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Car-free development through UK community travel plans

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European residential car-free development projects generally take the form of larger car-free ‘districts’ that provide both lifestyle and mobility incentives to residents, including green space, a safer play environment for children, car clubs and improved public transport provision. In contrast, most car-free housing in the UK thus far has taken the form of small-scale infill developments that rely on existing public transport infrastructure and local amenities. This paper reviews the progress of car-free housing in Europe and the UK. The shortcomings of current forms of UK car-free housing are discussed and a methodology is presented for furthering car-free development through community travel plans (CTPs), which are emerging as a progression of workplace travel plans. The paper suggests that the current UK ‘do minimum’ approach offers relatively little incentive to potential residents and is not an effective means of promoting the concept of car-free living. Furthermore, the lack of an integrated approach towards delivering mobility measures is a barrier to developing more extensive car-free neighbourhoods that would be more attractive to residents wishing to reduce their car use. The paper suggests that there is a need to adopt a European model for car-free housing, through the incorporation of area-wide CTPs. The use of CTPs is discussed in relation to reducing car dependency within existing communities and also as a means of facilitating car-free housing.

1. INTRODUCTION

Car-free housing is not a new concept. Prior to widespread car ownership, all residential areas were car-free, although there were sometimes significant problems as a result of horse-drawn transport.¹ Patterns of spatial development and mobility reflected the need to access a wide range of amenities on foot and, later, by public transport. Post World War II planning and transport policies, together with rising levels of car-ownership, have led to more dispersed patterns of development, lower levels of accessibility and a corresponding increase in the demand for mobility. Scheurer² suggests that, despite the marked post-war increase, the level of car-ownership appears to be stabilising in larger European cities, assisted by a demographic shift towards more single occupancy and over-65 households, which are less likely to own cars than middle-aged or family groups. The *UK National Travel Survey*³ indicates that 26% of UK households do not have regular use of a car, while

the proportion is 35% within London. Although individual non-car-owning households are intrinsically ‘car-free’, most are located in an environment shaped by the legacy of transport and planning policies which emphasised car-based mobility, while failing to recognise the needs of such households and the impacts of traffic upon their quality of life. Where a household does own a car, it is not available first-hand to those who are unable to drive, such as children or those with disabilities. It may also be required by the principle wage-earner and therefore unavailable to other adult household members.

More recent changes in policy have attempted to restore the link between transport and land-use planning in order to promote more mixed-use development, to reduce car-dependency and the demand to travel, to reverse the trend of sub-urbanisation and to regenerate inner-city areas. One future outcome of this strategy might be the option to live in a designated car-free neighbourhood, with an integrated mobility strategy, based upon sustainable modes and an unavoidable level of car use.

There is, however, an inevitable lag as land-uses respond to revised policy objectives. In a study to assess progress among members of the European car-free cities club, McKenzie⁴ identifies relatively ‘weak’ interpretations of sustainability as being a key factor in the limited success of location policies. Although all of the cities studied had attempted to direct development to locations with appropriate public transport infrastructure, growth had increased along primary routes and motorway junctions. A number of cities had also succumbed to pressures to attract prestigious development. Crane⁵ highlights considerable variation within the literature regarding the extent to which travel behaviour can be predicted or attributed to urban form, particularly beyond the neighbourhood scale, where walking trips diminish and a complex set of factors determines travel behaviour and modal choice. Even if land-use policies could provide all services locally, communities do not have discrete boundaries. Residents may typically display a preference for amenities at alternative locations, despite the demand for increased travel, and so a realistic model for car-free housing will need to cater for the demand for mobility via an integrated package of area-wide mobility measures. Experience at the Vauban site in Freiburg shows that car-free housing that combines community-wide mobility planning with an attractive environment has the potential to reduce

car-dependency. Here, 81% of car-free residents previously owned a car at some time and 57% subsequently sold their car when they relocated to the site.⁶ The purpose of this paper is to introduce the concept of car-free development, review how this has been applied in the UK so far and explore how it could be applied in the future. This has been approached primarily via a state-of-the-art review of existing literature relating to car-free developments and community travel plans (CTPs), supplemented by a series of semi-formal interviews with individuals with knowledge of UK car-free developments. Those who assisted are listed in the acknowledgements section of this paper.

