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## Transport Demand Management to Facilitate Urban Regeneration – Best Practice from London

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# Transport Demand Management to Facilitate Urban Regeneration – Best Practice from London

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## Abstract

Urban regeneration, internal densification and mixed land uses offer good opportunities for sustainable urban development. Transport impacts can best be limited. Locations with good public transport and cycle accessibility, i.e. locations that are accessible by other modes than the private car are often found close to the inner cities. At the same time, these locations are often restricted by the capacity of the surrounding street network.

With the introduction of Congestion Charging London has improved the capacity of its street network. Success of the system in terms of travel times by car and bus are often presented. However, Congestion Charging has also proven its benefits in facilitating urban regeneration within the inner city.

With the example of the Elephant & Castle regeneration, where the author was responsible for the Movement & Access Strategy, the paper shows how Transport Demand Management measures can be integrated to make use and maintain the benefits of Congestion Charging.

## Keywords

Urban Regeneration – Congestion Charging – Transport Demand Management / Mobility Management – Traffic Management

## 1. Introduction

Urban regeneration with internal densification and mixed land uses offers good opportunities for sustainable urban development. Transport impacts can best be limited. Locations with good public transport and cycle accessibility, i.e. locations that are accessible by other modes than the private car are often found close to the inner cities. At the same time, these locations are often restricted by missing capacity of the surrounding street network.

The London Congestion Charging (CC) has improved accessibility of the Inner City for traffic as well as for buses and cycling. Traffic volumes were reduced so that these are no longer a limitation to further developments. At the same time the achieved advantages need to be maintained and not compensated by new developments. Therefore measures are necessary that are able to limit traffic generation and facilitate a shift towards more sustainable modes like walking, cycling and public transport. The Transport Demand Management (TDM) / Mobility Management approach provides information and services to influence mobility behaviour at its source, before trips are started.

## 2. Congestion Charging benefits

With the introduction of Congestion Charging (CC) London has improved the capacity of its street network. Accessibility has been increased, travel times by car and bus are improved and more reliable. Less congestion and a better street environment supports public transport (buses), cycling and walking. The income can be used to finance these modes. However, CC has also proven its benefits in facilitating urban regeneration, further development and densification within the inner city.

### **Less traffic moving less congested in the charging zone**

Traffic (vehicles with four or more wheels) entering the zone during charging times has reduced by 21% and traffic circulating within the zone by 15% (Table 1). These traffic patterns became established at an early stage and have been sustained since then. Outside of charging hours on weekdays and weekends traffic levels are unchanged. There is no evidence of systematic increase due to the introduction of the charge.

Table 1 Traffic patterns after introduction of the charge

	Vehicles entering the zone		Traffic circulating in the zone (km)	
Cars	- 33%	} - 21% Four or more wheels	- 34%	} - 15% Four or more wheels
Vans	- 10...15%		- 5%	
Lorries and other	- 10%		- 7%	
Buses and coaches	+ 20%		+ 21%	
Two wheeled vehicles	+ 15%		+14%	

Source: TfL 2004, p 29/30

Congestion is measured by Transport for London (TfL) as lost travel time in min/km, based on the measured time between two points compared to the free-flow conditions (in the early morning). Congestion within the zone has reduced by 30%. This means that the proportion of time that drivers spend stationary or moving slowly in queues has reduced by up one-third. The average travel time is now 17 km/h compared to 8 km/h before the introduction of the charge.

#### **No substantial traffic increase outside the zone**

Traffic increase on the zone surrounding Inner Ring Road, that is free of charge has been limited to 4% in total and 1% for vehicles with four or more wheels. Due to better operational management, congestion on this street has been reduced by 10% to 20% and therefore travel times improved.

There is no evidence, that traffic outside charging hours or on local roads outside the charging zone has been increased.

#### **More bus passengers using more reliable and quicker buses**

37% more bus passengers are entering the zone. About half of the increased patronage is estimated to be due to congestion charging, the other half to service extensions and improvements.

Reliability of bus services has improved substantially. Delays and disruptions has been decreased by 60% within the charging zone and by 50% on the Inner Ring Road. Travel times have improved by 6% within the zone (11.6 km/h) and has not changed on the Inner Ring Road (13.3 km/h).

#### **Increase in cycling**

A substantial increase of cyclists was measurable already in Summer 2003. 300'000 commuter trips into Central London were made by cycling (the same amount as taxi and DLR

together). From 2003 to 2004 a further increase of 23% on the 'Transport for London Road Network' and 19% on the other streets was counted. A set of measures to improve the cycling infrastructure, cycle parking facilities and information, like the free cycle guides at all tube stations, have together with the CC facilitated this increase.

