Contents

1. INTRODUCTION 2

1.1 Purpose of this Report 2
1.2 Report Context: Sub-Regional Development Frameworks 2
1.3 The Sub-Regions 5
1.4 Report Structure 6

2. TRANSPORT AND DEVELOPMENT INTERACTIONS 7

2.1 Introduction 7
2.2 The West Sub-Region: Broad Characteristics 7
2.3 Stakeholder Aspirations 8
2.4 Transport Problems 8
2.5 Development and Transport Opportunities 12
2.6 Modelling Transport and Development Interactions 14
2.7 Strategic Policy Issues 14

3. A COMPENDIUM OF DATA FOR THE SUB-REGION 19

3.1 Introduction 19
3.2 Drivers of Change 19
3.3 Travel Patterns and Trends 40
3.4 Major Transport Schemes 69
3.5 Key Development Sites and Areas 71

ANNEXES 72

ANNEX 1: SUBMISSIONS TO THE EXAMINATION IN PUBLIC 73

ANNEX 2: REFERENCES 82

1. Introduction

1.1 Purpose of this Report

This West sub-region report is one of five covering each of the sub-regions in London, as identified in the draft London Plan (June 2002). The purpose of the report is twofold.

- First, to provide a review of transport and development interactions from a sub-regional perspective.
- Second, to develop a compendium of transport and land use data relating to the sub-region, the first time data has been collated on this basis.

As described in more detail below, the reports are part of the wider processes of revising the Mayor's Transport Strategy and Spatial Development Strategy (London Plan). They report on the first phase of this process identifying problems and opportunities, for testing and evaluation and strategy development in the next work phases.

1.2 Report Context: Sub-Regional Development Frameworks

The draft London Plan (June 2002) sets out a number of key spatial development priorities for London, as outlined below:

- Development in the Central Activity Zone and Central London Opportunity Areas to intensify and accommodate substantial growth, especially in economic activity.
- Major development to the east of London, along the Thames Gateway with an expansion of some central London functions into the City fringe, Isle of Dogs and Stratford.
- Enhancement and diversification of the role of town centres across London.
- Significant improvements in access, services and sustainability in suburban areas.
- A focused integration of spatial policies, including neighbourhood renewal, better health, improved learning and skills, greater safety and better employment and housing opportunities in the Areas for Regeneration.
- Appropriate intensification and mix of uses with a special focus on the Areas for Intensification.

The draft London Plan notes that these are strategic policy directions that will shape London's future. They need to be pursued in a manner that reconciles London-wide strategy with local aspirations and implementation. The development of sub-regional frameworks, considering the future strategic role of each particular sub-region, is seen as critical to this process. Transport for London commissioned Llewelyn-Davies to prepare transport inputs to these sub-regional frameworks. The broad stages of this project, as shown in Figure 1.1 are to:

- Stage 1: analyse problems, opportunities and key trends
- Stage 2: develop objectives and targets
- Stage 3: develop an integrated transport and land use strategy
- Stage 4: provide a costed and prioritised programme of schemes
- Stage 5: appraise and test packages of measures against the objectives and targets

Each of these stages needs to provide information by sub-region, consistent with the pan-London revision of the Transport Strategy.

Figure 1.1: *Project Stages*

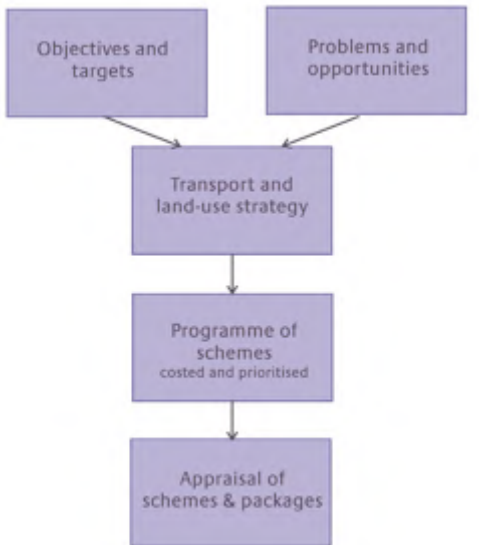
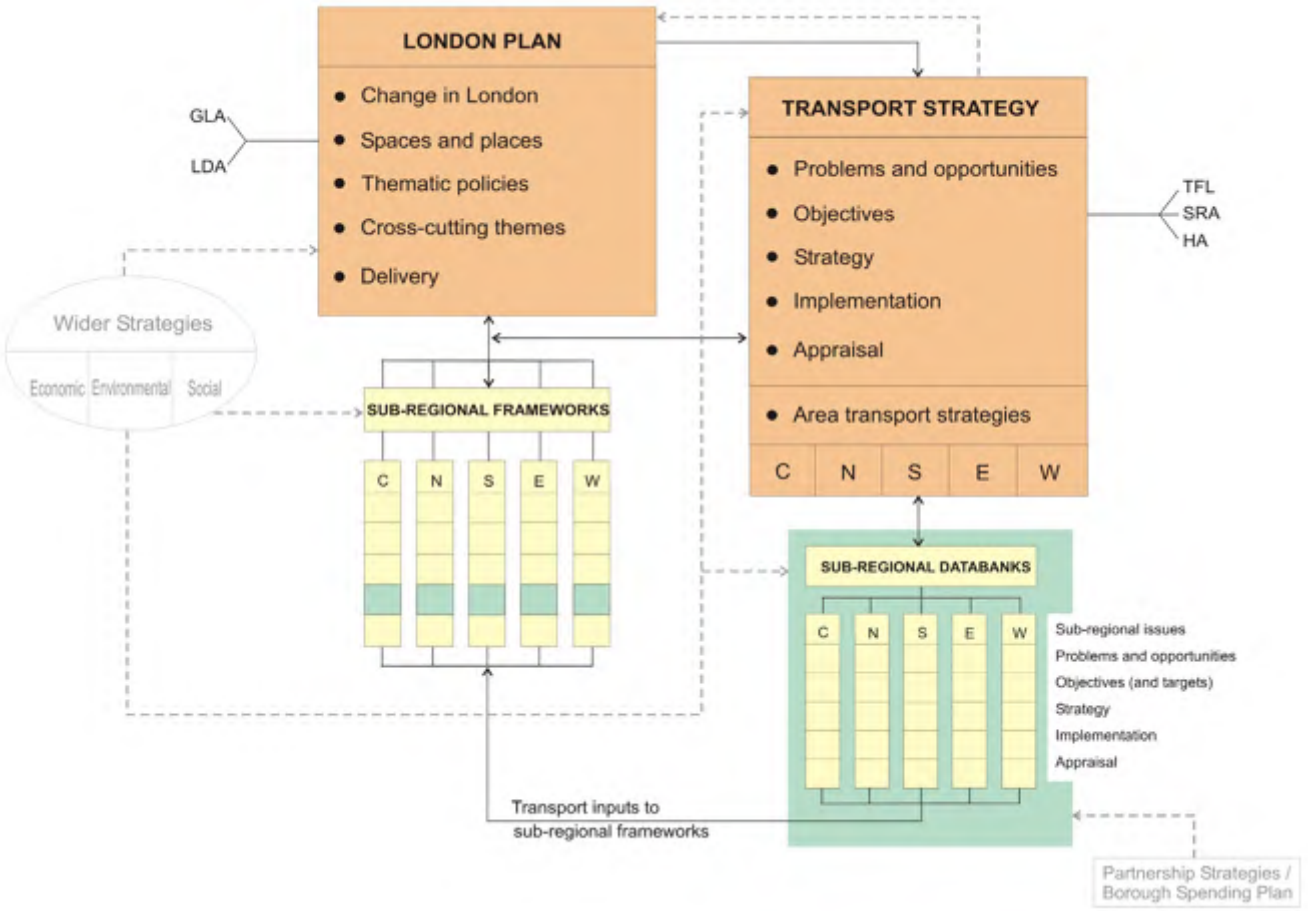


Figure 1.2 shows the relationship of the work with the ongoing development of the Transport Strategy and London Plan. This report provides a sub-region databank and an assessment of the problems and opportunities for the West sub-region. It will be used as context to the future development of objectives and targets, a transport strategy, and programme and appraisal, for the sub-region.

Figure 1.2: *Transport Inputs to the Sub-Regional Frameworks*



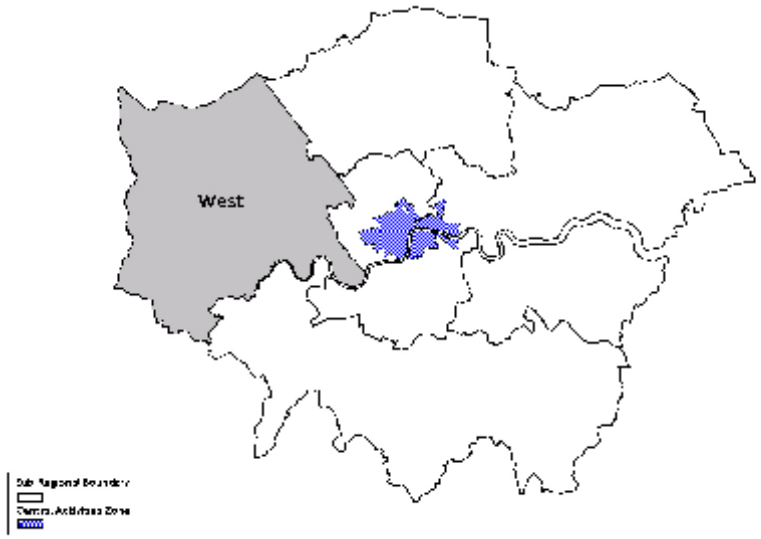
(Source: Llewelyn-Davies)

1.3 The Sub-Regions

The sub-regions within London are defined in the London Plan (June 2002) as follows:

- West London – Brent, Ealing, Hammersmith & Fulham, Harrow, Hillingdon and Hounslow.
- Central London – Camden, Islington, Kensington & Chelsea, Lambeth, Southwark, Wandsworth and City of Westminster.
- North London – Barnet, Enfield, Haringey and Waltham Forest.
- South London – Bromley, Croydon, Kingston upon Thames, Merton, Richmond upon Thames and Sutton.
- East London – Barking & Dagenham, Bexley, City of London, Greenwich, Hackney, Havering, Lewisham, Newham, Redbridge and Tower Hamlets.

Figure 1.3: *The Sub-Regions in London*



(Source: TfL, Hannah Shrimpton)

The sub-regions reflect the administrative areas of a number of agencies, such as the Learning and Skills Councils, Business Links and Local Authorities, and areas which are practical in terms of data collection. The sub-regions are also the focus of area-based partnerships, with key roles in the co-ordination of transport, economic development and regeneration activities.

In terms of data presentation within this report, disaggregated data for the West sub-region is provided. Wherever possible, this data is trend based, and compared to London as a whole.

1.4 Report Structure

The remainder of this West sub-regional report is structured as follows:

- Section 2: reviews problems and opportunities and the degree of "fit" between these and identified transport actions.
- Section 3: is a compendium of transport and land-use data organised into three parts. The first gives a brief overview of the sub-region, the second discusses the key drivers of change, while the third describes travel patterns and trends both quantitatively and qualitatively.

Two annexes provide further detail:

- Annex 1: Submissions to the Examination in Public
- Annex 2: Useful references

2. Transport and Development Interactions

2.1 Introduction

This section of the report reviews the transport and land use problems and opportunities for the sub-region, particularly concentrating on interactions at the sub-regional level. First, we consider the broad characteristics of the sub-region, then summarise stakeholder aspirations, perceived problems and opportunities, and conclude with a synthesis of key policy issues.

2.2 The West Sub-Region: Broad Characteristics

The West sub-region is a relatively thriving part of London with a diverse economy, including clusters of international businesses, a growing knowledge economy and some remaining concentrations of manufacturing. The draft London Plan (2002) envisages that growth should continue, with new development aimed at exploiting West London's dynamism and potential and tackling particular pockets of deprivation, especially in inner parts such as Acton and Park Royal and more local pockets such as those around Hayes and Feltham.

The inner parts of the sub-region have relatively good accessibility to public transport. The outer three boroughs have relatively poor accessibility to public transport, however, with low PTAL scores except around the main centres of the three outer boroughs (Harrow, Hounslow, and Uxbridge in Hillingdon). Public transport plays a relatively small role on local travel within the sub-region, while the rate of car trip generation is at a high level, second only to South Sub-Region.

The sub-region is regarded as having relatively high traffic levels due to higher than average car ownership, its location between London and the West of England and South Wales, and the presence of Heathrow.

The draft London Plan estimates that the West sub-region could accommodate 60,000 additional homes and 89,000 new jobs by 2016, much of it to be located in the Western Wedge (the London part of which extends from Paddington in Central London through Park Royal and Wembley to Heathrow and its environs).

A particular feature of the sub-region is the presence of Heathrow Airport, which not only generates a huge demand for surface travel on the western fringe of London (and to the centre), but also provides substantial employment. The draft London Plan aims to derive greater benefit from growth potential at Heathrow.

There is a relatively limited amount of brownfield development land in the sub-region and therefore much of the planned growth would need to be realised through higher density development, exploiting locations with good existing or potential access by public transport.

Current Transport Strategy schemes are shown in Figure 2.1

2.3 Stakeholder Aspirations

A number of issues have been highlighted during the draft London Plan Examination in Public as important to the future of the West sub-region. Below we show a summary of the key aspirations1 (further details are shown in the Annex).

The GLA family comments:

- The region will benefit from Crossrail 1, West London Transit, and improvements to the Piccadilly line.
- With the planned improvements in place it is expected that there will be sufficient transport capacity to support the development of the Opportunity and Intensification areas.
- A strategy is needed to plan for the continuing effects of Heathrow.

Borough comments:

- It is not clear how the required increases in office jobs can phased with improvements in public transport capacity. Concerns about ability of infrastructure to accommodate further growth.
- Should include a commitment to further proposals for north-south orbital public transport capacity movement.
- West London Transit is welcomed, but will not address problem of lack of orbital and north-south public transport routes.
- Transport proposals are not so helpful outside inner west London.

Other stakeholder comments:

- Public transport improvements, particularly on orbital rather than radial routes, are required to alleviate congestion.
- As no new transport capacity until the end of the Plan, development should not be prevented until new capacity is available.
- Mayor should seek interchange facilities where London Underground and National Rail lines cross.
- Airport related demands are over-stressing its transport systems. Need to minimise impacts of T5 development.
- Role of centres: need for improved public transport links between centres.

2.4 Transport Problems

A key purpose of this report is to address the transport issues associated with growth and change. However, in tackling these issues, it has to be recognised that the present transport system falls short of expectations, even for the present demands that are placed on it. Using a set of problem indicators, the West sub-region situation is set out in Table 2.1, together with commentary on how problems will develop, and any consequent need for intervention. Some of the problems are London wide and need to be addressed as such by the Transport Strategy.

Table 2.1: *Transport Problems*

Problem Indicator	West sub-region Performance and Trends	Projection and Strategy Intervention
Walking difficulties and quality of street environment	▪ Barriers to walking are summarised in the draft Walking Plan – people are discouraged by	▪ Conditions could deteriorate further as traffic levels increase.

[1] Source: Chris Hyde's summary of submissions to the EIP

	factors such as traffic volume, poor air quality, road safety issues, personal security, a poor quality of street environment and a lack of information. ▪ Pedestrians account for 21% of road casualties in the West sub-region, higher than the London average (See Table 3.16). ▪ High degree of severance related to heavy traffic flows, and relatively poor provision of crossing facilities.	▪ Counter actions at local level include traffic calming in residential areas, and better crossing facilities on main road network. ▪ Improvement of pedestrian environment is key to increasing the role of local, district and major centres.
Cycle difficulties	▪ Assumed that complex and dangerous traffic conditions suppress demand for cycling. ▪ Casualty levels for cyclists appear to be high (6% of total) in relation to the proportion of trips made by cycle (2.3% to work). See Table 3.16. Further data needed: ▪ Mode share for all trips. ▪ Attitudes on deterrents to cycling ▪ Impact of cycle provision on casualties and cycling levels.	▪ Cycling conditions may deteriorate further, unless traffic reduction is achieved. ▪ LCN+ routes are proposed on commuter routes. ▪ Current efforts to improve the quality of cycle routes e.g. new cycle crossings on the TLRN, TfL road safety campaign, improving cycle parking at train stations and provision of cycle route mapping.
Bus unreliability	▪ Bus reliability is average for London, for both high and low frequency services (see Figures 3.18-3.19).	▪ Should improve due to London wide bus service improvements (TfL).
Inadequate bus service routes or frequencies (social exclusion issue in terms of people working shifts outside hours of operation, or gaps in route coverage)	Future data need: ▪ Public satisfaction with service coverage in terms of routes, service levels and hours of operation.	▪ Pan-London issue, but probably of particular importance in West sub-region where public transport densities are lower than in Central sub-region, and employment and other facilities are often dispersed
Bus crowding	Data required to inform: ▪ Extent of crowding, especially on routes not served by Underground ▪ Especially commuter peak hours ▪ Some night bus routes ▪ School hours where coincident with commuter peaks	▪ Planned improvements should help to alleviate crowding (TfL), but data would be required to support this.
Rail unreliability	▪ SRA data is available by operator. Tables 3.25 and 3.26 and Figures 3.22 and 3.23 show that West sub-region experiences poor rail reliability, with some operators managing to get only 60-65% of their trains to their destinations on time. Further data required, including passenger satisfaction surveys.	

Rail crowding	▪ National Rail services suffer from crowding (See Figure 3.24)	▪ National Rail services would be subject to less crowding than now
Underground crowding	▪ Underground crowding at peak hours and on radial routes, especially the Piccadilly Line (See Figure 3.20)	▪ Conditions unlikely to improve on the Underground despite Crossrail and other schemes
Station and passenger environment and facilities	▪ See customer satisfaction section below.	▪ Is existing programme of upgrades adequate?
Road crashes and casualties	▪ Proportion of pedestrian casualties lower than London as a whole (See Table 3.16)	
Environmental problems	▪ Air pollution generally the worst in London (see Table 3.17 and 3.18). ▪ Major blackspot is Hillingdon. High levels of air pollution and noise are a result of land and air traffic associated with Heathrow Airport. ▪ The majority of commuting from Hillingdon is undertaken by car with 60% of work journeys by borough residents made by car – the highest figure for any London borough. (LB Hillingdon) ▪ 66% of jobs in LB Hillingdon are filled by non-borough residents, many of whom commute by car (LB of Hillingdon).	▪ Expected to deteriorate with growth of air travel and related activities
Road congestion (delays and unreliability)	▪ Fastest speeds of all the sub-regions. (See Table 3.33 and Figures 3.27-3.29). ▪ Even so, congestion coupled with poor public transport is considered a major constraint on growth (LB Hounslow).	
Parking difficulties	Data required for production of sub regional parking strategy. ▪ Residential parking difficulties in older and wealthier parts of the sub region. ▪ Parking difficulties in centres affects their competitiveness vis a vis out of centre facilities.	▪ Car ownership growth will exacerbate problems.
Costs of public transport for those on low incomes	Future data need: ▪ Impact of costs of travel on access to jobs (social exclusion issue) ▪ High costs of public transport use by international comparison. ▪ Businesses likely to experience labour market problems affecting competitiveness. ▪ Particular issue in relation to Heathrow.	▪ Improved with ticketing and fare initiatives. ▪ Improving as fare levels held. ▪ Young and unemployed peoples discounts.
Lack of transport	User impact data required.	▪ Pan-London problem.

payment integration	▪ Particular issue in West sub-region because served by both Underground and National Rail services.	Travelcards have helped. ▪ Will partly improve with Oyster card. ▪ Still no integration with National Rail, parking, taxi, car clubs.
Accessibility to PT for disabled people	Data could inform: ▪ Most rail services inaccessible; ▪ Buses – proportion accessible	▪ Crossrail and WLT proposals would help ▪ At present 79% of buses are wheelchair accessible. ▪ Rail accessibility for disabled users needs improving.
Risk and fear – personal security	User data required: ▪ Fear influence on mode or destination choice and trends. ▪ Fear of crime and anti-social behaviour known to be major deterrent to off-peak public transport use, especially for women. National survey suggested that this suppresses public transport travel by 10%. ▪ Same study found problems were greater walking and waiting at stops rather than on vehicle *(Crime Concern and Transport and Travel Research, 1997, "Perceptions of Safety from Crime on Public Transport", DETR)* ▪ West sub-region in comparison to other sub-regions not known.	▪ Not sub-region issue? ▪ Trends? ▪ Better or worse than other sub-regions?
Customer satisfaction	Data by sub-region required: ▪ Underground: customers are least satisfied with cleanliness of stations and helpfulness of staff and more satisfied by factors such as information, the services and safety and security (Transport Statistics for London, 2001). ▪ Buses: customers are least satisfied with service reliability and cleanliness of buses and slightly more satisfied with personal safety issues and staff behaviour (Transport Statistics for London 2001). ▪ Further data required by sub-region if possible.	

2.5 Development and Transport Opportunities

The previous section sets out transport problems in West sub-region as they now exist, or might develop. The Transport and Spatial strategies, however, can go further and set out ways of getting better outcomes and should show how development opportunities will be supported by appropriate transport actions. This section therefore tackles this issue of how to capitalise on transport and development opportunities.

To some extent it is difficult to separate problem solving" from "opportunity utilisation". For example, if a new transport facility is provided to help regenerate an area, it may also go some way towards solving existing transport problems.

Improving accessibility and the potential for intensification provide the key land use and transport opportunity for the West sub-region. A number of opportunities are included in Table 2.2 below that are not included in the DLP, but which could also be considered.

A further key issue to be addressed in the SRDF is the timing and phasing of major growth and increases in transport capacity. This is partly concerned with whether and in what ways the timing of transport and development can be co-ordinated, and partly the degree to which this is feasible. Relevant to this issue is the fact that the bringing forward of development schemes, and the implementation of some major infrastructure projects, are not within the control of the GLA or TfL. Nevertheless, this issue is strongly made in the representations made regarding the DLP, and it may be appropriate for the SRDFs to address this on a case by case basis.