Section 2 of this paper develops the UK policy context and Section 3 reports a categorisation of car-free development 'types'. Sections 4 and 5 look at car-free housing in Europe and the UK respectively. Section 6 advances the concept of CTPs and Section 7 sets out the limitations of the CTP approach. Conclusions are drawn in Section 8.

2. UK POLICY BACKGROUND

There is already support for car-free housing within UK transport and land-use policy from a number of perspectives: modal shift, efficient land-use, and safer and more people-friendly communities. This contrasts with the situation in Germany and the USA, where each car-free scheme must be justified as a novel proposal and authorised as a deviation from conventional parking standards or zoning ordinances.

The government's white paper on transport⁷ set out the difficult decisions required to reduce road congestion and pollution, mainly by persuading people to use their cars less and encouraging more sustainable modes of travel. The white paper identifies the benefits of car-free housing as

- (a) freeing up land normally used for car parking or access for other uses, including more green space
- (b) improved local air quality and less noise for residents
- (c) allowing children to play outside in greater safety.

Following this, *Planning Policy Guidance Note 13: Transport*⁸ (PPG13) set out the key role of land-use planning in delivering the government's integrated transport strategy and reducing the demand to travel by way of influencing the location of developments. Accordingly, local authorities are recommended to direct new development to the most accessible locations, such as town centres and sites close to major transport interchanges. PPG13 recognises that the availability of car parking has a major influence on travel choices. It recommends setting maximum parking standards for broad classes of development in order to reduce the attraction of the car and promote more sustainable modes of transport.

Housing policy is also critical to promoting car-free development. The relevant document is *Planning Policy Statement 3: Housing*,⁹ which replaces the government's revised *Planning Policy Guidance Note 3: Housing*¹⁰ (planning policy guidance notes are gradually being replaced by planning policy statements (PPSs) in UK government parlance but both have the same functions). In brief, the general (transport-related) aim of strengthening the links between housing, transport, accessibility and efficient land-use to reduce car dependency

by ensuring access by non-car modes, improving public transport links between housing, jobs and local amenities, and planning for mixed use remains the same. However, under PPS3⁹ local authorities are given more flexibility in deciding where homes are to be built and on setting average development densities, and must put more emphasis on considering social and environmental needs. Most significantly, the new policy statement removes the so-called maximum parking standard that applied previously. Instead, local authority standards must take account of local circumstances such as expected levels of car ownership in an area.

PPG notes and PPSs directly influence local authority planning policy. Supplementary planning guidance (SPG), now being superseded by supplementary planning documents (SPDs), provide additional information to that set out in policies and proposals in local or structure plans. SPGs and SPDs have, in some cases, been used to support car-free housing, although typically these are primarily designed to ease parking pressure rather than to promote the type of integrated car-free neighbourhoods found in mainland Europe.

Other complementary strategies reflect the objectives of PPS3 and PPG13 but make no specific reference to car-free residential areas. *Sustainable Communities*¹¹ seeks to shape liveable communities, promote integrated transport and reduce car use. The *Eco-towns Scoping Report*¹² highlights the need for high-quality transport within and between communities with an emphasis on enhancing access by foot, bicycle and public transport. The *Code for Sustainable Homes*¹³ awards points for cycle storage and home offices to reduce travel.

More positively, in *Making Residential Travel Plans Work: Guidelines for New Development*,¹⁴ the government specifically suggests that residential travel plans should consider measures including parking restraint (potential for car-free sites) and minimising intrusion from parking. It adds that 'ambitiously low parking standards can be contentious' so a 'comprehensive package of measures [needs to be] in place to ensure realistic travel choices are realistic'. The guidelines also note that

- (a) car-free development is not about restraining access to a car, as this can be provided through a car club
- (b) complementary schemes aimed at improving sustainable transport alternatives are needed to help residents reduce their reliance on cars
- (c) the design of new developments needs to take account of long-term sustainability considerations
- (d) developments that dedicate less space to parking should devote some of that space to other purposes that benefit the community, for example communal gardens or play areas for children.