These few indicators show already that accessibility of Central London was improved for all modes of transport. This is a main precondition for further inner urban development.

### 3. Urban regeneration and densification

Further urban regeneration and densification depends on accessibility and the capacity of the transport systems. That's in London the same as everywhere. CC has improved the capacity of the street network. To maintain these benefits, traffic impacts of new developments need to be limited. Further measures are necessary to manage the transport demand of inhabitants and visitors of these developments. From the very beginning a shift towards more sustainable modes like public transport, cycling and walking needs to be facilitated. Transport Demand Management (TDM) is a term used to describe the broad array of measures and initiatives that can be used to manage demand for travel. An effective strategy will need to include a well-balanced blend of incentives and disincentives. TDM offers comprehensive information and services to influence mode choice at its source.

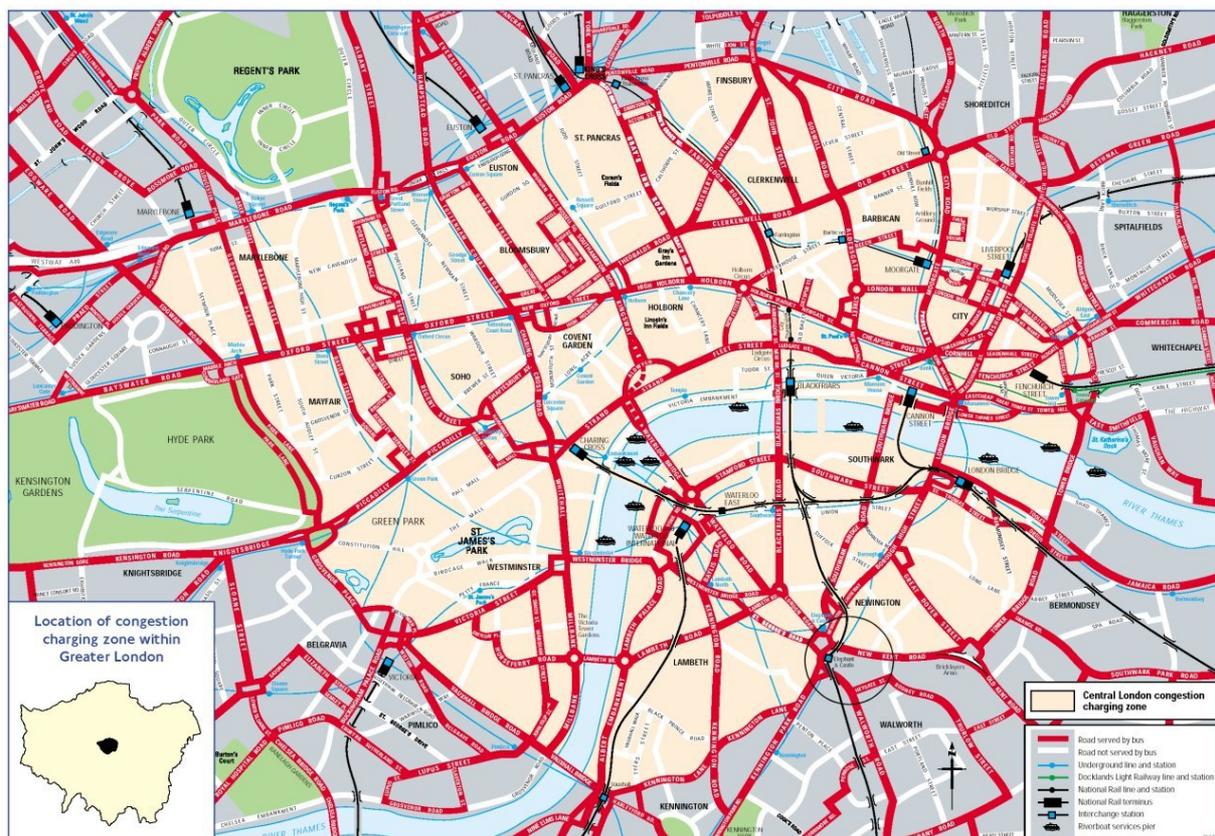
Figure 1 Elephant & Castle Development Framework, ground floor uses



Source: London Borough of Southwark 2004, S. 33

A good example for such efforts is the Elephant & Castle (E&C) regeneration (Figure 1): a 70 ha regeneration will unlock 5,200 new and replacement homes, 75,000 sqm of new retail space and 5,200 new jobs. E&C is located at the inner ring road of London, just outside the CC zone (Figure 2). E&C is a main interchange point between tube and bus. Two new tram lines will replace some of the bus services and increase the capacity of public transport. Improved regional rail services will be supported by a station extension and refurbishment.