Table 2.2: *Development and Transport Opportunities*

Opportunity	Related transport interventions	Comment on transport – development "fit" (An "OK" entry is given where the fit is judged to be clear)
Opportunity Areas		
Wembley (Inbound access for 5,000 jobs. Outbound for 400 homes)	▪ Crossrail 2	▪ OK ▪ New station at cross of Bakerloo and Chiltern lines could be considered as a means of increasing inbound accessibility.
White City (11,000 jobs. 1,200 homes) Also inbound access required for large retail component	▪ Major Strategic Interchange proposed, including new station on West London Line ▪ WLT	▪ Potentially large impact on local road system. (Developer's assumption of a third mode share by car). ▪ Inbound access currently to Shepherd's Bush. Proposals for 2 interchanges, but issue of re-configuration. Identified "major quality gap" in TfL Interchange Plan 2002
Park Royal (10,000 jobs only)	▪ No strategic schemes	▪ Poor inbound accessibility by public transport will mean high car mode share without new intervention.
Heathrow/ Feltham/ Bedfont Lakes (5,500 jobs. 930 homes)	▪ Major Strategic Interchange and Crossrail at Heathrow	▪ Inbound access to Heathrow currently geared to airport. Is this sufficient for inbound access to Feltham/Bedfont jobs?
Hayes/ West Drayton/ Southall 35,000 jobs. 5,800 homes)	▪ Major Strategic Interchange and Crossrail at Hayes &	▪ Poor inbound access and heavy current reliance on car. ▪ Public transport inadequate for inbound access to jobs.

	Harlington ▪ WLT at Southall	▪ Consider re-routing WLT to serve. ▪ Local public transport will need good integration with strategic rail services.
Intensification Areas		
Willesden Junction	▪ Major Strategic Interchange ▪ Crossrail	
Metropolitan/ Major Centres Intensification		
Ealing	▪ Major Strategic Interchange ▪ Crossrail ▪ WLT	▪ Identified as an area of neutral trend in the DLP ▪ Bigger role could be considered
Harrow	▪ None, although Crossrail runs close by to the east of Harrow	▪ Identified as an area of neutral trend in the DLP ▪ Bigger role could be considered
Hounslow	▪ None	▪ Identified as a regeneration area in the DLP
Wembley (See above)	▪ Crossrail	▪ Bigger role could be considered
Kilburn	▪ None	▪ Identified as a regeneration area in the DLP
Southall	▪ WLT ▪ Crossrail	▪ Identified as a regeneration area in the DLP
Hammersmith	▪ Major Strategic Interchange	▪ Identified as an area of neutral trend in the DLP
Fulham	▪ None	▪ Identified as an area of neutral trend in the DLP
Uxbridge	▪ WLT	▪ Identified as an area of neutral trend in the DLP ▪ Bigger role could be considered
Chiswick	▪ None	▪ Identified as an area of neutral trend in the DLP
Other opportunities not identified in DLP. (Accessibility and Intensification)	Would need new or redeveloped interchange stations	
None identified		
Transport opportunities	Would need new or redeveloped interchange stations	
None identified		

2.6 Modelling Transport and Development Interactions

LTS modelling (programmed for May/ June 2003) is to be based around the following scenarios:

1. Assumed development scenario (new homes and new jobs to 2016)
- Lower development aspiration (-50% London Plan)
- Current agreed development aspiration (London Plan)
- Higher development aspiration (+50% London Plan)

2. Transport scenarios
- 2001 Base: committed schemes (e.g. funding committed)
- 2011 model run: reference case and planned schemes
- 2016 model run: reference case and planned schemes

NB. Model runs to follow in May/June Results by borough/ sub-region (LTS cannot robustly go down to a finer level, e.g opportunity area). Standard LTS model oututs.

2.7 Strategic Policy Issues

2.7.1 Growth and Transport links

East and West London balance
A key issue for the West sub-region is how to support its continued growth and development, whilst not undermining the prospects of the high priority growth areas in East London and the Thames Gateway. One way of addressing this issue is to demand the highest standards of sustainability in all new developments. Developers will tend to choose West London over East London if high levels of car provision are allowed. More balanced competition will result if low parking provision and high public transport access is demanded.

Transport and Population Growth
The sub-region is expected to accommodate an additional 96,000 people between 2001 and 2016. Because the highway vehicle trip generation is expected to increase over that period by 4% (the largest percentage increase in London), the additional car trips generated by 2016 will be almost as many as in the East Sub-Region, where population growth will be well over twice that in West Sub-Region. A key issue for the sub-region is whether the role of private transport can be reduced, and what additional interventions could help bring this about.

Orbital Public Transport
An issue frequently raised by stakeholders is that of orbital public transport. The argument is that public transport is predominantly radial and that most of the major transport proposals are for reinforcement of radial movement. The argument is then made that there is a need to provide more public transport in orbital directions. However, there is no clear reason why these two arguments are linked. The absence of orbital public transport is not in itself a reason for creating them.

This issue should be re-examined in relation to the journey patterns that are desired, and what transport arrangements are best suited to achieving them. The traditional model was of suburban communities (and centres) linked to central

London by rail, and people within those communities finding local employment and other facilities within that community. This model has proved to be popular over the years, and links between radial corridors are weak compared to links within radial corridors. Suburban centres tend to cater for non-specialised employment, retail, leisure and other facilities, and consequently there is little to be gained by travelling from one radial corridor to another. We can see no reason why such orbital movement should be encouraged.

Apart from the lack of strategic purpose to providing for orbital movement (by whatever mode), there are inherent difficulties in providing for such movement by public transport, since origins and destinations are dispersed. Rarely will there be sufficient concentrations of demand to justify high intensity public transport. Low intensity (bus) transport already exists, but this is not easy to upgrade to the point where it competes effectively with the car.

The policy issue is thus related to land use policy, the strengthening of local, district and major centres, the strengthening and consolidation of radial public transport, and the provision of high quality movement at the local level.

There is no general case for orbital movement by public transport in Outer London. However, there is a strong need (as part of the growth and intensification strategy) for better public transport which provides inbound accessibility to town centres, and centres of employment. The resulting pattern of movement is better described as “local radial”, which when configured into public transport routes may resemble a tangential pattern. Within the West sub-region the main patterns of such movement will be generated at Heathrow and the main centres.

Employment, Retail and Transport Proposals
Much of the development undertaken in the past two decades in West London has been geared towards access by car, is poorly served by public transport, and has resulted in a high car mode share for employment and other purposes. Efforts have been made to change the balance of transport towards more sustainable modes, e.g. the Travel Plans with mode split targets for Heathrow airport and Stockley Park. But such initiatives cannot overcome structural problems in terms of the relationship between transport and development.

The proposed areas of opportunity and intensification give rise to a number of concerns in this respect. Table 2.2 above identifies that some proposed new employment and retail areas are inadequately related to existing or proposed public transport facilities, and therefore may result in high levels of car use.

On the plus side, intensified inbound access by rail (to the extent it can be achieved in the West sub-region) can be accommodated on the network without adding significantly to crowding, and using spare counter-flow capacity, thus adding to the financial viability of rail services. This impact cannot be overstated, however, and counter-flow commuting is notoriously difficult to achieve.

Further Opportunities for Intensification
There may be further opportunities for intensification at nodes in the rail network if interchange between lines can be provided, and services can be provided at Metro frequencies (e.g. 10 minutes headway or better). Development could help to fund the interchange infrastructure. Such opportunities would be likely to relate to employment or mixed-use developments, since the emphasis would be on inbound accessibility.

Specific opportunities could be investigated at the following locations:
- Old Oak Common (Central Line, North London Line, Paddington suburban lines)
- Gunnersbury (District, Piccadilly, North London Line)
- West Acton (Central, District, Piccadilly, Paddington suburban lines)

Centres in West London
The role of major and district centres is potentially an important issue. There are three centres with Metropolitan designation, of which Hounslow is seen as having regeneration potential. As part of a strategy to reduce social exclusion and reliance on car travel to retail, employment and leisure, a stronger role could be considered also for Harrow and Ealing. The same approach could be applied to major centres in West London, such as Hammersmith, Kilburn, Southall and Wembley. Although on a smaller scale, the role of district centres could also be enhanced to reduce the need to travel, and to exploit local public transport accessibility.

A further issue in relation to centres is the competitive relationship between established centres and new or expanding centres, as shown in table 2.3 below

Table 2.3: *Competition Between Centres*

Established centre with high PT accessibility	New or expanding centre actually or potentially in competition
Shepherds Bush	White City
Hammersmith	White City
Kilburn	Brent Cross/Cricklewood (North SR)
Wembley	Brent Cross/Cricklewood (North SR)

2.7.2 Transport and Areas of Deprivation

The proposed areas for employment growth (especially Willesden Junction, Park Royal and Hayes/West Drayton/Southall) have the potential to benefit the areas of deprivation. However, this benefit will need to be supported by public transport providing inbound access from the deprived areas to the employment areas. The strategic transport proposals such as Crossrail may well increase the attractiveness to business for investing in the areas, but they do not address this issue of local accessibility to jobs. Further transport improvements may therefore need to be identified.

2.7.3 Road network

Reducing travel by car
The Sub-Region is host to high profile attempts to secure a mode shift away from car for areas that are large scale attractors of car traffic. For example:
- BAA Travel Plan targets for access to Heathrow - original 50% car mode share target 1996-2001.
- Stockley Park - original target of 20% reduction in car use for commuting 1997 to 2002.

Given the high car mode share for travel to and within this sub-region, it could be useful to pursue such Travel Plan initiatives at a sub-regional level.

An equally important issue is whether and to what extent levels of car provision (and demand) associated with new development should be reduced. The type

and disposition of new development in relation to transport facilities may be a tool for influencing mode split, or journey lengths, or both. For example, employment targeted at the labour pool in areas of deprivation, and served by enhanced local public transport may generate a good deal less traffic than employment associated with strategic air and rail links and high profile inward investment by footloose companies.

For the purpose of increasing transport efficiency through traffic reduction, the West sub-region should be considered in relation to the entire "Western Wedge" extending beyond the London boundary into the Thames Valley. The Thames Valley and Orbit Multi Modal Studies, for example, considered the possibility of road user charging as a means of allowing the continuation of growth in the area whilst improving traffic conditions on the road network. The suggested introduction of a road user charging zone around Heathrow is relevant in this context. The logic is that in an area with a strong economy such as West London, this not only produces pressures and stress on the road network, but at the same time provides conditions in which a charging scheme can work.

2.7.4 Cycling

A feature of West sub-region is the low levels of cycling. The potential for replacing a proportion of car trips to cycling is an important issue for the sub region for a number of reasons:

- Distances to employment and facilities are often too long to walk;
- The bicycle offers its main advantages on distances typically covered by private car;
- Outer parts of the West sub-region have lower densities and often more space to accommodate cycle paths and lanes;
- Origins and destinations are often too dispersed to be served by high intensity public transport services;
- Cycle and ride would have potential at stations on both Underground and National Rail routes.

2.7.5 Air travel

A particular feature of the sub-region is the presence of Heathrow airport, one of the busiest international airports in the world. The airport and its associated activities place much heavier burdens on road and rail facilities than occurs in the outer parts of the other sub regions. This pressure will increase with the opening of Terminal 5. The key issue is how to accommodate the further growth of Heathrow without its impacts on the ground growing concomitantly. Aircraft noise is a major issue for much of the sub-region, as well as the environmental impact of road traffic. Crossrail would help to cater for much higher passenger numbers at Heathrow in the long term. Meantime there is the issue of how to reduce trip generation rates by both employees and passengers. Travel planning can continue to play an important role.

2.7.6 Network integration

As with all the sub regions, there is a need to identify priorities on the road network, and potential for inter-modal integration.

Priorities on the road network should be drawn up based on an identified hierarchy of roads and streets. This will be a key task for Stage 2 of the Sub Regional Development Frameworks.

Other integration issues of key importance are related to the timing of development and transport schemes. The view of some stakeholders, especially the boroughs, is that even though development is related to transport, it should not be delayed until transport projects are completed. These create a particular issue in areas of opportunity in particular. If development is allowed prior to good public transport accessibility being available, it will either be of sub-optimal density, or it will rely excessively on private car access.

3. A Compendium of Data for the Sub-Region

3.1 Introduction

This section of the report provides a compendium of transport and land use data for the West sub-region. Such a sub-regional disaggregation has not previously been provided in London. There are four key parts as outlined below:

- Drivers of change - key demographic, economic, social and environmental changes in the sub-region over recent years.
- Travel patterns and trends – key transport data such as mode share, weekday travel patterns, travel forecasts, etc.
- Major transport schemes.
- Key development sites and areas.

Where possible, this data is trend based, and compared to London as a whole.

3.2 Drivers of Change

3.2.1 Population

The post-1945 decline in London was reversed during the 1980s, increasing from 6.81 million in 1981 to 7.19 million in 2001. The West sub-region's population has also grown from just over 1.3 million in 1981 to almost 1.4 million in 2001. It is forecast that between 2001 and 2016 the population of the West sub-region will increase by 7% to almost 1.5 million, higher even than 1961 levels. Table 3.1 shows the population figures and projections by borough and also for the sub-region from 1961. Within the sub-region, all boroughs are forecast by 2016 to exceed 1961 population levels, with the exception of Hammersmith & Fulham and Brent. The total population growth to 2016 will, however, be less than half that predicted for the Central and East sub-regions.

Table 3.1: *West Sub-Region and Borough Population*

Sub-Region Borough	1961 Census (000s)	1971 MYE (000s)	1981 MYE (000s)	1991 MYE (000s)	2001 MYE (000s)	2011 (000s)	2016 (000s)
Hammersmith & Fulham	222	188.8	151.3	153.8	165.5	173.6	176.0
Harrow	209	207.0	199.0	203.0	208.0	214.8	218.6
Hillingdon	228	240.2	233.3	234.4	243.1	252.2	256.8
Hounslow	209	209.1	203.9	203.9	212.7	223.2	228.1
Ealing	302	304.1	282.2	283.8	301.6	316.0	322.9
Brent	296	282.8	254.2	240.8	263.8	280.3	287.6
West Sub-Region Total	**1,466**	**1,432.0**	**1,323.9**	**1,319.7**	**1,394.7**	**1,460.1**	**1,490.0**
London Total	7,994	7,529.4	6,805.6	6,829.4	7,187.9	7,679.3	7,899

Source: 1961 Census and ONS mid-year population estimates are Crown Copyright. Note: Data for 1961 to 1981 use 1991 boundaries. Data for 1991 and 2001 use 2001 boundaries.
Source for 2011 and 2016 GLA 2002 Round of Demographic Projections (GLA SDS Technical Report 23) © GLA 2003

Figure 3.1 shows the population trend and forecasts for the West sub-region

Figure 3.1: *West Sub-Region Population Trend and Forecasts*

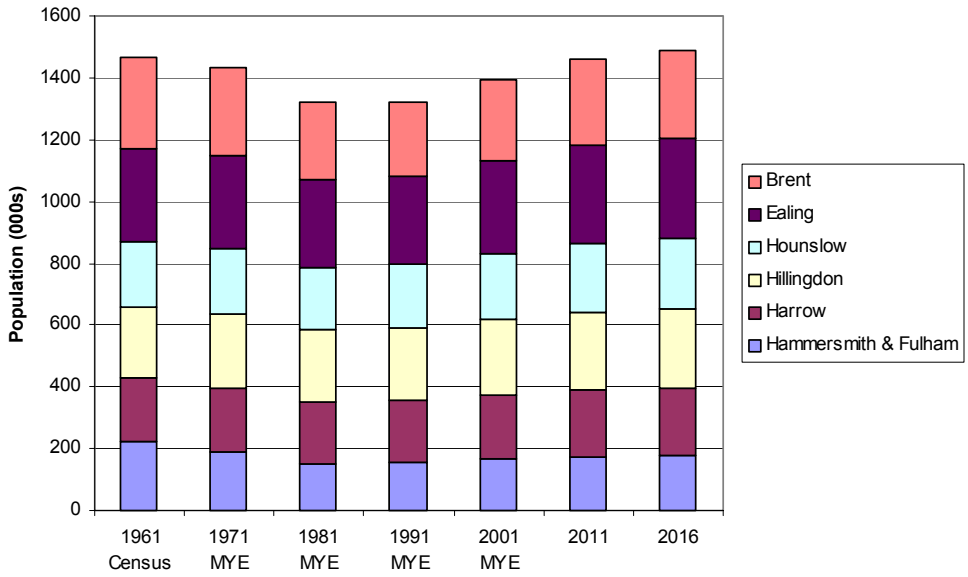


Table 3.2 highlights recent population increases using mid-year population estimates for the West sub-region in 2001, 2002 and 2003. The 2003 mid-year population estimate for the sub-region is just over 1.4 million people, with all the constituent boroughs, except for Harrow, contributing to the increase.

Table 3.2: *Recent Population Change*

Sub-Region Borough	2001	2002	2003
Hillingdon	243,052	243,132	243,264
Hounslow	212,668	214,118	215,652
Ealing	301,553	303,616	305,934
Hammersmith & Fulham	165,476	167,898	170,428
Brent	263,805	267,020	270,409
Harrow	207,988	207,930	207,878
West Sub-Region Total	**1,394,542**	**1,403,714**	**1,413,565**
London Total	7,188,006	7,238,366	7,290,174

Source: ONS (2003) 2001 Mid Year Estimates.
GLA (2002) Round of Demographic Projections (GLA SDS Technical Report 23)

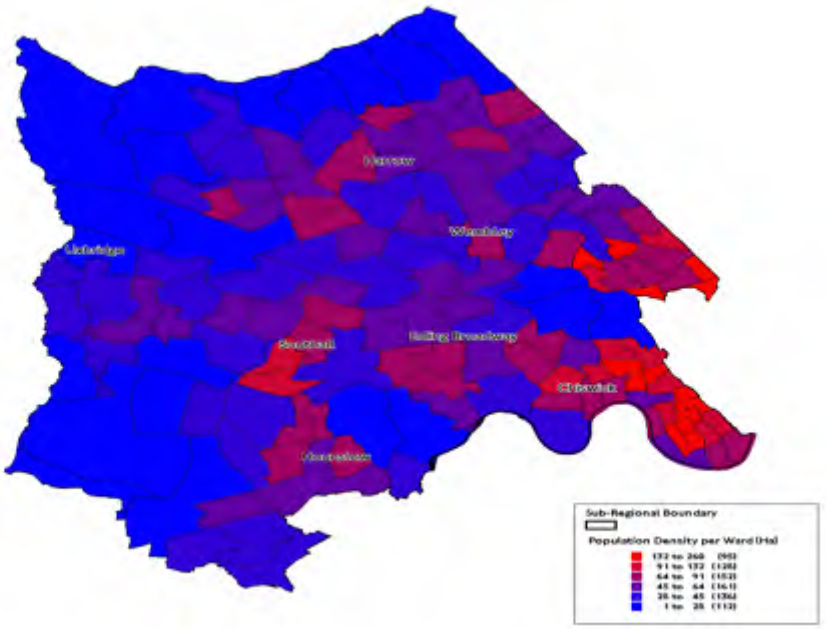
Table 3.3 gives the population densities for each of the London boroughs in the West sub-region. The average population density for the sub-region is 42 persons/ha, which is less than the London average. The least populated borough is Hillingdon with 21 people/ha. Hammersmith and Fulham is the most densely populated borough with 104 people/ha.

Table 3.3: *Population Density*

Sub-Region Borough	Area (Ha)	Population 2003	Household Density (Household/ Ha)	Population Density (Population/ha)
Hillingdon	11,570	243,264	8.4	21.0
Brent	4,324	270,409	23.2	62.5
Hounslow	5,599	215,652	15.0	38.5
Harrow	5,047	207,878	15.8	53.7
Hammersmith and Fulham	1,640	170,428	46.1	103.9
Ealing	5,553	305,934	21.3	55.1
West Sub-Region total	**33,733**	**1,413,565**	**16.4**	**41.9**
London Total	157,209	7,290,174	19.2	46.4

Source 2001 Census Statistics Table KS01 and ONS (2003) 2001 Mid Year Estimates.
GLA (2002) Round of Demographic Projections (GLA SDS Technical Report 23)

Figure 3.2: *Population Density 2003*



(Source: TfL, Hannah Shrimpton)
2001 Census Statistics Table KS01 and ONS (2003) 2001 Mid Year Estimates.
GLA (2002) Round of Demographic Projections (GLA SDS Technical Report 23)

Figure 3.3: *Population Density and Travel Behaviour*
CORRELATION/awaiting LTS output from Ian Wright/Atkins
(Source: 2001 Census Key Statistics and LTS)

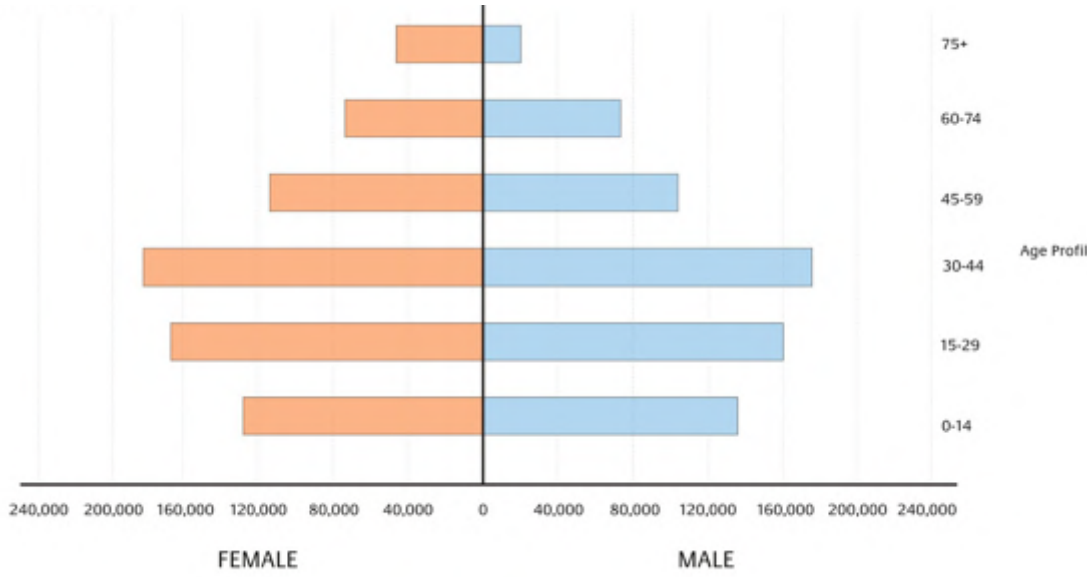
Table 3.4 and Figure 3.4 show the population age profile for the sub-region. The proportion of the population in the 30-44 age bracket in the West sub-region (25.4%) is smaller than the proportion in the Central sub-region (28.2%), but similar to the Greater London figure. The proportion of the population in the 0-14 bracket (18.6%) is higher than the Central sub-region, but lower than Greater London as a whole.

