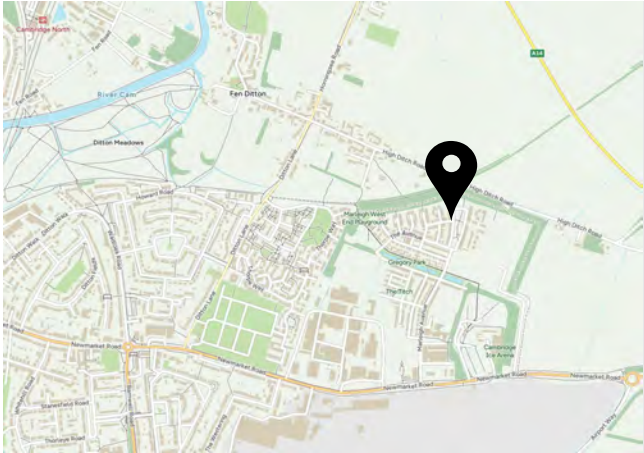
5 Off plot: on-street angled

- Lozenge of back-to-back on-street car parking.
- Efficiently located in the centre of the streets.
- Incorporates a row of street trees down the centre, between the bays and landscaping at each end.

Image 188: Barton Park. Off plot on street car parking.

19. Marleigh, Cambridgeshire

This is a mixed use urban extension with various car parking approaches and carefully integrated bins and bikes. Travelling into the city centre is made simple with enhanced cycling and walking trails, including plans for a cycle path link to Cambridge North Station.



Location	CB5 8XL
Developer	Marshall Group and Hill
Architect	Pollard Thomas Edwards Architects
Planning Authority	Cambridge City Council
Project Size	180 acres with a first phase of 450 homes / hectares
Building Form	Predominantly 3 storeys
Dwelling Types	Apartments: 1 & 2 bedrooms Houses: 2, 3, 4 & 5 bedrooms
Cycle Parking	1 per bedroom in garages, or secure stores to the side or rear of homes
Car Parking Ratio	1.37% (325 for 237 homes)
Density	42 homes per hectare
Tenure	68% private sale & 32% affordable

Car Parking Treatments:

- 1** On plot: car port & hardstanding
- 2** Off plot: front court
- 3** On street: courts
- 4** FOGs (see Parking Treatments)



19. Marleigh, Cambridgeshire - Critical Commentary



1 On plot: car ports

- The developments predominant car parking solution is car ports. These are set back from the road and covered in green roofs. Some homes have garages.
- There is hardstanding in front of the car port for a second car to avoid having hardstanding in front of the homes.
- Cycle parking is secured to the side of the car port. Bin storage is located in the garden behind the car port, with access gates from the back of the car port.

Image 189 earlier page: Marleigh. Image 190 previous page: Marleigh .Site Plan. Image 191: Marleigh. Car ports.



2 Off plot: front courts

- Courts are used for the apartment car parking and these are small scale of around 13 bays.
- Planting is used to break up runs of car parking so there are only 3-5 bays in a row.
- The apartments are accessed from and overlook the courts for activity and surveillance.

Image 192: Marleigh. Off plot front courts.



3 Off plot: courts

- Small front courts or yards are used at the edge of the scheme with homes and garages arranged off the courts.

Images 193: Marleigh. Off plot court parking.