Figure 2 Elephant & Castle location related to the Congestion Charging Zone



Source: TfL

One main precondition of the project was to show that the transport infrastructure will be able to cope with the expected movements. To achieve this, Congestion Charging is a vital issue to provide the necessary street capacity. At the same time the charge will limit / discourage car trips of the inhabitants and visitors of the development. However, car traffic had to be restricted in order to facilitate the whole project. Without a strategy to limit the generation of car trips and make alternative modes attractive the project would not have been possible.

## **Movement & Access Strategy for the Elephant & Castle Regeneration**

With its central location and good public transport access the area offers good preconditions. Mobility in the area is dominated by public transport. Car trips only count for 9% of all trips. Nevertheless, in the future this modal split would create 36'000 car trips per day (see Table 2). The street network and especially the Inner Ring Road would not be able to cope with these trips.

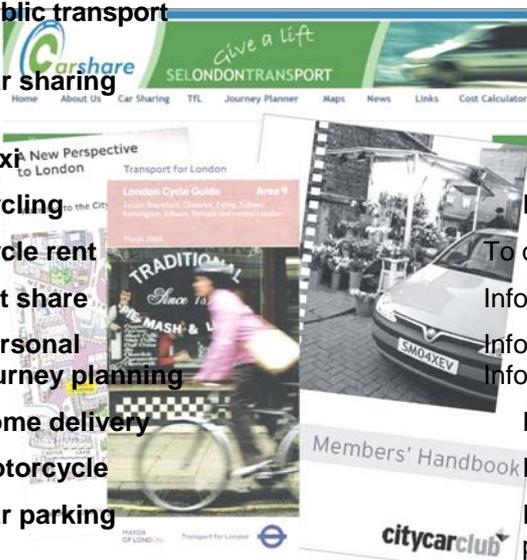
The transport strategy aims to reduce the traffic impact of the development and to define, in an integrated approach with the urban design, how transport demand for the development can be limited and properly managed. Infrastructure for walking, cycling, taxis and Transport Demand Management (TDM) measures, such as car clubs, are integrated into the urban design. Solutions that enable a modal shift from car to other modes can only be achieved if these modes are properly integrated at an early stage of the project. New developments are an opportunity for change. Whether it is to work, live or just visit; they are new destinations that need to be accessed. This means new habits need to be established.

Any Movement & Access Strategy has to start at the demand of the future inhabitants, employees and customers. The most important precondition for a successful concept will be the availability of good public transport and excellent cycle and walking facilities from the very first day. Innovative approaches are considered, that offer people the whole range of mobility, including car use via an integrated Car sharing service.

Basic elements of the developed Movement & Access Strategy are the car free retail development and limited car parking provision for residents. Car parking will be offered as a separate market, i.e. no parking provision will be inclusive to residential units. This is considered to offer real choice between the different modes. Car sharing will have to compensate for the lack of cars / car parking in the area. As they only fill a gap between the other sustainable modes, car sharing is offered as part of an integrated package, which incorporates further mobility facilities and services.

The advantages and specials of the development need to be actively promoted. To improve penetration and acceptance and to provide easy access to the different services, mobility packages were developed. These mobility packages consist of a number of different services and information. They should be available to residents and employees from their first day in their new home / job. Figure 3 provides an overview on the developed mobility package for new residents.

Figure 3 Mobility Package for new inhabitants

<p><b>Public transport</b></p> <p><b>Car sharing</b></p> <p><b>Taxi</b></p> <p><b>Cycling</b></p> <p><b>Cycle rent</b></p> <p><b>Lift share</b></p> <p><b>Personal journey planning</b></p> <p><b>Home delivery</b></p> <p><b>Motorcycle</b></p> <p><b>Car parking</b></p>		<p>Information package with a free travel card for the first month.</p> <p>All residents are automatically Car sharing members without additional fixed costs.</p> <p>Rickshaw voucher for the first mile.</p> <p>Information package and maps on walking and cycling.</p> <p>To offer city bikes / Special rental conditions for residents.</p> <p>Information package on the web-based Lift share service.</p> <p>Information on and invitation to the Mobility Centre.</p> <p>Information on Hotline and Web based travel information.</p> <p>Information on the services of the High Street Retail.</p> <p>Information on parking provision.</p> <p>Information on provision of parking and charges. Daily parking for residential visitors possible (need to be booked in advance).</p>
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Source: JMP 2003