Table 3.4: *Population Age Profile*

Sub-region Borough	Age Profile												Total
	0-14		15-29		30-44		45-59		60-74		75+		
	M	F	M	F	M	F	M	F	M	F	M	F	
Hammersmith & Fulham	12,986	12,956	21,784	24,592	22,773	23,509	11,468	11,966	7,232	7,981	2,976	5,253	165,476
Brent	24,532	24,229	32,634	32,902	32,335	34,798	19,693	21,164	14,180	14,754	4,755	7,829	263,805
Ealing	28,573	27,386	35,777	35,721	38,784	39,417	23,865	25,157	14,780	15,672	6,267	10,154	301,553
Hillingdon	24,927	23,561	23,613	25,170	28,885	30,183	20,990	21,375	13,391	15,084	5,761	10,112	243,052
Hounslow	20,938	20,020	24,610	24,892	27,090	27,184	17,128	17,987	10,567	11,033	4,191	7,028	212,668
Harrow	20,131	18,677	21,759	21,243	23,356	25,239	18,406	19,755	11,621	13,155	5,374	9,272	207,988
West Sub-Region Total	**132,087**	**126,829**	**160,177**	**164,520**	**173,223**	**180,330**	**111,550**	**117,404**	**71,771**	**77,679**	**29,324**	**49,648**	**1,394,542**
London Total	696,652	668,534	801,301	842,328	909,530	939,651	561,090	594,857	355,799	394,474	155,088	268,702	7,188,006

(Source: ONS mid-year estimates, GLA, John Hollis)

Figure 3.4: *Population Age Pyramid*



(Source: John Hollis, GLA)

Table 3.5 shows the growth in households in the West sub-region, between 1991 and 2001 with projections to 2016. Household numbers are predicted to rise by over 80,000 between 2001 and 2016.

Table 3.5: *Household Growth*

Sub-Region Borough	Households 1991	Households 2001	*Households 2011	*Households 2016
Hammersmith & Fulham	71,218	75,545	82,400	84,200
Brent	95,113	100,120	117,100	121,700
Ealing	110,082	118,260	132,900	137,500
Harrow	76,917	79,561	86,300	89,300
Hillingdon	92,849	96,661	104,500	108,500
Hounslow	81,016	84,123	92,400	96,000
West Sub-Region total	**527,195**	**554,271**	**615,600**	**637,200**
London Total	2,809,056	3,022,674	3,322,700	3,469,800

Source: 1991 and 2001 data from GLA 2002 Round of Demographic Projections (GLA SDS Technical Report 23) Copyright GLA 2003. 2011 and 2016 projections from GLA, John Hollis

3.2.2 Economy and Employment

Table 3.6 shows that employment in the West sub-region is forecast to grow by 10% overall between 2001 and 2016. The borough where growth is predicted to be the greatest is in Hammersmith and Fulham (19%), with Hounslow and Brent also predicted to have employment growth above the sub-regional average. Lower employment growth is anticipated in Harrow or Hillingdon. The percentage increase in employment growth for the sub-region is forecast to be lower than that of London as a whole.

Table 3.6: *Employment Forecasts*

Sub-Region Borough	2001	2016	Change	Change %
Brent	99,878	114,874	14,996	15%
Ealing	116,362	125,609	9,247	8%
Hammersmith and Fulham	107,917	128,511	20,594	19%
Harrow	70,224	70,802	578	1%
Hillingdon	171,848	178,553	6,705	4%
Hounslow	138,236	156,175	17,939	13%
West Sub-Total	**704,465**	**774,525**	**70,060**	**10%**
*West Sub-Region total (GLA, London Plan Data)	780,000	866,000	86,000	11%
London Total	4,014,206	4,690,799	676,593	17%

Source: Annual Business Inquiry, 2001/ Roger Tym & Partners Projections (GLA Economics, Damien Walne)
** Draft London Plan (TfL, 2003, Analysis of the Transport Programme to Support the Draft London Plan)*

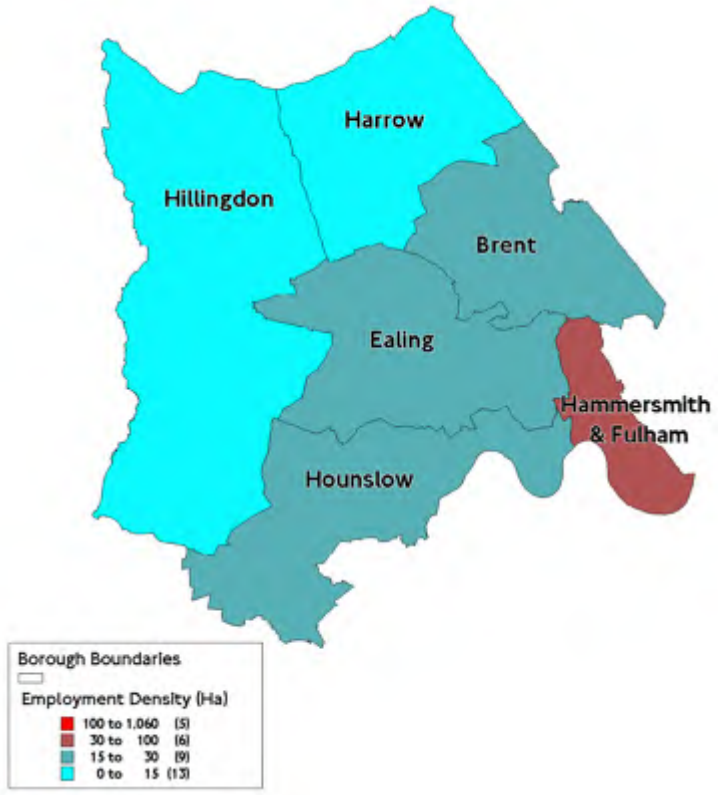
Table 3.7 shows the employment densities in 2001 of the individual boroughs and the West sub-region's total. Hammersmith and Fulham has by far the sub-region's highest employment density (50.6 employees/ha). The remainder of the boroughs in the sub-region average employment densities of between 10 employees/ha in Hillingdon and 27.5 employees/ha in Brent. Overall, the West sub-region has lower employment densities than Greater London as a whole.

Table 3.7: *Employment Density 2001*

Sub-Region Borough	Number of employees	Area (ha)	Employees/ ha
Hammersmith and Fulham	83,023	1,640	50.6
Hillingdon	117,044	11,570	10.1
Hounslow	103,623	5,599	18.5
Brent	118,704	4,324	27.5
Ealing	143,766	5,553	25.9
Harrow	97,759	5,047	19.4
West Sub-Region total	**663,919**	**33,733**	**19.7**
London Total	4,014,206	157,209	26

Source: Annual Business Inquiry, 2001/ Roger Tym & Partners Projections (GLA Economics, Damien Walne)

Figure 3.5: *Employment Density*



(Source: TfL, Hannah Shrimpton and Annual Business Inquiry, 2001/ Roger Tym & Partners Projections (GLA Economics, Damien Walne)

Figure 3.6: *Employment Density and Travel Behaviour*
To be completed/waiting for Atkins data

Table 3.8 shows that the West sub-region has 17.5% of London's total employment. The major employment sectors in this region comprise the distribution, hotels and restaurant sector and the business service sector. One other sector of employment, which is notably high in this sub-region, is the transport and communications sector: accounting for almost 15% of jobs (compared to 8% across London), largely due to the presence of Heathrow Airport, London's single largest employer.

Table 3.8: *Type of Employment*

Sub-Region Borough	Agriculture and fishing	Energy and water	Manufacturing	Construction	Distribution, hotels and restaurants	Transport and communications	Business Services	Finance	Public administration, education & health	Other services	TOTAL
Brent	5	160	13,584	5,556	29,792	8,637	15,679	1,696	19,570	5,199	99,878
Ealing	66	151	12,313	6,149	32,430	10,335	27,270	1,267	19,791	6,590	116,362
Hammersmith and Fulham	30	4	6,741	1,949	20,616	6,593	27,814	1,206	22,228	20,736	107,917
Harrow	42	55	6,329	3,817	15,807	3,489	15,617	4,747	16,913	3,408	70,224
Hillingdon	132	268	12,284	5,490	39,656	56,368	30,715	4,030	18,751	4,154	171,848
Hounslow	99	450	7,557	5,440	32,908	17,831	34,845	3,954	22,496	12,656	138,236
West Sub-Region Total	**374**	**1,088**	**58,808**	**28,401**	**171,209**	**103,253**	**151,940**	**16,900**	**119,749**	**52,743**	**704,465**
London Total	3,809	11,877	260,360	134,395	891,710	321,623	1,000,889	324,437	780,081	285,025	4,014,206

Source: Annual Business Inquiry, 2001 (Damien Walne, GLA)

3.2.3 Incomes and Car Ownership

Table 3.9 shows the gross average weekly earnings for full time jobs in the West sub-region (data relates to workplaces and not residents who work outside of the sub-region). Working categories are as follows:

- "High" skill refers to managers, professionals, senior officers, and associate professional and technicians.
- "Medium" skill refers to secretarial/administration, skilled and personal service
- "Low" skill refers to sales/customer service, operatives and elementary occupations.

The table also benchmarks sub-regional earnings against the GB average, which is indexed at 100. In the West sub-region, average weekly earnings are higher than Great Britain (28% higher) and Greater London (7% higher).

Table 3.9*: Average Gross Weekly Earnings*

Area	Average Weekly Earnings (Index)	High Skilled Workers	Medium Skilled Workers	Low Skilled Workers
West Sub-Region	**414 (128)**	**568 (118)**	**298 (121)**	**284 (115)**
Greater London	392 (121)	545 (113)	282 (114)	279 (112)
Great Britain	324 (100)	482 (100)	247 (100)	248 (100)

Source: New Earnings Survey, Office for National Statistics (NOMIS) PACEC 'Understanding London's Sub-Regional Economies'

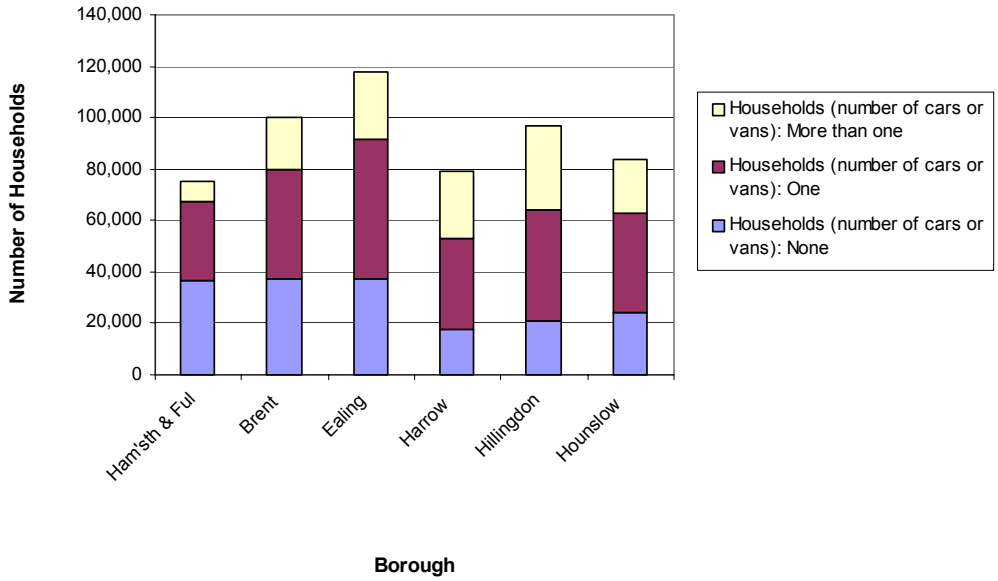
Table 3.10 and Figure 3.7 show car ownership in the West sub-region in 2001. Car ownership are higher than the London average. 31.5% do not have a car, compared to Greater London at 37%. 24% of households have more than 1 car, which is higher than the Greater London percentage of 19.5%. The relative prosperity of the sub-region, the jobs in the prosperous Thames Valley economy to the west of London and the many car based developments in the sub-region, could be a major factor behind these figures

Table 3.10: *Car Ownership (2001)*

West Sub-Region borough	All households*	Households (number of cars or vans): None*	Households (number of cars or vans): One*	Households (number of cars or vans): Two*	Households (number of cars or vans): Three*	Households (number of cars or vans): Four or more cars*	All cars or vans in the area**
Hammersmith and Fulham	75,438	36,630	30,461	7,032	1,058	257	48,868
Brent	99,991	37,287	42,606	16,207	3,135	756	87,757
Ealing	118,023	37,372	54,259	21,761	3,742	889	112,907
Harrow	79,112	17,972	34,900	20,789	4,286	1,165	94,385
Hillingdon	96,643	20,972	43,116	25,690	5,225	1,640	117,298
Hounslow	83,994	24,049	38,920	16,868	3,316	841	86,270
West Sub-Region	553,201	174,282	244,262	108,347	20,762	5,548	547,485
Total London	3,015,997	1,130,649	1,298,481	476,185	86,470	24,212	2,616,328

Source: Census 2001
**Includes any company car or van if available for private use*
*** All cars or vans in the area' includes only those cars and vans owned by; or available for use by; households*

Figure 3.7: *West Sub-Region Car Ownership (2001)*



Source: Census 2001. Includes any company car or van if available for private use

3.2.4 Tourism and Culture

London is one of the world's most popular destinations for international travellers and tourists. In 1998 it attracted 13.5 million visitors who stayed for an average of seven nights, an increase of 30% since 1990. Although the West sub-region has a lower proportion of hotels than the Central sub-region, it still has over 16% of the Greater London total, giving it the second highest number of hotels of all of the sub-regions. In terms of proportion of bedspaces it again accounts for 16% of the London total. The sub-region does not have any visitor attractions within London's top 20. The higher proportion of visitor accommodation in the West sub-region compared to the North, South or East, is largely due to the presence of Heathrow Airport.

Table 3.11 *Hotels in the West Sub-Region*

West Sub-Region Boroughs	Establishments	Rooms	Bedspaces
Brent	25	1,119	2,350
Ealing	42	1,148	2,437
Hammersmith and Fulham	43	2,913	6,028
Harrow	31	723	1,413
Hillingdon	66	6,979	14,158
Hounslow	38	1,321	2,933
West Sub-Region total	**245**	**14,203**	**29,319**
London Total	1,509	93,286	186,067

Source: BTA/LTB November 2002

Table 3.12 shows that the West sub-region accounts for only a small proportion of people on the Underground whose origin of travel was a hotel. Only 4.7% of those on the Underground who started at a hotel in London did so from the West sub-region.

Table 3.12: *Underground Passengers Travelling from a Hotel*

Area	Number of passengers
West Sub-Region	1,752
London Total	37,181

Source: London Underground Rolling Origin and Destination Survey
NB. Definition of 'Underground Passengers Staying at a Hotel': number of London Underground passengers whose journey origin was from a hotel in the sub-region.

3.2.5 Drivers of Change

The trends in employment, population and tourism identified above are all leading to a growth in travel. A number of other drivers of change are likely influence future travel patterns. These include: information technology/home working/flexible working, environmental protection policies and extension of opening hours. Table 3.13 shows the extent of working at home for employed residents in the sub-region.

Table 3.13: *Extent of Working from Home*

West Sub-Region Borough	People who work at or mainly from home	% of employed residents in each borough
Hammersmith and Fulham	7,376	8.9%
Hillingdon	9,624	8.2%
Hounslow	8,667	8.4%
Brent	10,886	9.2%
Ealing	12,256	8.5%
Harrow	9,644	9.9%
West Sub-Region total	**58,453**	**8.8%**
London Total	285,935	8.6%

Source: Census 2001 KS15 (GLA, John Hollis)

3.2.6 Social Inclusion and Regeneration

Deprivation
Transport links are critical to supporting regeneration and promoting social inclusion by improving access for people in deprived areas to employment and other opportunities. Thirteen of the twenty most deprived boroughs and districts in the UK are in London (ONS, 2000).

Each of England's 8,414 wards is ranked according to its level of overall deprivation on the Index of Multiple Deprivation (IMD). The most deprived ward is ranked 1 and the least deprived ward is 8,414. The median rank for England is 4,208. Table 3.14 shows, for each given area, the median rank of its wards on each of the indices of deprivation and on the overall measure, the IMD. The calculation of IMD is based on a weighted summary figure of the rankings of the various indices.

The overall IMD figure for the West sub-region is above the London average. The West sub-region scores better than Greater London in terms of employment, income, health and education. Housing and access deprivation are, however, worse in the West sub-region than in Greater London.

Table 3.14: *Indices of Deprivation*

Area	IMD	Income	Employment	Health	Education	Housing	Access
West Sub-Region	**2,655**	**2,604**	**3,071**	**3,618**	**4,165**	**430**	**6,940**
Greater London	2,418	2,444	2,555	3,457	3,347	564	7,483
England	4,208						

Source: Neighbourhood Statistics, Index of Multiple Deprivation 2000, ONS, PACEC

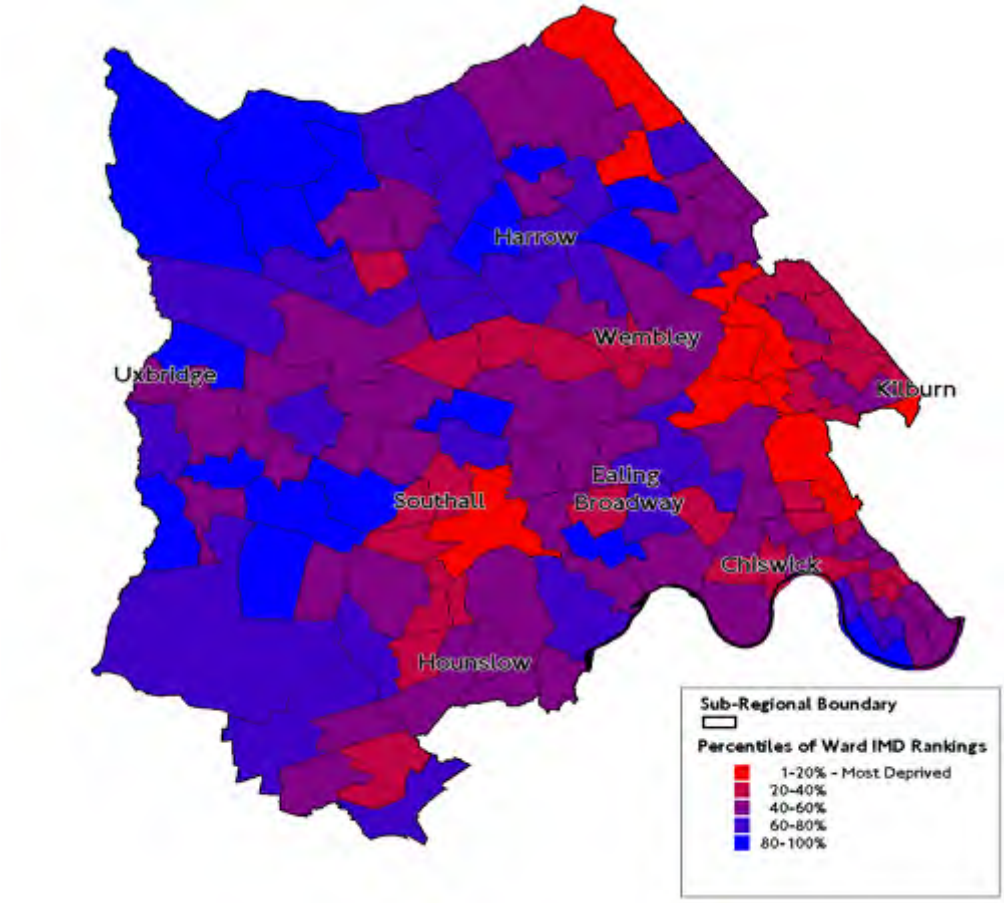
Table 3.15 shows the average ward scores in terms of deprivation. High figures indicate higher deprivation, with London's most deprived ward being Tower Hamlets in the East sub-region (61.3), and the least deprived being Richmond Upon Thames in the South sub-region (7.5). The most deprived borough in the West sub-region is Brent (33.5). Harrow (16.0) is the least deprived.

Table 3.15: *Indices of Deprivation – Average Ward Scores*

Borough	Indices of Deprivation 2000, (average of ward scores)
Ealing	26.78
Hillingdon	18.30
Hounslow	25.76
Harrow	16.03
Hammersmith and Fulham	31.57
Brent	33.53
Average West Sub-Region ward score	25.31
London	28.70

Source: ONS

Figure 3.8: *Indices of Deprivation 2000*



(Source:TfL, Hannah Shrimpton and ONS)

Figure 3.9: *Deprivation and Travel Behaviour*
CORRELATION, awaiting data from LTS, Ian Wright/Atkins

3.2.7 Safety and Security

24,836 road traffic crashes involving personal injury were reported to the Metropolitan and City police within Greater London during the first nine months of 2002. This is a 9% decrease compared with 2001. However, casualties in 2002 have shown a decrease of 8% compared with 2001.

