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1. Introduction

1.1 Purpose of this Report

This North 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 process 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 aims 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 provides information by sub-region consistent with the pan-London revision of the Transport Strategy.

Figure 1.1: Project Stages

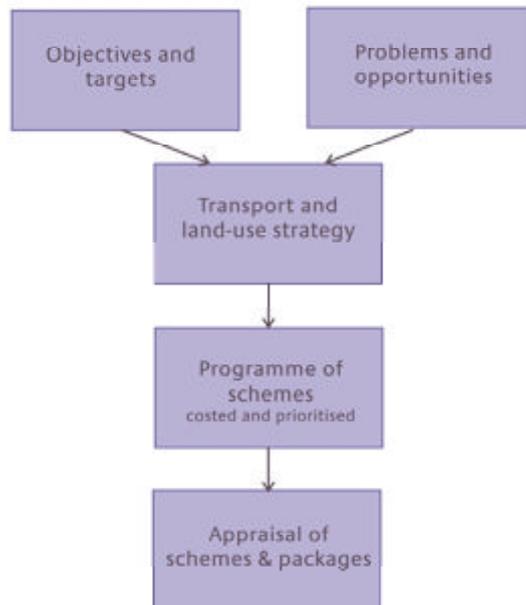
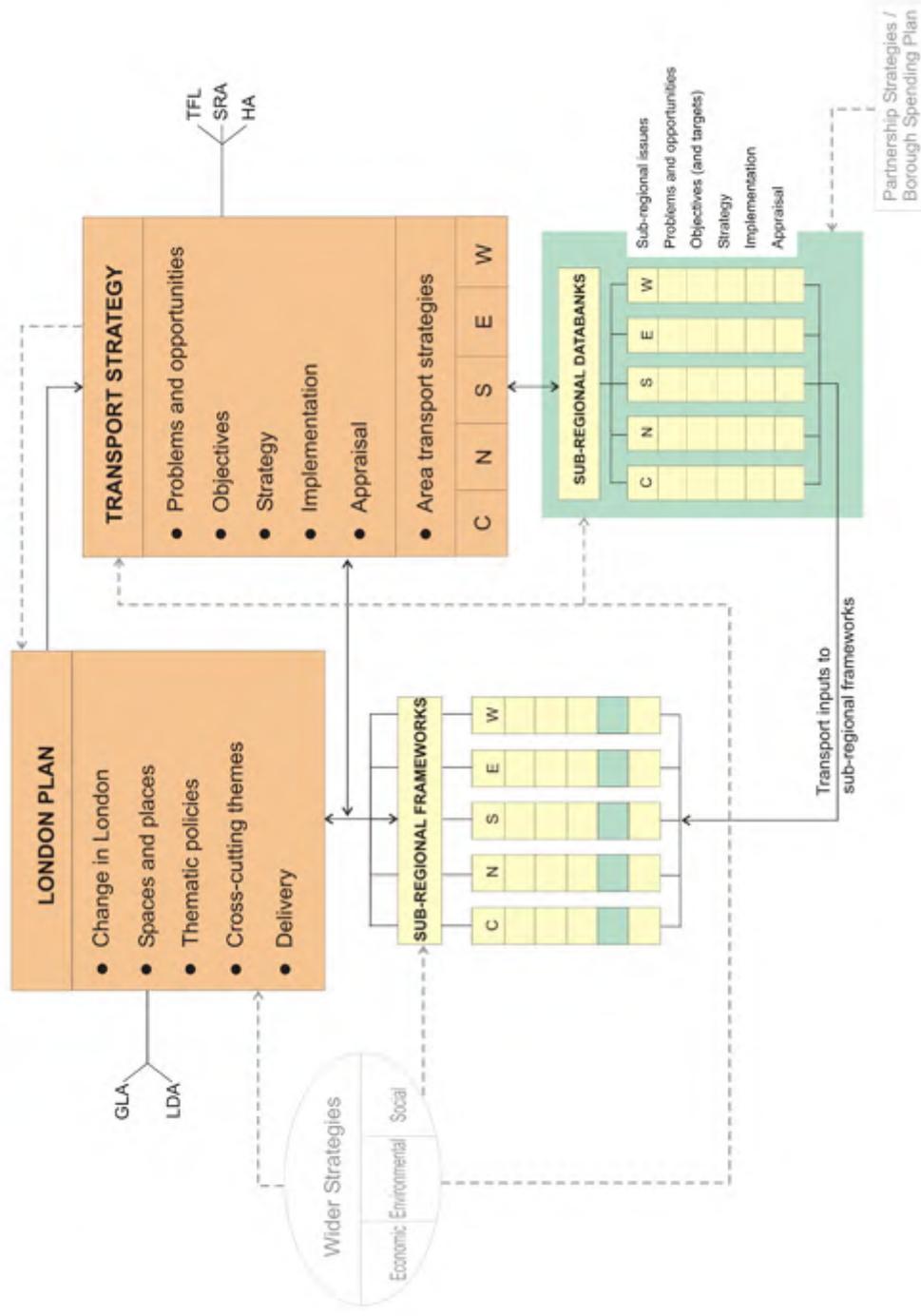


Figure 1.2 shows the relationship of the work with the ongoing development of the Transport Strategy and London Plan. This report provides a sub-region databank - an assessment of the problems and opportunities for the North Sub-Region – and will be used as context to the future development of objectives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

Figure 1.2: Transport Inputs to the Sub-Regional Frameworks



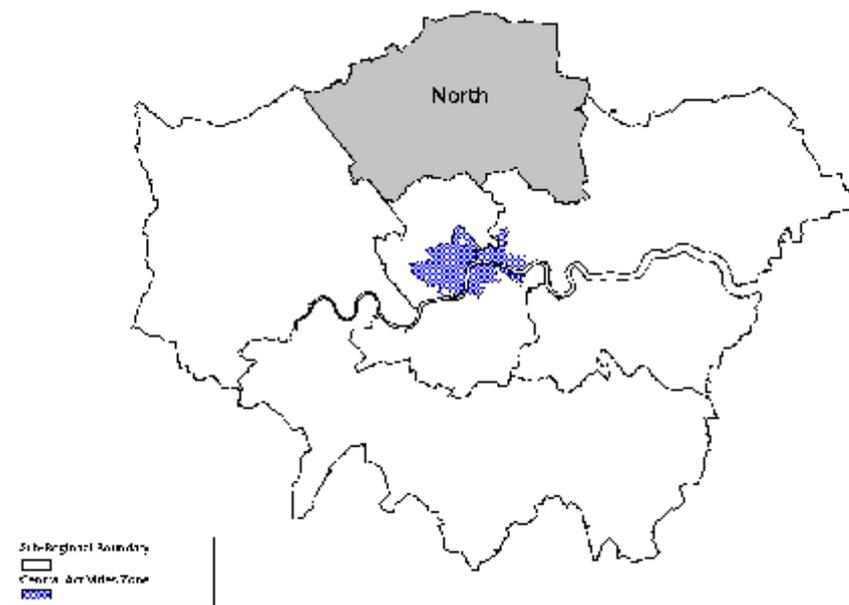
(Source: Lewelyn-Davies)

1.3 The Sub-Regions

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

- North London – Barnet, Enfield, Haringey and Waltham Forest.
- Central London – Camden, Islington, Kensington & Chelsea, Lambeth, Southwark, Wandsworth and City of Westminster.
- South London – Bromley, Croydon, Kingston upon Thames, Merton, Richmond upon Thames and Sutton.
- West London – Brent, Ealing, Hammersmith & Fulham, Harrow, Hillingdon and Hounslow.
- 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: 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 North 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 North 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 North Sub-Region: Broad Characteristics

Much of the North Sub-Region consists of low to medium density residential communities, linked to central London by rail and Underground lines. Parts of the sub-region, especially around the Lee Valley, were developed around manufacturing industry which has declined dramatically over recent years. The local commuting patterns associated with this employment have also changed.

Due to its position, the North Sub-Region has acted as a base for a large number of businesses which provide goods and services to areas in close proximity to the sub-region. Due to excellent road connections, parts of the sub-region act as convenient through routes, with large traffic volumes accessing the major roads leading out of London. The road network has undoubtedly helped to create employment growth in the North Sub-Region, but also has had a negative impact on the quality of the local environment.

The Underground has greater significance than National Rail for commuting purposes in the North Sub-Region. There is little in the way of an orbital network for public transport in the sub-region. However, the North Circular Road, together with employment and retail facilities attracted to it, generates significantly greater tangential movement by car and lorry than is found, for example, in the equivalent area in south London.

Wood Green has the status of a Metropolitan centre while Edgware, Enfield Town and Walthamstow are designated as Major centres. There are a further 30 designated district centres. Brent Cross is a significant car-based retail centre.

Current Transport Strategy schemes are shown in Figure 2.1.

2.3 Stakeholder Aspirations

The North Sub-Region has a varied economy, with strong recent growth, notably in Barnet, but with other areas of continuing stagnation, for example, in parts of the Upper Lee Valley and the industrial areas around the North Circular Road.

The draft London Plan (2002) proposes that North London should accommodate 45,000 additional homes and around 25,000 new jobs (an increase of 7%) by 2016. Development should be focused on the Opportunity Areas with particular emphasis on the Upper Lee Valley.

A co-ordinated approach should be planned for the corridor stretching from the Upper Lee Valley, beyond London, towards Stansted and Cambridge. This should maximise development and regeneration opportunities, exploiting the potential of Stratford, Stansted and other strategic transport links. The corridor and transport links between North London and Luton Airport also require

strategic co-ordination. There are especially strong links across the Lee Valley and into the Thames Gateway.

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

The GLA family comments:

- Priority is East and Central sub-regions.
- There will be sufficient transport capacity to support the development of the OA and IA.
- Area will benefit from London wide bus capacity growth and from improvements on the LU Northern, Jubilee & Victoria lines.
- Sub-region has potential good access to high level transport through Stansted Airport and Stratford International Rail Station.
- More challenging issue is that of orbital links across North London.

Borough comments:

- Concern over late scheduling of North London's transport improvements and fact that they will not resolve congestion.
- Brent Cross/Cricklewood is not a location where major trip generating development is appropriate because it is not a town centre and has poor public transport access.
- Accessibility to a range of destinations is important whilst at the same time there needs to be capacity in the system to cope with additional demand for public transport services.
- Recognition of importance of links from the North Sub-Region to the Thames Gateway, though there are other sub-regional improvements that are important to support regeneration initiatives and to improve resident's access to jobs.

Other key stakeholder comments:

- One key element is the transport links between north London and the airports at Luton and Stansted and links to CTRL and Stratford.
- Transport system will need very careful attention. There are no orbital rail routes in the sub-region.
- With no significant new transport infrastructure planned until Crossrail 2 (2016) the road network remains critical (current congestion, improvements needed to North Circular with junction to A1).
- Concerns about the promotion of Brent Cross as a new town centre (currently operates as an out of town shopping centre). The attraction to car users far outweighs the attraction to those who use (or wish to) public transport.
- Development of new stations on Thameslink should include a station to serve Brent Cross.

¹ Source: Chris Hyde's summary of submissions to the EIP (2003)

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 North 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, other matters are more effectively dealt with at the sub-regional or borough level.

Table 2.1: Transport Problems

Problem indicator	North Sub-Region performance and trends	Projection and strategy intervention
Walking difficulties and quality of street environment	<ul style="list-style-type: none"> ▪ Barriers to walking are summarised in the draft Walking Plan – people are discouraged by factors such as traffic volume, poor air quality, road safety issues, personal security, poor quality of street environment and a lack of information. ▪ Pedestrians account for 18% of road casualties in the sub-region. <p>Further data needed to inform following:</p> <ul style="list-style-type: none"> ▪ Severance caused by main road traffic and infrastructure. ▪ Traffic dominance in traditional centres. 	<ul style="list-style-type: none"> ▪ Greater priority to walking in traffic management needs policy and scheme development. ▪ The quality of the local environment is likely to deteriorate further unless traffic increases reversed. ▪ Strategy for established centres should aim to radically improve public realm.
Cycle difficulties	<ul style="list-style-type: none"> ▪ It can be assumed that poor safety and complex traffic conditions suppress the demand for cycling. In 2002, cyclists accounted for 5% of all casualties in the sub-region (See Figure 3.10 and Table 3.16). ▪ Only 1% of work trips are undertaken by bike in the sub-region (2001 Census). <p>Further data needed:</p> <ul style="list-style-type: none"> ▪ Attitudes on deterrents to cycling. ▪ Impact of cycle provision on casualties and levels of cycling. 	<ul style="list-style-type: none"> ▪ Improved LCN+ routes are proposed on commuter routes, with safe, high quality, high capacity facilities. ▪ Other projects include new cycle crossings on the TLRN. ▪ There is a need for improved cycle parking at train stations and at the work place. ▪ Cycling provision could offer a substantial alternative to the car in North Sub-Region, especially for access to local shops, employment and schools. ▪ Cycle targets should be revised as mode share targets, not use targets.
Bus unreliability	<ul style="list-style-type: none"> ▪ Buses, especially high frequency services, are generally less reliable than in other sub-regions, apart from the Central sub-region (see Figures 3.18-3.19). 	<ul style="list-style-type: none"> ▪ Bus reliability would deteriorate further without priority intervention ▪ Such intervention is justified in terms of heavy reliance on bus for intra sub-region movement

Inadequate bus service routes or frequencies. (A social exclusion issue in terms of people working shifts outside hours of operation, or gaps in route coverage)	<p>Future data need:</p> <ul style="list-style-type: none"> There is variation in service levels, (time of day, day of week) but it is assumed that meeting all travel needs because of poor service outside core hours is likely to be worse than Central sub-region due to lower density of service. 	<ul style="list-style-type: none"> Policy action has/will improve the situation. Fares policy has/will address social inclusion. Potential to explore service coverage (time) in relation to subsidy.
Bus overcrowding	<p>Data required to inform:</p> <ul style="list-style-type: none"> Extent of overcrowding, especially on routes not served by Underground. Especially commuter peak hours Some night bus routes School hours where coincident with commuter peaks 	<ul style="list-style-type: none"> TfL's planned 50% capacity increase by 2016 is particularly relevant to North Sub-Region. If bus priority routes achieved, bus route capacity will increase substantially.
Rail Routes	<ul style="list-style-type: none"> There is a lack of orbital rail routes in the region (London First). Links to airports at Luton and Stansted should be improved (GLA). Thameslink 2000 would address Luton airport access, while West Anglia modernisation would assist with Stansted access. The bigger problem is local access to stations within the sub-region. 	<ul style="list-style-type: none"> Links between the opportunity areas and areas of deprivation need to be addressed. New orbital rail routes are possibly not feasible. Even the present North London Line is understood to be poorly used.
Rail unreliability	<p>SRA data is available by operator. See Tables 3.27-3.28 and Figures 3.22-3.23. Reliability by sub-region not available as yet.</p> <ul style="list-style-type: none"> SRA public performance measures are available by train operator. 	<ul style="list-style-type: none"> Key pan-London output indicator. Issue of control, especially National Rail.
Rail overcrowding	<ul style="list-style-type: none"> National rail overcrowding on Euston routes, but not significant for the North Sub-Region (See Figure 3.24 for 2001 overcrowding and Figure 3.25 for 2016). 	
Underground Overcrowding	<ul style="list-style-type: none"> Little Underground overcrowding in peak commuter hours within North Sub-Region, but affected by overcrowding within Central sub-region portions of lines. (See Figures 3.20-3.21) 	<ul style="list-style-type: none"> The Underground situation is not expected to improve, and at times gets worse, despite full implementation of schemes. There is therefore an issue of how to increase peak hour capacity for commuters from North Sub-Region.
Station and passenger environment and facilities	See customer satisfaction below	<ul style="list-style-type: none"> Are current improvement programmes adequate?
Road crashes and casualties	<ul style="list-style-type: none"> Marginally lower proportion of pedestrian casualties in the sub-region than in London as a whole (See Table 3.16). 	<ul style="list-style-type: none"> Road space reallocation and speed management policies could accelerate improvements.
Environmental problems	<ul style="list-style-type: none"> Noise and air pollution are generally poor in the North Sub-Region. (See 	<ul style="list-style-type: none"> Deterioration greatest where traffic growing fastest

	<p>Figure 3.11)</p> <ul style="list-style-type: none"> See Tables 3.17-3.18 for NO_x and PM10 emissions. Impact of traffic on local environment of town centres (but no data specifically on this). 	<p>(outside peaks, outside Central Area, and residential “rat runs”)</p> <ul style="list-style-type: none"> CO₂ reduction unlikely without further traffic reduction.
Road congestion (delays and unreliability)	<ul style="list-style-type: none"> Traffic speeds are used as a measure of congestion. Only TLRN data is available – it shows that speeds in the North are faster than in the Central and East sub-regions, but slower than South and West (See Figure 3.33 and tables 3.27-3.29). 	<ul style="list-style-type: none"> Deterioration greatest where traffic growing fastest i.e. outside am peak. The forecast is for worse congestion, but at a lower growth rate than for London as a whole. Will cause increasingly unstable traffic conditions (unpredictable delays). Choice of solving problem through extended traffic reduction measures.
Parking difficulties	<p>Future need for data on parking difficulties</p> <ul style="list-style-type: none"> Assumed that Brent Cross as a car based commercial development makes it difficult to serve by PT. Also assumed that non residential parking is strained in traditional centres. Residential parking difficulties, though not as severe as in Central sub-region. 	<ul style="list-style-type: none"> Further deterioration unless further extensions to residential parking. Contribution of Car Clubs to solving this problem. CA reallocation of parking to other uses? Further action around centres and stations?
Costs of public transport for those on low incomes	<ul style="list-style-type: none"> Assumed to create problems for job seekers in North Sub-Region, especially for those taking opportunities outside the North Sub-Region 	<ul style="list-style-type: none"> Improved with ticketing and fare initiatives Improving as fare levels held Young and unemployed people discounts Potential capacity problem with lower fares (subsidy, service, fares triangle)
Lack of transport payment integration	<ul style="list-style-type: none"> Pan-London issue, but less significant in North Sub-Region where most public transport is under TfL control 	<ul style="list-style-type: none"> Travelcards have helped Will partly improve with Oyster card Further integration potential with National Rail, parking, taxi, car club
Accessibility to PT for disabled people	<ul style="list-style-type: none"> Many rail services inaccessible Future data requirement: Buses – proportion accessible 	<ul style="list-style-type: none"> Accessible buses programme – 79% of buses are currently wheelchair accessible. Rail – programme adequate?
Risk and fear – personal security	<p>Future data requirement</p> <ul style="list-style-type: none"> Fear influence on mode or destination choice Fear of crime and anti-social behaviour as deterrent to off-peak public transport use 	<ul style="list-style-type: none"> Trends not known
Customer satisfaction	<ul style="list-style-type: none"> Underground: customers are least satisfied with cleanliness of stations and helpfulness of staff and more satisfied by factors such as 	

	<p>information, the services and safety and security (Transport Statistics for London, 2001).</p> <ul style="list-style-type: none"> ▪ 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. 	
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2.5 Development and Transport Opportunities

The previous section sets out transport problems in the North Sub-Region as they now exist, or might develop. The Transport and Spatial strategies, however, can go further and set out ways of generating 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. New development opportunities and the potential for intensification provide the key land use and transport opportunity for the North Sub-Region. The transport interventions are restricted to Thameslink 2000, upgrading the interchange at Tottenham Hale and Underground improvements. A number of opportunities are included in Table 2.2 that are not included in the DLP, but which could also be considered.