Reinforcing this further with the strongest guidance yet, recommendations for the ten planned 'eco-towns' to be built in the UK see car-free developments as being key design features in promoting a reduction in car dependency.¹⁵ However, despite the positive moves towards pushing the car-free agenda on the one hand, on the other (in the review process for the revised PPSs) it looks like government is apparently beginning to abandon the concept of maximum parking standards,¹⁶

therefore seemingly actively to undermine the very basis on which car-free development is founded.

3. TYPES OF CAR-FREE DEVELOPMENT

Before discussing car-free housing, it is useful to examine the different forms this may take. The term 'car-free' usually refers to sites where no access or parking is available for motorised vehicles within the core residential area.¹⁷ Certain schemes provide a visually traffic-free environment, but do not seek to restrict car ownership or use. Some offer limited parking, often at a significant cost to users. Others may only provide parking spaces for disabled residents and may also employ legally binding agreements to prevent other residents from owning their own vehicles. The following typology¹⁸ describes different forms of car-free development.

(a) Visually car-free—typically, the core residential area does not include any motorised access or parking provision. Walkways and access routes are designed for pedestrians and bicycle access, but are accessible to emergency vehicles. The narrower access routes and lack of parking allow more green public spaces whilst maintaining housing densities. This approach provides a high-quality, car-free residential environment but may, in some cases, be weaker on mobility management. Although the site may incorporate public transport and a car club, it may not restrict car ownership, in which case significant levels of residential parking may be provided at the edge of the site or in costly underground parking garages.

(b) Low-car/car-reduced—residential development that has a reduced overall parking standard; some units will be eligible for parking permits either on site or on surrounding streets within a controlled parking zone (CPZ).

(c) Car-free—in its simplest form, the term 'car-free' might be applied to existing high-rise housing or traditional high-density tenements, where little or no provision has been made for vehicle infrastructure or residential parking. Purpose-built car-free sites generally do not provide any on-site parking for motor vehicles, apart from spaces for disabled residents and delivery vehicles. This may be enforced by legal agreements. Where optional residential parking is provided, high charges and peripheral location act as disincentives. In the case of small car-free development plots within a CPZ, residents are usually precluded from obtaining on-street parking permits. Larger car-free areas, approaching the scale of functional neighbourhoods, incorporate a range of alternative transport measures and local amenities.

4. CAR-FREE HOUSING: EUROPEAN OVERVIEW

Car-free housing is better established in mainland Europe than in the UK and includes more extensive sites approaching the neighbourhood scale (Table 1). Renewed interest in the car-free housing concept started in Germany and Austria in the early-1990s. The first car-free project was planned for Bremen in 1992: 220 car-free homes were proposed as part of a larger development, with 30 parking spaces rather than the standard 180–220. Although the entire project was cancelled, this was

Site	Description	Size	Car parking	Mobility
Germany				
Woltmannweg, Berlin	<ul style="list-style-type: none"> Visually car-free Constructed 1980s Residential area car-free Public space, play areas, shop and bar, green roofs 	<ul style="list-style-type: none"> 7.3 ha 5000 residents 	<ul style="list-style-type: none"> Peripheral and underground parking spaces (0.5/unit) 	<ul style="list-style-type: none"> Car club Bus route S-bahn 10 min walk
Vauban, Freiburg	<ul style="list-style-type: none"> Car-reduced Phase 2 car-free Initial occupancy 1999 Final phases completed 2006 	<ul style="list-style-type: none"> 240 car-free units to date 2000 units total 38 ha car-free 90–100 units/ha Net density 200 units/ha 	<ul style="list-style-type: none"> Peripheral parking spaces charged at €16 000 (one-off fee) 	<ul style="list-style-type: none"> Light rail extension opened in 2006 Car club membership includes free regional public transport pass and 50% discounted national rail travel Bicycle and trailer rental
Saarlandstraße, Hamburg	<ul style="list-style-type: none"> Car-free Completed 2000 Public space, play areas, cycle parking 	<ul style="list-style-type: none"> 220 units 3.5 ha Net density 63 units/ha 	<ul style="list-style-type: none"> Limited peripheral parking for disabled residents and car club vehicles only (0.15/unit) 	<ul style="list-style-type: none"> Car club U-bahn 3 min walk 2 metro stations and retail centre nearby
Austria				
Florisdorf, Vienna	<ul style="list-style-type: none"> Car-free Completed 2000 Public space, retail facilities, community meeting room, work-spaces, rooftop vegetable gardens, sauna and gym 		<ul style="list-style-type: none"> Reduced parking provision (<0.5/unit) 8% car ownership 	<ul style="list-style-type: none"> Integrated public transit On-site car club Pedestrian and cycle networks