These 24,836 crashes resulted in 30,228 casualties. Of these 203 were fatal, 3,992 were seriously injured and 26,033 were slightly injured. Fatalities decreased by 3% from 209 to 203 compared with the first nine months of 2001. Serious injuries decreased by 5% and slight injuries decreased by 9%.

Figure 3.10 shows casualties in the West sub-region, and Table 3.16 the type of casualties, both in the first nine months of 2002. In terms of total casualties, the West sub-region accounts for 18.8% of the total for London. Harrow (-18%), Hammersmith and Fulham (-12.3%) and Hounslow (-12.3%) all had greater percentage decreases from 2001 than the average for London (-8.4%).

Figure 3.10: *Total Casualties in the Sub-Region (January to September, 2002)*

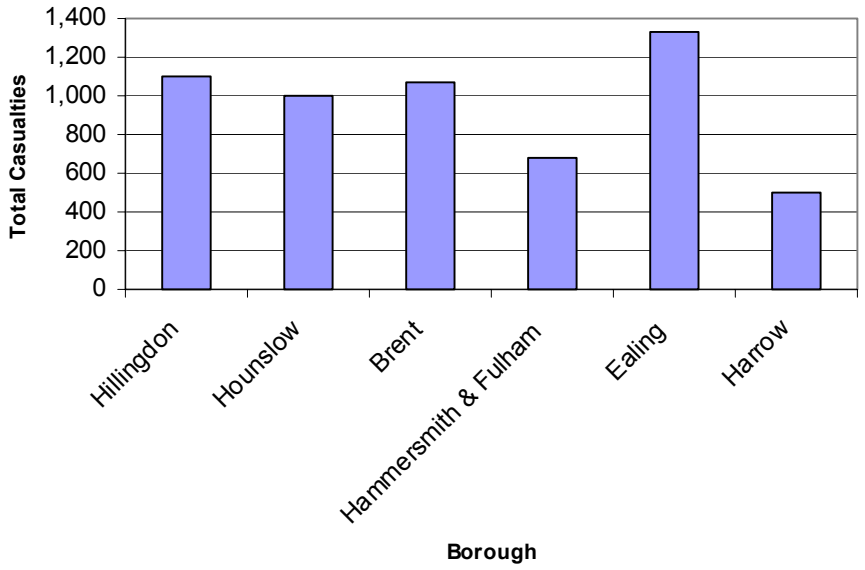


Table 3.16: *Casualties in the sub-region 2002 (January to September 2002)*

West Sub-Region borough	Total casualties		Pedestrians		Pedal cyclists		Powered two wheelers		Car occupants		Total vehicle occupants	
	Jan - Sept 2002	% change over 2001	Jan - Sept 2002	% change over 2001	Jan - Sept 2002	% change over 2001	Jan - Sept 2002	% change over 2001	Jan - Sept 2002	% change over 2001	Jan - Sept 2002	% change over 2001
Hillingdon	1,101	-6.1	132	13.8	47	-31	105	2.9	765	-6.7	969	-8.2
Hounslow	1,004	-12.3	122	-10.3	66	-33	140	-2.1	607	-12.3	882	-12.6
Brent	1,066	-4.7	211	12.8	56	12	137	-2.1	583	-8.2	855	-8.3
Hammersmith & Fulham	680	-12.3	155	-7.2	95	-10	176	-16.6	191	-17.7	525	-13.7
Ealing	1,329	-7.8	230	-1.3	82	-23	159	-30	760	-2.2	1,099	-9.1
Harrow	496	-18.0	69	-37.3	25	-19	59	13.5	312	-14.5	427	-13.7
Total for West Sub-Region	**5,676**		**919**		**371**		**776**		**3,218**		**4,757**	
Total for London	30,228	-8.4	5,472	-7.8	2,351	-8.5	5,225	-10.7	14,341	-8.1	24,756	-8.5

Source: TfL Street Management Fact Sheet – London Accident Analysis Unit, Quarterly Summary year 2002 (first nine months) January 2003

3.2.8 Environment and Health

Air Quality

London's air quality is the poorest in the UK and amongst the worst in Europe. Poor air quality is significant cause of ill health and early death in London. The Government's National Air Quality Strategy[2] sets out air quality objectives for eight air pollutants, all of which have adverse effects on health. Table 3.17 shows air emissions by borough in the sub-region, with projections for 2005 in Table 3.18. Highest emissions, for all pollutants, are found in Hillingdon. Substantial reductions are expected across the sub-region for all noxious pollutants. Carbon dioxide emissions are expected to increase however.

The Mayor wishes London to make a contribution to meeting the UK target of reducing CO_2 emissions by 20% below 1990 levels, by the year 2010. London's transport system is responsible for around 20% of the CO_2 emissions in the city. For transport-related CO_2 emissions, road traffic accounts for 65%, rail and Underground for 25%, and aviation for the remaining 10%.

Table 3.17 *Air Emissions (1999)*

West Sub-Region	Sulphur Dioxide	Oxides of Nitrogen	Carbon Monoxide	Carbon Dioxide	Non-Methane Volatile Organic Compound	Benzene	Butadiene	Particulate Matter
Hammers-mith and Fulham	36.7	955	2,869	473,905	1,228	29.0	7.3	39
Brent	69.5	1,501	4,127	693,979	2,317	42.7	10.9	62
Hillingdon	470.2	7,701	12,904	1,850,805.	6,319	136.2	36.1	246
Hounslow	102.3	2,736	6,884	842,888	2,361	58.7	16.5	91
Ealing	210.7	2,279	5,916	880,816	2,761	58.2	15.9	116
Harrow	149.1	1,288	3,367	640,885	1,657	33.2	8.5	116

Source GLA – Lucy Sadler

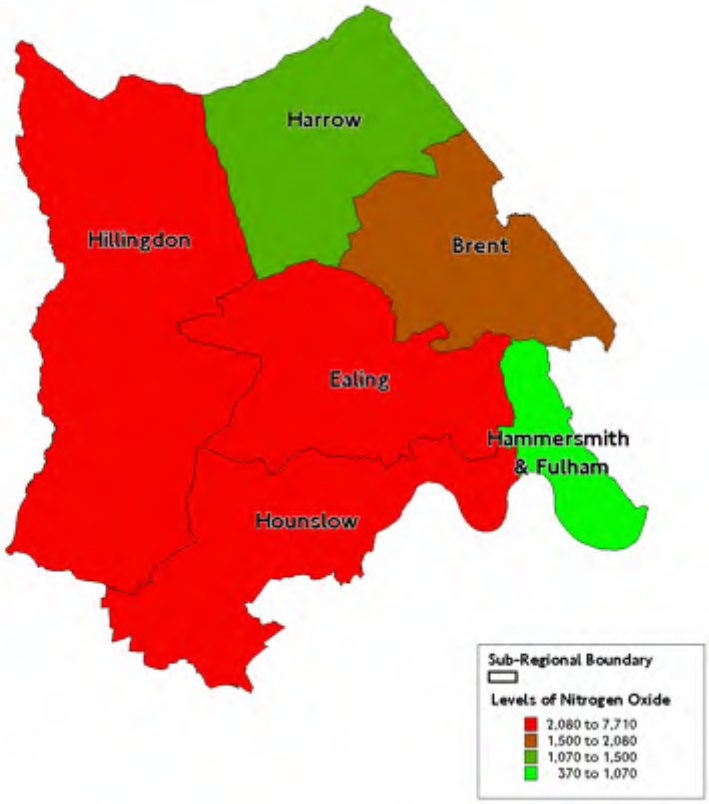
Table 3.18 *Projected Air Emissions (2005)*

West Sub-Region	Sulphur Dioxide	Oxides of Nitrogen	Carbon Monoxide	Carbon Dioxide	Non-Methane Volatile Organic Compound	Benzene	Butadiene	Particulate Matter
Hammers mith and Fulham	24.0	952	1,607	642,180	1,128	18.7	3.3	31
Brent	152.5	1,370	2,116	805,844	2,162	25.9	4.7	65
Hillingdon	415.8	6,955	8,929	1,952,214	5,884	103.0	24.4	250
Hounslow	65.5	2,270	3,330	928,161	2,027	29.9	6.1	71
Ealing	193.0	1,988	3,168	1,043,148	2,653	35.9	7.5	101
Harrow	129.8	1,114	1,671	696,856	1,467	18.7	3.2	148

Source GLA – Lucy Sadler

[2] DETR (2000) Air Quality Strategy for England, Scotland, Wales and Northern Ireland

Figure 3.11: *Air Quality: Concentration of Nitrogen Oxide (1999)*



(Source: TfL, Hannah Shrimpton and GLA, Lucy Sadler)

3.2.9 Health

Health and environmental issues are closely linked. Tackling safety and security, air pollution, noise and stress arising from crowding and traffic delay, are necessary to improve health in the West sub-region. By contributing to the regeneration of deprived areas, better transport can also address the aspects of social exclusion and poverty which strongly correlate with poor health.

The London Health Commission has identified health improvement through transport measures as one of four key priorities for health improvement in London. Table 3.19 reports on some high-level indicators identified as important determinants of health in the sub-region.

Table 3.19: *Indicators of Health in the Sub-Region*

Sub-Region Borough	Unemployment Rate (%)	% of Pupils (aged 15) achieving 5 or more GCSE Grades A*-C or equivalent	Proportion of Homes judged unfit to live in (%)	Burglary Rate/ 1000 Resident Population	Road Traffic Casualty Rate / 1000 Resident Population (killed, injured or slightly injured)	Life Expectancy at Birth		Infant Mortality Rate/1000	Proportion of People with Self Assessed Fair, Good Health
						Male	Female		
Hounslow	2.8%	49.5%	9.8%	8.7	7.2	75.0	79.8	5.7	70.9%
Hammersmith & Fulham	5.5%	50.3%	13.2%	12.1	6.2	75.1	81.3	5.1	72.9%
Brent	6.5%	49.6%	12.0%	11.3	5.7	76.0	81.5	7.3	70.1%
Ealing	4.3%	49.8%	5.2%	10.1	6.4	75.7	80.5	5.1	71.1%
Hillingdon	2.5%	46.0%	5.0%	9.6	6.5	76.2	81.2	4.8	71.3%
Harrow	2.9%	59.1%	3.75	9.4	3.8	77.6	82.6	6.4	72.1%

(Source: London Health Commission, Health in London, 2003)
Unemployment: GLA & ONS Claimant Count (2002)
Life expectancy ONS 1999-2001
Infant Mortality ONS 1996-2001
Road Casualties: Transport for London (accident figures). ONS (mid-year estimates 2001) based on 2001 census
Burglary: Metropolitan Police Statistics: 2000/2001. ONS: mid-year estimates, 2001 based on 2001 census
GCSEs: DfES (provisional figures); January 2003
Housing: GLA: HIP data for London, April 2001
Good health: ONS 2001
Note: NO2 and PM10 are one of the 10 indicators. They have not been included in this table as the figures are shown in Tables 3.17 and 3.18

3.3 Travel Patterns and Trends

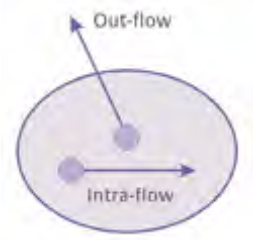
This section of the report draws together the key changes in travel patterns and trends in the West sub-region over recent years. It includes data on current travel patterns, traffic congestion, public transport, walking, cycling and private vehicles.

3.3.1 Mode Share

The following tables and diagrams, based on Census and Railplan data, show the mode share patterns for weekday journeys to work in the West sub-region.

Journeys to Work

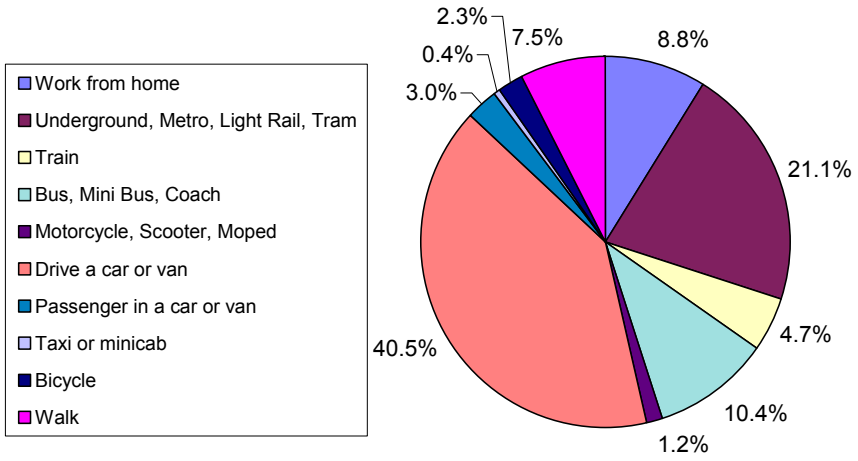
Figure 3.12 shows journeys to work by main mode for people living in the West sub-region (Census, 2001). 4 in 10 use public transport and a similar proportion travel by private car/ van.



Key comparisons with London-wide data are as follows:

- 40% of residents drive to work in the West sub-region, compared to 34% London-wide.
- 21% of residents travel by Underground, metro, light rail or tram, higher than London-wide (19%).
- 5% of residents travel to work by National Rail, less than London-wide (12%).
- 10% of residents use the bus, similar to London-wide (11%).
- Of the remainder, 7% walk, 9% work from home and 2% cycle to work.

Figure 3.12: *Main Mode for Journeys to Work by Employed Residents of West Sub-Region*

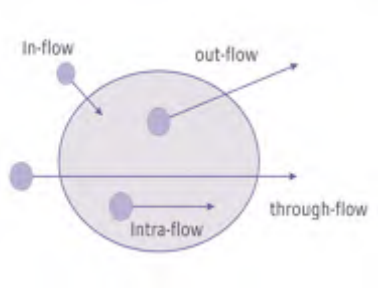


Source: Census 2001 (GLA, John Hollis)

Currently, there is no data source available which shows an accurate picture of journey type by mode by sub-region in London. London Area Transport Survey data for 2001 will however be available towards the end of May 2003 and this will provide an accurate breakdown for 2001. There are also plans to introduce an annual household survey, starting from 2002, which again should provide a greater understanding of travel for purposes other than work.

Public Transport Usage

Table 3.20 is based on 2001 Railplan runs for various public transport modes in the West sub-region and includes journeys originating or terminating in the West sub-region and through journeys.



- 49% of all public transport journeys in the sub-region are by National Rail, slightly less than London-wide (56%).
- The Underground has the second largest share of public transport journeys at 38%, higher than London-wide (28%).
- Bus usage at 13% is lower than either National Rail or the Underground patronage in the sub-region, but similar to bus usage London-wide (14%).

Table 3.20: *Public Transport Travel in the West Sub-Region (Passenger kms, 1000s)*

Borough	LUL		Rail		Bus	
	kms	%	kms	%	kms	%
Hounslow	159	38%	163	39%	97	23%
Hammersmith & Fulham	296	62%	61	13%	120	25%
Ealing	365	28%	778	60%	153	12%
Brent	663	48%	645	46%	85	6%
Harrow	195	39%	240	48%	66	13%
Hillingdon	79	14%	398	71%	86	15%
Total West	1,757	38%	2,285	49%	607	13%
Total London	9,356	28%	18,653	56%	4,510	14%

Source: 2001 Railplan Runs (TfL, Richard Hopkins)
The values are passenger kms inside the borough for all services that pass through the associated borough. Thus the shown values have a through service and a stopping service component.

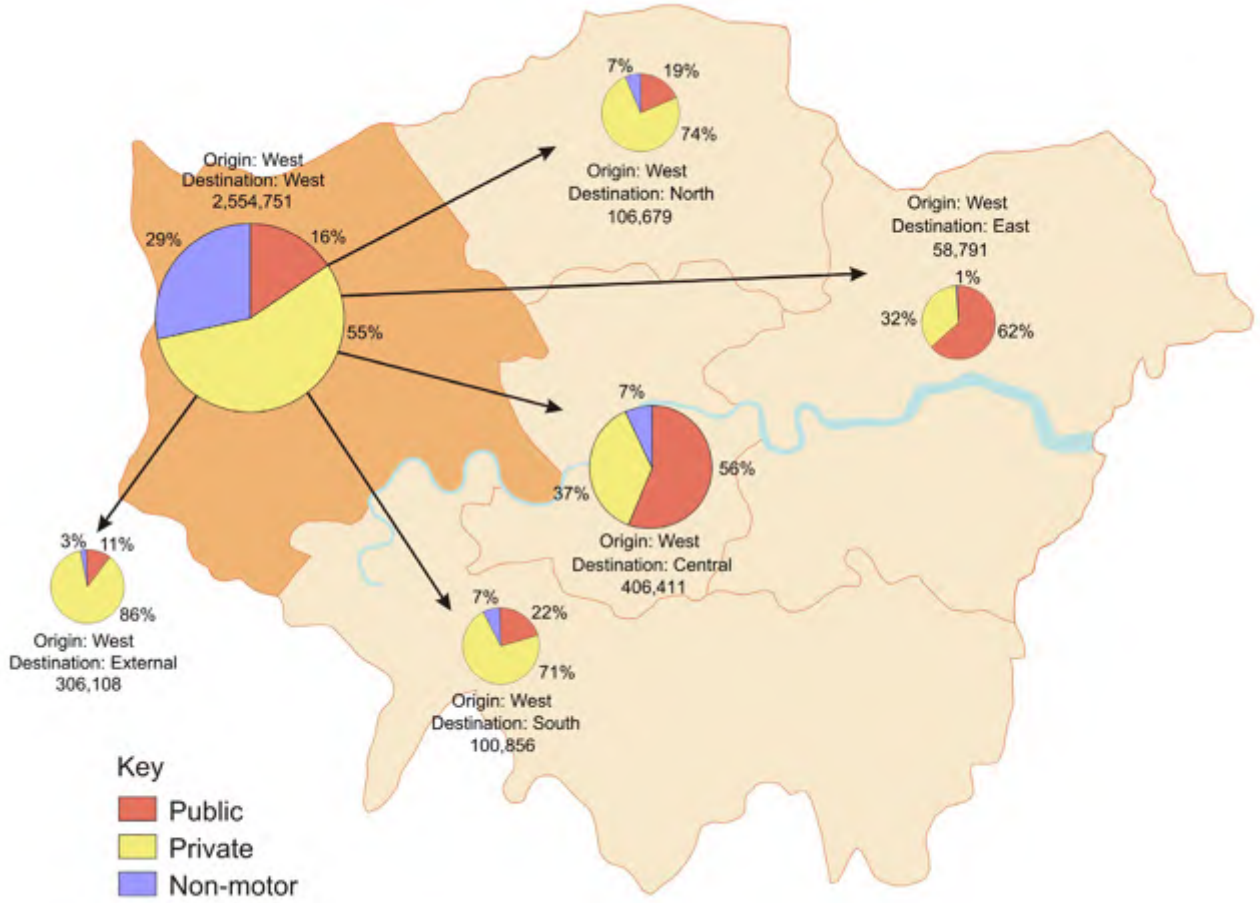
3.3.2 Weekday Travel Patterns

Weekday travel patterns in the West sub-region are shown in Figure 3.13. Based on LATS data, this shows the overall travel patterns in the sub-region, distinguished by public, private and walk/cycle. Trips originating in the West sub-region to other sub-regions and trips to areas outside London are shown.

Key findings are:

- 72% of all originating trips are made wholly within the sub-region.
- 55% of these are made by car.
- The second largest share of trips is to the Central sub-region. The third largest share is to areas outside London.
- Public transport accounts for 56% of the trips made to the Central Sub-Region, compared to only 16% of trips within the West Sub-Region. This indicates the dominance of radial public transport into central London, especially for work, and the relatively small role played by public transport for other trip categories in suburban west London.

Figure 3.13: *Weekday Travel Patterns in the West Sub-Region*



Source: LATS data (TfL, Mike Collop)
Reverse flows are assumed as equal over a full 24-hour day

Table 3.21 shows trips originating in the West sub-region, classified by the main mode of transport. It shows all trips taking place on a weekday, based on the 1991 LATS survey. The daily mode share patterns are shown, together with the percentage of trips for work and the percentage taking place in the peak periods. It should be noted that the results are not comparable with Figure 2.12 of the *Mayor's Transport Strategy*. This is mainly because of the different definitions used. The published table uses trip stages, with every interchange being taken as defining a new stage of the journey.

- 29% of daily trips in the sub-region are for work, of which 47% are made in the peak period.
- 63% of daily rail trips are for work, of which 71% are made in the peak period.
- 58% of daily Underground/DLR trips are for work, of which 65% are made in the peak period.
- 27% of daily bus trips are for work, of which 46% are made in the peak period.
- 26% of walking trips are for work, of which 47% are made in the peak period.

Table 3.21*: Travel in the West Sub-Region - Trips by Origin Sub-Region*

Main mode of transport	Daily trips Million	% for work	% of work trips in peak period
Underground (including DLR)	0.29	58%	65%
National Rail	0.05	63%	71%
Bus	0.30	27%	46%
Walk	1.34	26%	47%
Car/motorcycle	2.01	26%	44%
Bicycle	0.06	37%	47%
Taxi	0.02	23%	43%
Total	4.07	29%	47%

Source: Underground, rail, car/motorcycle, taxi - 1991 LATS Combined trips files
Bus, walk, bicycle - LATS 1991 Household survey (London residents)
'Peak period' includes both morning (7-10am) and evening (4-7pm) peaks
(TfL, Mike Collop)

Figure 3.14: *Key Highway Flows*
DESCRIPTIVE TEXT/DIAGRAM/waiting for LTS data/Ian Wright/Atkins

.