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		
Upper Lea Valley (Inbound access for 10,000 jobs. Outbound for 700 homes)	<ul style="list-style-type: none"> ▪ West Anglia upgrade by 2007? ▪ Nearest Major Strategic Interchange is Edmonton Green 	<ul style="list-style-type: none"> ▪ Problems of local access by public transport, walking and cycling. ▪ Doubts as to adequacy of West Anglia route since this does not serve labour market.
Tottenham Hale (5,000 jobs. 200 homes)	<ul style="list-style-type: none"> ▪ Major Strategic Interchange 	<ul style="list-style-type: none"> ▪ Focal point on public transport network, and plenty of inbound rail capacity. ▪ Ideal opportunity for high intensity employment.
Cricklewood/ Brent Cross (5,000 jobs. 5,000 homes)	<ul style="list-style-type: none"> ▪ Thameslink 2000 (Cricklewood) 	<ul style="list-style-type: none"> ▪ Strategic “fit” between public transport and development at this location OK. ▪ But accessibility issues are likely to be significant at the local level in terms of detailed routing and relationship to development sites.
Intensification Areas		
Mill Hill East (500 jobs. 2,000 homes)	<ul style="list-style-type: none"> ▪ None identified 	<ul style="list-style-type: none"> ▪ Low PTAL rating and poor inbound access by public transport for proposed jobs. Northern Line branch will serve commuting from the area,

		but is and will remain crowded towards central London. Need to address access to this area.
Hendon RAF (500 jobs. 2,000 homes)	<ul style="list-style-type: none"> ▪ Thameslink 2000 passes the site but does not serve it. 	<ul style="list-style-type: none"> ▪ Low PTAL rating and poor inbound access by public transport for proposed jobs. ▪ Northern Line Colindale will serve commuting from the area, but is and will remain crowded towards central London. ▪ Thameslink stations are inaccessible from the site. ▪ The site is currently severed from hinterland by M1 and railways. ▪ There is thus a major issue of accessibility for this area
Haringey Heartlands/ Wood Green (1,500 jobs. 1,000 homes)	<ul style="list-style-type: none"> ▪ Thameslink 2000 	<ul style="list-style-type: none"> ▪ Relationship between sites and the high bus accessibility Wood Green area is important.
Major Centres intensification		
Edgware	<ul style="list-style-type: none"> ▪ None 	<ul style="list-style-type: none"> ▪ Identified as a neutral trend in the DLP
Enfield Town	<ul style="list-style-type: none"> ▪ None 	<ul style="list-style-type: none"> ▪ Identified for consolidation in the DLP ▪ Potential for enhancement of role could be explored
Walthamstow	<ul style="list-style-type: none"> ▪ None 	<ul style="list-style-type: none"> ▪ Recognised as a centre for regeneration in the DLP ▪ (Must be noted that 30 years of the Victoria Line has had little impact, so mechanisms other than just transport likely to be the key)
Other opportunities not identified in DLP. (Accessibility and Intensification)		
None identified		
Transport opportunities		
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 outputs.

2.7 Strategic Policy Issues

2.7.1 Growth and transport links

Relatively small growth is expected in the North Sub-Region: an additional 45,000 homes and 25,000 jobs. New development is to be focused in the Upper Lee Valley and in the industrial sites along the North Circular. The London Plan sees the potential to enhance economic opportunities in an area which extends from Tottenham Hale, through to the Upper Lee Valley. The idea is to maximise opportunities arising in Stansted and Cambridge, along the existing rail route.

It also proposes links with opportunity areas in the Thames Gateway, and this is an issue identified for development in the SRDF. Currently there are no proposed links, and the only existing rail service is the half hourly service to Barking. The ELLX is proposed to reach Finsbury Park, but this is on the southern border of the sub-region. In view of this, if the Thames Gateway is to supply jobs for residents of North Sub-Region, this is likely to involve reliance on car travel.

There is also potential for further growth at Finsbury Park and Wood Green, both areas with excellent PTAL scoring as seen at Figure 3.17 and of course improved links with the areas of deprivation would be desirable.

A further issue raised in the draft London Plan and EIP is the issue of what, if any, improvements are needed to facilitate or encourage orbital movement in north London. The predominantly radial structure of the public transport network is a product of the sub-region's strong dependence on central London for employment and other facilities. Apart from the issue of access to the Thames Gateway and the Stanstead/Lea Valley areas already raised, it is not clear what the purpose would be of encouraging orbital movement. Given an objective of increasing the public transport mode share there could be disadvantages in encouraging functional links in non-radial directions since this would inevitably mean increasing reliance on cars.

An alternative perspective for the North Sub-Region is to consider the potential for reinforcing local movement to local or district centres. A hypothesis is that the relatively good links by Underground has led to North Sub-Region residents

depending more heavily on Central London for retail, etc. than do, for example, residents of the South sub-region, which has stronger suburban centres and interchanges. It may be noted that the North Sub-Region has only one Metropolitan centre (Wood Green) and 3 Major centres (4 if Brent Cross is included) for a population of 1.1 million. Greater local dependence could be encouraged based on (mostly) bus access to existing centres. This could address trip length and mode split issues. Potential could be explored for significantly strengthening the existing centres such as Wood Green, Enfield and Golders Green, capitalising on improved local transport.

A significant retail centre in North Sub-Region is Brent Cross, but currently it has a relatively low PTAL rating as seen at Figure 3.17. It is well served by the M1 and North Circular Road and as such is heavily reliant on car access. An issue is the extent to which Brent Cross can become less car oriented, and more of a broad based town centre. A sub issue is whether or how new jobs and homes in the Cricklewood area can be integrated with Brent Cross as a town centre and its public transport accessibility be improved.

The Lee Valley opportunity area raises significant issues in terms of transport and accessibility. Although it follows the London to Stansted/Cambridge rail line, the capacity of this line to carry local stopping services is severely limited, due to priority given to fast services. Also, the railway itself acts as a major barrier to movement, severing the development sites from their hinterland west of the railway. The extent to which the West Anglia route modernisation could address these problems is an issue for consideration. Also important is the issue of how to link the employment areas of the Lee Valley with the labour market areas. Currently they are relatively inaccessible, partly due to the rail severance problem mentioned previously. Tottenham Hale is a major interchange on this line at the south end of the opportunity area, and is close to Tottenham High Road with good public transport accessibility. This is an area where potential for higher intensity development could be explored, including for commercial uses.

2.7.2 Transport and areas of deprivation

Better transport links are required between the areas of deprivation (Tottenham, Edmonton and Leyton) and the opportunity areas of Tottenham Hale, Stratford and the areas of intensification at Mill Hill, Hendon and Wood Green.

2.7.3 Road Network

The road network in much of the North Sub-Region is under strain from heavy traffic volumes. The North Circular attracts heavy flows that have no parallel in the South sub-region for example, and roads feeding this strategic road also get very congested. Particular problems include the severance of local communities by large scale road infrastructure (e.g. the M1 and North Circular), the intrusive traffic levels in traditional town centres, and one-way traffic management schemes imposed over the years as a means of squeezing more traffic capacity out of the road system (e.g. Tottenham and Enfield). These arrangements cause major environmental impacts. An issue for North Sub-Region is therefore how to reduce traffic impact as part of a strategy of consolidating and strengthening the role of local and district centres.

2.7.4 Network Integration

Continuing the theme of strengthening local communities and their focus on existing centres, there could be scope for a major increase in the role of cycling. In outer London suburbs such as characterise much of the North Sub-Region,

typical journey distances to retail and employment facilities may often be beyond walking distance, while the dispersed pattern of trip origins and destinations makes it difficult to serve by public transport. The bicycle is ideal for filling this gap as an alternative to the car. The generally low-density environment means there are ample opportunities for inserting new cycling infrastructure.

Interchange between different public transport services is relatively difficult in much of the North Sub-Region. Rail stations, for example, are in many cases remote from the centres and focal points on the bus network (examples can be found at Wood Green, Enfield, Brent Cross and Tottenham). There is a heavy reliance on the bus for movement internal to the sub-region (i.e. as opposed to radial movement to central London) so that the policy to expand bus capacity by 40% across London is of particular significance for this sub-region.

3. 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 North 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.

3.2 Drivers of Change

3.2.1 Population

The post-1945 decline in London was reversed during the 1980's, increasing from 6.81 million in 1981 to 7.19 million in 2001. The North Sub-Region's population has also grown from 980,000 in 1981 to 1.02 million in 2001. It is forecast that by 2016 the population of the North Sub-Region will be over 1.1 million, an increase on 1961 levels. Within the sub-region, both Barnet and Enfield have similar populations in 2001 to 1961 levels and are forecast to grow well in excess of these by 2016. Waltham Forest and Haringey, even by 2016, are not forecast to reach the population levels of 1961. Table 3.1 shows the population figures and projections by borough and the sub-region from 1961 to 2016.

Table 3.1 North 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)
Barnet	318	310.0	295.2	297.7	315.3	335.5	344.3
Waltham Forest	249	236.7	217.5	215.9	218.6	229.3	235.9
Haringey	259	243.4	207.2	207.0	216.8	240.6	250.7
Enfield	274	269.5	261.1	260.1	274.3	287.1	292.3
North Sub-Region	1,100	1,059.6	981.0	980.7	1,025.0	1,092.5	1,123.2
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 are on 1991 boundaries. Data for 1991 and 2001 are on 2001 boundaries

Source for 2011 and 2016 GLA 2002 Round of Demographic Projections (GLA SDS Technical Report 23) © Copyright GLA 2003

Figure 3.1 shows the population trend and forecasts for the North Sub-Region.

Figure 3.1 North Sub-Region Population Trend and Forecast

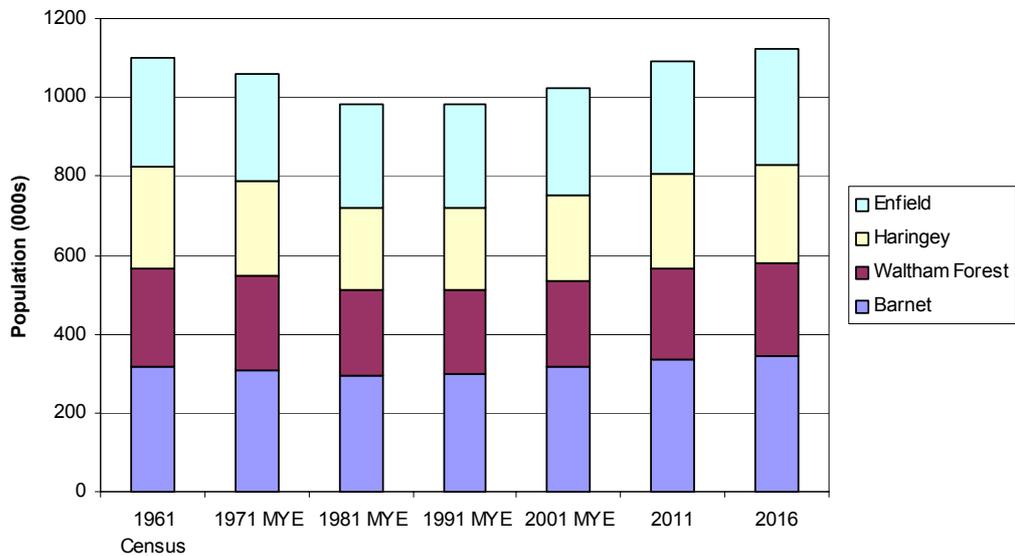


Table 3.2 highlights recent population increases using mid-year population estimates for the North Sub-Region in 2001, 2002 and 2003. The 2003 mid-year population estimate for the sub-region is just over 1.03 million people, with all boroughs contributing to the increase.

Table 3.2 Recent Population Change

Sub-regional Borough	2001	2002	2003
Enfield	274,343	276,326	278,349
Haringey	216,809	218,217	219,691
Waltham Forest	218,649	219,037	219,743
Barnet	315,267	316,881	318,541
North Sub-Region total	1,025,068	1,030,460	1,036,324
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)

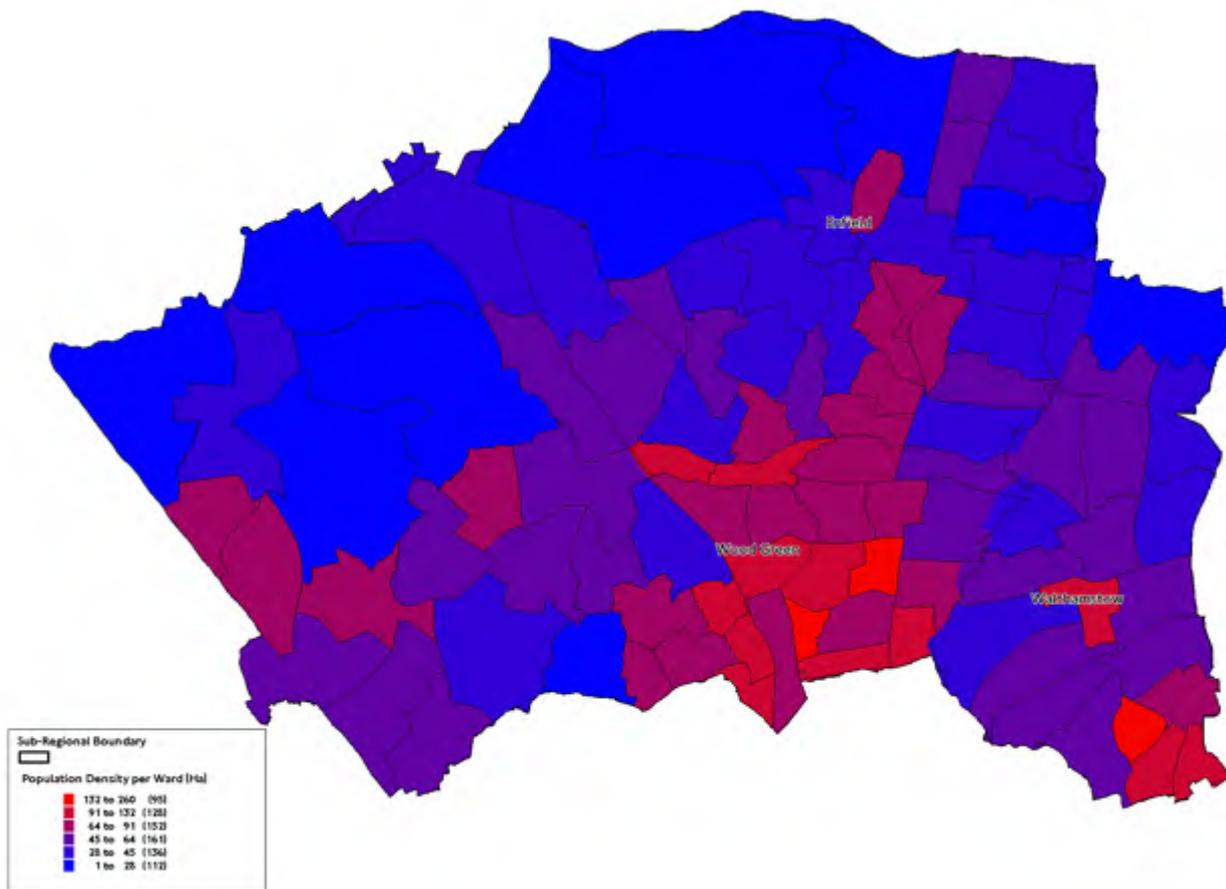
Table 3.3 gives the population densities for each of the London boroughs in the North Sub-Region. The average population density for the sub-region is 43.9 persons/ha gross. The most densely populated borough in the sub-region is Haringey (at 74.2 persons/ha), whilst the least is Enfield (34.4 persons/ha).