Table 1. Selected European car-free sites^{2,18,32}



Figure 1. Large-scale car-free development in Amsterdam: Westerpark

due to changes in the housing market related to economic recession rather than lack of support for the car-free concept.²⁰

As of 2004, Germany had ten significant purpose-built car-free residential areas and another nine approved.⁶ Large-scale car-free development schemes elsewhere in Europe that are served by excellent alternatives to the car include Westerpark in Amsterdam, Netherlands (Figure 1) and Hammarby Sjostad in Stockholm, Sweden (Figure 2).²

Importantly, the provision of efficient public transport, car clubs and walking and cycling infrastructure seems to form an integral part of the majority of European schemes. Some large sites, such as Vauban in Freiburg, include optional residential parking. Parking charges reflect construction costs and land values. Looking in more detail, Reutter^{21,22} discusses a project in Halle, Germany that converted an existing residential area to car-free and also included measures to promote modal shift. The project was planned in consultation with the municipal authority, public transport providers and residents. A range of physical traffic-calming and traffic-management measures was introduced to reduce through traffic and vehicle speeds. Walking and cycling provision was improved. A subsidised public transport ticket was introduced for tenants and a car club was established. Follow-up surveys showed that the majority of residents viewed the traffic-calming measures



Figure 2. Large-scale car-free development in Stockholm: Hammarby Sjostad

positively. Measures to reduce car-dependency were, however, less successful. The number of car-free households actually decreased between 1998 and 2001 (from 40 to 35%). Only 2% of residents actively use the car club facility, but this was rated positively by three quarters of residents, with 15% saying they envisaged using it in the future. This is the only example identified of a project that retrospectively employed both physical design and mobility measures within an existing community with the intention of testing the car-free model.

5. CAR-FREE HOUSING IN THE UK

There has been recent interest in low-car and car-free housing in the UK. Car-free sites have mostly been concentrated within London, but newer sites are emerging in other towns and cities such as Swansea, Brighton, Poole and Leeds. Unlike many European examples, most UK sites are on a small scale (often as infill development or conversion to residential use) rather than in the form of larger car-free districts. Several larger 'eco-housing' schemes (e.g. Greenwich Millennium Village (GMV) and Beddington zero-emission development (BedZED)) include an on-site car club but still retain much more residential parking than European examples. Other communities, such as the Poundbury Estate in Dorset, focus on environmental performance or high-quality urban design, but do not combine this with strong policies on car restraint or mobility management. Poundbury is recognised as an example of best practice in terms of urban design, but has been criticised for its relatively high parking standard (negotiated down from 2.5 to 2.3 per unit by the developer) and for not influencing travel behaviour.²³ The only example of a totally car-free 'neighbourhood' with integrated mobility policies is Slateford Green in Edinburgh.

5.1. Slateford Green

Currently, the largest purpose-built car-free residential area within the UK is Slateford Green in Edinburgh. The 120-unit site was developed by Canmore Housing Association and completed in 2000. The design is derived from a traditional Edinburgh tenement, with sheltered courtyard, and achieves a similar net density of 75 units/ha. The site is served by two high-frequency bus routes. There are no amenities on-site, but two local schools are within 1 km and a supermarket is nearby. The site has extensive landscaped areas, including gardens, reed beds, children's play areas and allotments.