3.3.3 Summary Traffic Data and Forecasts:

Table 3.22 shows highway vehicle and public transport passenger movements into and out of the sub-region by different time periods. In the morning peak period there are far more public transport trips out of the sub-region than into it. For highway vehicle trips the sub-region imports more than it exports, although the imbalance is not large. The number of highway vehicle trips into and out of the inner boroughs (Hammersmith & Fulham and Brent) is considerably than in the other boroughs.

The highway vehicle trip generation rate was 287 per 1,000 residents of the sub-region, 8% above the London average of 265, and the second highest trip generation rate after South Sub-Region (derived from Tables 3.1 and 3.22 am peak period for trips within London).

Table 3.22: *Summary Highway and Public Transport Data for the Sub-Region (2001)*

Area	2001 Morning Peak Period				2001 Inter Peak Period				2001 Evening Peak Period			
	Highway Vehicles		Public Transport Persons		Highway Vehicles		Public Transport Persons		Highway Vehicles		Public Transport Persons	
	Origs	Dests	Origs	Dests	Origs	Dests	Origs	Dests	Origs	Dests	Origs	Dests
Hammersmith & Fulham	37,468	47,172	44,817	45,948	81,610	83,745	55,249	47,479	46,073	35,734	47,914	42,630
Hounslow	71,803	82,574	32,736	25,452	133,473	132,807	36,990	34,807	86,148	80,303	22,853	26,126
Hillingdon	95,287	119,895	33,269	21,243	210,648	209,731	39,043	35,063	129,359	109,601	22,784	26,113
Ealing	94,802	87,210	59,379	30,124	150,530	150,799	61,027	58,229	94,019	96,089	34,582	52,966
Brent	53,436	54,644	59,659	23,446	92,961	93,939	52,645	44,936	58,007	57,971	27,043	42,041
Harrow	47,466	44,602	35,153	17,691	86,842	84,195	33,923	32,121	50,696	53,440	16,277	29,250
West	400,262	436,097	265,013	163,904	756,064	755,216	278,877	252,635	464,302	433,138	171,454	219,126
Central	362,470	437,281	428,326	904,716	831,796	835,164	756,373	838,196	440,903	398,607	880,924	531,035
East	453,486	479,347	391,680	432,623	900,636	897,217	430,684	408,791	537,816	514,702	391,301	337,267
South	423,564	403,232	232,378	128,684	755,023	748,520	203,207	199,245	456,818	469,819	114,518	187,164
North	266,793	254,549	197,485	87,441	454,091	455,494	182,022	169,582	273,680	280,154	82,780	156,989
Internal	1,906,575	2,010,507	1,514,883	1,717,368	3,697,611	3,691,610	1,851,163	1,868,449	2,173,519	2,096,419	1,640,977	1,431,581
Annulus	327,783	312,370	69,440	32,253	577,100	580,406	54,674	52,800	344,074	362,139	28,686	61,681
External	967,263	878,745	295,742	130,443	1,193,611	1,196,305	182,150	166,737	877,992	937,026	135,619	312,020
Total	3,201,622	3,201,622	1,880,065	1,880,065	5,468,321	5,468,321	2,087,987	2,087,987	3,395,584	3,395,584	1,805,282	1,805,282

Source: London Transportation Studies LTS model (Ian Wright, TfL & Atkins)

Table 3.23 shows the forecast position for 2016. Public transport trips originating in the sub-region are expected to increase by 27-31% in the morning peak period and by 25% in the inter-peak period.

The highway vehicle trip generation rate is expected to increase from 287 per 1,000 residents in 2001 to 298 in 2016, an increase of 4% taking it 13% above the forecast London average of 263. (Derived from Tables 3.1 and 3.23 am peak period for trips within London) The increase in the trip generation rate will mean that despite having the second lowest population increase of all the sub-regions, it will generate almost as many additional car trips as the East Sub-Region, which will have the highest population growth.

Table 3.23: *Summary Highway and Public Transport Data for the Sub-Region (2016)*

Area	2016 Morning Peak Period				2016 Inter Peak Period				2016 Evening Peak Period			
	Highway Vehicles		Public Transport Persons		Highway Vehicles		Public Transport Persons		Highway Vehicles		Public Transport Persons	
	Origs	Dests	Origs	Dests	Origs	Dests	Origs	Dests	Origs	Dests	Origs	Dests
Hammersmith & Fulham	39,091	48,473	53,735	58,644	84,987	87,804	67,698	59,553	48,210	37,383	61,092	52,270
Hounslow	80,612	89,582	41,638	34,492	146,562	146,401	46,965	44,549	93,447	89,144	31,191	33,781
Hillingdon	107,650	136,280	45,702	32,071	242,926	242,764	53,870	48,637	147,448	124,527	33,701	37,697
Ealing	104,468	94,349	77,174	37,183	165,094	165,743	74,520	71,119	101,185	105,781	42,295	68,297
Brent	60,591	59,982	75,145	29,558	104,243	105,536	64,106	55,703	63,700	65,442	33,593	55,092
Harrow	51,822	50,092	43,565	22,637	96,044	93,066	41,293	38,525	56,025	58,028	21,174	36,819
West	444,234	478,757	336,959	214,585	839,856	841,314	348,453	318,087	510,015	480,304	223,047	283,956
Central	375,322	444,771	546,964	1,084,008	872,857	873,980	950,639	1,045,055	452,986	414,584	1,071,738	681,679
East	497,507	520,852	527,942	589,676	980,314	976,518	573,589	551,812	581,842	559,364	541,994	460,930
South	466,039	432,696	284,617	150,093	816,069	810,016	242,776	237,793	487,844	511,522	135,649	231,508
North	297,459	276,185	250,504	104,233	498,255	500,028	220,467	206,363	296,542	309,873	100,059	202,067
Internal	2,080,562	2,153,261	1,946,986	2,142,595	4,007,351	4,001,855	2,335,924	2,359,111	2,329,229	2,275,647	2,072,487	1,860,140
Annulus	362,182	360,168	92,663	51,121	655,725	657,631	83,879	78,277	393,153	402,571	46,694	83,766
External	1,175,540	1,104,856	333,111	179,045	1,508,273	1,511,863	225,749	208,165	1,107,197	1,151,361	180,730	356,005
Total	3,618,285	3,618,285	2,372,760	2,372,760	6,171,349	6,171,349	2,645,553	2,645,553	3,829,579	3,829,579	2,299,911	2,299,911

Source: London Transportation Studies LTS model (Ian Wright, TfL & Atkins)

Table 3.24: *Summary Public Transport Data for the Sub-Region (Average Morning Peak Hour)*

Highway Performance	2001 Base	2011				2016			
		Reference Case	% Change	Planned	% Change	Reference Case	% Change	Planned	% Change
West Sub-Region									
National Rail									
Passenger km	1,374,860			1,796,600	31%			2,283,856	66%
Total seats km	1,933,570			2,576,313	33%			3,656,832	89%
Crowded hours	7,074			11,329	60%			8,356	18%
Uncrowded hours	18,784			24,750	32%			36,321	93%
Underground/DLR/CTL									
Passenger km	1,414,406			1,700,271	20%			1,757,576	24%
Total seats km	2,143,251			2,407,026	12%			2,746,924	28%
Crowded hours	8,678			11,421	32%			7,838	-10%
Uncrowded hours	35,988			42,798	19%			39,910	11%
Bus									
Passenger km	465,184			638,320	37%			607,982	31%
Total seats km	1,588,827			1,999,459	26%			2,141,809	35%
Total passenger hours	31,391			40,888	30%			39,325	25%
London									
National Rail									
Passenger km	12,571,279			15,508,087	23%			18,648,337	48%
Total seats km	19,681,200			24,160,423	23%			31,929,688	62%
Crowded hours	97,896			154,823	58%			126,154	29%
Uncrowded hours	234,305			287,196	23%			359,289	53%
Underground/DLR/CTL									
Passenger km	8,045,830			10,015,507	24%			9,879,511	23%
Total seats km	9,044,660			10,169,533	12%			11,385,886	26%
Crowded hours	88,532			124,996	41%			89,501	1%
Uncrowded hours	243,818			298,296	22%			274,303	13%
Bus									
Passenger km	3,713,015			4,824,633	30%			4,511,483	22%
Total seats km	12,216,038			15,573,514	27%			16,352,963	34%
Total passenger hours	272,468			350,775	29%			324,574	19%

Source: Morning Peak Data, Railplan (Richard Hopkins, TfL)

Table 3.25: *Highway Forecasts for the West Sub-Region (Average Morning Peak Hour)*

Highway Performance	2001 Base	2011				2016			
		Reference Case	% Change	Planned	% Change	Reference Case	% Change	Planned	% Change
Vehicle travel distance (km)									
West Sub-Region	1,187,922							1,314,604	11%
London	5,114,774							5,694,543	11%
Vehicle travel time (hours)									
West Sub-Region	44,995							53,510	19%
London	203,642							237,095	16%
Vehicle speeds (km/h)									
West Sub-Region	26.4							24.6	-7%
London	25.1							24.0	-4%
Free flow vehicle time (hours)									
West Sub-Region	26,549							29,193	10%
London	125,861							138,396	10%
Delay vehicle hours									
West Sub-Region	18,446							24,317	32%
London	77,780							98,699	27%
Delay rate (mins/km)									
West Sub-Region	0.93							1.11	19%
London	0.91							1.04	14%

NB. Draft data including interim 2016 forecasts, further data to fill following modelling
Source: LTS data, Ian Wright, Atkins & TfL)

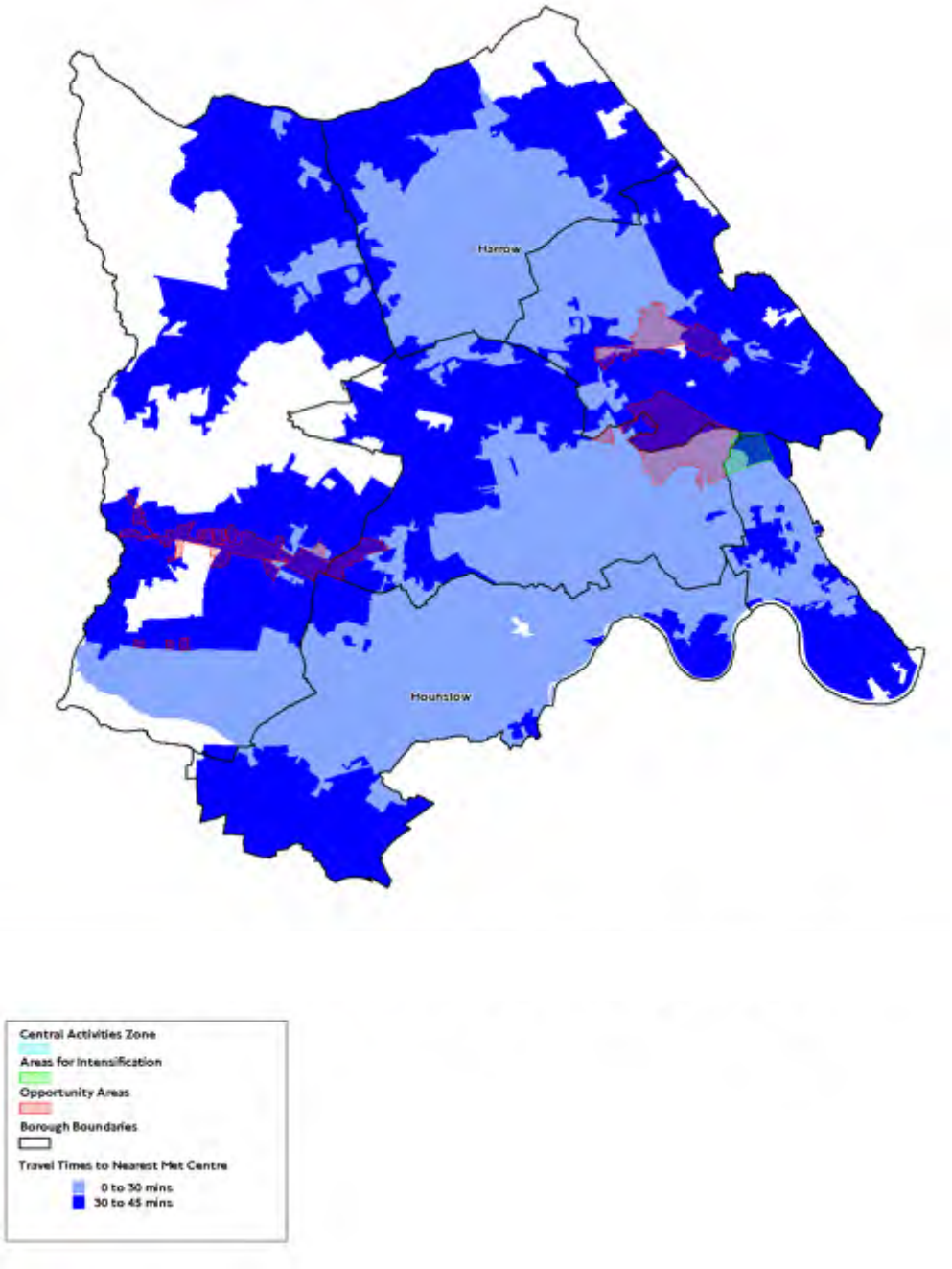
3.3.4 Public Transport Accessibility

Figures 3.15 to 3.17 highlight the levels of public transport accessibility in the sub-region. The Metropolitan centres - Ealing, Harrow and Hounslow - all have large catchment areas within 30 minutes travel time. Most of the sub-region falls within a 45 minute journey time, with the exception of the western extremes of Hillingdon and the northern tip of Harrow. The main opportunity areas are more than 30 minutes from a Metropolitan centre. The innermost areas at Willesden and Wembley are relatively well served with access to Central London, but the area west of Southall is mostly more than 30 minutes from a centre of Metropolitan status. The large areas to the west and north west of the sub-region that are more than 45 minutes from a Metropolitan centre are mostly areas with very low density development, or are undeveloped.

Figure 3.16 illustrates the areas of the sub-region within 30 minutes travel time of the Major centres, using public transport. Wembley, Southall, Uxbridge and Chiswick have large catchment areas. There are many Major centres grouped together in the south-east of the sub-region, and such a close proximity has an effect on their individual catchment areas. Large parts of the boroughs of Hillingdon and Hounslow are outside the 30 minute catchment. Parts of the borough of Ealing are also relatively distant from a Major or Metropolitan centre. Again, the areas with poorer access to centres are partly explained by areas of undeveloped land or low density development.

Accessibility to public transport for all areas in the sub-region are shown in Figure 3.17. This shows ranks all areas according to their proximity to public transport and the quality of the services provided. The Metropolitan centres are focal points on the public transport network and this leads to relatively good access to public transport in their hinterlands. The areas immediately around these centres have mid-high levels of access, as do the areas in the south-east (innermost parts) of the sub-region around Hammersmith and Shepherd's Bush. The rest of the sub-region tends to have a low accessibility level (a PTAL score of either 1 or 2). A score of 3 is achieved mostly in locations within walking distance of an Underground station, but the accessibility thus provided will be primarily radial towards inner and central London. Most of the Hayes-Southall opportunity area currently has poor access to public transport.

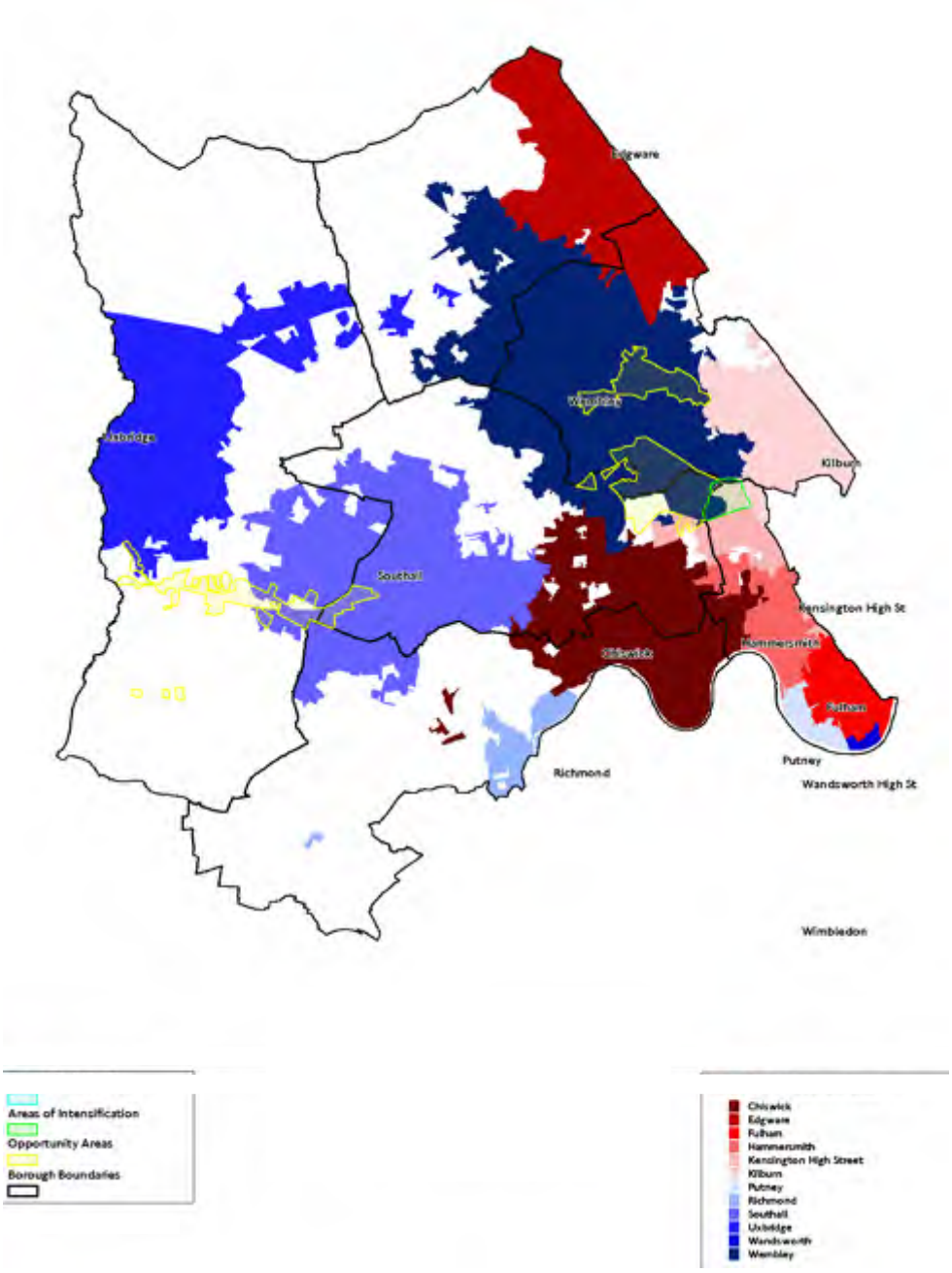
Figure 3.15: *Public Transport Accessibility[3] to Metropolitan Centres in the West Sub-Region*



Source: CAPITAL (TfL, Richard Hopkins)

[3] CAPITAL is a hybrid GIS/ transportation modelling tool which can assess travelling times to or from specific locations at a enumeration district level

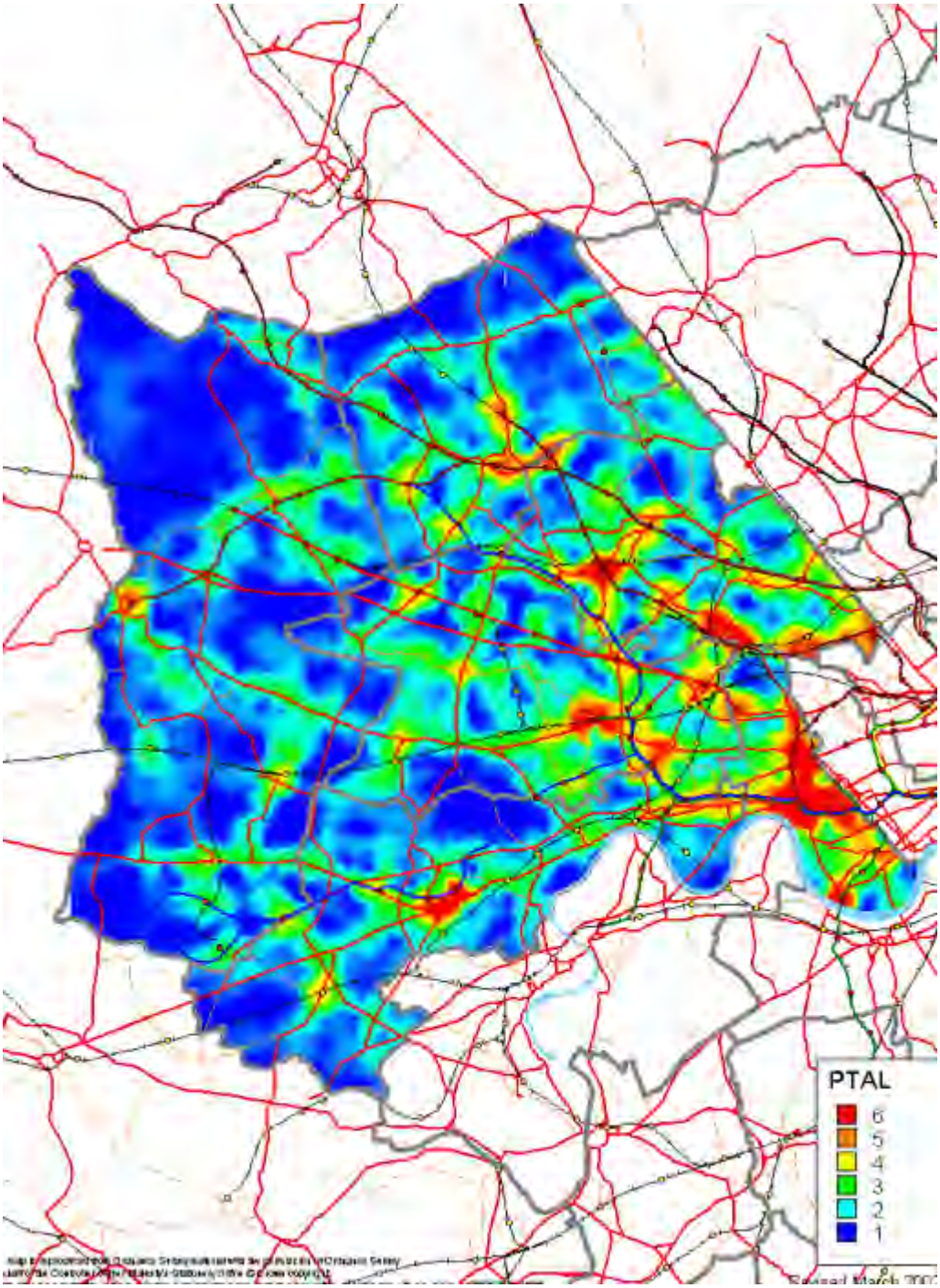
Figure 3.16: *Public Transport Accessibility[4] to Major Centres in the West Sub-Region*



Source: CAPITAL (TfL, Richard Hopkins)

[4] CAPITAL is a hybrid GIS/ transportation modelling tool which can assess travelling times to or from specific locations at a enumeration district level

Figure 3.17: *Accessibility to Public Transport[5] in the Central Sub-Region*



Source: PTALS (TfL, Richard Hopkins)

[5] The Public Transport Accessibility Level (PTAL) method measures the amount of public transport service available, taking account of the proximity of stops and stations, the number of services available and the frequency of the services. The higher the value, the greater access provided by the public transport network.