Table 3.3 Population Density

Sub-region Borough	Area (Ha)	Population 2003	Household Density (Household/ Ha)	Population Density (Population/ha)
Waltham Forest	3,882	219,743	23.2	56.6
Haringey	2,959	219,691	31.2	74.2
Enfield	8,084	278,349	13.7	34.4
Barnet	8,674	318,541	18.1	36.7
North Sub-Region Total	23,599	1,036,324	17.8	43.9
London Total	157,209	7,290,174	19.2	46.4

Source: Census Key Statistics Table KS01

Figure 3.2: Population Density



(Source: Hannah Shrimpton)

Figure 3.3: Population Density and Travel Behaviour CORRELATION/waiting for Atkins data

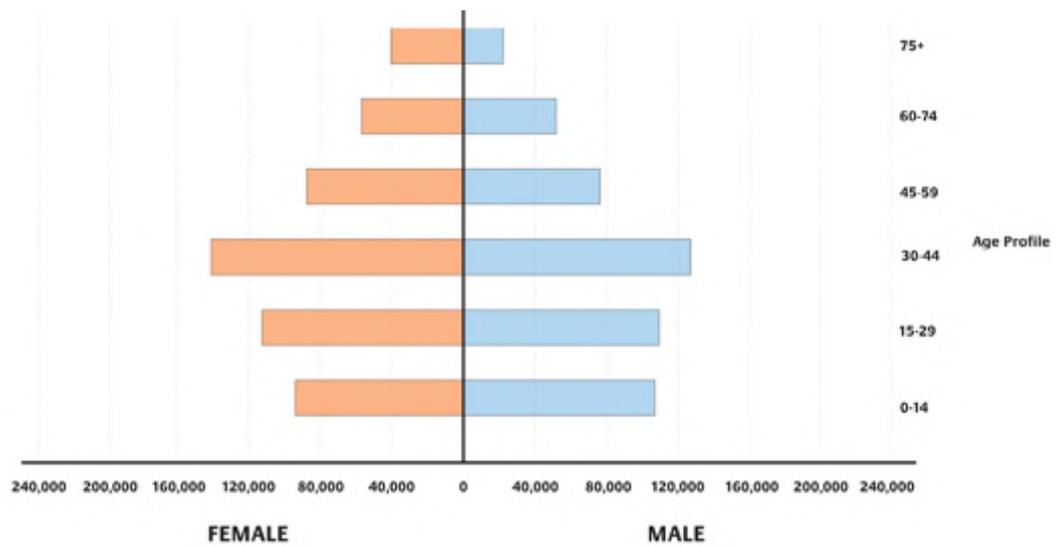
(Source: 2001 Census Key Statistics and LTS)

Table 3.4 and Figure 3.4 show the population profile for the sub-region. The proportion of 30-44 year old people in the North Sub-Region is 25%, which is similar to the Greater London proportion (25%), but not as dominant as in the Central Sub-Region (28%). The proportion of the population in the 0-14 age bracket is 20%, higher than both Greater London (19%) and the Central Sub-Region (17%).

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			
Haringey	21,156	20,819	26,672	28,019	28,689	31,237	14,743	16,538	9,453	10,311	3,262	5,910	216,809		
Barnet	30,613	29,442	32,570	34,688	36,283	38,995	26,186	28,304	16,481	19,029	8,125	14,551	315,267		
Enfield	27,593	26,851	26,870	28,744	32,679	34,875	22,506	24,382	15,132	16,602	6,410	11,699	274,343		
Waltham Forest	22,843	21,280	25,725	25,080	27,395	29,066	15,912	17,530	10,429	11,010	4,248	8,131	218,649		
North sub region total	102,205	98,392	111,837	116,531	125,046	134,173	79,347	86,754	51,495	56,952	22,045	40,291	1,025,068		
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

Figure 3.4: Population Age Pyramid

(Source: John Hollis, GLA)

Table 3.5 shows the growth in households in the North Sub-Region between 1991 and 2001 and projections to 2016. Between 2001 and 2016, household numbers in the sub-region are expected to increase by almost 60,000.

Table 3.5 Household Growth

Sub-region Borough	Households 1991	Households 2001	*Households 2011	*Households 2016
Haringey	87,624	92,299	105,600	111,200
Barnet	116,652	127,228	137,700	143,800
Enfield	103,047	110,714	118,800	123,100
Waltham Forest	88,375	89,915	97,600	101,700
North Sub- Region total	395,698	420,155	459,700	479,800
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 North Sub-Region is forecast to grow by 10% between 2001 and 2016. The highest growth is forecast to take place Haringey, whilst less growth is predicted in Enfield. Growth in the North Sub-Region is below that of Greater London (17%).

Table 3.6: Employment Forecasts

Sub-Region Borough	2001	2016	Change	% Change
Barnet	112,163	124,529	12,366	11%
Enfield	93,764	101,341	7,577	8%
Haringey	59,900	67,365	7,465	12%
Waltham Forest	56,954	62,563	5,609	10%
North Sub-Region Total	322,781	355,798	33,017	10%
*North Sub-Region total (GLA, London Plan Data)	386,000	412,000	26,000	7%
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)

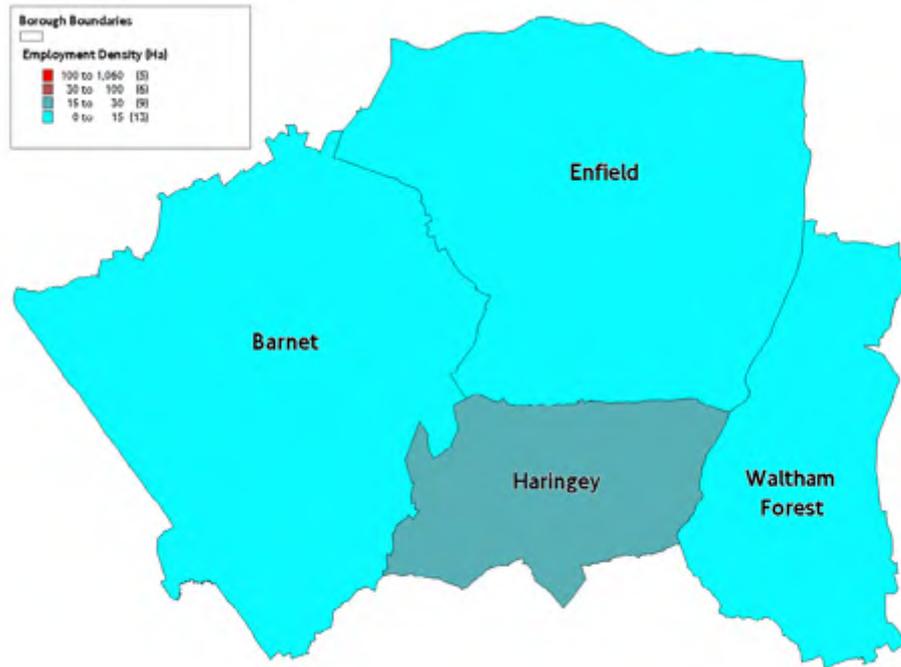
Table 3.7 shows employment densities in 2001 for each of the sub-region's boroughs and for the North Sub-Region as a whole. Haringey has the highest employment densities of 20 employees/ha. Employment densities in the North Sub-Region are lower than those of Greater London (26 employees/ ha).

Table 3.7 Employment Density 2001

Sub-Region Borough	Number of employees	Area (ha)	Employees/ha
Barnet	112,163	8,674	13
Enfield	93,764	8,084	12
Haringey	59,900	2,959	20
Waltham Forest	56,954	3,882	15
North Sub-Region total	322,781	23,599	14
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: Hannah Shrimpton)

**Figure 3.6: Employment Density and Travel Behaviour
CORRELATION**

Table 3.8 shows that the North Sub-Region accounts for only 8% of London's employment. The largest employment sector is distribution, hotels and restaurants which account for 27% of the sub-region's employment. A further 26% is in the public administration, education and health sector.

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
Barnet	66	211	3,880	5,608	34,299	6,159	24,292	3,053	28,003	6,592	112,163
Enfield	88	356	10,249	5,719	23,031	7,725	14,056	4,519	24,286	3,735	93,764
Haringey	44	26	5,566	2,552	16,488	4,617	9,658	765	14,892	5,292	59,900
Waltham Forest	54	166	6,189	3,001	14,916	2,358	9,345	1,010	16,688	3,227	56,954
North Sub-Region	252	759	25,884	16,880	88,734	20,859	57,351	9,347	83,869	18,846	322,781
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 2007, (GLA, Damien Walne)

3.2.3 Incomes and Car Ownership

Table 3.9 shows gross the average weekly earnings for full time jobs in the North Sub-Region (data relates to workplaces, i.e. incomes of people employed in the sub-region regardless of place of residence). 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 North Sub-Region, average weekly earnings are higher than Great Britain (7% higher), but lower than the Greater London average (14% lower). High skilled worker earnings are lower than both Greater London (-16%) and Great Britain (-3%). Low skilled workers are relatively well placed, earning more than Greater London (+4%) and Great Britain (+16%).

Table 3.9 Average Gross Weekly Earnings

Area	Average Weekly Earnings (Index)	High Skilled Workers	Medium Skilled Workers	Low Skilled Workers
North Sub-Region	346 (107)	467 (97)	260 (105)	288 (116)
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) from LDA and PACEC (2003) 'Understanding London's Sub-Regional Economies'

Table 3.10 and Figure 3.7 show car ownership in the North Sub-Region in 2001. Just over 34% do not have a car, which is marginally lower than the Greater London's figure of 37%. Over 21% of the households have more than one car, which is just above the London average (20%).

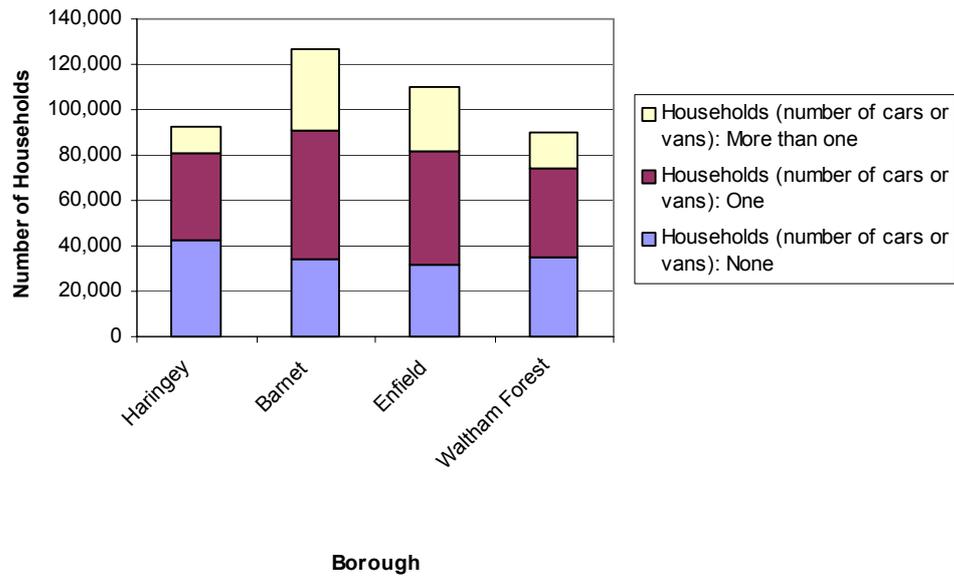
Table 3.10 North Sub-Region Car Ownership 2001

North 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**
Haringey	92,170	42,820	38,005	9,622	1,374	349	62,949
Barnet	126,944	33,925	57,039	28,680	5,648	1,652	138,587
Enfield	110,398	31,496	50,201	22,814	4,586	1,301	115,205
Waltham Forest	89,788	34,975	39,562	12,512	2,177	562	73,529
Total for sub-region	419,300	143,216	184,807	73,628	13,785	3,864	390,270
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: North Sub-Region Car Ownership (2001)

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 per cent since 1990. The North Sub-Region, however, has only a small proportion of the hotels in London, accounting for just 2% of bedspaces available. The North Sub-Region does not have any of London's top 20 tourist attractions within its boundaries. Table 3.11 shows the number of hotels in the sub-region.

Table 3.11: Hotels in the North Sub-Region

North	Establishments	Rooms	Bedspaces
Barnet	34	878	1,824
Enfield	9	409	795
Haringey	17	238	470
Waltham Forest	12	419	819
North Sub-Region Total	72	1944	3,908
London Total	1,509	93,286	186,067

Source: BTA/LTB November 2002

Table 3.12 shows that the North Sub-Region accounts for only a small proportion of people on the Underground whose origin of travel was a hotel. Only 3.2% of those on the Underground who started at a hotel in London did so from the North Sub-Region.

Table 3.12: Underground Passengers Travelling from a Hotel

Area	Number of passengers
North Sub-Region	1,200
London Total	37,181

Source: London Underground Rolling Origin and Destination Survey

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 to 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

North Sub-Region boroughs	People who work at or mainly from home	% of employed residents in each borough*
Haringey	8,416	8.8%
Barnet	15,467	10.6%
Enfield	9,985	8.2%
Waltham Forest	6,735	6.9%
North Sub-Region total	40,603	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.

Table 3.14 shows that the overall IMD figure for the North Sub-Region is just above the London average, as are the scores for employment, health, housing and access. The sub-region scores poorly, in London terms, on income and education.

Table 3.14 Index of Deprivation

Area	IMD	Income	Employment	Health	Education	Housing	Access
North Area	2,426	2,103	2,575	3,460	3,098	569	7,299
Greater London	2,418	2,444	2,555	3,457	3,347	564	7,483
England	4,208						

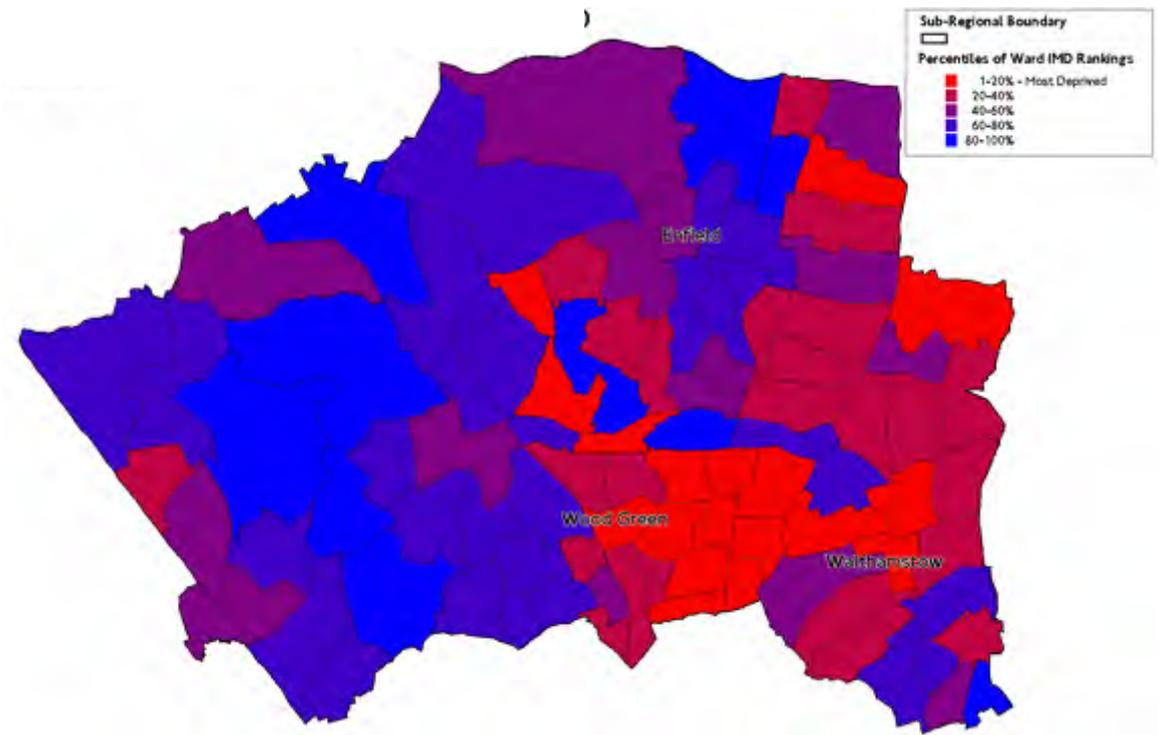
Source: Neighbourhood Statistics, Index of Multiple Deprivation 2000, ONS, PACEC

Table 3.15 show 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), whilst the least deprived is Richmond Upon Thames in the South sub-region (7.5). In the North Sub-Region, the most deprived borough is Haringey (42.3) whilst Barnet is the least deprived (16.6).

Table 3.15 Index of Deprivation – Average Ward Scores

Sub-region Borough	Indices of Deprivation 2000, average of Ward scores
Barnet	16.6
Enfield	26.8
Haringey	42.3
Waltham Forest	33.7
Average North Sub-Region ward score	29.9
London	28.7

Source: ONS

Figure 3.8: Indices of Deprivation

(Source: Hannah Shrimpton)

Figure 3.9: Deprivation and Travel Behaviour
CORRELATION/waiting for Atkins data

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, 3992 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 North Sub-Region, and Table 3.16 type of casualties, both in the first nine months of 2002. In terms of total casualties, the North Sub-Region accounts for 14.2% of the total for London. Waltham Forest (-11.8) and Haringey (-10.1%) both had greater percentage decreases from 2001 than the average for London (-8.4%).

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

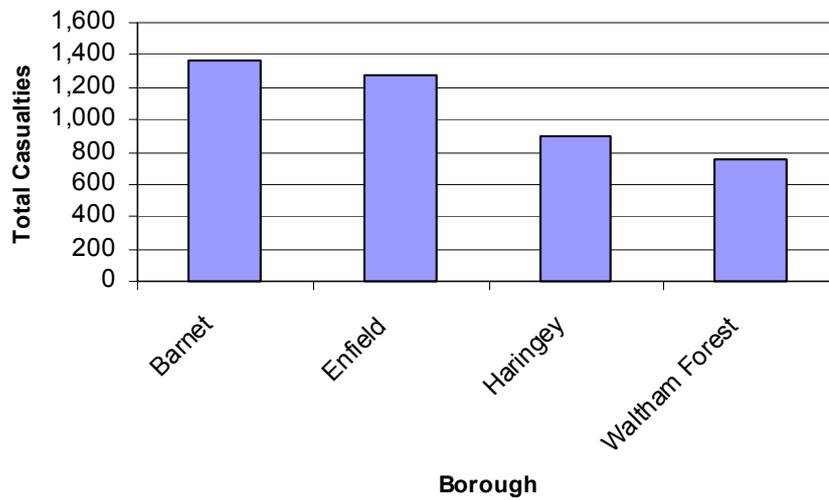


Table 3.16: Casualties in the Sub-Region (January to September 2002)

North 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
Barnet	1,366	3.5	201	-4.7	49	-9.3	176	2.3	832	7.4	1,165	5
Enfield	1,281	3.7	173	-1.1	64	31	107	-14.4	822	3.4	1,108	4.5
Haringey	898	-10.1	231	6.0	60	1.7	125	-18.3	411	-15.6	667	-14.6
Waltham Forest	749	-11.8	154	2.7	52	13	94	-17.5	388	-16.6	595	-14.9
Total for North Sub-Region	4,294 (100%)		759 (18%)		225 (5%)		502 (12%)		2,453 (57%)		3,535 (82%)	
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 Strategy² 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. Substantial reductions are forecast for all the noxious pollutants, with the exception of carbon dioxide.