On-site parking is limited to disabled residents, loading bays and car club vehicles. There is no restriction on car ownership. Parking is not controlled in the surrounding residential area, but the site is located within a high-density tenement area with limited existing parking. Under the terms of the tenancy agreement, tenants undertake not to park a vehicle within the development. An additional voluntary agreement discourages parking on nearby streets and visitors from parking nearby.²⁴ However, these policies do not form part of any legally binding agreement. Cairns *et al.*²⁵ found that, despite much promotional work, none of the Slateford Green residents had joined the car club. It was suggested that the mix of social housing is not the right 'market' for the car club.

5.2. London boroughs

Several London boroughs, including Camden, Lewisham, Sutton, Wandsworth, Greenwich and Merton, have completed

car-free or low-car schemes, while other boroughs, including Islington²⁶ and Waltham Forest,²⁷ have issued SPG on car-free housing to assist developers. The SPG states that car-free development will only be appropriate in locations with good public transport links. There is often no detailed guidance on site selection or additional requirements to incorporate high-quality public space. This 'do minimum' approach relies on existing local amenities and public transport infrastructure. There are some advantages to this approach, but also several shortcomings, which will be discussed later.

5.2.1. Camden. Car-free housing forms part of Camden's green transport strategy, which was adopted in November 1997 in advance of the government's integrated transport policy White Paper.⁷ Car-free housing is encouraged at locations

- (a) easily accessible by public transport
- (b) where there is a good mix of local facilities and housing
- (c) within a CPZ.

To date, the borough has granted planning permission for approximately 2400 car-free units at 260 sites. The majority consist of a small number of units. All rely on planning conditions (section 106 agreements in England) to reduce or prohibit residential parking permits. None of the car-free sites within Camden include additional mobility measures such as a car club, although this is planned as part of the future redevelopment of existing high-rise housing.

5.2.2. Lewisham. OneSE8 is a recent high-rise development at Deptford Bridge, in the London borough of Lewisham. It is served by Docklands Light Rail, local bus services and incorporates a car club. Gated landscaped areas are provided, along with some open-access community space and shared leisure facilities. The central open spaces between blocks are hard surfaced. The site provides only a nominally car-free environment, as the central space appears to be used for car parking.²⁸

5.2.3. Sutton. Bedzed is located in the London borough of Sutton. It has 82 homes, 16 business units and childcare and community sports facilities. The site is on a bus route, 5 minutes walk from a rail station and 10 minutes from a tram stop. The project incorporates energy-efficient design, recycled materials and a combined heat and power (CHP) system. The area is not within a CPZ, so no mechanism exists for enforcing off-site parking. In order to address concerns of overspill parking, a green lifestyles officer was employed to establish a car club and a green transport plan. As a result, the parking standard was reduced by 50%.¹⁷ The site is defined as low-car. Nevertheless, it has a parking standard of 0.85/unit (84 spaces), which represents a considerable proportion of the available area. Both GMV and Bedzed appear to have relatively high parking standards (0.85 spaces per home); this exceeds most European low-car housing (approximately 0.5/unit). For comparison, the London Borough of Southwark has adopted a residential parking standard of 0.25–0.4 spaces per unit at all locations with high accessibility to public transport. All future housing within a CPZ will be *de facto* car-free as the parking standard is reduced to zero.

5.2.4. Wandsworth. A car-free project is under construction in Wandsworth, providing 22 affordable homes for key

workers. The site is located close to public transport, local shops and leisure facilities. The design incorporates landscaping, a green roof and features to minimise use of water and energy. There is secure cycle parking on-site, but no car parking. The possibility of an on-site car club is being discussed, but this was not part of the original planning agreement and any additional mobility measures have not been finalised.