NB. Repeat Brook Lyndhurst work: regression accessibility and employment density once LTS data available from Atkins

3.3.5 Public Transport

Table 3.26 shows public transport trips originating in the West sub-region over a weekday. Both internal trips within the sub-region and external trips (to other sub-regions and areas outside London) are shown.

- Internal (i.e. within the West sub-region) weekday public transport trips are estimated as 397,569, over half (54%) of all trips.
- There is considerable movement from the West to the Central sub-region, with 228,208 weekday trips taking place (31%).
- There is also significant movement to the East, with 36,667 trips from the West sub-region to the East sub-region (5%).

Table 3.26*: Weekday Public Transport Trips by Origin and Destination*

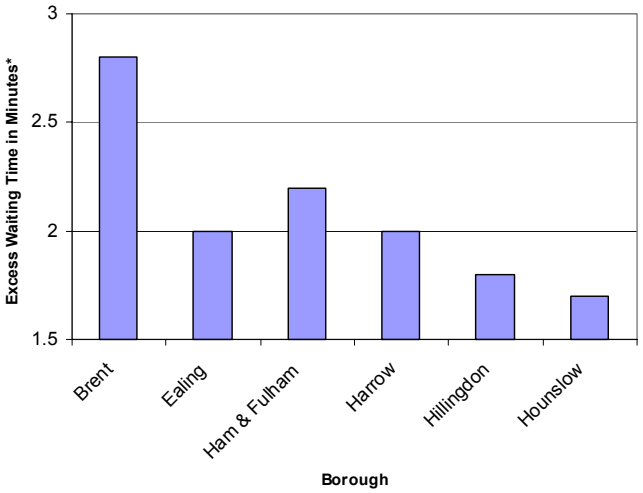
Origin	Destination													
	Central		East		North		South		West		External		Total	
West	228,208	31%	36,667	5%	19,811	3%	21,690	3%	397,569	54%	33,997	5%	737,942	100%
All London	2,227,790	40%	1,230,163	22%	471,305	8%	560,213	10%	684,713	12%	445,815	8%	5,620,000	100%

Source: LATS data (TfL, Mike Collop)
NB. The matrices are not exactly balanced, because (1) all estimates are from a sample, and (2) there are small timing differences for which adjustments have not been made. The data refers to a 16-hour survey day (6 am to 10 pm). Over a full 24-hour day, flows in the opposite directions are assumed to be equal.

Buses

Every weekday, London-wide, 6,000 buses carry four and a half million passengers on 500 different routes. Despite deteriorating reliability of services over the past few years, the number of bus passengers has risen 22% since 1993/94. Figure 3.18 shows the reliability of high frequency buses in the West sub-region. Brent has the least reliable bus services, with an average excess waiting time of almost 3 minutes. Hounslow has the most reliable high frequency services with excess waiting times of 1.7 minutes. Hillingdon also has lower excess waiting times.

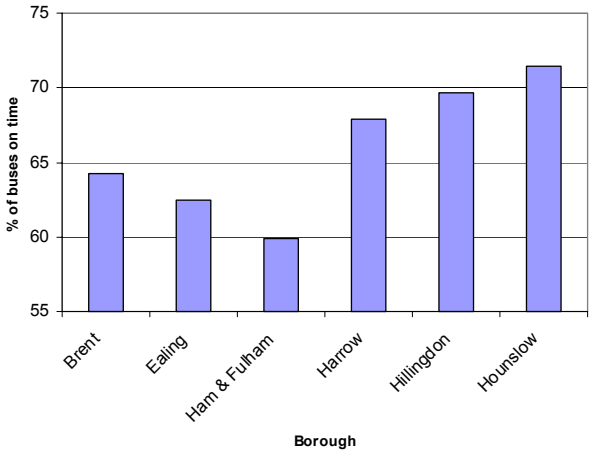
Figure 3.18: *Reliability of High Frequency Bus Services*



Source: TfL, Chris Kershaw

Figure 3.19 shows the reliability of low frequency bus services. Hounslow and Hillingdon have the most reliable low frequency bus services. Over 71% of Hounslow's low frequency bus services are on time. In Hillingdon, the figure is just below 70%. The worse performing services are in Hammersmith and Fulham.

Figure 3.19: *Reliability of Low Frequency Bus Services*



Source: TfL, Chris Kershaw

Underground
Figures 3.20-3.21 show current (2001) and forecast (2016) crowding on the Underground network in the sub-region in the morning peak hour.

In 2001 the worst sections for crowding were on the District and Piccadilly Lines between Putney and Hammersmith and Central London. The lines further west do not appear to have major crowding problems, apart from a small section of the Piccadilly Line between South Ealing and Acton Town.

In 2016, there is a reduction in crowding compared to 2001 on most lines, probably as a result of relief provided by Crossrail. A new element of crowding is predicted on the westbound District Line between Turnham Green and Gunnersbury, which probably reflects the major new employment developments at Gunnersbury. The overall picture for this sub-region is that commuters into Central London will not experience serious crowding in 2016.

Figure 3.20: *Underground Crowding 2001, AM Peak Hour (8.15 – 9.15)*

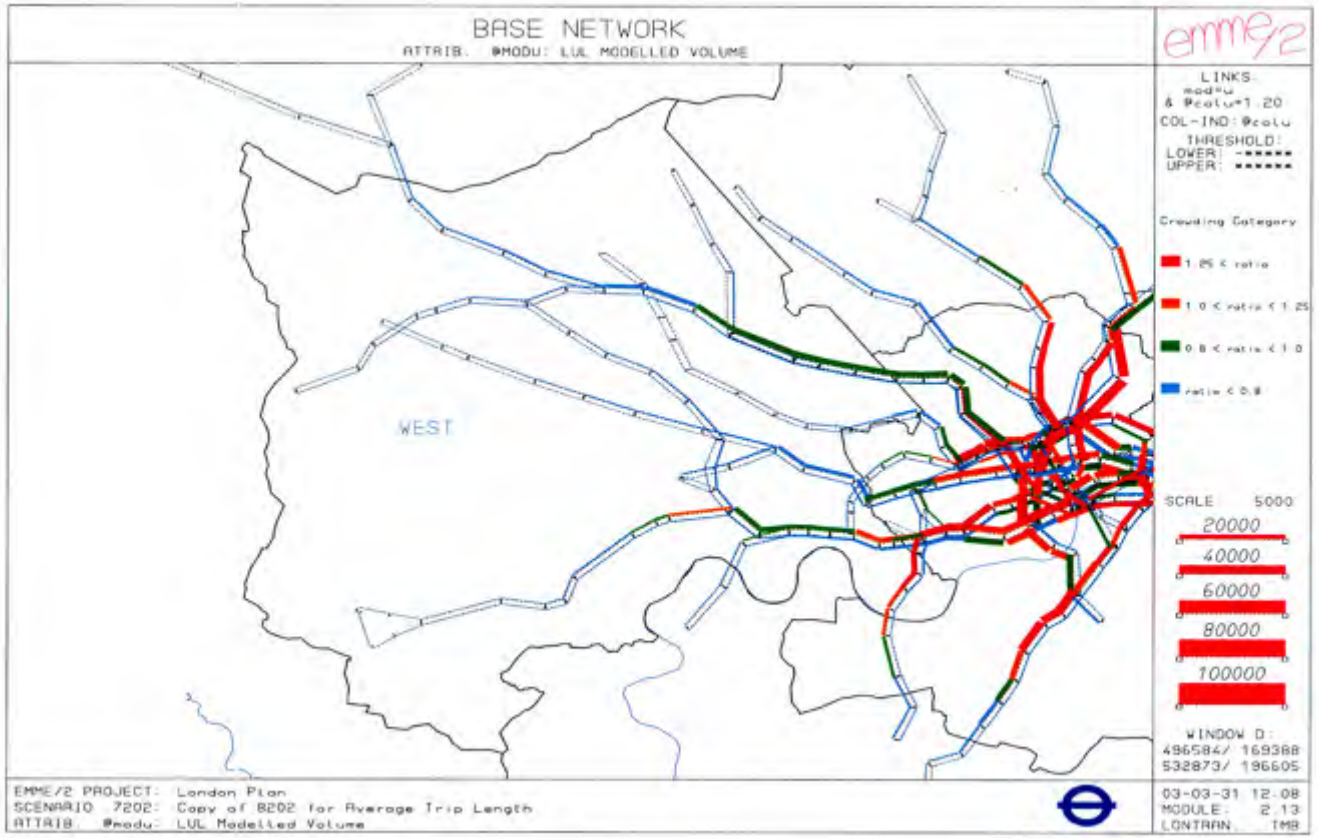


Figure to be graphically enhanced
(Source: TfL, Richard Hopkins)

Figure 3.21: *Projected Underground Crowding 2016 with TS, AM Peak Hour (8.15 – 9.15)*

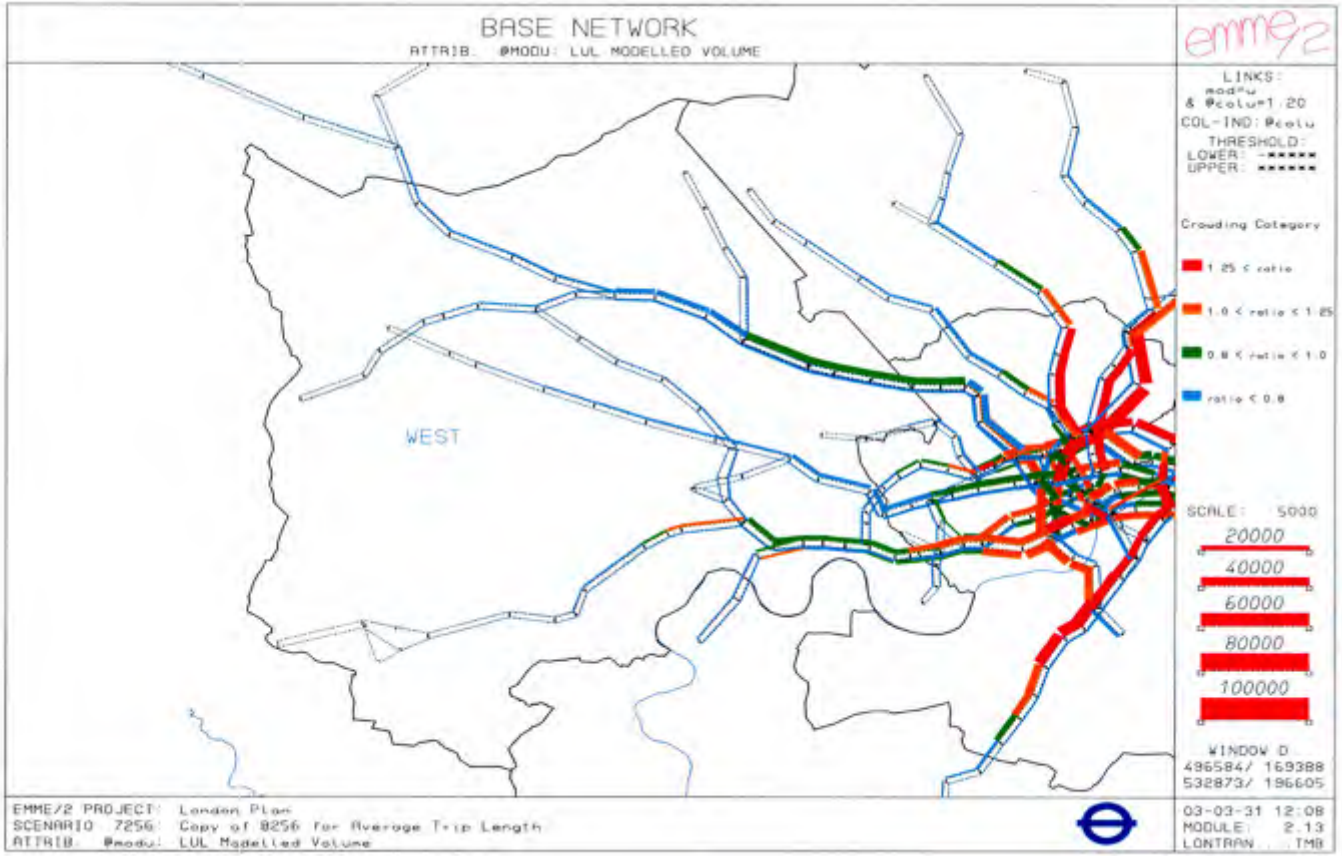


Figure to be graphically enhanced
(Source: TfL, Richard Hopkins)

National Rail

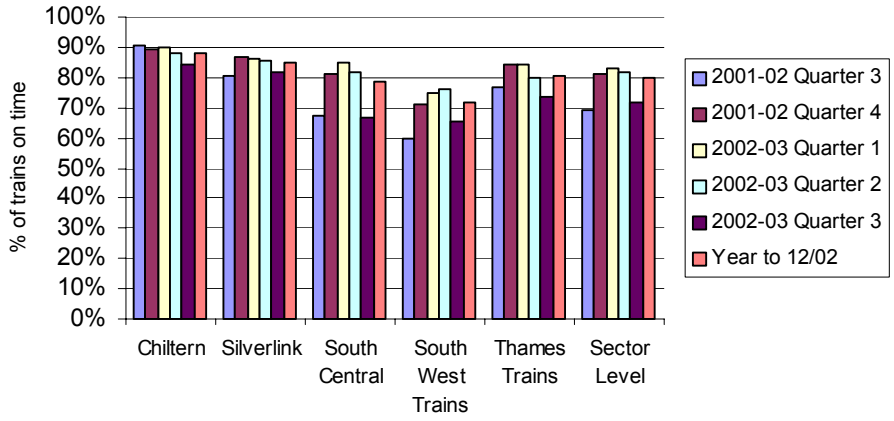
Table 3.27 highlights train service reliability *all day* for operators in London. Services running in the West sub-region are highlighted. In the most recent time period (2002-03, Quarter 3), South Central and South West Trains have the poorest reliability records, with under 67% of trains arriving on time. The sector average is 72%.

Table 3.27: *Trains Arriving on Time, 2001-02 to 2002-03 (All Day)*

Operator	2001-02 Quarter 3	2001-02 Quarter 4	2002-03 Quarter 1	2002-03 Quarter 2	2002-03 Quarter 3	Year to 12/02
C2C	74.5%	88.9%	88.1%	84.4%	81.7%	85.8%
Chiltern	90.6%	89.6%	89.8%	88.0%	84.2%	88.0%
Connex SE	67.8%	84.0%	84.7%	84.1%	71.2%	81.2%
First Great Eastern	80.7%	91.3%	90.6%	89.6%	84.9%	89.2%
Silverlink	80.7%	86.5%	86.0%	85.5%	81.5%	84.8%
South Central	67.3%	81.1%	84.8%	81.7%	66.5%	78.7%
South West Trains	59.9%	71.2%	75.1%	75.9%	65.4%	72.0%
Thames Trains	76.9%	84.5%	84.1%	79.9%	73.3%	80.5%
Thameslink	60.4%	75.7%	80.8%	75.8%	64.3%	74.3%
West Anglia Northern	65.4%	75.9%	79.8%	82.7%	72.7%	77.9%
Sector Level	69.3%	81.1%	83.1%	81.9%	71.9%	79.6%

London and SE operators all day, source: SRA

Figure 3.22: *Trains Arriving on Time, 2001-02 to 2002-03 (All Day)*



London and SE operators all day, source: SRA

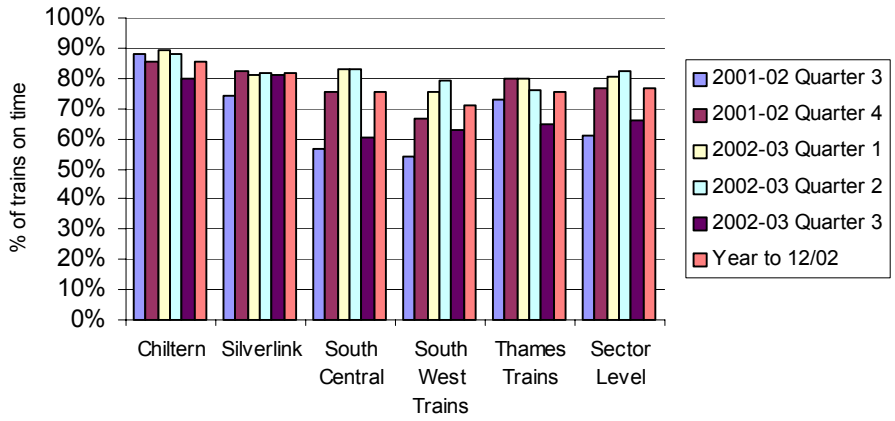
Table 3.28 highlights train service reliability in the *peak period* in the West sub-region. In the most recent time period (2002-03, Quarter 3), South Central, South West Trains and Thames Trains have the poorest reliability records, with under 65% of trains arriving on time. The sector average is 66%.

Table 3.28: *Trains Arriving on Time, 2001-02 to 2002-03 (Peak)*

Operator	2001-02 Quarter 3	2001-02 Quarter 4	2002-03 Quarter 1	2002-03 Quarter 2	2002-03 Quarter 3	Year to 12/02
C2c	68.0%	88.1%	87.2%	83.9%	81.7%	85.1%
Chiltern	87.8%	85.3%	89.3%	88.1%	79.8%	85.7%
Connex SE	59.8%	80.2%	81.9%	84.4%	62.5%	77.5%
First Great Eastern	70.7%	88.3%	87.0%	89.4%	79.3%	86.1%
Silverlink	74.2%	82.4%	81.4%	81.9%	81.1%	81.7%
South Central	56.7%	75.4%	83.2%	83.1%	60.2%	75.6%
South West Trains	54.4%	66.7%	75.5%	79.5%	62.9%	71.3%
Thames Trains	72.9%	79.7%	79.7%	76.4%	65.0%	75.2%
Thameslink	54.6%	69.6%	79.4%	74.4%	57.7%	70.5%
West Anglia Northern	52.2%	69.4%	73.6%	78.8%	63.6%	71.5%
Sector Level	60.8%	76.6%	80.7%	82.1%	66.2%	76.6%

London and SE operators peak period, source: SRA

Figure 3.23: *Trains on Time, 2001-02 to 2002-03 (Peak)*



(Source: London and SE operators peak period, SRA)

Figures 3.24-3.25 show current (2001) and forecast (2016) crowding on the National Rail network in the sub-region in the morning peak. National Rail services in the sub-region do not carry the volume of passengers experienced in south London, but nevertheless there is crowding on the Chiltern services towards Marylebone, and especially the Thames Trains services from the west into Paddington Station.

The network in 2016 includes Crossrail 1, and this is reflected in the much higher flows on the Reading to London route, but a lower level of crowding. Other lines, including Chiltern Railways are also forecast to be less crowded.