The Mayor wishes London to make a contribution to meeting the UK target of reducing CO₂ emissions by 20% below 1990 levels, by the year 2010. London's transport system is responsible for around 20% of the CO₂ emissions in the city. For transport-related CO₂ emissions, road traffic accounts for 65%, rail and Underground for 25%, and aviation for the remaining 10%.

Table 3.17: Air Emissions 1999

North Sub-Region	Sulphur Dioxide	Oxides of Nitrogen	Carbon Monoxide	Carbon Dioxide	Non-Methane Volatile Organic Compound	Benzene	Butadiene	Particulate Matter
Haringey	122.4	1,028	3,136	540,910	1,666	30.7	7.7	45.6
Barnet	91.9	2,922	9,419	1,130,571	2,823	85.4	24.0	116.5
Enfield	83.1	3,697	6,316	1,021,907	3,341	56.4	15.6	102.8
Waltham Forest	34.1	1,060	3,049	480,562	1,819	30.5	7.6	41.8

Source: GLA – Lucy Sadler

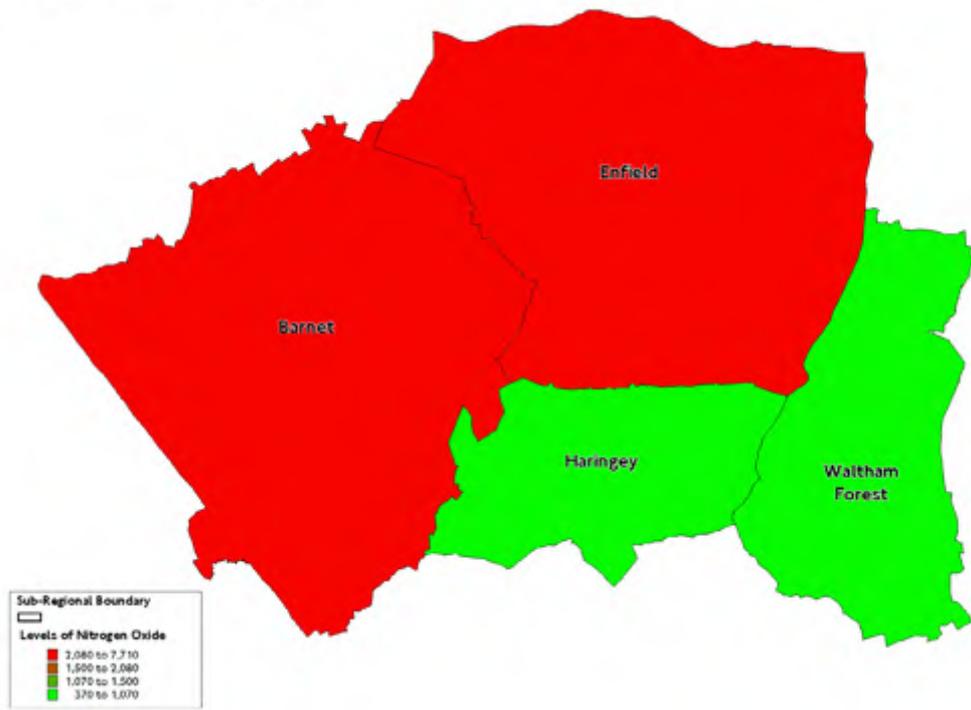
Table 3.18: Projected Air Emissions 2005

North Sub-Region	Sulphur Dioxide	Oxides of Nitrogen	Carbon Monoxide	Carbon Dioxide	Non-Methane Volatile Organic Compound	Benzene	Butadiene	Particulate Matter
Haringey	102.7	872.6	1,464	594,311	1,501	17.1	2.7	35.4
Barnet	31.3	2,220	3,883	1,184,340	2,112	40.0	8.0	109.2
Enfield	39.6	3,290	3,306	1,143,706	3,018	29.9	6.2	85.7
Waltham Forest	20.4	875	1,407	525,673	1,642	16.8	2.7	34.4

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: Hannah Shrimpton)

Health

Health and environmental issues are closely linked. Tackling safety and security, air pollution, noise and stress arising from overcrowding and traffic delay, are necessary to improve health in the North 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 the 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 North 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 Good Health
						Male	Female		
Enfield	4.3%	46.2%	N/A	10.2	6.2	76.4	80.6	5.6	69.6%
Waltham Forest	5.6%	44.3%	9.0%	11.8	5.1	74.1	78.6	7.4	68.6%
Barnet	3.8%	59.1%	4.8%	8.3	5.8	77.5	81.4	4.8	72.5%
Haringey	7.3%	35.4%	N/A	17.7	6.3	74.2	79.7	6.1	70.2%

(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: DfE provisional figures; January 2003

Housing: GLA: HIP data for London, April 2001

Good health: ONS 2001

Note: NO2 and PM10 are included in the key 10 indicators of health, they are shown in Tables 3.17 and 3.18

3.3 Travel Patterns and Trends

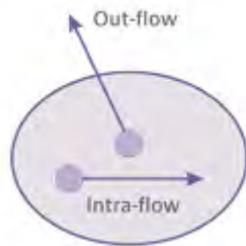
This section of the report draws together the key changes in travel patterns and trends in the North Sub-Region over recent years. It includes data on current travel patterns, traffic congestion, public transport, walking, cycling and private vehicles.

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 North Sub-Region.

Journeys to Work

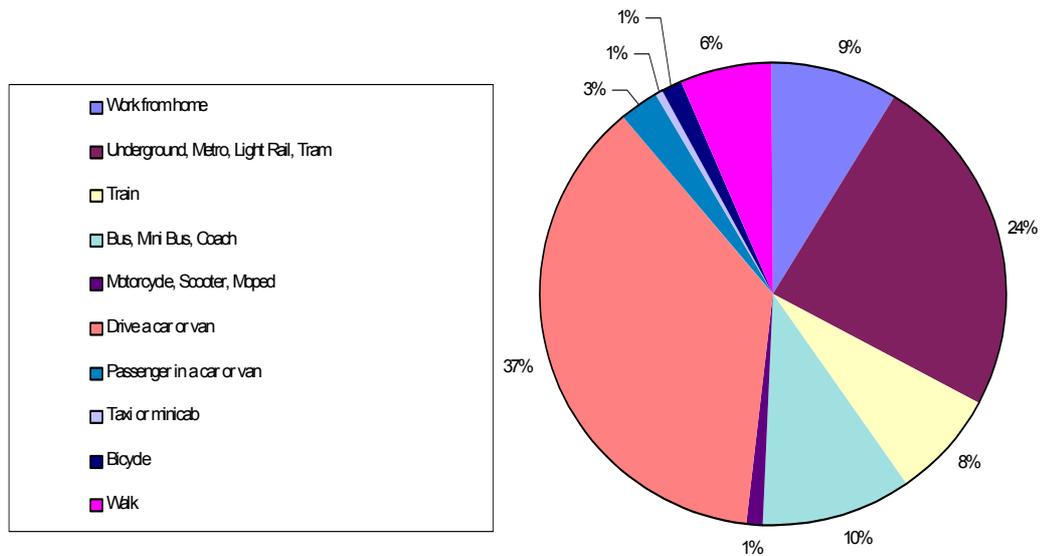
Figure 3.12 shows journeys to work by main mode for people living in the North Sub-Region (Census, 2001). Just under half use public transport, whilst almost 4 in 10 use the car.



Key comparisons with London-wide data are as follows:

- 24% of North Sub-Region residents use the Underground or DLR, significantly higher than London-wide (19%).
- 37% of residents drive to work, higher than London-wide (34%).
- 8% of residents travel to work by train, less than London-wide (12%).
- 10% of residents travel by bus, similar to London-wide (11%).
- Of the remainder, 6% of residents walk to work, 1% cycle to work and 9% work from home.

Figure 3.12: Journeys to Work by Employed Residents in the North Sub-Region

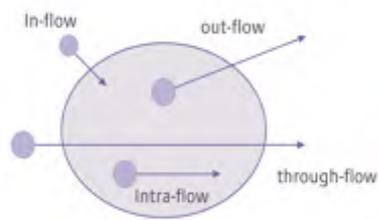


Source: Census 2001 (GLA, John Hollis)

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 April/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 North Sub-Region and includes journeys originating or terminating in the North Sub-Region and through journeys.



The main focus for public transport travel in the sub-region is rail, it is of primary significance.

- 56% of public transport journeys in the sub-region are by national rail, the same as the London-wide figure.
- The Underground and the bus have equal share of journeys, with 22% taking place on each mode. Bus usage is significantly higher than the Greater London average of 14%.

Table 3.20: Travel in the North Sub-Region (Passenger kms, 1000s)

Borough	LUL		Rail		Bus	
	Count	%	Count	%	Count	%
Barnet	204	25%	496	61%	119	15%
Enfield	28	5%	388	74%	110	21%
Haringey	146	25%	284	49%	146	25%
Waltham Forest	90	43%	25	12%	96	46%
Total North Sub-Region	468	22%	1,193	56%	471	22%
Total London	9,356	28%	18,653	56%	4,510	14%

Source: Railplan 2001 (TfL, Richard Hopkins)

The values are passenger kms inside the borough for all services that pass through the associated borough. Thus it is important to note that the shown values have a through service and a stopping service component.

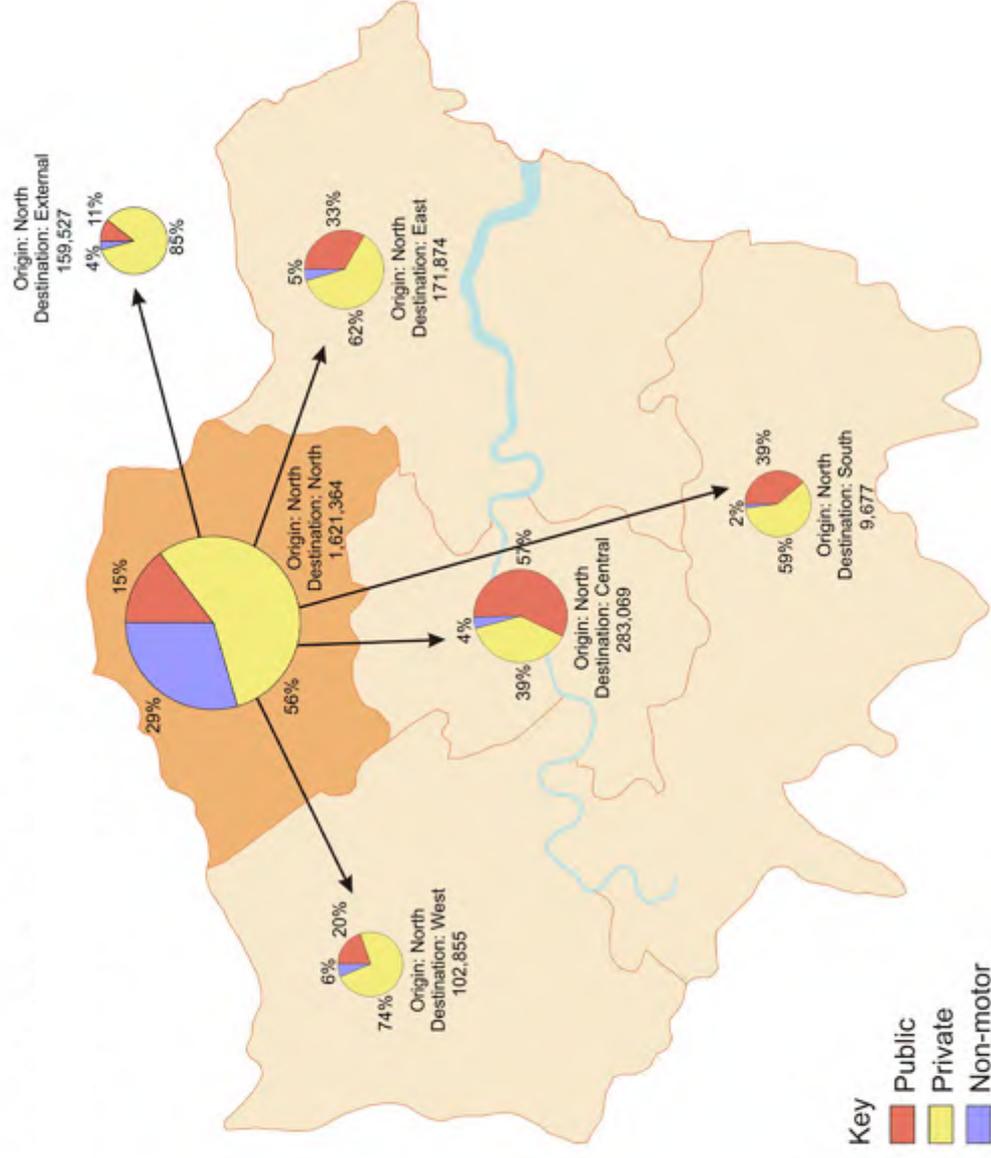
3.3.2 Weekday Travel Patterns

Figure 3.13 shows the weekday pattern of trips originating in the North Sub-Region by main mode.

Key points are:

- Private motor vehicles account for the majority of trips originating in the sub-region, and form the dominant mode for trips to all areas, with the exception of Central Sub-Region, for which public transport predominates.
- The number of public transport trips made wholly within the sub-region roughly equals the number made to other areas.
- Three quarters of private vehicle trips are made wholly within the sub-region.
- In relation to the public/private split, Public transport accounts for 15% of trips internal to the sub-region, a lower proportion than for trips to other London sub-regions.
- Walk/cycle trips account for 29% of all trips within the sub-region.
- The main movement out of the sub-region is to Central Sub-Region, followed by East Sub-Region, which includes the City.

Figure 3.13: Weekday Travel Patterns in the North Sub-Region



Source: 1991 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 North Sub-Region, classified by the main mode of transport. It shows all trips taking place on a weekday, using the 1991 LATS survey as source. The daily mode share patterns are shown, together with the percentage of trips for work and in the peak period. 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. Mode share patterns are very similar to those in the South Sub-Region.

- 27% of daily trips made in the sub-region are work-related, of which 47% are made in the peak period.
- 71% of all daily rail trips in the sub-region are for work, of which 77% occur in the peak period.
- 59% of daily Underground/DLR trips are for work, of which 68% take place in the peak period.
- 22% of daily bus trips are for work purposes, of which 43% take place in the peak period.
- 23% of walking trips are work-related, and 46% of these take place in the peak period.

Table 3.21: Travel in the North 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)	0.15	59%	68%
National Rail	0.05	71%	77%
Bus	0.23	22%	43%
Walk	0.83	23%	46%
Car/motorcycle	1.34	24%	44%
Bicycle	0.03	37%	51%
Taxi	0.01	14%	34%
Total	2.64	27%	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 the highway vehicle and public transport passenger trips originating in and terminating in the Sub-Region by period of the day. The Sub-Region “exports” more public transport trips in the morning peak than it attracts, reflecting the radial commuting by public transport to Central London. Private vehicle trip origins and destinations in the sub-region are more closely balanced, however, reflecting a higher proportion of these trips being made wholly within the sub-region than is the case with peak hour public transport trips.

The highway vehicle trip generation rate was 260 per 1,000 residents of the sub-region, just below the London average of 265 (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		
	Origins	Dests		Origins	Dests		Origins	Dests		Origins	Dests		Origins	Dests		Origins	Dests	
Barnet	85,120	81,487		56,705	29,616		148,087	150,402		57,778	53,184		90,327	96,135		27,282	45,226	
Enfield	81,736	76,077		42,970	21,129		134,693	135,422		38,402	37,402		81,958	82,396		17,669	33,794	
Haringey	49,560	50,618		57,143	21,574		87,435	84,072		49,217	44,247		52,298	50,103		24,420	46,017	
Waltham Forest	50,377	46,367		40,666	15,122		83,875	85,598		36,625	34,749		49,097	51,521		13,410	31,952	
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	
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	
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	
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	
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 situation in 2016. Public transport trips are predicted to grow at a much faster rate than trips by highway vehicle. This is likely to reflect, at least in part, an increase in commuting to Central London. Public transport trips originating will grow by 27% in the morning peak and a fifth in the inter-peak period, whereas highway vehicle trips will grow by around 10% throughout the day. The lower rate of growth for public transport trips ending within the sub-region (e.g. 19% in the am peak) suggests that a majority of the growth in public transport use will be for commuting out of the sub-region.