5.2.5. Greenwich. GMV is one of two millennium village sites intended to serve as a model for the creation of 21st century sustainable communities.²³ It incorporates energy-efficient construction techniques and CHP. Community facilities include a school, medical centre, green space and wetland area. Once completed, the GMV will provide 3000 homes at a net density of 230 units/ha.²⁹ Despite excellent transport infrastructure (car club, London Underground, high-frequency shuttle bus, cycling and walking routes), there is considerable off-street parking in the form of a multi-storey car park, plus informal parking for commuters using the site as a park and ride. Residential areas are traffic-free, although walkway widths permit vehicular access. 'The emphasis is on removing cars from residential areas'²⁹ not restricting car ownership. The site is therefore defined as visually car-free. It has not been possible to establish definitive parking standards at GMV, as various sources refer to different phases of the ongoing development. An assessment of the contribution of the millennium villages and other 'sustainable' housing projects to sustainable lifestyles²³ concluded that none of the study sites fully integrated transport and land-use, or employed an innovative demand-reduction strategy. The report added that, given the potential for modal shift at GMV, anything less than high patronage of public transport should be regarded as a failure.

5.2.6. Merton. The Department for Transport¹⁴ reports that a development of 570 flats by David Wilson Homes will allocate 0.78 parking spaces per dwelling at a suburban site at Plough Lane.

5.3. Reasons for car-free housing in London

Restricted land supply and continued economic growth have led to a chronic housing shortage within London and south-east England. Compared with the rest of the UK, London also has relatively good public transport and lower car ownership. 55% of residents in Camden do not have access to a car; the figures are 52% in Southwark and 41% in Greenwich. Market conditions therefore lend themselves to this 'do-minimum' form of car-free housing.

The advantages of car-free housing may be summarised as follows.

- (a) From a developer's perspective, the use of a section 106 agreement to reduce parking standards may actually be beneficial. Without it, a local authority (or other planning authority) may decide to withhold planning consent on the grounds that the development proposal has the potential to increase local traffic volumes or affect local air quality standards.
- (b) From the local authority perspective, it is possible to secure affordable housing, while managing any additional

pressure upon existing parking. PPG3 recognises that it may be difficult to incorporate parking into housing that has been redeveloped from other uses.

- (c) For residents, car-free developments mean an increased supply of market-rate and affordable housing in central locations where the proximity of public transport and local amenities means car ownership is not necessary.

However, there are also a number of disadvantages.

- (a) The approach implies that residents are able to 'choose' a car-free lifestyle. In reality, a significant proportion of the 'car-free' units are the agreed proportion of affordable or social housing units. Scheurer² found that car-ownership among housing association tenants of Slateford Green was only 17%. As tenants of affordable housing are less likely to own a car, restricting their access to a parking permit does little to reduce car use or promote a shift to other modes.
- (b) Residents of small, urban car-free sites do not benefit from the landscaping or other environmental benefits of larger car-free developments. They may also be subject to 'perimeter effects'—a scenario from biodiversity conservation in which the area is too small to provide a core area free of disturbance and external influences, such as noise or poor air quality.
- (c) Whereas larger car-free developments usually include some sort of in-built mobility measures to ensure that residents have access to a range of transport modes, this is not the case with smaller (micro-scale) sites that are designated via restriction of resident parking permits within a CPZ. The reduced size of the site may also make it too small to sustain local amenities or arrangements for a car club.
- (d) As there is little need for wider infrastructure improvements or mobility measures, this approach demands no major change in thinking among planners or developers. Although residents are prevented from owning a car, they do not receive any benefits or trade-offs. Rather, the motivation is to be seen to 'do a car-free scheme', but with minimum investment in supporting measures.

5.4. Acceptance of car-free housing

One objective of studying the potential for community-wide travel plans in the context of car-free communities must be to determine whether this could promote wider acceptance of the car-free concept. In order to gain market acceptance, car-free housing must therefore demonstrate benefits to both developers and residents. The car-free concept should not be regarded by developers as simply an opportunity to increase the density of housing. Discussing Slateford Green, Hazel³⁰ supports the principle that any land gained from a reduction in parking provision should be used for open space, play areas or other benefits to residents.