The impact of the Movement & Access Strategy on the estimated trip generation were estimated separately for the different land uses retail, residential and office use. Two scenarios summarise the minimum and maximum expected shifts and show the range of trip generation that could be expected (Table 2). A crucial element for the reduction of car traffic in the two scenarios is the car-free retail development. However, also the increase on cycling will be influenced by an attractive infrastructure and accompanying services.

Table 2 Trip Generation and achievable Mode Shift

	Baseline Scenario		Scenario 1: Minimal Shift		Scenario 2: Maximum Shift	
	Trips	Modal Split	Trips	Modal Split	Trips	Modal Split
Walking	83'006	21%	91'269	23%	95'098	24%
Cycling	3'361	1%	15'035	4%	23'787	6%
Public Transport	262'123	65%	277'007	69%	271'121	68%
Motorcycle	840	0%	3'330	1%	4'053	1%
Car passenger	18'147	5%	6'824	2%	3'259	1%
Car driver / Taxi	35'790	9%	9'800	2%	5'948	1%
	403'266	100%	403'266	100%	403'266	100%

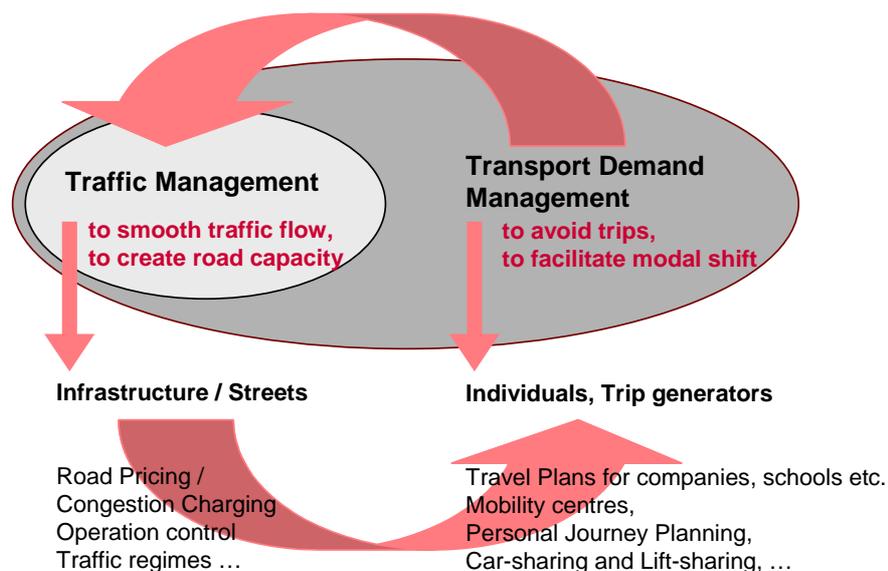
Source: JMP 2003

Capacity estimations and modelling has shown that the road network as well as the public transport infrastructure will be able to deal with the result of these scenarios. The project is still in a planning stage and not yet implemented. However, the movement and access strategy is a fundamental part of the adopted development framework that is legally established as Supplementary Planning Guidance. Therefore, it already shows best practice that is worth follow on.

#### 4. Effectiveness of Traffic Management and Transport Demand Management

The example shows how Road pricing as a substantial feature of traffic management can be complemented by a comprehensive Transport Demand Management strategy to achieve a most efficient infrastructure use and best accessibility for all modes.

Figure 4 Effectiveness of Traffic Management and Transport Demand Management



Traffic management creates a smoother traffic flow and finally creates road capacity that can also be used for public transport, cycle or pedestrian infrastructure. Transport Demand Management addresses the individuals and trip generators. It limits traffic increase by avoiding trips and facilitating shifts from car to other modes. In combination of both elements high effectiveness and efficiency are achievable.

Based on such strategies the development of attractive urban locations is possible and meets the objectives of a sustainable urban development. This is the same issue in Swiss and Europe agglomerations as it is in London. Together with Traffic Management measures also

Transport Demand Management need to be considered to ensure that not only the existing trip generators benefit from a better flow and perhaps increase their traffic. Transport Demand Management can contribute to equal opportunities for existing and new developments. Existing locations benefit by the improved accessibility.

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