The highway vehicle trip generation rate will increase from 260 per 1,000 residents in 2001 to 265 in 2016, an increase of 2% taking it marginally above the forecast London average of 263. (Derived from Tables 3.1 and 3.23 am peak period for trips within London)

Table 3.23: Summary Highway and Public Transport Data for the Sub-Region (2016 on London Plan Assumptions)

	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																																																																																																																																									
Barnet	96,223	89,006	71,694	35,745	163,771	165,977	69,516	64,513	98,008	106,899	33,422	58,114	89,256	82,661	54,429	24,842	146,850	147,566	88,760	90,009	21,117	43,228	54,619	54,374	72,667	25,954	94,992	91,737	61,140	55,923	56,343	54,901	29,550	59,664	57,361	50,144	51,714	17,692	92,642	94,747	43,217	40,805	53,432	58,063	15,970	41,061	297,459	276,185	250,504	104,233	498,255	500,028	220,467	206,363	296,542	309,873	100,059	202,067	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	497,507	520,852	527,942	589,676	980,314	976,518	573,589	551,812	581,842	559,364	541,994	460,930	444,234	478,757	336,959	214,585	839,856	841,314	348,453	318,087	510,015	480,304	223,047	283,956	466,039	432,696	284,617	150,093	816,069	810,016	242,776	237,793	487,844	511,522	135,649	231,508	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	362,182	360,168	92,663	51,121	655,725	657,631	83,879	78,277	393,153	402,571	46,694	83,766	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	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
North Sub-Region								
National Rail								
Passenger km	915,713		1,141,748	25%		1,193,223	30%	
Total seats km	1,505,725		1,741,915	16%		2,581,263	71%	
Crowded hours	3,890		7,077	82%		3,130	-20%	
Uncrowded hours	12,437		15,575	25%		16,327	31%	
Underground/DLR/CTL								
Passenger km	366,941		445,450	21%		468,812	28%	
Total seats km	724,195		759,629	5%		856,265	18%	
Crowded hours	1,709		2,661	56%		1,904	11%	
Uncrowded hours	9,857		11,943	21%		11,443	16%	
Bus								
Passenger km	352,327		460,985	31%		471,792	34%	
Total seats km	1,540,223		1,968,331	28%		2,096,818	36%	
Total passenger hours	24,203		31,640	31%		32,387	34%	
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 North Sub-Region (Average Morning Peak Hour)

Highway Performance	2001 Base			2011			2016			
	Reference Case	% Change	Planned	Reference Case	% Change	Planned	Reference Case	% Change	Planned	
Vehicle travel distance (km)										
North Sub-Region	848,866								872,868	3%
London	5,114,774								5,694,543	11%
Vehicle travel time (hours)										
North Sub-Region	49,870								53,129	7%
London	203,642								237,095	16%
Vehicle speeds (km/h)										
North Sub-Region	17.0								16.4	-3%
London	25.1								24.0	-4%
Free-flow vehicle time (hours)										
North Sub-Region	28,228								28,901	2%
London	125,861								138,396	10%
Delay vehicle time (hours)										
North Sub-Region	21,643								24,227	12%
London	77,780								98,699	27%
Delay rate (mins/km)										
North Sub-Region	1.53								1.67	9%
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 – 3.17 highlight levels of public transport accessibility in the sub-region.

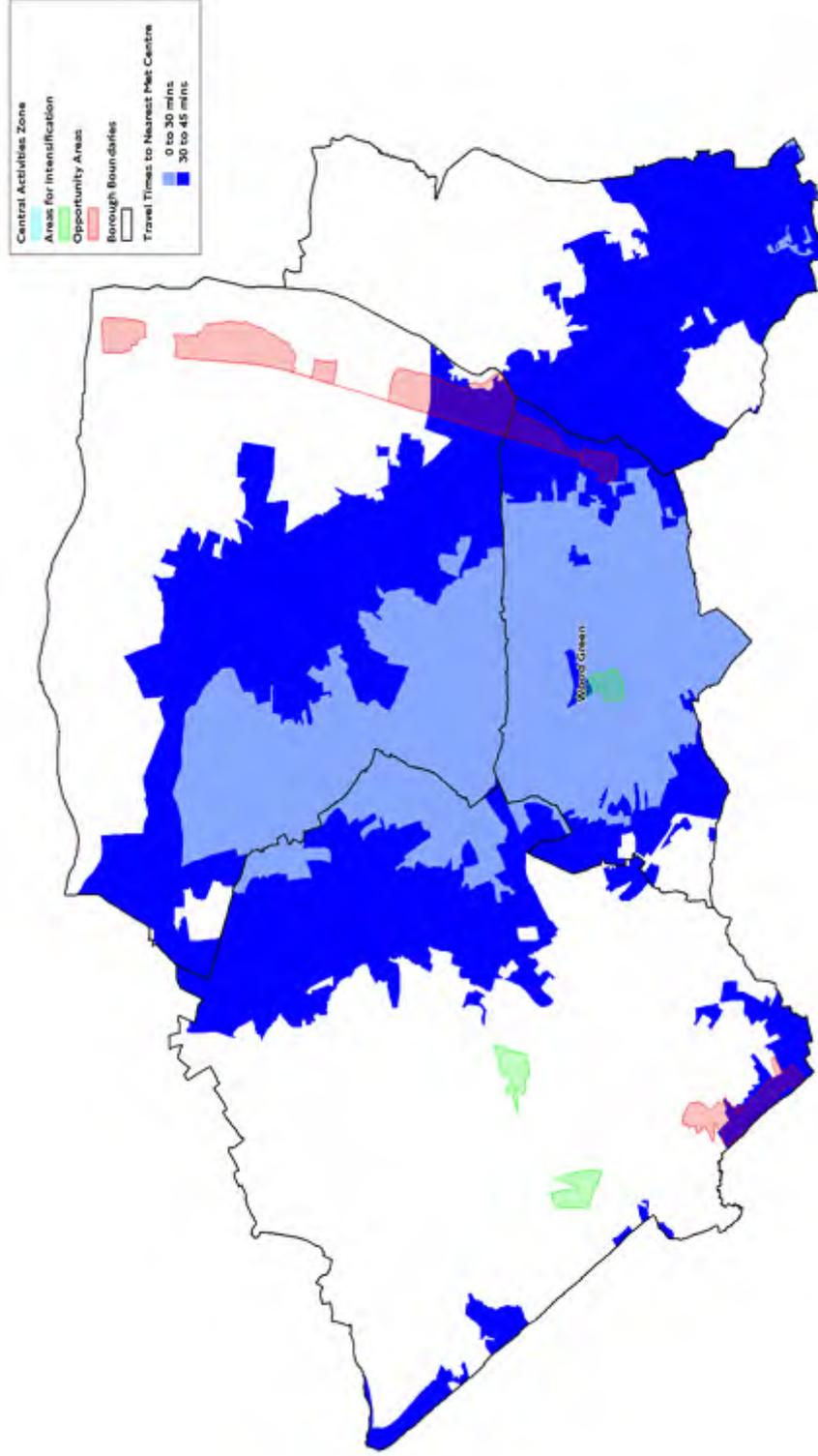
Figure 3.15 shows the travel times to the sub-region's only Metropolitan centre Wood Green. Wood Green has a very large catchment area within 30 minutes travel time, extending up to the north of the sub-region, overlapping with the catchment of Enfield town centre (see Figure 3.16). Approximately half the sub-region falls within a 45-minute journey time of Wood Green. The east and west parts of the sub-region fall outside the 45-minute catchment of Wood Green and hence have relatively poor access to centres of Metropolitan status.

Figure 3.16 illustrates the areas of the sub-region within 30 minutes travel time of the Major centres using public transport. Enfield and Walthamstow have large catchment areas, as does Edgware. The catchment areas of some of the Major centres in the Central sub-region also overlap into this sub-region

It should be noted that a substantial proportion of the sub-region is more than 30 minutes away from any centre with Major or Metropolitan status. This includes substantial areas of Barnet and Enfield boroughs, and some of the opportunity and intensification areas, notably much of the Lea Valley.

Accessibility to public transport services throughout the sub-region is shown in Figure 3.17. This ranks all areas according to distance from public transport stops and the quality of service provided. The areas around and to the north of Wood Green Metropolitan centre have good access to public transport. The Major centres and their immediate hinterland have relatively good accessibility levels. The areas around these centres and those along the major routes have average levels of access. Some parts of the sub-region have low accessibility to public transport, including much of the Lea Valley. The North Circular road corridor is also apparent as having relatively poor public transport. Other parts of sub-region with very poor public transport accessibility (PTAL scores of just 1) are largely accounted for by open or undeveloped land.

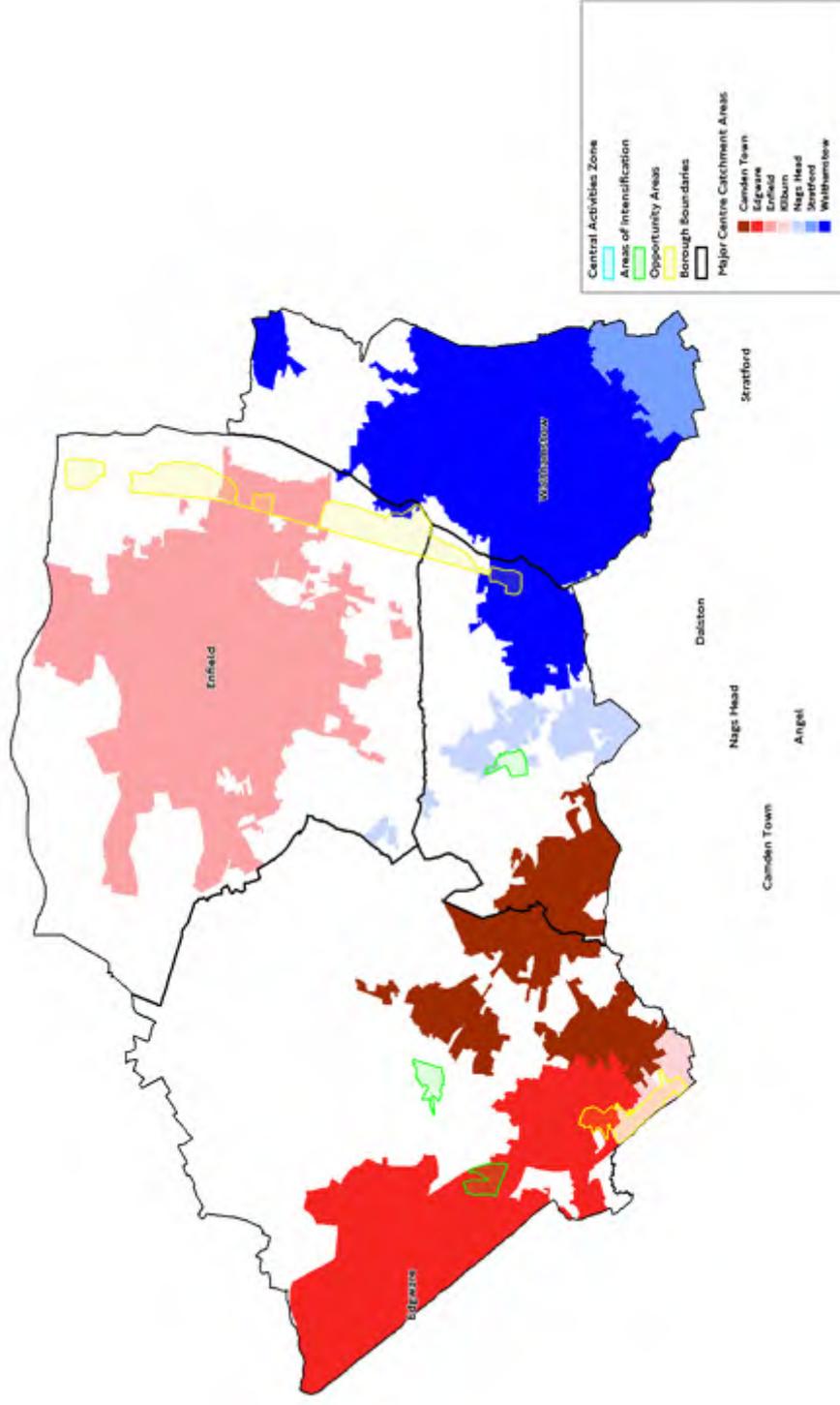
Figure 3.15: Public Transport Accessibility³ to Metropolitan Centres in the North Sub-Region



Source: CAPITAL (TfL, Richard Hopkins)

³ CAPITAL is a hybrid GIS/transportation modelling tool which can assess travel times to or from specific locations at an enumeration district level.

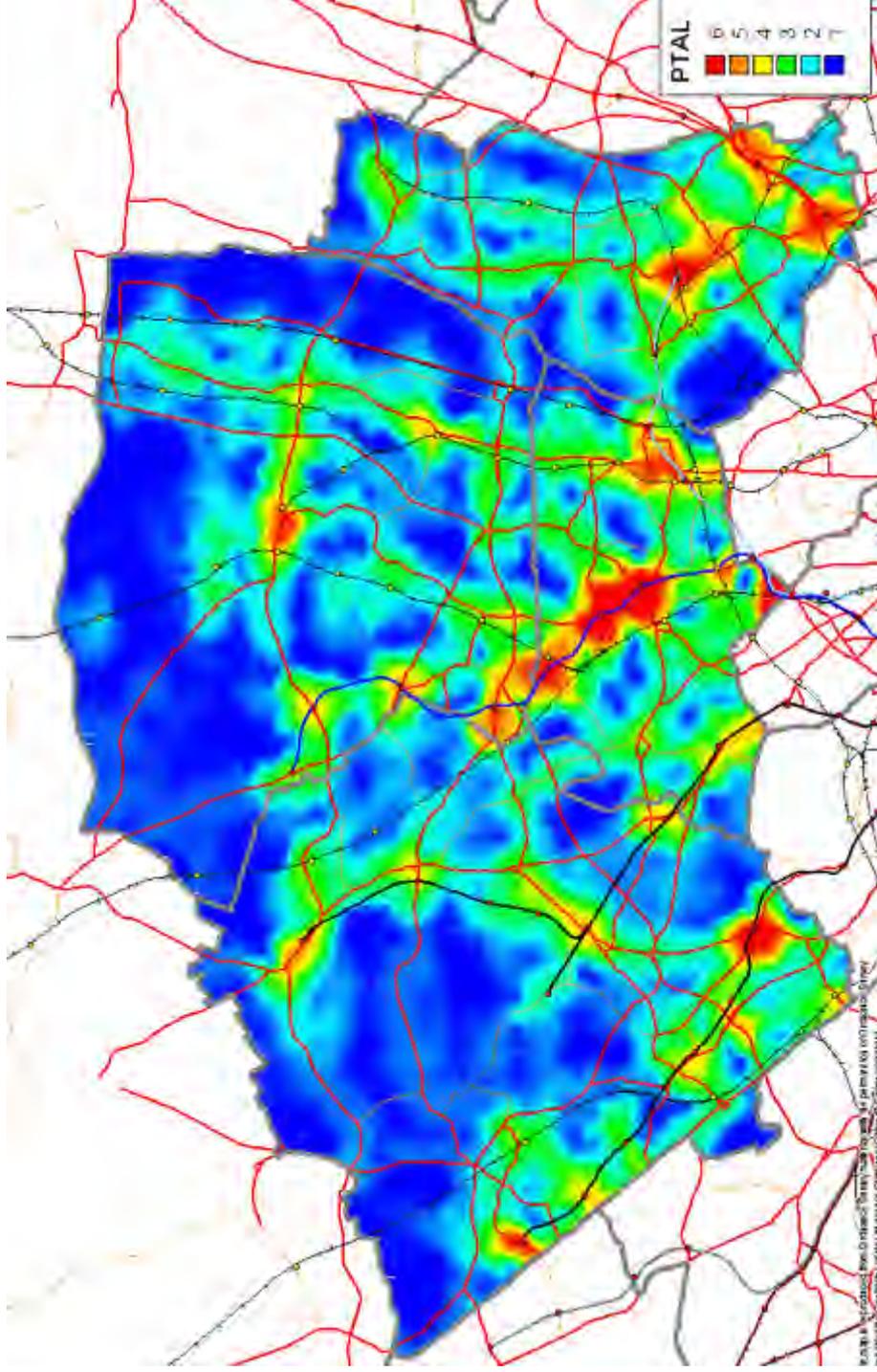
Figure 3.16: Public Transport Accessibility⁴ to Major Centres in the North Sub-Region



Source: CAPITAL (TfL, Richard Hopkins)

⁴ CAPITAL is a hybrid GIS/transportation modelling tool which can assess travel times to or from specific locations at an enumeration district level.

Figure 3.17: Accessibility to Public Transport⁵ in the North 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 North 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.

- The largest number of public transport trips occur within the sub-region (48% of total movements).
- There is considerable movement from the North Sub-Region to the Central, totalling (32%), while the East Sub-Region including the City accounts for 11%. Public transport trips in other directions form a small proportion of the total.

Table 3.26: Weekday Public Transport Trips by Origin and Destination

Origin	Destination													
	Central		East		North		South		West		External		Total	
North	161,112	32%	57,291	11%	240,363	48%	3,736	1%	20,695	4%	18,148	4%	501,345	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)

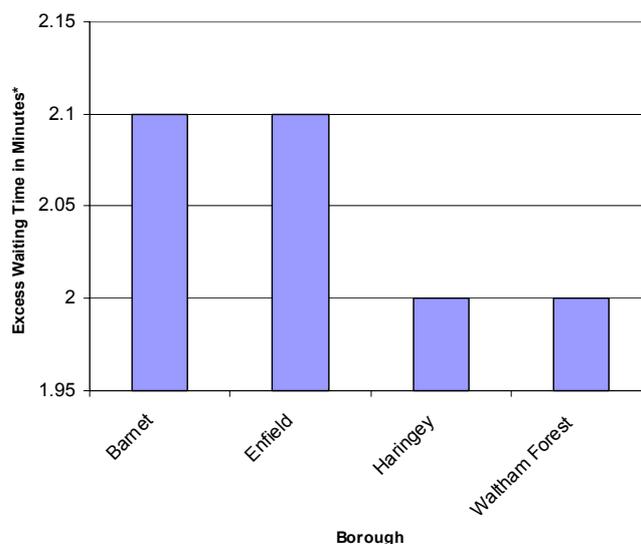
NB. The matrices are not exactly balanced, because (1) all estimates are from a sample, and (2) there are small timing differences for which adjustments have not been made. The data refers to a 16-hour survey day (6 am to 10 pm). Over a full 24-hour day, flows in the opposite directions are assumed to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

Buses

Every weekday, 6,000 London 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 by 22% since 1993/94.