Levine and Inam³¹ describe the situation in the USA, where long-established zoning laws effectively promote urban sprawl (through lower densities), single-use development and a presumption in favour of car-based lifestyles. There is, however, growing support among developers (reflecting market preferences) for 'smarter growth' focused on higher densities, mixed-use and improved accessibility by non-car modes. The

authors regard the slow progress towards smarter growth as a failure of the US planning system, which requires prior evidence of a causal link between 'alternative' development patterns and changes in travel behaviour.

Currently, there is some resistance among UK developers to implementing car-reduced areas on a larger 'community' scale, which might support public transport, local amenities and attractive public spaces. High land prices may mean that developers are reluctant to use the space previously required for access roads and parking bays for public space if they perceive that the area could be more profitably used for increasing densities. Hazel³⁰ cites a continued belief among developers that the urban housing market requires layouts that are 'dominated by the need to provide parking and access for vehicles'. An example of this is the relatively high parking standard at GMV despite its excellent public transport links.

In supporting the Slateford Green project, one of Edinburgh City Council's objectives was to demonstrate the existence of a market for alternatives to car-based development, which was not currently available.³⁰ Scheurer² suggests that there is a ready market for purpose-built car-free housing within existing non-car-owning households. The potential market might be even wider, including car-owning households—Canmore Housing Association suggests it is widely accepted that people will choose to live in a development such as Slateford Green, given the benefits of a car-free environment. This is supported by market research carried out at Nippes, Cologne—of the initial 5000 respondents, 50% were car-owners who stated they would comply with the legal requirement not to own a car.³² As of 2004, the development had a waiting list of 2000 applicants,³² with residents only moving into the first 130 units in March 2007.¹⁹

If alternatives to car-dependence are to be viable—for both existing communities and new-build developments—car-free living should provide improved quality of life but should not be perceived as 'anti-car'. The 'do minimum' model employed at the small central London sites is a pragmatic approach, reflecting the limited availability of land and the need for affordable housing. However, it provides a limited framework for future development of more extensive car-free housing areas, as such small-scale sites are unable to support local amenities or area-wide mobility strategies. They also fail to provide the additional incentives of reduced noise and traffic-free space. An alternative model for car-free housing is required—one that incorporates a community-wide 'mobility concept' and does not simply relocate vehicles to underground parking or withhold parking permits.

From a transport-planning perspective, larger car-free (or car-reduced) communities will require a different approach to the provision of residents' demand for mobility, which targets a wide range of everyday travel requirements. This is where CTPs may provide a means of increasing the potential for car-free housing.

6. COMMUNITY TRAVEL PLANS

The travel plan concept is now well-established for several sectors, particularly workplaces and schools. It involves developing a series of practical measures to improve transport

choices for employees or visitors to a site. From their origin in large industrial sites in the USA, travel plans were adopted in the Netherlands as part of the 1988 national transport structure plan and in the UK during the mid-1990s.³³ They were first formerly recognised in UK policy terms in the 1998 White Paper *A New Deal for Transport: Better for Everyone*.⁷ Subsequently, as noted by Enoch and Zhang,³⁴ travel plans have developed in terms of scale, structure, scope and segment. Crucially, all of the more mature travel plan segment 'types' so far have been destination-orientated; that is each site serves as the focal point for journeys from a surrounding area. In contrast to destination-based travel plans, CTPs work at the journey origin (the neighbourhood or residential development site) and aim to provide transport options to a wide range of possible destinations, including work, school and leisure.