Appendix: census data 2021

2021 Census Data - whole house or bungalows

NATIONAL			All households (excluding caravans or other mobile or temporary structures)		No cars or vans in household		1 car or van in household		2 cars or vans in household		3 cars or vans in household		4 or more cars or vans in household	
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
All households (excluding caravans or other mobile or temporary structures)			24,678,933	-	5,755,085	-	10,178,868	-	6,467,970	-	1,617,739	-	659,271	-
Whole house or bungalow	Owns outright or with a mortgage or loan	1 bedroom	133,912	0.5%	34,380	0.6%	74,708	0.7%	20,250	0.3%	3,324	0.2%	1,250	0.2%
		2 bedrooms	2,357,818	9.6%	427,414	7.4%	1,267,429	12.5%	550,240	8.5%	88,534	5.5%	24,201	3.7%
		3 bedrooms	6,993,623	28.3%	778,531	13.5%	3,033,061	29.8%	2,427,033	37.5%	567,210	35.1%	187,788	28.5%
		4 or more bedrooms	4,463,589	18.1%	171,234	3.0%	1,231,462	12.1%	2,006,119	31.0%	694,179	42.9%	360,595	54.7%
	Shared ownership	1 bedroom	3,220	0.0%	1,083	0.0%	1,776	0.0%	306	0.0%	40	0.0%	15	0.0%
		2 bedrooms	63,036	0.3%	8,455	0.1%	34,808	0.3%	17,341	0.3%	2,025	0.1%	407	0.1%
		3 bedrooms	67,837	0.3%	6,930	0.1%	31,032	0.3%	24,352	0.4%	4,387	0.3%	1,136	0.2%
		4 or more bedrooms	10,750	0.0%	1,504	0.0%	4,040	0.0%	3,500	0.1%	1,136	0.1%	570	0.1%
	Social rented, Private rented or lives rent free	1 bedroom	348,113	1.4%	181,305	3.2%	144,364	1.4%	19,670	0.3%	2,120	0.1%	654	0.1%
		2 bedrooms	1,741,379	7.1%	607,155	10.5%	831,853	8.2%	262,062	4.1%	33,000	2.0%	7,309	1.1%
		3 bedrooms	2,489,612	10.1%	666,175	11.6%	1,120,008	11.0%	553,410	8.6%	117,851	7.3%	32,168	4.9%
		4 or more bedrooms	630,006	2.6%	147,686	2.6%	223,580	2.2%	171,082	2.6%	58,566	3.6%	29,092	4.4%

Above: 2021 Census Data - whole house or bungalows

2021 Census Data - flat, maisonette or apartment

NATIONAL			All households (excluding caravans or other mobile or temporary structures)		No cars or vans in household		1 car or van in household		2 cars or vans in household		3 cars or vans in household		4 or more cars or vans in household	
			No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
All households (excluding caravans or other mobile or temporary structures)			24,678,933	-	5,755,085	-	10,178,868	-	6,467,970	-	1,617,739	-	659,271	-
Flat, maisonette or apartment	Owns outright or with a mortgage or loan	1 bedroom	351,667	1.4%	154,276	2.7%	172,333	1.7%	22,126	0.3%	2,162	0.1%	770	0.1%
		2 bedrooms	722,717	2.9%	210,342	3.7%	405,609	4.0%	94,931	1.5%	9,545	0.6%	2,290	0.3%
		3 bedrooms	134,408	0.5%	33,397	0.6%	70,810	0.7%	24,748	0.4%	4,208	0.3%	1,245	0.2%
		4 or more bedrooms	21,097	0.1%	4,731	0.1%	9,037	0.1%	5,007	0.1%	1,512	0.1%	810	0.1%
	Shared ownership	1 bedroom	33,220	0.1%	16,605	0.3%	14,693	0.1%	1,736	0.0%	134	0.0%	52	0.0%
		2 bedrooms	55,268	0.2%	18,180	0.3%	29,222	0.3%	7,152	0.1%	590	0.0%	124	0.0%
		3 bedrooms	4,475	0.0%	1,860	0.0%	2,018	0.0%	504	0.0%	77	0.0%	16	0.0%
		4 or more bedrooms	964	0.0%	514	0.0%	254	0.0%	132	0.0%	24	0.0%	40	0.0%
	Social rented, Private rented or lives rent free	1 bedroom	1,927,090	7.8%	1,264,170	22.0%	596,656	5.9%	59,234	0.9%	4,578	0.3%	2,452	0.4%
		2 bedrooms	1,711,668	6.9%	815,023	14.2%	730,070	7.2%	151,103	2.3%	12,568	0.8%	2,904	0.4%
		3 bedrooms	320,684	1.3%	151,554	2.6%	124,918	1.2%	36,308	0.6%	6,620	0.4%	1,284	0.2%
		4 or more bedrooms	92,780	0.4%	52,581	0.9%	25,127	0.2%	9,624	0.1%	3,349	0.2%	2,099	0.3%

Above: 2021 Census Data- flat, maisonette or apartment
(data collated by Phil Jones Associates)

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The Housing and Regeneration Agency

enquiries@homesengland.gov.uk

0300 1234 500

gov.uk/homes-england