Figure 3.24: *National Rail Crowding 2001, AM Peak Hour (8.15 – 9.15)*

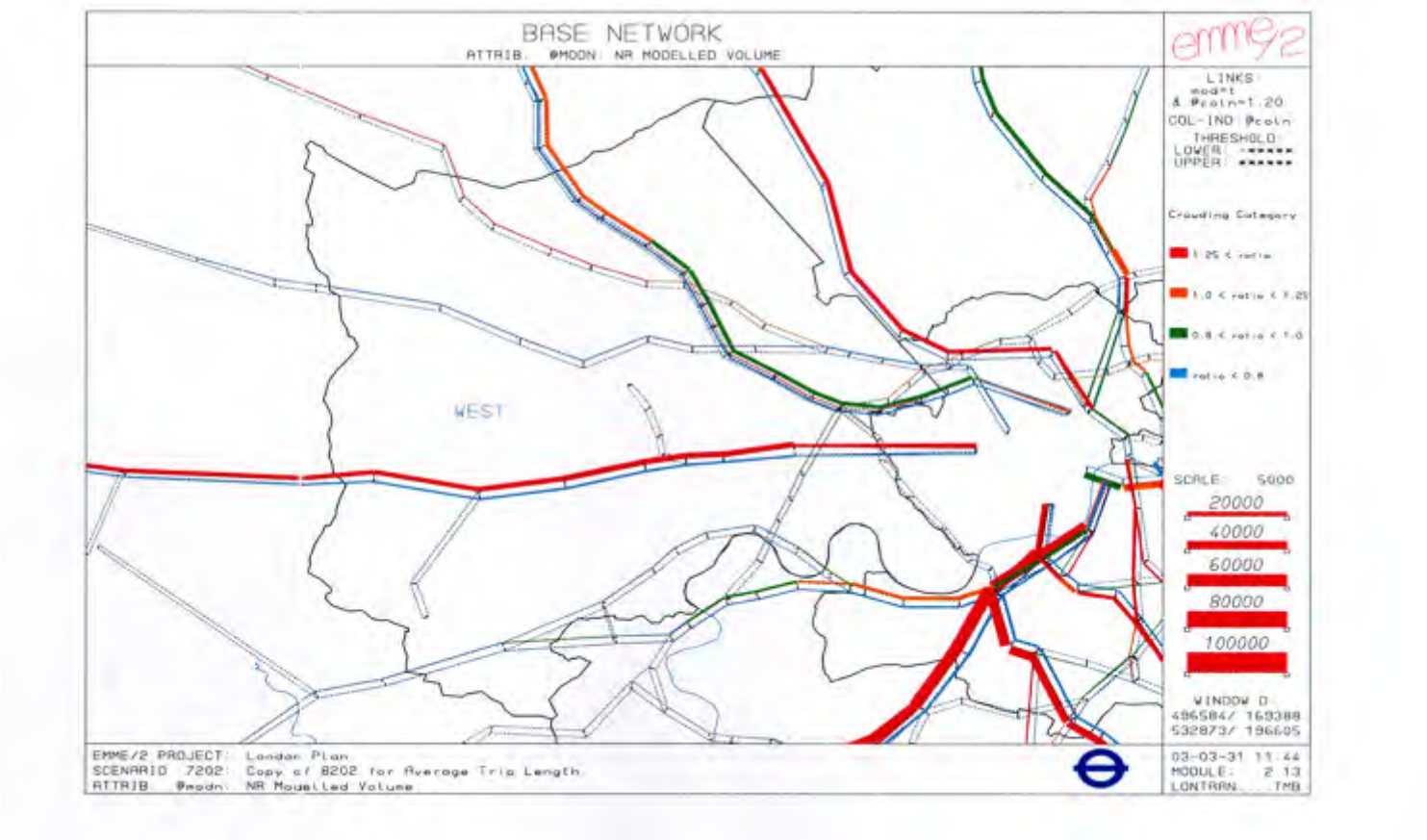


Figure to be graphically enhanced
(Source: TfL, Richard Hopkins)

Figure 3.25: *Projected National Rail Crowding 2016 with TS, AM Peak Hour (8.15 – 9.15)*

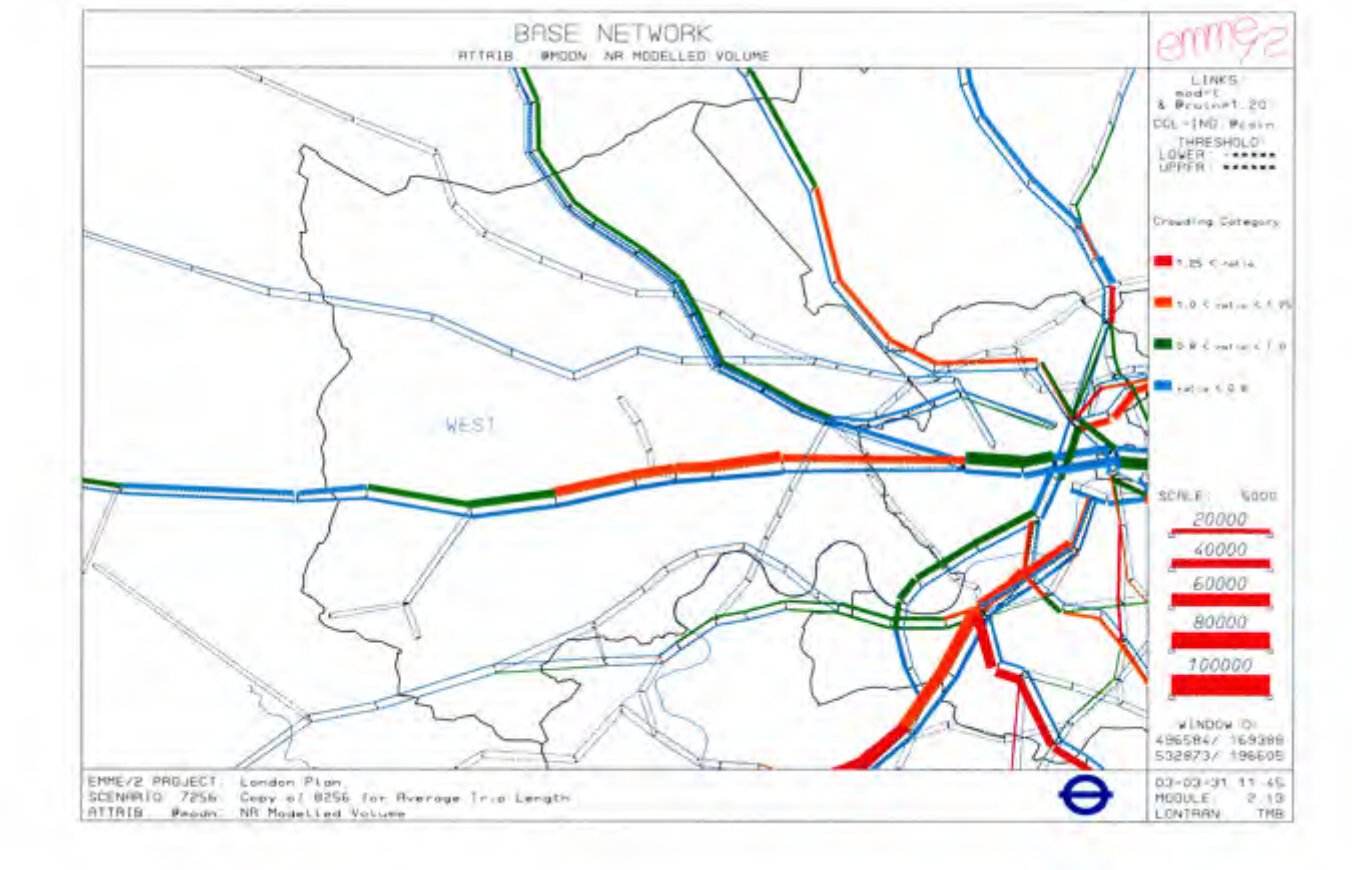


Figure to be graphically enhanced
(Source: TfL, Richard Hopkins)

3.3.6 Walking

Data showing sub-regional walking patterns in London is extremely limited, although London-wide data is available in the consultation draft version of the *Walking Plan for London* published in January 2003. The most useful information currently available is shown below in Table 3.29. Based on LRTS data, this highlights the frequency of travel by those resident in the West sub-region over the period 2000-02. It shows that 56% of people surveyed in the West sub-region walk 5 days a week or more and 12% walk 3 or 4 days a week.

Data for the other sub-regions has shown that a large proportion of their population has not walked in the past 12 months or has never walked, which is clearly 'suspect' and shows the fallibility of the current data for walking. Similar data is shown for the West sub-region, 14% have supposedly not walked in the last 12 months/never.

Table 3.29: *Frequency of Walking by Residents of West Sub-Region (2000/02)*

Frequency of Travel by Walking	West		London	
	Count	%	Count	%
No answer	5	0%	31	0%
Don't know	7	0%	46	0%
5 days a week or more	1,212	56%	5,863	56%
3 or 4 days a week	266	12%	1,208	11%
2 days a week	153	7%	795	8%
1 day a week	137	6%	590	6%
About once a fortnight	23	1%	133	1%
About once a month	27	1%	117	1%
Less often than once a month	44	2%	267	3%
Not used in the last 12 months/never	309	14%	1,455	14%
Group Total	2,183	100%	10,505	100%

Source: LRTS data (TfL, Henry Burroughs)
Combination of data from 2000 – 01 Q1-Q4 and 2001 – 02 Q2 + Q3

3.3.7 Cycling

Data showing cycling patterns in London is also extremely limited. The most useful information currently available is shown below in Table 3.30. Based on LRTS data, this shows the frequency of travel by those resident in the West sub-region over the period 2000-02:

- Around 4% of people surveyed in the sub-region cycle 5 days a week or more. In London as a whole the figure is 2%.
- 76% of residents have not cycled in the last 12 months or have never cycled.

Again, as the above summary shows, this data has produced some surprising results for some of the sub-regions, showing its fallibility for assessing cycling patterns.

Table 3.30: *Frequency of Cycling by Residents of West Sub-Region (2000/02)*

Frequency of Travel by Bicycle	West		London	
	Count	%	Count	%
No answer	59	3%	258	2%
Don't know	0	0%	4	0%
5 days a week or more	95	4%	251	2%
3 or 4 days a week	47	2%	226	2%
2 days a week	66	3%	252	2%
1 day a week	69	3%	214	2%
About once a fortnight	44	2%	157	1%
About once a month	48	2%	236	2%
Less often than once a month	91	4%	387	4%
Not used in the last 12 months/never	1,665	76%	8,135	77%
Group Total	2,184	100%	10,503	100%

Aggregate of data from 2000 – 01 Q1-Q4 and 2001 – 02 Q2 + Q3
Source: LRTS data (TfL, Henry Burroughs)

Table 3.31 shows the weekday walk and cycle (main model) trips by origin and destination. It shows that 94% of all main mode walk and cycle trips occur within the West sub-region. Only 3% start from the West sub-region and finish in the Central sub-region.

Table 3.31: *Weekday Walk and Cycle Trips by Origin and Destination*

Origin	Destination													
	Central		East		North		South		West		External		Total	
West	27,156	3%	315	0%	6,935	1%	7,471	1%	733,615	94%	8,097	1%	783,589	100%
All London	1,119,119	26%	1,106,593	26%	510,215	12%	726,763	17%	782,591	18%	61,186	1%	4,306,467	100%

Source: LATS data (TfL, Mike Collop)
NB. The matrices are not exactly balanced, because (1) all estimates are from a sample, and (2) there are small timing differences for which adjustments have not been made. The data refers to a 16 hour survey day (6am to 10pm). Over a full 24-hour day, flows in the opposite directions are assumed to be equal.

3.3.8 Private Motor Vehicles

Road Hierarchy
The road hierarchy in the West sub-region is shown in Figure 3.26. The main road routes are predominantly east-west and include the M4 motorway, the A4 and the A40. The major north-south/orbital route is the A406 North Circular.

Figure 3.26: *Road Network in the Sub-Region*

(Source: TfL, Hannah Shrimpton)

Table 3.32 shows all weekday private transport trips by origin (West sub-region) and destination (other sub-regions and external). Columns of the matrices refer to destinations. Thus, for example, within the West sub-region there are 1,423,567 trips (71% of the total) and from the West sub-region to the East sub-region there are 21,809 weekday trips (just 1%). Over a full 24-hour day, the flows in opposite directions are assumed to be equal.

Table 3.32*: Weekday Private Transport Trips by Origin and Destination*

Origin	Destination													
	Central		East		North		South		West		External		Total	
West	151,047	8%	21,809	1%	79,933	4%	71,695	4%	1,423,567	71%	264,014	13%	2,012,065	100%
All London	1,713,762	16%	2,330,653	22%	1,332,328	13%	2,103,122	20%	2,001,425	19%	1,012,669	10%	10,493,959	100%

Source: LRTS data (TfL, Mike Collop)
The matrices are not exactly balanced, because (1) all estimates are from a sample, and (2) there are small timing differences for which adjustments have not been. The roadside data refer to a 16 hour survey day (6 am to 10 pm). Estimates of travel during the non-survey hours are not available.

Traffic Congestion and Speed

Table 3.33 gives the time-series of average traffic speeds on the Transport for London Road Network (TLRN) in the West sub-region. It shows that over the period 1986 to 2003 average traffic speeds have slowed down. In particular:

- In the AM peak, average speeds dropped between 1990-1997. By 1997/00, speeds had improved, although they were still below the 1986/90 average.
- In the off-peak period, speeds again fluctuated and by 2000 they were just below the 1986/90 level.
- In the PM peak, there is a clear pattern of average speeds slowing down over the period and, by 2000, the average had fallen to 19.4 mph.

Table 3.33: *Average Traffic speeds on the TLRN*

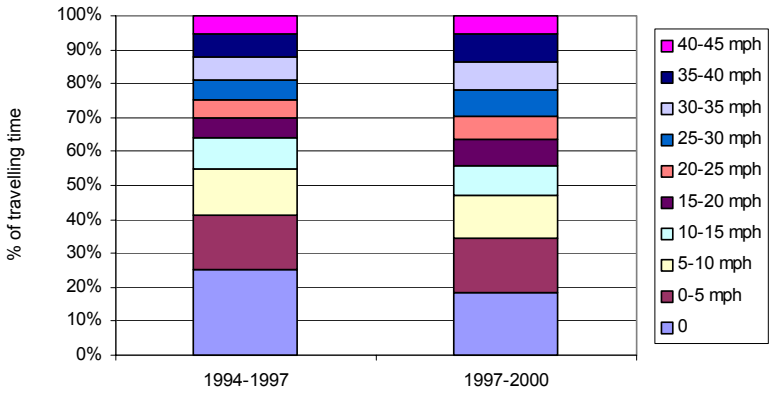
Time period	1986 to 1990	1990 to 1994	1994 to 1997	1997 to 2000
AM peak (7am to 10am)	21.4	16.4	16.8	19.9
Off peak (10am to 4pm)	26.1	24.3	27.8	25.6
PM peak (4pm to 7pm)	22.4	21.9	19.5	19.4

Average speed in miles per hour
Source: TfL Traffic Speed Surveys (TfL, Mike Rowland)

Figure 3.27 shows the average travelling time spent on the TLRN at different traffic speeds in the *AM peak* period (7am to 10am).

- It shows that cars were stationary for just under 20% of their travelling time in 1997/00, a slight improvement on 1994/97.
- Overall, less time is spent travelling at speeds below 30 mph in 1997/00 than in 1994/97.

Figure 3.27: *Travelling Time Spent on TLRN by Speed (Am Peak)*

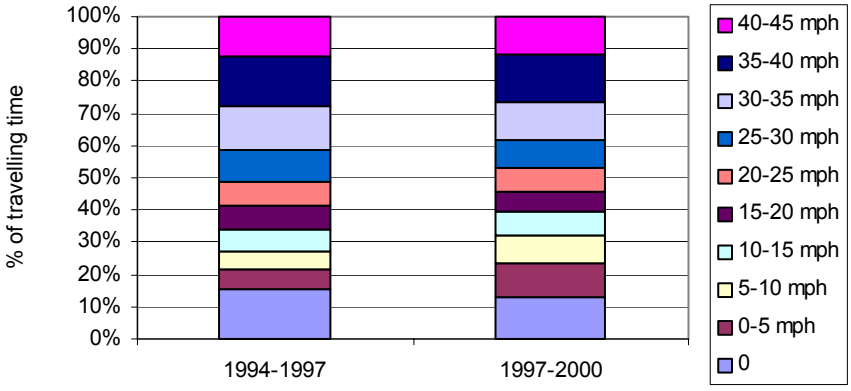


Source: TLRN Traffic Speed Surveys (TfL, Mike Rowland)

Figure 3.28 shows the percentage of travelling time spent on the TLRN at different traffic speeds in the *off peak* period (10am to 4pm).

- Off peak speeds appear to have slowed over the period 1994-2000. A greater proportion of time is spent at speeds under 30 mph in 1997/00 than in 1994/97.
- In 1997/2000, 39% of travelling time was spent at 15 mph or less, compared to 34% in 1994/1997.

Figure 3.28: *Travelling Time Spent on TLRN by Speed (Off Peak, 10am to 4pm)*

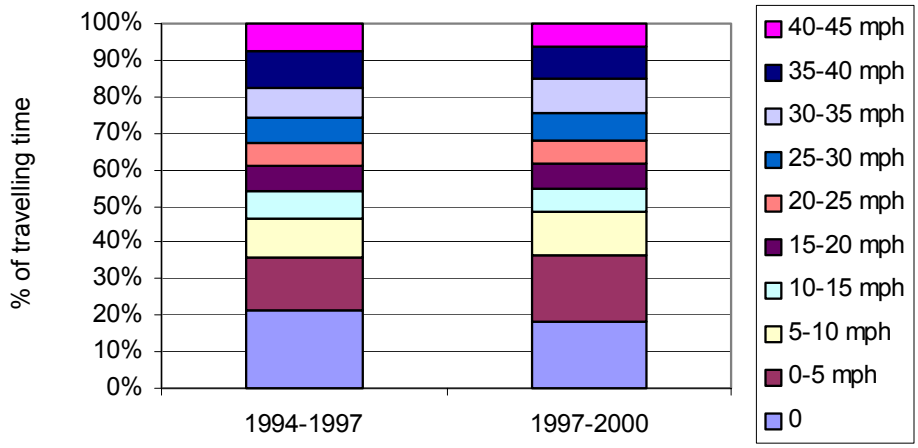


Source: TLRN Traffic Speed surveys (TfL, Mike Rowland)

Figure 3.29 shows the percentage of travelling time spent on the TLRN at different traffic speeds in the *PM peak* period (4pm to 7pm).

- Over the period 1994 to 2000, traffic flow at speeds lower than 15 mph has reduced marginally. However, in 1997/00 around 35% of travelling time is either stationary or travelling below 5 mph.
- In 1997/00, nearly 40% of travelling time is spent travelling at 10 mph or less.

Figure 3.29*: Travelling Time Spent on TLRN by Speed (PM Peak, 4pm to 7pm)*



Source: TfL Traffic Speed Surveys (TfL, Mike Rowland)

3.4 Major Transport Schemes

The Mayor's Transport Strategy sets out the proposals for major improvements to the existing Underground, rail and bus networks across the sub-region. Table 3.31 shows the major planned transport projects.

Table 3.34: *Major Transport Projects in the Sub-Region*

Transport Scheme	Description	Status	Opening Date	Cost (£ Million)	Capacity Provided by 2016
Major Schemes					
Crossrail 1	High capacity rail link with the City, Isle of Dogs, the West End and Heathrow.	The scheme is currently undergoing a technical and financial review and will report in February 2003.	2012	9,000	24tph
Crossrail 2	High capacity rail link between Victoria and Kings Cross. In addition, would allow existing north-east and south west suburban rail services to be linked across London.	N/A	2016	3,000	24tph
Thameslink 2000	This project will greatly enhance the existing Thameslink service linking north and south London. It includes capacity increases between Kings Cross and Blackfriars, platform extensions to accommodate 12 car trains and linking of the Great Northern Route into the central Thameslink section.	The scheme subject to a Transport and Works Act inquiry which if approved by the Secretary of State will result in works beginning in 2003.	2008	3100	24tph
West London Tram	This will be a tram route running from Uxbridge to Shepherds Bush via Acton, Ealing, Hanwell and Southall Town Centres.	The scheme was subject to public consultation and is now undergoing further feasibility assessment.	2005	230	10 tph in peak hour (vehicle capacity is 288 pax)
Other Schemes					
Interchanges	Improvements to capacity of a hierarchy of public transport interchanges including Victoria, Barking, Whitechapel, Woolwich Arsenal and Belvedere/ Erith.	An Interchange Development Strategy is currently underway which is due to report in February 2003. This will firm up interchange programme.	2006+	1630	
Buses	The BusPlus improvements have been established to improve routes across	Ongoing programme of improved bus services and	2002+	100	N/A

	London through a range of measures including clearer passenger time information, upgrading of bus fleet, more bus priority measures, increased enforcement of bus lanes, kerbside and bus shelter improvements and improved passenger and bus information.	infrastructure.			
Walking and Cycling	Programme of measures that aim to increase the levels od walking and cycling in the capital on both TLRN and borough roads.	Ongoing programme of improvement.	2002+	0.2	N/A
oad Safety	Road Safety Plan aimed at establishing targets for reducing the number of road accidents in London as well implementing measures to achieve these targets.	Ongoing programme of improvement.	2002+	255	N/A

(*Source: London Plan Appraisal Summary Sheet v.8, Martin Oaten)*

3.5 Key Development Sites and Areas

The West sub-region's opportunity areas and areas for intensification are shown in Table 3.32. Development opportunities within these and major town centres should be maximised. In addition, the areas for regeneration should be prioritised for additional accessibility improvements.

Table 3.32: *Key Development Areas in the Sub-Region*

Key Development Areas			
Opportunity Areas	Area (ha)	New Jobs to 2016	New Homes to 2016
Wembley	238	5,000	400
White City	30	11,000	1,200
Park Royal	470	10,000	-
Heathrow/ Feltham/ Bedfont Lakes	91	5,500	930
Hayes/ West Drayton/ Southall	371	35,000	5,800
Areas for Intensification	Area (ha)	New Jobs to 2016	New Homes to 2016
Willesden Junction	96	3,600	500

**Jobs and housing forecast numbers shown as minimum targets for growth (Draft London Plan, June 2002)*

Annexes

Annex 1: Submissions to the Examination in Public

A. Greater London Authority Submission

Draft London Plan, Examination in Public, March/ April 2003
Sub Matter 3d
West London
Date Published: 17 February 2003
(Source: SDS Team, Kevin Reid)

West London
Does the Plan contain appropriate policies for West London, with regard to the area's employment potential, the role of centres in the sub-region, local transport needs and the impact of Heathrow airport on the sub-region, including the consequences of the development of Terminal 5?

Introduction
The draft London Plan (DLP) does contain policies appropriate for West London and the Sub-Regional Development Framework (SRDF) will build on these. In addition, all the DLP's general policies apply to West London: these include many policies to encourage economic growth; a balanced network of town centres and increased public transport capacity.