Figure 3.18 shows the reliability of high frequency buses in the North Sub-Region. Both Enfield and Barnet have the least reliable bus services, with an average excess waiting time of 2.1 minutes. Haringey and Waltham Forest fair marginally better with excess waiting times of 2 minutes.

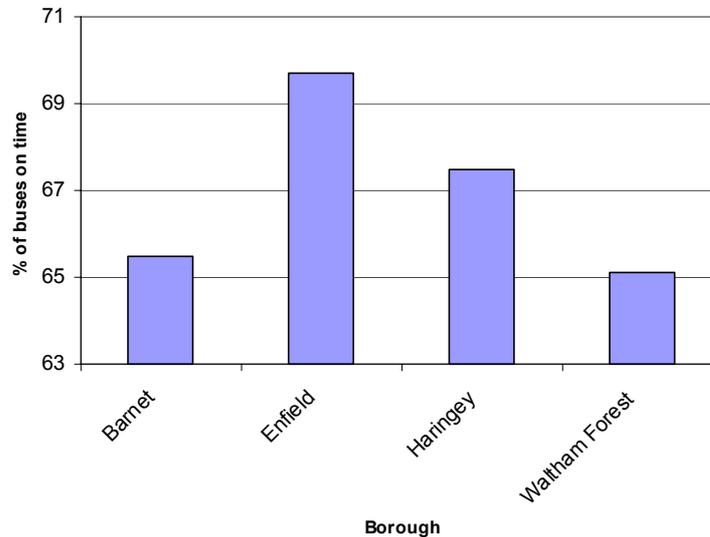
Figure 3.18: Reliability of High Frequency Bus Services



(Source: TfL, Chris Kershaw)

Figure 3.19 shows the reliability of low frequency bus services. Enfield and Haringey have the most reliable low frequency bus services. Nearly 70% of Enfield's low frequency bus services are on time. In Haringey, the figure is almost 68%. The worst performing borough is Waltham Forest.

Figure 3.19: Reliability of Low Frequency Bus Services



Source: TfL, Chris Kershaw

Underground

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

Currently, crowding is a limited problem within the sub-region, but all of the lines are radial into Central London, and services become more crowded as they get closer to central London. The most notable sections of crowding on the Underground in the AM peak in the sub-region occur on the Piccadilly Line from Turnpike Lane southbound, the Victoria Line southbound from Finsbury Park, and the Northern Line southbound from Archway. The section between the interchanges at Tottenham Hale and Seven Sisters is also crowded.

In 2016, crowding remains on all the sections described for 2001. In addition, crowding becomes worse on the Victoria Line between the interchange stations at Seven Sisters and Finsbury Park.

Figure 3.20: Underground Crowding 2001, AM peak hour (8.15 – 9.15 am)

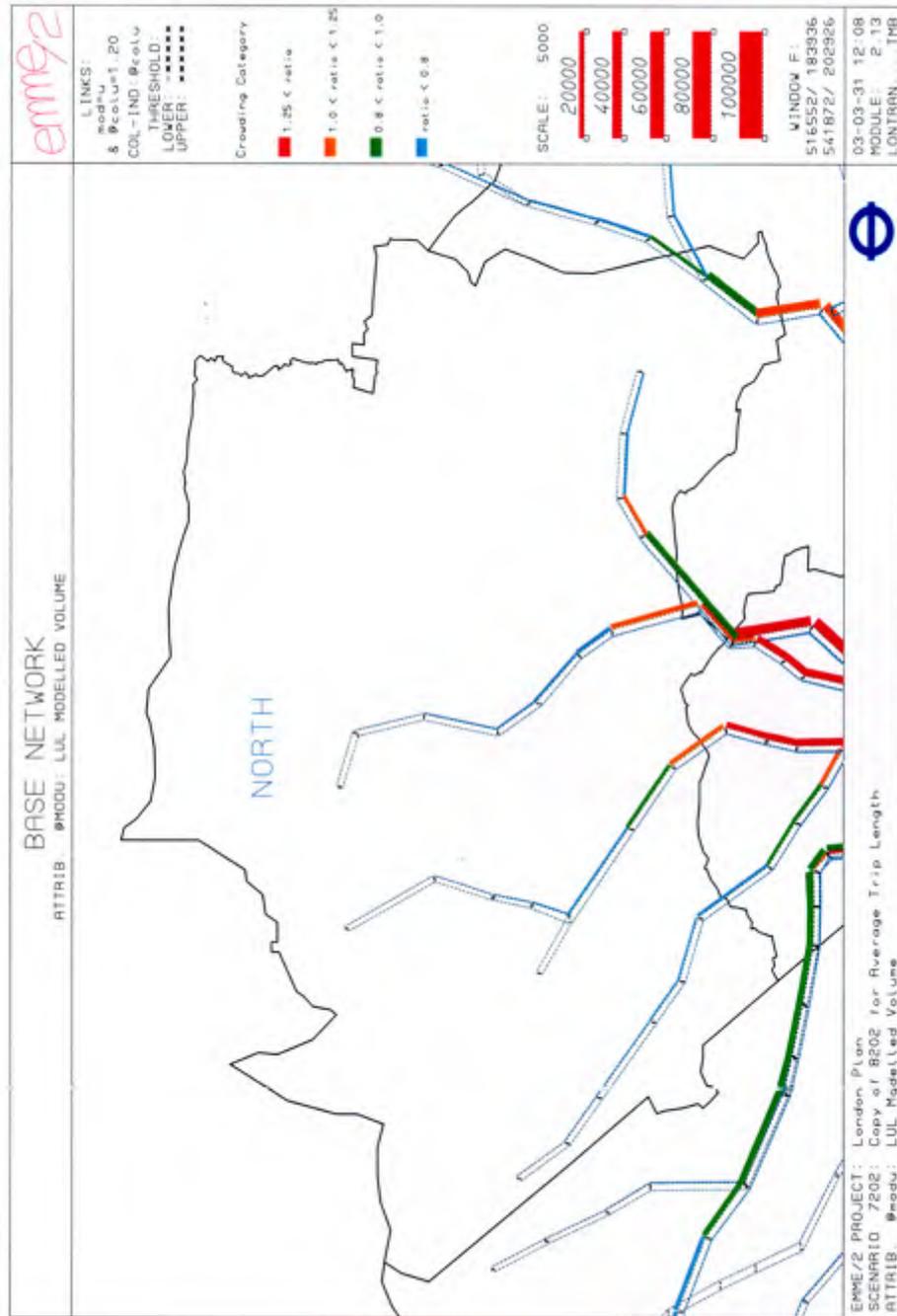


Figure to be graphically enhanced (Source: TfL, Richard Hopkins)

Figure 3.21: Projected Underground Crowding 2016 with TS, AM peak hour (8.15 – 9.15 am)

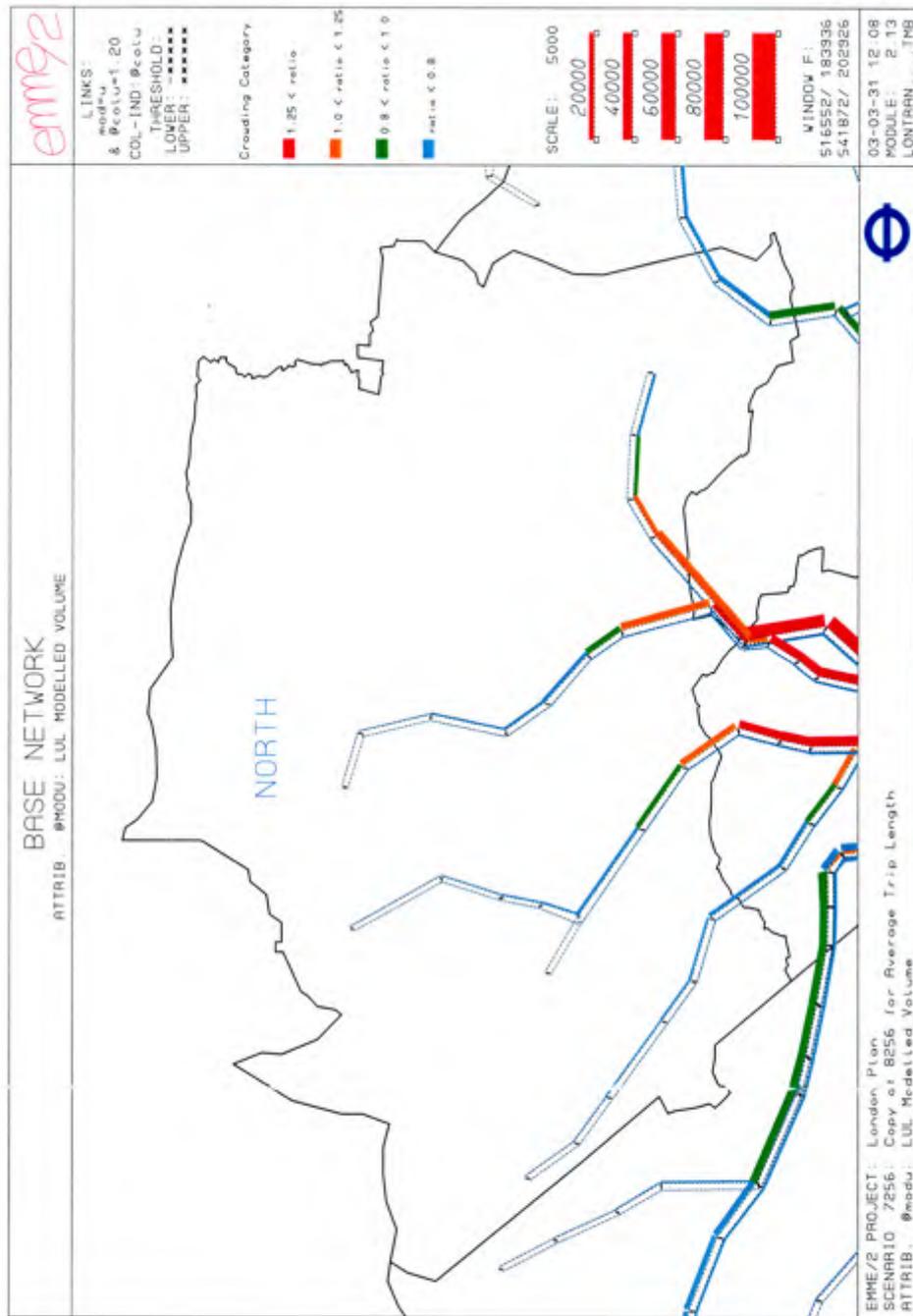


Figure to be graphically enhanced
(Source: TfL, Richard Hopkins)

National Rail

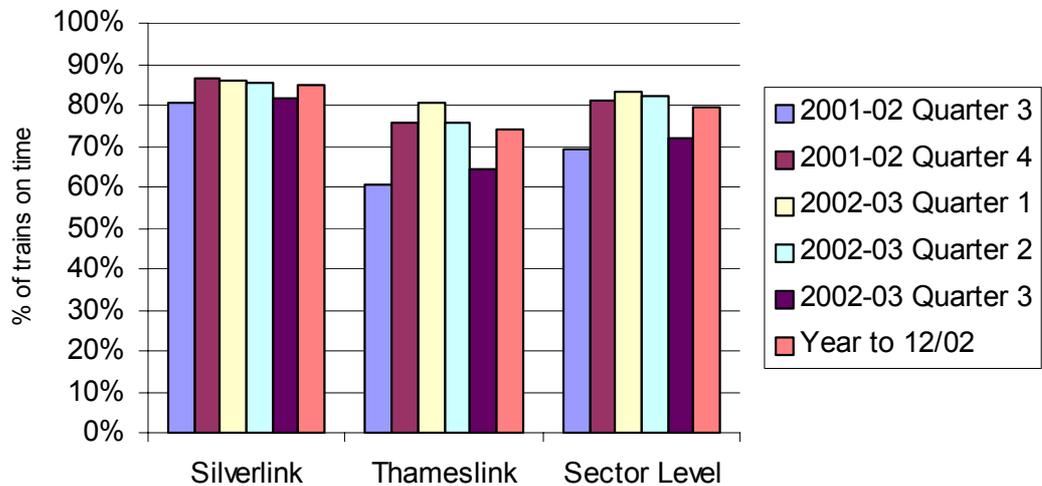
Table 3.27 highlights train service reliability *all day* in London. The train services operating in the North Sub-Region are highlighted. In the most recent time period (2002-03 Quarter 3), Thameslink has the worse reliability with less than 65% of trains arriving on time. This is well below the sector average of 72%. Silverlink performs relatively well, with 82% of trains arriving on time.

Table 3.27: Trains Arriving on Time 2001-02 to 2002-03

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%

(Source: SRA)

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



(Source: SRA)

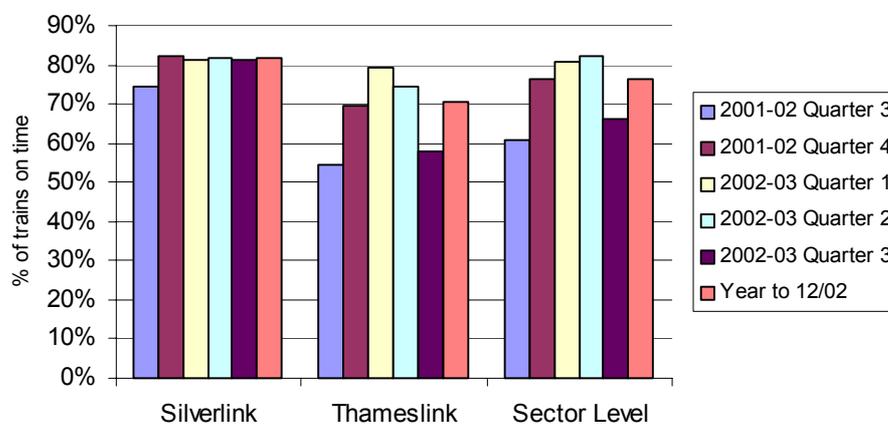
Table 3.28 highlights train service reliability in the *peak period* in London. Again, operators with services in the North Sub-Region (Thameslink and Silverlink) are highlighted in yellow. In the most recent time period (2002-03, Quarter 3), Thameslink again had the poorest reliability record, with under 58% of trains arriving on time. The sector average for the quarter was 66%. Silverlink performed relatively well, with 81% of trains arriving on time.

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 Arriving on Time 2001-02 to 2002-03 (Peak Period)



(Source: 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 hour. crowding on the rail network in 2001. The most crowded services are on the Thameslink line between Mill Hill Broadway and Kings Cross. In 2016 crowding on Thameslink 2000 services are reduced and there are notable improvements on most other lines, except between Edmonton Green and Seven Sisters.

Figure 3.24: National Rail Crowding 2001, AM peak hour (8.15 – 9.15 am)