As already noted, there are few examples of CTP implementation, but one is the green transport plan at Bedzed. The St James and Bartonsham Community Association is working in partnership with Hereford City Council to develop a CTP. The scheme, initiated and driven by the community association, is headed by a steering group that includes the director of highways. The key aim is to reduce car dependency and improve conditions for walking and cycling in the St James area of Hereford and to increase transport choice for residents. It is hoped that CTPs will be rolled out to other parts of the county. Melia³⁵ reports on resident types in a low-car development at Poole Quarter, Dorset which has also set up a CTP. The Seldown eco-development in Poole will see a ratio of 0.7 parking spaces per home.¹⁴

Brighton is also developing low-car housing, although it is not yet clear how far this will be supported by a CTP. The New England Quarter development will see a mix of uses, comprising a supermarket, two hotels, a language school with student accommodation and 355 new homes. There will be a maximum of one parking space per dwelling, although some blocks will have much lower levels of parking (e.g. blocks E and F parking ratios are set at only eight spaces for 170 dwellings¹⁴). Otherwise, perhaps the leading authority in terms of residential travel plans in the UK is Surrey County Council, although thus far it is not intended to push car-free or low-car developments particularly.

More recently, there has also been interest shown in area-wide CTPs that aim to provide for a more varied range of journeys that originate within a neighbourhood. Nottinghamshire County Council has recently worked on CTPs in two residential areas of Nottingham and area-wide travel plans are now also being completed for business parks and clusters of companies.²⁵ The highways department of Devon County Council is also developing a CTP approach. An integral part will be three consultation meetings that will identify the key issues to address, how these will meet local transport plan objectives and agree which measures will be developed.

Finally, the concept of the CTP has now been officially recognised by government.¹⁴ Overall, there is much policy guidance on developing successful workplace travel plans but still relatively little information is currently available regarding the potential for applying similar principles to residential sites. CTPs may provide a means of mainstreaming car-free

housing and also improving transport options within existing communities with low levels of car-ownership.

7. LIMITATIONS OF THE APPROACH

A number of difficulties exist. Defining a 'community' within which a travel plan might operate can be a complicated process. Even when developing a travel plan for a physically defined car-free area, there is a distinction between the social 'community' and physical 'neighbourhood'. For example, car clubs attached to car-free housing projects are frequently open to subscribers who live off-site.

Similar difficulties also exist in terms of identifying mobility options for all potential destinations. It is clear that an individual's movements are not restricted to one part of a city, so are unlikely to reflect the physical configuration of a definable 'neighbourhood'. People may not use the amenities in their neighbourhood, but may favour services in other parts of the city due to personal preference or proximity to other destinations. Catchment areas for schools, shops and post offices therefore vary and influence each other, so that each type of amenity (and thus trip-generating destination) extends into different catchments.

This was supported by Kennell³⁶ when studying the use of local amenities within a mixed-use 'urban village' created at the former Caterham barracks site in Surrey. Following Christaller's central place theory,³⁷ settlements display a hierarchical structure at the city/district/neighbourhood scale in terms of the catchment area for amenities of different calibre (with higher quality and more accessible central amenities influencing a wider catchment).

Identifying and addressing a potentially large number of journey types may mean that CTPs should be viewed as an iterative process that gradually identifies and refines options for meeting various travel demands. This might prove especially significant when applying a CTP approach to new car-free communities that have no historical pattern of mobility or existing residents.

8. CONCLUSIONS

Initial research has identified explicit support for car-free housing within UK national planning guidance, which is not present in other European countries. It has also identified a number of differences between car-free and car-reduced housing in the UK and mainland Europe. Car-free development has been shown to offer many advantages to residents, so long as a community-wide package of mobility options is developed as part of the traffic-free concept. Compared with European sites, UK examples are relatively small and have rarely incorporated a comprehensive form of area-wide mobility planning. The majority of the UK small-scale developments rely on planning conditions to limit access to on-street parking. This 'do minimum' approach is advantageous to local authorities and developers, but provides limited opportunity to incorporate the type of landscaping, safety and mobility incentives that attract residents to car-free neighbourhoods.

Such small-scale sites are therefore unlikely to encourage car-dependent households to consider the car-reduced or

car-free concept. Some larger sites, such as GMV and Bedzed, combine an attractive environment with good public transport and on-site car clubs. However, both these developments have a relatively high parking standard of 0.85 per unit, which exceeds that of European low-car sites and is double that of recently revised parking guidelines for 'regular' residential development. CTPs may offer a means of mainstreaming the car-free concept within the UK, making it more attractive to both developers and potential residents.

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