Are the policies appropriate for West London?
The Mayor's response on Matter 3.2 points out that the DLP can consider different policies for each sub-region, but that all the Plan's policies "should be of significance to the wider interests of London as a whole"[6] The SRDF will have an important role in enabling the strategic policies of the London Plan to be interpreted at a more detailed level.

The SRDF will be an important tool for guiding the successful implementation and growth in the West London sub region. Early discussions have taken place with key stakeholders and have enabled the Mayor to gain a better understanding of these issues and enabled stakeholders, and especially boroughs, to understand that their concerns can and should be addressed at this more detailed level.

Employment potential
The DLP identifies a very substantial 11% growth in employment up to 2016 in the West London sub –region amounting to 87,000 jobs. This forecast is influenced by some contextual factors:
(a) Economic growth is more focused on Central and East London because of the World City, Central London and Thames Gateway priorities that the Mayor must – and will –address. This is justified in the Mayor's response to Sub-matter 1c.
(b) West London's economy will continue to be somewhat affected by decline in industrial employment. Technical report 21 shows that most West London boroughs will experience some decline in industrial jobs.
(c) Much of the area is highly developed and there are some constraints on land availability in parts of the sub-region.

Nevertheless the DLP acknowledges the diversity and dynamism of the West London economy and wishes this to continue. It forecasts a positive net rate of employment growth in every borough. Office growth is projected to be dynamic: 15% in Harrow, 23% in Ealing and 37-38% in each of the other four boroughs.

[6] Circular 1/2000, 2.11

West London will benefit from the development of jobs related to residential concentrations, people-oriented services and leisure activities. The DLP encourages all of these sectors and supports the focus of growth in hotels, tourism and catering in town centres outside Central London.

Much of the growth in employment can be accommodated in the "Western Wedge" from Paddington through Royal Park and Wembley to Heathrow and its surrounds. This includes many of the areas in need of regeneration. Five Opportunity Areas are designated, as key locations for growth and Willesden Junction will be an Area for Intensification. Some of the employment areas in need of protection or promotion are smaller scale and it is appropriate for local planning authorities, rather than the London Plan, to identify these.

Role of centres
The DLP strongly supports the widening and strengthening of town centres and a balanced network. PPG 6 says that regional planning guidance should provide a broad framework of policies for town centres. The DLP says that "development intensification in the major town centres of Ealing Broadway, Uxbridge and Shepherd's Bush should be promoted" (paragraph 2B 89) and the Wembley and White City centres are part of Opportunity Areas. The DLP also supports the strengthening of other town centres in the Sub Region[7].

The detailed implementation of this strategy will be for the local planning authorities, but the SRDF can assist in translating from the strategic to the local.

Meeting local transport needs
The priority for major public transport investment is with the East and Central sub-regions for reasons given in the Mayor's response on Matters 1 and 5. Population and employment densities are relatively low in much of West London and resources for investment in high - capacity schemes are limited. Nevertheless, the sub-region will benefit from the three schemes identified in paragraphs 2B 78-80 of the DLP: the improvement of the West London line, the West London Road Transit and Crossrail.

The Sub-Region will also benefit substantially from the wider package of increased and improved services, including bus and other local transport services, supported in the Plan and set out in more detail in the Mayor's Transport Strategy. TfL's Technical Report suggests that there will be sufficient transport capacity to serve the growth in all five Opportunity Areas and the Areas of Intensification.

The SRDF will provide a vehicle to consider and promote transport schemes that are of sub-regional, but not London-wide significance. It will also give an opportunity to look at transport proposals that may form part of the first Review of the London Plan including the need to consider positively improvements to orbital public transport.

The impact of Heathrow Airport
The sub-region has benefited from the potential for economic growth generated by Heathrow. However, much of the "Heathrow effect" has been experienced on the other side of the London boundary in the Thames Valley area, including much of the international business growth. A strategy is needed to plan for the continuing effects of Heathrow, further stimulated by the extension at Terminal 5,

[7] See Annex 5 of the DLP

across the London boundary between West London and the Thames Valley so that the whole area can experienced balanced and sustainable development.

The Mayor is engaged in a joint study with the London Development Agency, the South East England Development Agency and the South East England Regional Assembly to address these issues and to provide the basis for a joint strategy. The results of this Study will be fed into the work on the SRDF and will inform the first Review of the London Plan.

In the meantime, work on increasing the benefits of Heathrow's expansion in West London is strongly encouraged in the DLP, which designated two Opportunity Areas in its environs, with total targets of 40,000 jobs and over 5,700 homes, and which proposes planning frameworks to achieve outcomes that are sustainable and enhance social inclusion.

Conclusion
The DLP does contain policies for West London at an appropriate strategic level that provide a positive framework for local planning on employment, town centres, transport and the constructive management of the effects of its proximity to Heathrow Airport.

B. Transport for London Summary of Submissions

Draft London Plan EIP Written Submissions – Transport Issues arising from Sub Matter 3d
Sub Matter 3d: West London
(Source: Chris Hyde)

Does the Plan contain appropriate policies for West London, with regard to the area's employment potential, the role of centres in the sub-region, local transport needs and the impact of Heathrow airport on the sub-region, including the consequences of the development of Terminal 5?

Summary of the written submissions:
In creating the summaries the reviewer has read through each organisation's submission and summarised all comments that refer to transport, or infrastructure when it implies the inclusion of transport. The reviewer has then made a comment on how he views the overall tone of the submitters' comments. For those of you that just want a very brief summary the key points for each grouping are bulleted. A more detailed summary of the organisations' submissions follows in the boxes.

The submissions have been summarised in more detail under the following five groupings:

1. The GLA Family
2. London Assembly and Governmental Bodies
3. Local Authority Related Bodies
4. Key Stakeholders

1. The GLA Family

- The region will benefit from Crossrail 1, West London Transit, improvements to the Piccadilly line

- With the planned improvements in place it is expected that there will be sufficient transport capacity to support the development of the Opportunity and Intensification areas
- A strategy is needed to plan for the continuing effects of Heathrow.

TRANSPORT FOR LONDON
▪ The region will benefit from Crossrail 1, West London Transit, improvements to the Piccadilly line and London-wide improvements to bus services.
▪ With the planned improvements in place it is expected that there will be sufficient transport capacity to support the development of the Opportunity and Intensification areas

MAYOR OF LONDON
▪ The DLP contains appropriate policies and the SRDF will build on these. Also all DLP general policies apply, including increased public transport capacity.
▪ Development intensification to the major town centres of Ealing Broadway, Uxbridge and Shepherd's Bush should be promoted, and Wembley and White City centres are Opp. Areas.
▪ Densities are relatively low and resources for high-capacity transport schemes are limited, however the sub-region will benefit from the Crossrail line 1, West London Transit, and the improvement of the West London Line
▪ The wider package of transport improvements will also benefit the area, and there will be sufficient capacity to support growth in the 5 Opp Areas and Intensification Areas
▪ A strategy is needed to plan for the continuing effects of Heathrow. The results of a study with LDA, SEEDA and SEERA will provide a basis for a strategy and will be fed into the SRDF

2. London Assembly and Governmental Bodies

GOVERNMENT OFFICE FOR LONDON
▪ As stated in 3a) Need more clarity on phasing of infrastructure and its links with development.
▪ Plan should set out a clearer programme of housing and jobs, prioritised as appropriate, to be taken forward and developed thro. the SRDF. This would identify any major transport improvements needed to allow development to go forward.
▪ Areas capable of being developed in 1st 5 years should be identified for the 1st phase of the Plan, looking at under-utilised potential and any capacity improvements that are already committed

3. Local Authority Related Bodies

- Not clear how the required increases in office jobs can phased with improvements in public transport capacity. Concerned about ability of infrastructure to accommodate further growth
- Should include a commitment to further proposals for north-south orbital public transport capacity movement.
- WLT is welcomed, but will not address problem of lack of orbital and north-south public transport routes,
- Transport proposals are not so helpful outside inner west London.

LONDON BOROUGH OF EALING

▪ Development potential of sites should be related to transport capacity.
▪ Not clear how the required increases in office jobs can phased with improvements in public transport capacity.
▪ Parking requirement should be set in the context of reducing car use, encouraging other modes, and air quality targets. Parking standards are complex and could be interpreted as a relaxation of standards. Concern about use of accessibility data for uses outside peak hours.
▪ Developments should require transport impact assessments.
▪ Proposals for improving transport are supported but should include a commitment to further proposals for north-south orbital public transport capacity movement. Bus is not enough – want step change from rail, Underground and tram.
▪ Plan should provide for a public transport link into the identified opportunity are south of Harrow.
▪ Policy on road schemes should clarify that such schemes will only be accepted if consistent with sustainable devt.
▪ The policy for tackling congestion and reducing traffic (3C.14) should relate specifically to the sub-regions.

LONDON BOROUGH OF HAMMERSMITH AND FULHAM
▪ Supports transport proposals but notes these not so helpful outside inner west London. Wants improved orbital transport.

LONDON BOROUGH OF HARROW
▪ Little infrastructure in 1st 10 years, unclear how Harrow can accommodate the growth - a critical issue.
▪ Want step change in orbital transport. Link town centres together.

LONDON BOROUGH OF HILLINGDON
▪ DLP overlooks the lack of supporting infrastructure in west London to support economic growth.
▪ [Referring to ALG suggestion of increased employment target of 112,000 jobs for West London], LB Hillingdon requests that the Panel consider whether adequate infrastructure exists or is likely to exist in terms of [among other things] transport. A phased target, linked to infrastructure improvements, is suggested.
▪ Limited consideration of Heathrow – a serious omission, including traffic.
▪ The majority of commuting from Hillingdon is undertaken by car with 59.7% of work journeys by borough residents made by car – the highest figure for any London borough – and 80% of Heathrow passengers and workers travelling by road. 66% of jobs in LB Hill by non-borough residents, many of whom likely to commute by car. Terminal 5 is [unlikely?] to improve these figures, given Piccadilly and Heathrow Epress are [likely?] to significantly increase public transport capacity.
▪ LB Hill welcomes WLT but notes that this will not address problem of lack of orbital and north-south public transport routes, and likely to compromise the ability of West London to accommodate T5 and the forecast growth sought by the Mayor. LB Hill accepts that bus improvements will come in the short term, but calls for need for consideration of new radial and orbital routes for other routes. An orbital improvement suggested by LB Hill is links to the WLT such as via Hayes-Parkway.
▪ Radial improvements are dependent upon on the implementation of new routes, such as Crossrail. However there is no reference to other proposed routes such as the Airtrack connection from Staines/Woking through to the

Paddington suburban line
▪ LB Hill urges consideration of Transport Development Areas, defined as well designed, higher density, mixed use areas situated around good public transport access points – a concept which was developed by the RICS and is endorsed in PPG13. There is potential to promote TDAs to reinforce town centres is advocated in Policy 3D.1 [though this policy does not refer to TDAs].
▪ The DLP should include a commitment to consider extending the area around Heathrow.
▪ Concerned about failure to consider impact of Heathrow and sets out changes to DLP including transport – refers to Appendix 1 but not attached.

LONDON BOROUGH OF HOUNSLOW
▪ NOTE: Lack of public transport provision is the major issue. ▪ DLP fails to identify any public transport infrastructure to address current and future requirement in LB Hounslow.
▪ Increased transport congestion from Heathrow is not in the Plan.
▪ On transport needs, the Plan is over-reliant on large projects which may assist radial movement but not other journey patterns. Want more support for small scale local projects. Provision for orbital public transport movement is totally inadequate. Orbital public transport is almost exclusively buses – want upgrades to express buses, and possibly intermediate modes which link town centres and major transport interchanges
▪ Congestion and poor public transport accessibility are significant constraints on growth. Heathrow users on Hounslow radial public transport and strategic road routes aggravate problems.
▪ None of proposed major public transport schemes for West London will directly serve LB Hounslow, therefore cannot accept DLP assertion that existing and planned transport capacity will support the growth.
▪ Policy 2B.77 fails to acknowledge transport implications of expanding Heathrow. Limited public transport routes result in nearly 80% of Heathrow's non-transfer passengers travelling by road. The DLP should assess the transport implications of the increasing capacity at Heathrow and consider the need for additional infrastructure
▪ No further identified public transport infrastructure investment in the vicinity of the Opportunity area of South Heathrow
▪ More priority needed for local transport needs in vicinity of Heathrow. T5 will increase crowding on the Piccadilly line.
▪ LB Hounslow propose various transport schemes: ▪ alternative Crossrail corridor (instead of Kingston) using the Hounslow loop via new interchange at Chiswick Business Park. ▪ light rapid transit scheme between A4 corridor and orbital A312 with Heathrow in map of future light transit schemes (3C.3). ▪ southern rail link to Heathrow in Map 3C.2. ▪ transport interchange in Heathrow and at adjacent locations ▪ Ref in 3C.11 to quality orbital bus corridors

LONDON BOROUGH OF RICHMOND
▪ Concerned about ability of infrastructure to accommodate further growth
▪ Plan should be amended to include substantive public transport proposals to provide for orbital movements including links between town centres
▪ Plan should include proposals for improved rail access to Heathrow, particularly from the south.
▪ Plan should include policies to address road capacity and congestion

problems

4. Key Stakeholders

- Public transport improvements, particularly on orbital rather than radial routes, are required to alleviate congestion
- As no new transport capacity until the end of the Plan, development should not be prevented until new capacity is available
- Mayor should seek interchange facilities where LU and NR lines cross.
- Airport related demands are over-stressing its transport systems. Need to minimise impacts of T5 development
- Role of centres: need for improved public transport links between centres

THE HAMMERSMITH SOCIETY
▪ Would strongly argue that the White City scheme should include a properly integrated interchange between the West London Line and the H&C and Central tube lines.
▪ Vehemently oppose any increase in airport capacity in the SE.
▪ Further increases in capacity will provide many new jobs but the surrounding areas cannot readily absorb the housing needs of the new employees. Most of them will have to live some distance from their place of work which will in turn generate much more surface traffic in an area that is already overburdened.
▪ WLL would benefit from an upgrade. Nth - Sth commuters may grow when the White City retail devt is in full operation
▪ Uxbridge Rd Transit Scheme is the subject of considerable local anxiety, stemming from dedicating sections of the Uxbridge Rd to bus and tram resulting in diverting other traffic to other already congested routes. Experience from other European cities shows that vehicles can happily co-exist on the same road
▪ Crossrail 1 will not specifically be of great benefit for Hammersmith residents who wish to travel to Heathrow as they are already well provided with links to the airport.

THAMES VALLEY UNIVERSITY
▪ Concern that the Plan assumes transport improvements will take place. Plan should set out how it deal with consequences if they don't.
▪ Supports the principle of improving public transport, is concerned that they do not impact adversely on the lives of those who live, work and study in the sub-region. Specifically, concern at diversion of traffic onto surrounding residential streets

LONDON FIRST
▪ Public transport improvements, particularly on orbital rather than radial routes, are required to alleviate congestion and reduce the need for travel by car. Crossrail will be important in reducing the need for car travel.
▪ The highest priority in the short to medium term is the West London Line which could provide a valuable orbital service.
▪ Greater attention should be paid to the issue of surface access to Heathrow in order to minimise congestion from capacity increases. Airtrack (link to Waterloo via Staines) will important additional direct link, reducing need for travel by car.
▪ West London Tram will provide important public transport capacity.
▪ As no new transport capacity until the end of the Plan, development should

not be prevented until new capacity is available – policies should be applied flexibly.

LONDON FORUM OF AMENITY AND CIVIC SOCIETIES
▪ T5 introduces more road congestion due to need for extra access points. Mayor and boroughs should consider an exit toll to encourage switch to public transport.
▪ SRDFs should aim for self-sufficiency of Richmond, Twickenham and Kingston centres or good public transport links between them.
▪ At White City, the planning framework will have to make clear how the Plan's intention of reducing car parking will be achieved – could attract 40,000 car trips.
▪ Main local transport requirements relate to early availability of Crossrail 1 and its extensions through Wembley Park and Wembley Central.
▪ Upgrading of rail service between Acton Central and Hounslow will be needed to support growth of A4 golden mile, e.g. from Corridor 6 extension of Crossrail 1 to Richmond and beyond, which could allow Silverlink service to be added to the current rail service on the Hounslow Loop line.
▪ Mayor should seek interchange facilities where LU and NR lines cross.
▪ Early improvements in signalling for Piccadilly and District lines to improve reliability – PPP does not meet required timescale.
▪ Development of West London Line has been expected for some time. Should be consideration

QUINTAIN ESTATES
▪ Priniciple issue is appropriate policy framework for Wembley, having regard to its high levels of public transport accessibility. Quintain consider DLP policies to be broadly appropriate.

SWELTRAC
▪ Main issue is to minimise impacts of T5 development: ▪ Aim for 40% mode split target for workers, and 50% for visitors. ▪ Increase rail access from south and west through Airtrack scheme, and integrate it with South London Metro. Ensure Crossrail 1 is complementary to it. ▪ Improve rail and coach links to Heathrow by establishing Hayes as a major transport hub/interchange and the Gateway North station to Heathrow. ▪ Retain Feltham station and Heathrow bus links as Heathrow's Gateway South. ▪ Increase the number of feeder buses/coached to Heathrow
▪ Role of centres: need for improved public transport links between centres
▪ In the light of SRA's Strategic Plan reduced investments, essential to plan now for expansion of transit schemes at Croydon, CRT and WLT. Draft schemes for Hillingdon, Hounslow and Kingston should be "extended" to cover the opportunity schemes.

WEST LONDON ALLIANCE
▪ Airport related demands are overstressing its transport systems. WLA considers Heathrow not sustainable at its current level of operation and concerned that the DLP fails to appreciate the extent of mitigation, particularly public transport enhancement.
▪ Much of West London is relatively poorly served by public transport, as

indicated to DLP Map 2A.5 (shows PTAL accessibility) which shows [?] two thirds of commuting is by car.
▪ T5 will not change mode share. Proposed extensions of the Piccadilly line and Heathrow Express are unlikely to significantly increase capacity. Picc line extension without significant train operations increase will worsen existing commuting problems in West London. Plan should reassess transport implications of T5 and identify additional public transport capacity in West London.
▪ Proposals to more than triple the current surface rail capacity by 2011 (3 years after T5) depends on new routes such as Crossrail and the proposed southern rail route yet to be finalised by the SRA.
▪ Concerned that DLP fails to recognise the extent to which West London's inadequate public transport comprises radial routes and fails to appreciate the need to provide new orbital public transport. Plan should recognise the need for new orbital bus routes, including express buses.
▪ Concerns about environment and noise problems from Heathrow and roads.
▪ The Plan should support the proposed development of public transport schemes in West London, including a Light Transit scheme along the A4 from Hammersmith to Heathrow and a southern rail connection to Heathrow.
▪ The Plan should consider the introduction of congestion charging in the Heathrow area.

WEST LONDON BUSINESS
▪ Transport remains the primary concern. The Plan should demonstrate a strategic and equitable approach. Should be broad equity in capital expenditure per job between Central London and the other sub-regions (except East London).
▪ The approach to developing the SRDF should include a review of the West London transport strategy widening its remit to include the areas listed below:
▪ A tram network
▪ Proposals to significantly improve orbital public transport – a high priority. Should have a clear plan for transport in West London. Should show main links and interchanges and the proposals to upgrade existing public transport links and interchanges, based on current and projected demand.
▪ Assess opportunities to enhance heavy rail, particularly for T5 and Wembley.
▪ A sub-regional approach to town centre development should be an integrated component of the development of a comprehensive public transport strategy.

WEST LONDON RIVER GROUP
▪ Particularly support the increased use of the West London Line, specifically as it connects West London with South London.
▪ Strongly of the opinion that transport infrastructure should be expanded in advance of new development.

Annex 2: References

Buck et al (2002) Working Capital – Life and Labour in Contemporary London

DETR (1997) Crime Concern and Transport and Travel Research – Perceptions of Safety from Crime on Public Transport

DfES (2003) GCSE Results

Greater London Authority Economics and Roger Tym & Partners (2001) Annual Business Inquiry

Greater London Authority (2001) HIP data for London

Greater London Authority (2002) Draft London Plan - Draft Spatial Development Strategy for Greater London

Greater London Authority (2002) SDS Technical Report 3. Planning for London's Growth

Greater London Authority (2002) SDS Technical Report 9 – London Office Policy Review 2001

Greater London Authority (2002) SDS Technical Report 10 – London Office Market Monitoring Project Stage 2

Greater London Authority (2002) SDS Technical Report 21 – Demand and Supply of Business Space

Greater London Authority (2002) Round of Demographic Projections (GLA SDS Technical Report 23)

Greater London Authority (2003) London Property Research – London Office Policy Review

Greater London Authority (2003) Consumer Expenditure in London 2001

LPAC (1998) Sustainable Residential Quality (Small Sites), Report 20/98

London Development Agency and PACEC (2003) Understanding London's Sub-Regional Economies – Main Report

London's Health (2002) Health in London – 2002 Review of the London Health Strategy High-Level Indicators.

London Underground Rolling Origin and Destination Survey

Metropolitan Police Statistics (2000/01)

ODPM (2000) Tapping the Potential. Assessing Housing Capacity, Towards Better Practice

ONS Census (1961-2001)

ONS (2001) Health Data

Strategic Rail Authority (2003) On Track

Transport for London (1991) LATS Household Survey

Transport for London (2001) Mayor's Transport Strategy

Transport for London (2001) Railplan Runs

Transport for London (2001) Transport Statistics for London 2001

Transport for London (2002) Working Paper No. 1: Transport Trends and Demands

Transport for London (2002) Interchange Plan – Improving interchange in London

Transport for London (2002) Street Management Fact Sheet – London Accident Analysis Unit, Quarterly Summary

Transport for London (2003) Fact Sheet - London Accident Analysis Unit, Quarterly Summary 2002 (First nine months)

Transport for London (2003) Analysis of the Transport Programme to Support the Draft London Plan

Transport for London and Arup (2003) DLR Market Plan Report 2002/03

Transport for London, Business Plan for 2003/04 - 2008/09