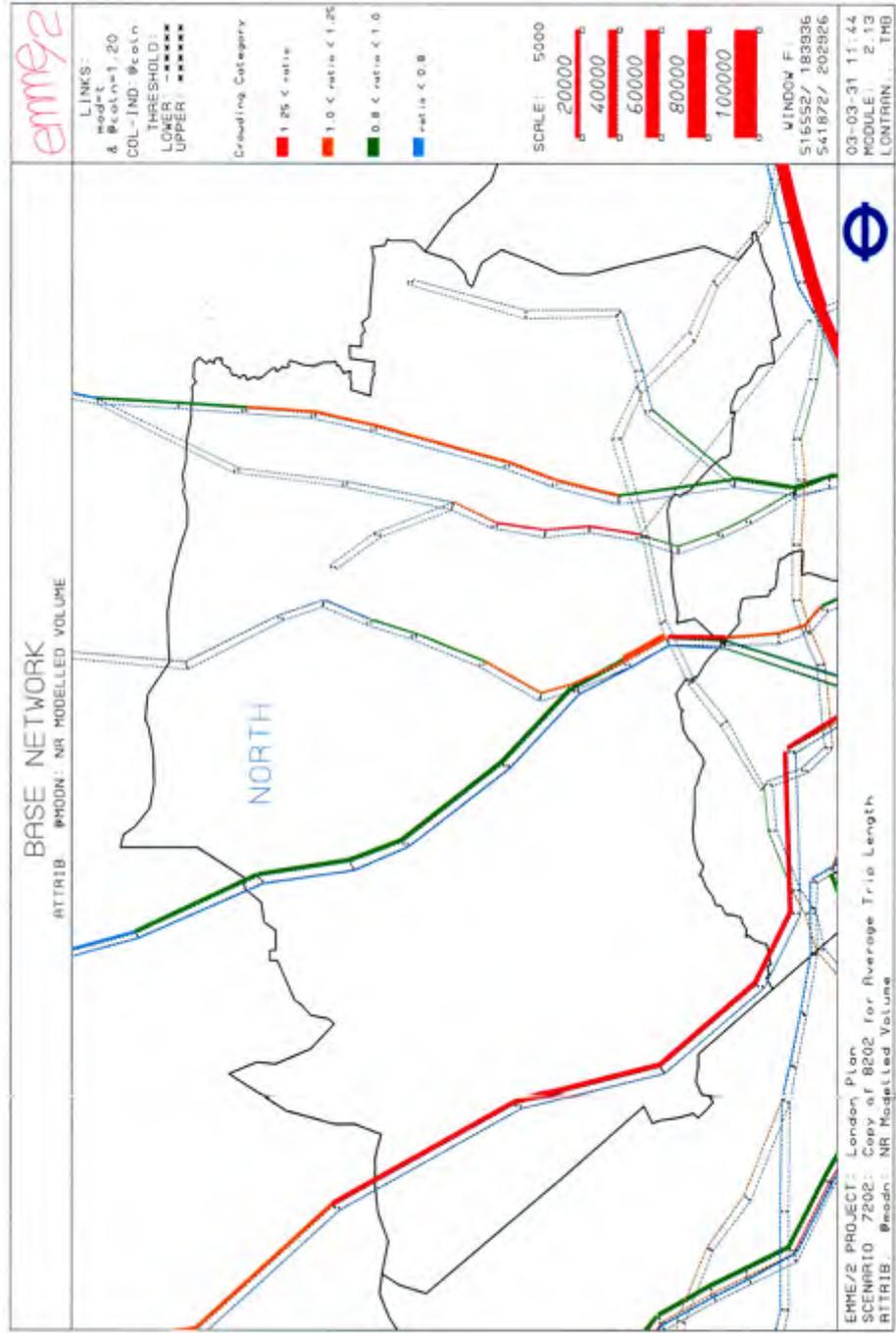
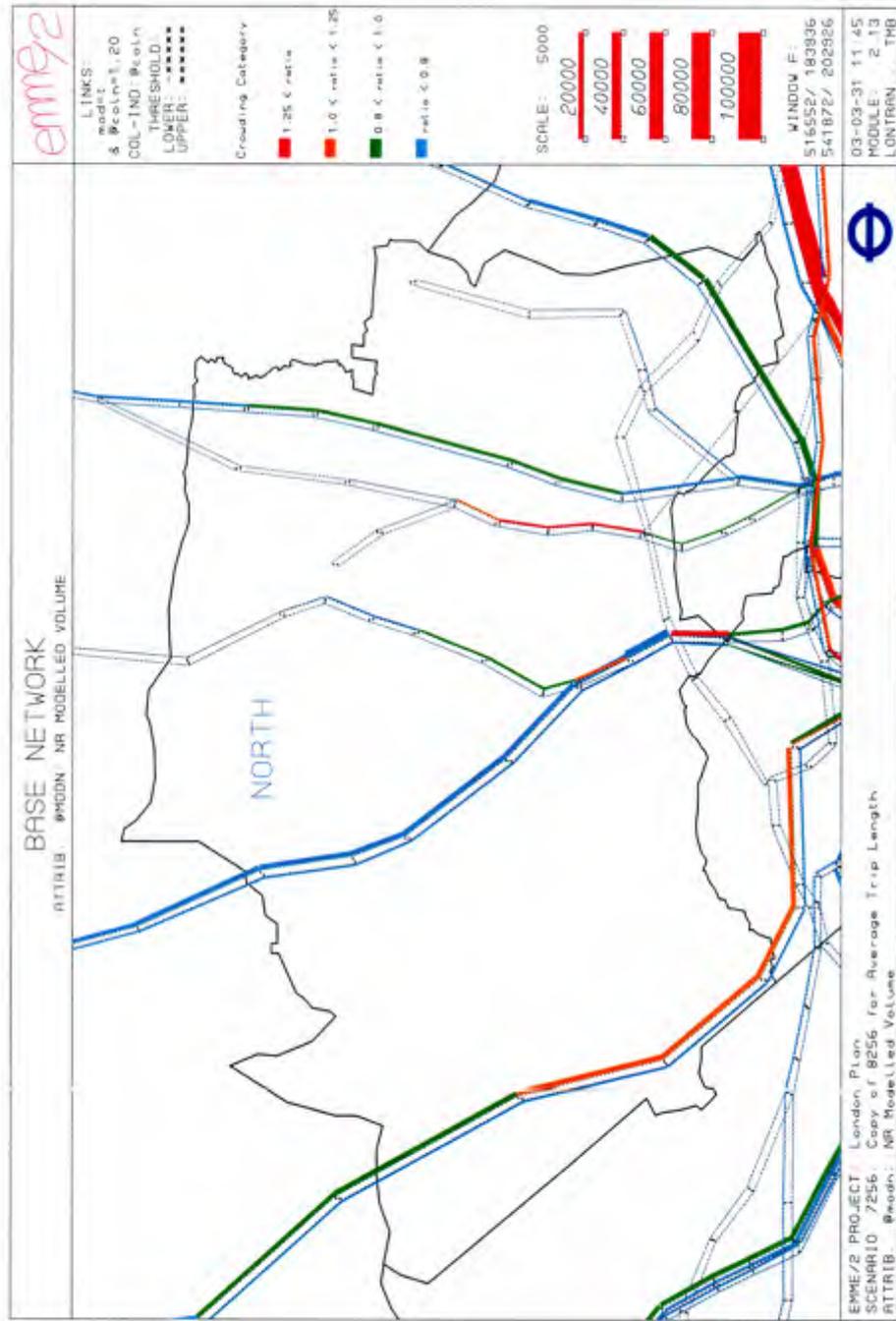


Figure to be graphically enhanced (Source: TfL, Richard Hopkins)

Figure 3.25: Projected National Rail Crowding 2016 with TS, AM peak hour (8.15 – 9.15 am)



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

3.3.6 Walking

Data showing walking patterns in London by sub-region is extremely limited. The most useful currently available information is shown below in Table 3.29. Based on LRTS data, this highlights the frequency of travel by those resident in the North Sub-Region over the period 2000-02. It shows that 55% of people surveyed in the North Sub-Region walk 5 days a week or more, and 12% walk 3 or 4 days a week. However the data also shows that 17% of respondents have walked less than once a month in the past 12 months, which is clearly 'suspect', and perhaps shows the fallibility of the current data on walking.

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

Frequency of Travel by Walking	North		London	
	Count	%	Count	%
No answer	3	0.2%	31	0%
Don't know	2	0.1%	46	0%
5 days a week or more	864	55%	5,863	56%
3 or 4 days a week	182	12%	1,208	11%
2 days a week	114	7%	795	8%
1 day a week	90	6%	590	6%
About once a fortnight	17	1%	133	1%
About once a month	15	1%	117	1%
Less often than once a month	53	3%	267	3%
Not used in the last 12 months/never	225	14%	1,455	14%
Group Total	1,565	100%	10,505	100%

Combination of data from 2000 – 01 Q1-Q4 and 2001 – 02 Q2 + Q3

Source: LRTS data (TfL, Henry Burroughs)

3.3.7 Cycling

Data showing cycling patterns in London is also extremely limited. The most useful currently available information is shown below in Table 3.30. Based on LRTS data, this shows the frequency of cycling by those resident in the North Sub-Region over the period 2000-02. Only 4% of people surveyed in the sub-region cycle 5 days a week or more. 77% say they have not cycled in the last 12 months, which again is clearly 'suspect', and possibly shows the fallibility of the current data on cycling.

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

Frequency of Travel by Cycling	North		London	
	Count	%	Count	%
No answer	33	2%	258	2%
Don't know	0	0%	4	0%
5 days a week or more	60	4%	251	2%
3 or 4 days a week	36	2%	226	2%
2 days a week	73	5%	252	2%
1 day a week	39	2%	214	2%
About once a fortnight	24	2%	157	1%
About once a month	27	2%	236	2%
Less often than once a month	63	4%	387	4%
Not used in the last 12 months/never	1,210	77%	8,135	77%
Group Total	1,565	100%	10,503	100%

Source: 2001/02 Q1-Q4 LRTS data, by residency (TfL, Henry Burroughs)

Table 3.29 shows the weekday walk and cycle (main mode) trips by origin and destination. It shows that 91% of all main mode walk and cycle trips occur with the South sub-region.

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

Origin	Destination													
	Central		East		North		South		West		External		Total	
North	11,440	2%	8,560	2%	476,887	94%	166	0%	6,346	1%	6,563	1%	509,962	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)

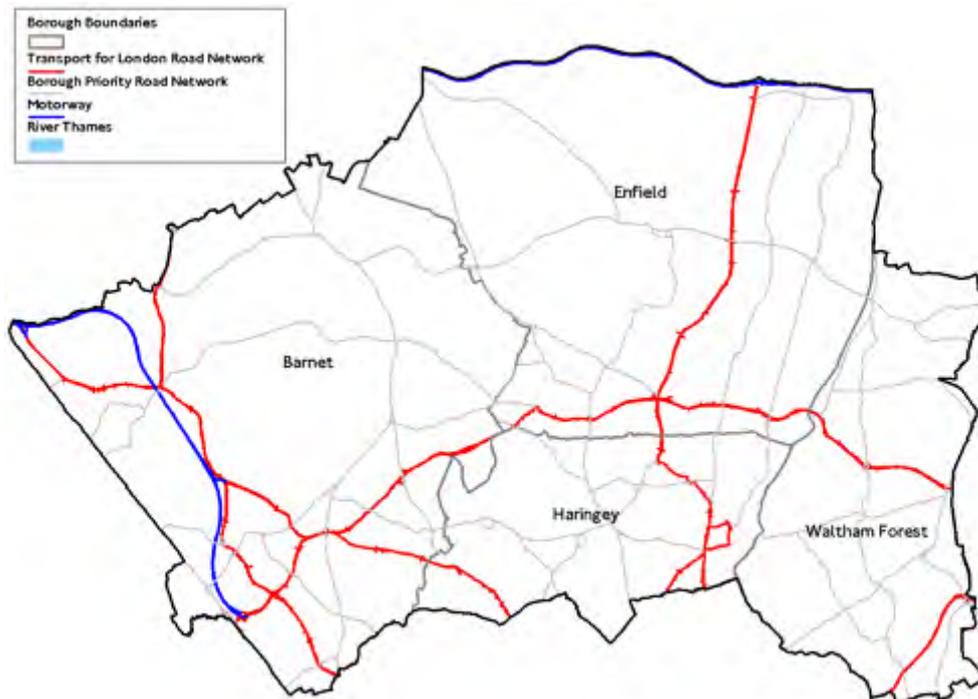
NB. The matrices are not exactly balanced, because (1) all estimates are from a sample, and (2) there are small timing differences for which adjustments have not been. The data refers to a 16-hour survey day (6 am to 10 pm). Over a full 24-hour day, flows in the opposite directions are assumed to be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

3.3.8 Private Motor Vehicles

Road Hierarchy

The road hierarchy in the North Sub-Region is shown in Figure 3.26. Important regional routes in the sub-region include the M25 motorway, which runs along the northern boundary and the M1, which runs up the western edge of the sub-region. Other major roads include the A10 between the City of London and the M25 and the A1. The main east-west route is the A406 North Circular road between Brent Cross and Woodford.

Figure 3.26: Road Network in the Sub-Region



(Source: TfL, Hannah Shrimpton)

Table 3.32 shows all weekday private transport trips by origin (the North Sub-Region) and destination (other sub-regions and external). Columns of the matrices refer to destinations. Thus, for example, within the North Sub-Region there are 904,114 trips (68% of all trips) and from the North Sub-Region to the East sub-region there are 106,023 weekday trips (8%). 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	
North	110,517	8%	106,023	8%	904,114	68%	5,775	0%	75,814	6%	134,816	10%	1,337,059	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 North Sub-Region. It shows that over the period 1986 to 2003, average traffic speeds have slowed. In particular:

- In the AM peak, although speeds have begun to rise again (to 17.9 mph), in 2000/03 they are slower than in 1986/90 (19.2 mph).
- In the off-peak period, the average traffic speed has slowed from 21.7 mph in 1986/90 to 19 mph in 2000/03.
- Likewise in the PM peak, the average traffic speed has slowed from 19.9 mph in 1986/90 to 17.6 mph in 2000/03.
- In the 2000/03 cycle, the average speed in the off-peak period is marginally faster than both the AM and PM peak speed.

Table 3.33: Average Traffic Speeds on the TLRN

Time period	1986 to 1990	1990 to 1994	1994 to 1997	1997 to 2000	2000 to 2003
AM peak (7am to 10am)	19.2	16.1	14.6	17.8	17.9
Off Peak (10am to 4pm)	21.7	22.1	20.5	22.3	19.0
PM peak (4pm to 7pm)	19.9	18.7	16.8	18.0	17.6

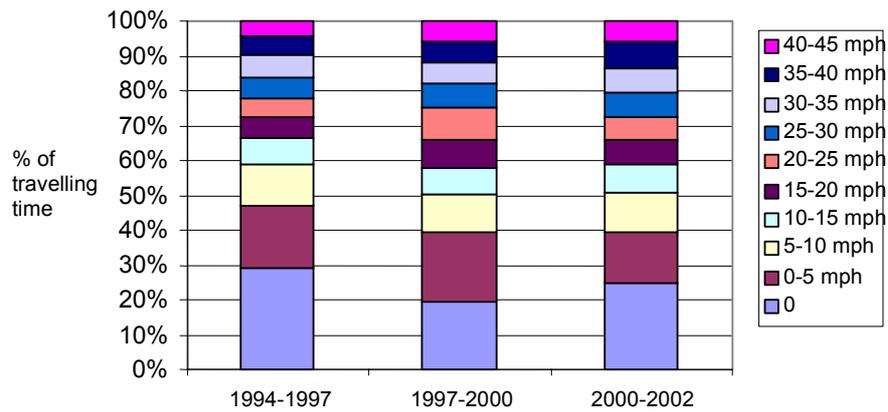
Average speed in miles per hour

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

Figure 3.27 shows the percentage of travelling time spent on the TLRN at different traffic speeds in the AM peak period (7am to 10am). It indicates that over the period 1997 to 2002, as traffic flow has deteriorated, congestion and delays have increased in the North Sub-Region.

- After a slight improvement in flow from 1994/97-1997/00, travel times and speeds have marginally deteriorated over the period 1997/00-2000/02. Cars were stationary for 25% of their travelling time and spent nearly 60% of their travelling time travelling at 15 mph or less in 2000/02.

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

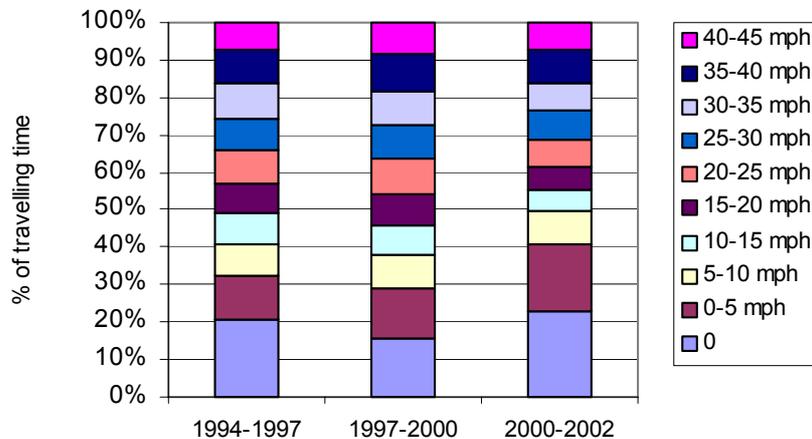


Source: TLRN Traffic Speed Surveys (TfL, Mike Rowland)

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). It shows that in the North Sub-Region, off peak speeds have deteriorated over the period 1994 to 2002. Off peak travel by car is slow in the sub-region and journeys are longer.

- 50% of travelling time is spent at 10 mph or less in 2000/02.
- Around 55% of travel in 2000/02 is at 15 mph or less, a greater proportion than in 1994/97.

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

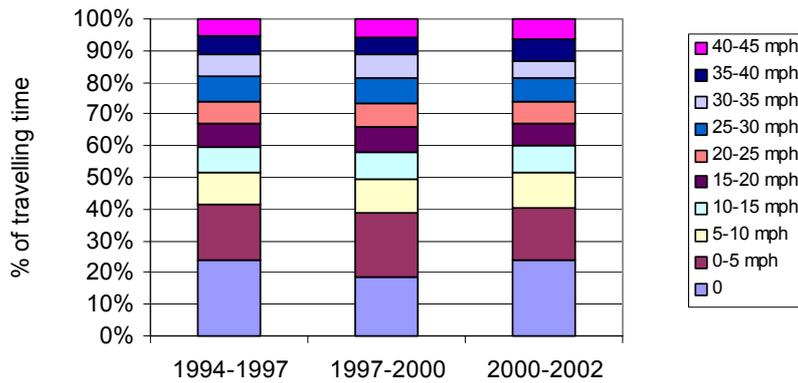


Source: TLRN Traffic Speed Surveys (TfL, Mike Rowland)

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). Travel by car in the North Sub-Region is a slow process.

- Over 40% of travelling time for drivers in cars in the North Sub-Region is either stationary or travelling only up to 5 mph.
- In the period 2000/02, over 50% of travelling time is spent travelling at 10 mph or less.
- In the period 2000/02, 60% of travelling time was at 15 mph or less.

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



Source: TLRN 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 3.34 shows the major planned transport projects.

Table 3.34: Major Transport Projects

Transport Scheme	Description	Status	Opening Date	Cost (£million)	Capacity Provided by 2016	BCR
Major Schemes						
<i>Crossrail 2</i>	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	Under review
<i>East London Line</i>	The project will integrate national rail services north and south of the Thames. The project involves a northwards extension from the current LU terminus of Shoreditch to Dalston, where the route will link with the North London Line. At a later stage the route will be extended south to link with the national rail network.	The scheme is currently undergoing further design and development work.	2009	1,000	16tph	Not Available
<i>Thameslink 2000</i>	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	Not Available
Other Schemes						
<i>Interchanges</i>	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		Not available
<i>Buses</i>	The BusPlus improvements have been	Ongoing programme of	2002+	100	N/A	N/A

	<p>established to improve routes across 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.</p>	<p>improved bus services and infrastructure.</p>				
<i>Walking and Cycling</i>	<p>Programme of measures that aim to increase the levels of walking and cycling in the capital on both TLRN and borough roads.</p>	<p>Ongoing programme of improvement.</p>	2002+	0.2	N/A	N/A
<i>Road Safety</i>	<p>Road Safety Plan aimed at establishing targets for reducing the number of road accidents in London as well implementing measures to achieve these targets.</p>	<p>Ongoing programme of improvement.</p>	2002+	255	N/A	N/A

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

3.5 Key Development Sites and Areas

The North Sub-Region's Opportunity Areas and Areas for Intensification are shown in Table 3.35. Development opportunities within these and the major town centres should be maximised. In addition, the areas for regeneration should be prioritised for additional accessibility improvements.

Opportunity, Intensification and Regeneration Areas.

The North Sub-Region's opportunity areas as identified in the Draft London Plan are focused within three key areas. The Upper Lea Valley, which is also part of a wider regeneration area, is the largest of the opportunity areas in the sub-region and the draft London Plan anticipates development to create up to 10,000 new jobs in the area. The Tottenham Hale opportunity area is the smallest of the three opportunity areas, in relation to the size of the development area, but due to its good interchange facilities, 5,000 new jobs are planned in the area. The Cricklewood/Brent Cross area is the third opportunity area, with 5,000 new jobs and 5,000 new homes planned.

Table 3.35: Key Development Areas in the Sub-Region

Key Development Areas			
Opportunity Areas	Area (ha)	New Jobs to 2016	New Homes to 2016
Upper Lea Valley	416	10,000	700
Tottenham Hale	26	5,000	200
Cricklewood/ Brent Cross	107	5,000	5,000
Areas for Intensification	Area (ha)	New Jobs to 2016	New Homes to 2016
Mill Hill East	38	500	2,000
Hendon RAF	42	500	2,000
Haringey Heartlands/ Wood Green	30	1,500	1,000

**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 3e

North London

Date Published: 17 February 2003

(Source: SDS Team, Kevin Reid)

North London

Does the Plan contain appropriate policies for North London, with regard to the area's employment potential and capacity for development, the role of Cricklewood and Brent Cross and other centres in the region, regeneration in the Lea Valley and meeting the local transport needs?

Are the policies appropriate?

The draft London Plan (DLP) does contain policies appropriate for North London and the Sub-Regional Development Framework (SRDF) will be able to build on these. All the DLP's general policies apply to North London: these include many policies to encourage economic growth; a balanced hierarchy of town centres and increased public transport capacity.

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 DLP's policies "should be of significance to the wider interests of London as a whole" (Circular 1/2000, 2.11). The SRDF will therefore 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 North London sub region. Early discussions have taken place with some key stakeholders and have enabled the Mayor to gain a better understanding of these issues and enabled stakeholders to understand that their concerns can and should be addressed at this more detailed level.

Employment Potential and Capacity for Development

The DLP identifies a significant 7% growth in employment up to 2016 in the North Sub-Region. This forecast is influenced by several contextual factors.

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.

North London's economy will continue to be affected by decline in industrial employment. GLA Technical report 21 shows the following trends and forecasts. Over the period 1973-2000, the North London boroughs experienced some of the biggest declines in manufacturing jobs. This will continue over the Plan period albeit at a lesser rate. Industrial jobs are forecast to decline by 20% in Waltham Forest, 6% in Enfield and over 4% in Barnet: only Haringey has an unchanged figure. These losses reduce the net growth. Employment growth has been modest in recent years. Most North London boroughs were in the lowest category of increase in London business services 1989-2000. In terms of total numbers of jobs Barnet was the 5th highest increase in total employees over the period 1989-1999, but the other three boroughs did poorly, they all suffered a reduction in total employees.

There are limitations on capacity for employment growth. GLA Technical report 21 suggests that demand for economic growth will be relatively modest in North London and that, nevertheless, supply of locations to accommodate growth will also be modest and, in some North London boroughs, less than demand (figures 5.1 and 5.2).

Despite these constraints, the draft Plan forecasts a very positive net rate of employment growth: 8.1% in Barnet, 6.5% in Enfield, 9.9% in Haringey and 1.4% in Waltham Forest, where the heavy loss of industrial jobs will pull down the net figure.

This growth reflects a high projected growth in office jobs: 30% in Haringey, 23% in Enfield, 15% in Barnet and 8% in Waltham Forest. North London will benefit from the development of jobs related to residential concentrations, personal 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.

In addition, the Mayor has worked with partners on the London-Cambridge-Stansted Study. Further work is expected to develop policies that include the economic growth of the whole corridor and the management of the major growth areas of Cambridge and, as part of new government policy, Stansted. This will benefit North London. North London will also benefit substantially from being linked to the Thames Gateway growth area and especially the International Railway Station at Stratford. The DLP's North London strategy of linkage with these growth areas and transport hubs of international importance will be central to its economic future and especially to that of the Upper Lea Valley and Tottenham Hale. The detail of how to achieve better links will be an important part of the SRDF.

Role of Cricklewood and Brent Cross and other centres

The DLP strongly supports the widening and strengthening of town centres and a balanced network. There is potential for retail employment to grow in North London's town centres. Brent Cross is an anomaly in terms of the hierarchy of retail facilities across London. The Mayor's approach is to acknowledge its current status and to drive forward its transformation into a much more sustainable and multi-functional town centre in line with PPG6 and RPG3 (para 5.6).

The ability to do this will be significantly increased by linking the Brent Cross area to underused land at Cricklewood. This represents a major opportunity to create a gateway to a London mixed use site with good rail links via Thameslink, the Northern Line and improved local bus services. The targets for the Opportunity Area identified in the DLP are minimum targets and LB Barnet have indicated that these could be considerably exceeded.

PPG6 says that regional planning guidance should provide a broad framework of policies for town centres. The DLP strongly supports the widening and strengthening of town centres and a balanced hierarchy in North London as elsewhere. The implementation of this strategy will be for the local planning authorities, but the SRDF can assist in translating from the strategic to the local. Development of Wood Green metropolitan centre is associated with the Haringey Heartlands Area for Intensification. The SRDF should also focus on measures to ensure that other town centres do not suffer because of Brent Cross.

The overall pattern of town centres in North London will benefit from a policy, which will regularise the currently anomalous position of Brent Cross. The approach of the DLP is to strengthen town centres generally rather than seeking to deny the significance of Brent Cross or to suppress its proper integration into a more sustainable town centre network.

Regeneration of the Lea Valley

The London-Cambridge-Stansted work referred to in para 3.9.10 will be of greatest benefit to the Lea Valley. Furthermore the strategy of improved linkage to Stratford and the Thames Gateway will also benefit to this part of the sub region. An important role for the SRDF will be ensuring that the appropriate measures are implemented in the Lea Valley to benefit from growth in the London-Cambridge-Stansted corridor.

The Upper Lea Valley and Tottenham Hale are designated as Opportunity Areas including 15,000 new jobs and 900 new homes. The Area will benefit from the rail enhancements of the West Anglia Route Modernisation Program and, in the longer term, from Crossrail 2. The LDA is already focused on these areas.

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 North London and it is difficult to justify the costs of investment in high - capacity schemes. Nevertheless, the sub-region will benefit from improvements generated by Thameslink 2000 and, in the longer term, by Crossrail 2. The area should also benefit from East London Line Extension to Finsbury Park. It will also benefit substantially from the wider package of increased and improved bus services supported in the DLP and set out in more detail in the Transport Strategy.

TfL's Technical Report suggests that there will be sufficient transport capacity to serve the growth in the sub-region's Opportunity Areas and Areas of Intensification. There may be some capacity problems at Tottenham Hale that will need to be resolved.

The sub-region also has the enormous potential created by its potentially good access to high level transport in the form of Stansted Airport, whose growth the Mayor supports, and of Stratford International Rail Station.

The SRDF will provide a vehicle to consider and promote transport schemes that are of sub-regional, but not London-wide significance (and therefore not appropriate to the London Plan as specified in Circular 1/2000). It will also give an opportunity to look at transport proposals that may form part of the first Review of the Transport Strategy and later of the London Plan.

Initial discussions around the SRDF have revealed a number of relatively local transport projects such as adding curves or spurs to the existing rail network, Victoria Line extension to Northumberland Park and alterations to service patterns. Collectively these could have a significant improvement in the accessibility of parts of North London.

A more challenging issue is that of orbital links across north London. The options for such schemes need to be positively considered in further work involving the GLA, TfL, boroughs and others and in the SRDF.

Conclusion

The DLP does contain policies for North London at an appropriate strategic level, which provide a positive framework for local planning on employment, town centres, regeneration and transport.

B. Transport for London Summary of Submissions

Draft London Plan EIP Written Submissions – Transport Issues arising from Sub Matter 3e

Sub Matter 3e: North London

(Source: Chris Hyde)

Does the Plan contain appropriate policies for North London, with regard to the area's employment potential and capacity for development, the role of Cricklewood and Brent Cross and other centres in the region, regeneration in the Lea Valley and meeting the local transport needs?

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

- Priority is East and Central
- There will be sufficient transport capacity to support the development of the OA and IA.
- Area will benefit from London wide bus capacity growth and from improvements on the LU Northern, Jubilee & Victoria lines
- Sub-region has potential good access to high level transport through Stansted Airport and Stratford International Rail Station
- More challenging issue is that of orbital links across North London

TRANSPORT FOR LONDON
<ul style="list-style-type: none"> ▪ With the major rail schemes of Thameslink 2000 and Crossrail 2 in place as expected there will be sufficient transport capacity to support the development of the OA and IA.
<ul style="list-style-type: none"> ▪ Local transport requirements of the sub-region will be considered as part of the SRDF and review of the transport strategy. This will include consideration of the orbital transport needs in the North Sub-Region. Area will benefit from London wide bus capacity growth and from improvements on the LU Northern, Jubilee & Victoria lines

MAYOR OF LONDON
<ul style="list-style-type: none"> ▪ Priority is East and Central
<ul style="list-style-type: none"> ▪ TfL's technical report suggests there will be sufficient transport capacity to serve the growth though there are some capacity issues at Tottenham Hale
<ul style="list-style-type: none"> ▪ Potential as sub-region has potential good access to high level transport through Stansted Airport and Stratford International Rail Station
<ul style="list-style-type: none"> ▪ SRDF will provide a vehicle to consider and promote transport schemes that are of sub-regional and not London-wide significance (hence not appropriate to London Plan)
<ul style="list-style-type: none"> ▪ Initial SRDF discussions have revealed a number of relatively local transport projects (E.g. Victoria Line Extension to Northumberland Park) and collectively these could have a significant improvement in the accessibility of parts of North London
<ul style="list-style-type: none"> ▪ More challenging issue is that of orbital links across North London

2. London Assembly and Governmental Bodies

GOVERNMENT OFFICE FOR LONDON
<ul style="list-style-type: none"> ▪ Plan should set out policies for trip-generating development of strategic importance. (reference to the new town centre for Cricklewood/Brent Cross)

3. Local Authority Related Bodies

- Concern over late scheduling of North London's transport improvements and fact that they will not resolve congestion
- Brent Cross/Cricklewood is not a location where major trip generating development is appropriate because it is not a town centre and has poor public transport access
- Accessibility to a range of destinations is important whilst at the same time there needs to be capacity in the system to cope with additional demand for public transport services
- Recognition of importance of links to the north with Thames Gateway though there are other sub-regional improvements that are important to support regeneration initiatives and to improve resident's access to jobs.

LONDON BOROUGH OF BRENT
<ul style="list-style-type: none"> ▪ Brent Cross/Cricklewood is not a location where major trip generating development is appropriate because it is not a town centre. Whilst access by the private car is very good, public transport access is not. Major trip-generating development at this location, which benefits from the largest car park in the region after Heathrow, would be contrary to the principles of achieving sustainable development which is the key objective of the Plan.
<ul style="list-style-type: none"> ▪ The North Circular is a major barrier to the integration of development sites
<ul style="list-style-type: none"> ▪ Why should investors locate at Wembley (cinema complex) when a similar catchment area can be served by a facility at Brent Cross that would be much more attractive to those travelling by car?
<ul style="list-style-type: none"> ▪ Wembley is better placed than Brent Cross/Cricklewood to promote access by public transport. Access at Brent Cross clearly favours the car. The Wembley regeneration area benefits from 3 stations as well as several bus routes. This public transport provision is also to be enhanced with the development of the new National Stadium. Potential investors are likely to see the advantages of Brent Cross because of its supply of car parking and

ease of access for those who wish to use their cars for shopping and leisure trips. It is not a 'level playing field' if there is competition between the two locations to attract investment

LONDON BOROUGH OF ENFIELD

- Concern over late scheduling of North London's transport improvements and fact that they will not resolve congestion
- Encourage more sub-urban locating and hence reduce commuting

LONDON BOROUGH OF HARINGEY

- Haringey Heartlands should be recognised as an Opportunity Area which should only be delivered with new transport links
- Accessibility to a range of destinations is important whilst at the same time there needs to be capacity in the system to cope with additional demand for public transport services
- Recognition of importance of links to the north with Thames Gateway though there are other sub-regional improvements that are important to support regeneration initiatives and to improve resident's access to jobs. Haringey requests the support of the Mayor for other strategic transport improvements which though not committed should be included in the Plan
- Haringey requests support of Mayor within the LP to increase public transport capacity and distribution inter alia
- Reference linking Stansted to Stratford is confusing, the WARME project is not a firm proposal
- Haringey is seeking provision of a regular rail service between Tottenham Hale and Stratford
- List of schemes Haringey will lobby for:
 - extension of the Victoria line to Northumberland Park
 - inclusion of Haringey stations especially Alexandra Palace in the Thameslink 2000 proposals
 - Crossrail 2 to include improvements to Great Northern services on the lines serving Finsbury Park and Alexandra Palace; and West Anglia services on the Lee Valley line serving Seven Sisters and Edmonton
 - Orbirail proposals to include Barking- Gospel Oak line
 - West Anglia Route Modernisation Enhancement (WARME) including additional rail tracks and additional services between Tottenham Hale and Stratford
 - improve orbital public transport
 - improved access to Heartlands (an area for intensification)
- improved radical public transport on Tottenham High Road corridor

4. Key Stakeholders

- One key element is the transport links between north London and the airports at Luton and Stansted and links to CTRL and Stratford.
- Transport system will need very careful attention. There are no orbital rail routes in the sub-region
- With no significant new transport infrastructure planned until Crossrail 2 (2016) the road network remains critical (congested, improvements needed to North Circular with junc A1)
- Concerns about the promotion of Brent Cross as a new town centre (currently operates as an out of town shopping centre). The attraction to car users far outweighs the attraction to those who use (or wish to) public transport.

- Development of new stations on Thameslink should include a station to serve Brent Cross

EEDA
<ul style="list-style-type: none"> Key element is the transport links between north London and the airports at Luton and Stansted and links to CTRL and Stratford.
<ul style="list-style-type: none"> Reinstate service between Tottenham Hale and Stratford, as it would open up links from Lee Valley, Harlow, Stansted Airport and Cambridge to CTRL. Thameslink 2000 is another priority for improving cross-London rail services by providing more capacity in the through London sections and providing journey opportunities to more destinations in the East of England
<ul style="list-style-type: none"> Crossrail 2 could assist the Lee Valley but there are concerns if Crossrail 1&2 transform into Metro proposals

GVA GRIMLEY
<ul style="list-style-type: none"> It is essential that Government departments (including TfL) take an active role early in the preparation of the Development Frameworks in order to ensure a comprehensive approach
<ul style="list-style-type: none"> Objection to 2B.101 reference of “no increase in car parking” and this paragraph should also make reference to improved accessibility provided by the proposed new passenger railway station or equivalent major public transport improvements at Cricklewood
<ul style="list-style-type: none"> There is no reference made to the ability of the Cricklewood/Brent Cross Opportunity Area to provide improved freight facilities consistent with the Mayor’s desire to divert growth in freight from road to rail. Suggestion made
<ul style="list-style-type: none"> Object to the London diagram on basis that identification of CTRL and Crossrail projects ignores other designations such as Opportunity Areas and Thameslink 2000.

H/SL
<ul style="list-style-type: none"> 2B.101 Detailed parking policies should of course reflect restraint but be determined at the sub-regional/local level (delete parking phrase)
<ul style="list-style-type: none"> H/SL have no intention other than creating the impression that they are anything other than serious about sustainable transport solutions for Brent Cross. Nevertheless there is potential for an additional £1million ft² of mixed use development North of A406. Until the Development Framework is complete, the appropriate balance between car-parking and other modes will not be apparent

LFACS
<ul style="list-style-type: none"> Tottenham Hale Area for Intensification is a key public transport node but development scope might be constrained by the relatively small area of land available
<ul style="list-style-type: none"> Transport system will need very careful attention. There are no orbital rail routes in the sub-region
<ul style="list-style-type: none"> Development of new stations on Thameslink should include a station to serve Brent Cross
<ul style="list-style-type: none"> A feasibility study of reopening the line through Dudding Hill to passenger traffic with services to Cricklewood / Brent Cross

LONDON FIRST
<ul style="list-style-type: none"> With no significant new transport infrastructure planned until Crossrail 2 (2016) the road network remains critical (congested, improvements needed to North Circular with junc A1)

<ul style="list-style-type: none"> ▪ 3C.2 needs to be removed / amended
<ul style="list-style-type: none"> ▪ For development in Cricklewood, improvement to the public transport infrastructure including a new Thameslink 2000 station, bus termini and integration is required
<ul style="list-style-type: none"> ▪ Upper Lee Valley improvements are confined to WARM and bus network
<ul style="list-style-type: none"> ▪ Impact of further capacity at Stansted airport needs to be carefully addressed

WARNER VILLAGE
<ul style="list-style-type: none"> ▪ 2B.101 delete

WEMBLEY PARK SRBPB
<ul style="list-style-type: none"> ▪ While Wembley offers good sustainable transport links to its local and regional communities, Brent Cross / Cricklewood's location at the end of the M1 motorway and its catchment area is most easily accessed by car. The board feel that Wembley with its public transport access is better placed to provide redevelopment and regeneration in a sustainable matter

WEST LONDON ALLIANCE
<ul style="list-style-type: none"> ▪ Concerned at the promotion of Brent Cross as a new town centre (currently clearly operates as an out of town shopping centre). This proposal is not supported by the essential impact assessments and transport studies. Brent Cross will have up to 7,600 car parking spaces and the Brent Cross/Cricklewood regeneration area is close to the North Circular and major arterial roads which means there is easy access by car for a very large catchment population. The attraction to car users far outweighs the attraction to those who use (or wish to) public transport.

Annex 2: References

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