



# **PARK AND RIDE ASSESSMENT FRAMEWORK FOR LONDON**

Park and Ride Assessment Framework for London  
incorporating Transport for London's Park and Ride  
policy principles.

THIS DOCUMENT OUTLINES TRANSPORT FOR LONDON'S POSITION AND ADVICE ON PARK AND RIDE IN LONDON. THIS ASSESSMENT FRAMEWORK WAS DEVELOPED IN CONJUNCTION WITH DR. GRAHAM PARKHURST.

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# **PARK AND RIDE ASSESSMENT FRAMEWORK FOR LONDON**

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## POLICY CONTEXT

Park and ride (P&R) policy involves the provision of special facilities for modal interchange between public transport and cars. Such facilities include temporary and permanent bus-based schemes, which are signed from the road network, and rail-based schemes, whether at designated 'parkway' stations or at stations where smaller car parks are provided as a rail-user facility<sup>1</sup>.

The broad range in the scale and nature of P&R schemes means that they are likely to have widely varying economic, social, environmental and behavioural effects. The present assessment framework document provides a basis for TfL:

- to have a consistent approach to the assessment of P&R proposals in London, as required by the Mayor's strategies – in particular the Transport Strategy<sup>2</sup> and the London Plan (LP)<sup>3</sup>; and
- more specifically, to enable the appraisal of P&R proposals against the LP, which is driven by the following Mayoral Objectives:-

Objective 1: To accommodate London's growth within its boundaries without encroaching on open spaces.

Objective 2: To make London a better city for people to live in.

Objective 3: To make London a more prosperous city with strong and diverse economic growth.

Objective 4: To promote social inclusion and tackle deprivation and discrimination.

Objective 5: To improve London's accessibility.

Objective 6: To make London a more attractive, well-designed and green city.

The Mayor seeks to implement these objectives through working with strategic partners, setting priorities for the GLA group and by exercising his planning functions; UDP policies should take these objectives fully into account. These are hence the overarching objectives that guide P&R policy in London, and the framework seeks to enable compliance with the policy.

The framework document incorporates TfL advice on the appropriate application of P&R policy in the London context, and provides a framework to guide proposers and evaluators in assessing schemes. Hence, the framework is cognisant of the strategic influence of P&R, as well as local-scale implications. It is also relevant for the full range of public transport modes which might support P&R.

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<sup>1</sup> It should be emphasised that P&R may involve both dedicated car parks and dedicated bus services, but also includes parking acts made at formal car parks with the sole or primary aim of gaining access to a public transport network. Informal P&R, making use of on-street capacity or off-street capacity dedicated for other uses, is more likely to be the subject of policies of restraint, rather than promotion.

<sup>2</sup> The Mayoral Transport Strategy (Greater London Authority, 2001) contains explicit policies (4D.5, 4E.3) relating to national rail and park and ride (P&R).

<sup>3</sup> Mayor for London (2004). *The London Plan*. Published by the Greater London Authority and replacing Regional Planning Guidance Note 3.

## POLICY PRINCIPLES

In particular, it implements the following key principles of the TfL P&R policy:

- 1) No new (or substantial increases to existing) permanent park and ride car parks should be considered within zones 1-3 due to their likely generation effect of additional car vehicle trips and kilometres.
- 2) Proposals for new sites or substantial increases to existing park and ride car parks outside zone 3 can be considered provided they result in shortening of car vehicle trips and an overall reduction in car vehicle kilometres.
- 3) Exceptions to point 2 will only be considered if the proposal is proven to relieve highway bottlenecks and if any additional trips would use sections of the networks which have spare capacity forecast in the future.
- 4) Proposals which encourage railheading should in all cases be discouraged. (I.e. that encourage existing drivers to drive further into London due to cheaper fares or higher frequency).
- 5) Proposals for permanent park and ride sites to improve access to town centres should be considered only where it is difficult to provide adequate access by bus, walking or cycling and where there is an associated decrease in parking capacity in the town centres. Where the latter is not appropriate, if the park and ride proposal is in line with Mayoral objectives and sustainable planning principles, then a town centre parking plan with satisfactory rationale for any proposed rearrangement of parking provision should be provided.
- 6) Pricing proposals should not encourage a greater number of trips by car and should be sensitive to local pricing of car parking to ensure sites are not used for general parking.
- 7) Provision for high occupancy vehicles should be considered when reviewing the potential of individual proposals.
- 8) Priority should be given to accessible parking for blue badge holders.

The framework is applicable at all stages of a particular proposal's development, from 'pre-feasibility' to full planning application.

Finally, it is noted that a number of consultation interviews with key stakeholders were conducted to inform the preparation of the framework, and it has been subject to further consultation in draft form.

The framework document proceeds with: a brief introduction considering the role of P&R in London (Part A); followed by an introduction to the Framework itself (Part B); and the Assessment Framework proper (Parts C-F). A more detailed consideration of the future role of P&R in London follows in Appendix 1.

## A – Role of Park & Ride in London

The current and potential roles of P&R are introduced here, with reference to the context to appraisal. The issues are considered in greater depth in Appendix 1.

### 1 EXISTING ROLE OF PARK & RIDE

Policies to enhance interchange, either between cars and buses or cars and rail (light, underground, suburban, or high-speed) have been promoted in the UK and other industrialised states for more than three decades now. Typically, in the UK, rail P&R schemes have involved the provision of dedicated car parking capacity at existing railway stations, which is usually targeted at travellers making day-return trips and is made available either free of charge or at modest daily rates. A few stations have been promoted as parkway stations. These typically have high-frequency rail services, significant parking capacity (500 spaces upwards), and are located in areas where there are large numbers of potential rail users living beyond walking range of a station. The provision of adequate parking at railway stations is seen by many concerned with the rail industry as an important factor in the efficient and sustained use of the railway.

In both the GLA area and the whole South East of England, P&R plays a significant role already. There are around 12,000 existing official spaces at London Underground (LU) stations and more than 70,000 on the heavy rail network throughout Southeast England, many of which serve London<sup>4</sup>. Estimating the contribution of P&R is complicated by the existence of unofficial (or informal) P&R activities. For example a recent review for London Underground Property (LUP, 2000) noted that although there are only 12,000 official parking spaces for the system, there are five times more users who park a car near a station or get a lift.

Considering the rail network overall, currently around 5% of all trips on the rail network are accessed by officially-designated park and ride facilities. Whilst the absolute proportion of trips is perhaps not substantial across London, it is significant in particular areas of London where the public transport (primarily bus) network is less dense. Arguably, taking into account both the underground and overground networks, London is already the foremost application of rail P&R worldwide.

Bus-based schemes, instead, usually involve the provision not only of parking capacity – typically ranging between 500 and 1,500 spaces – but also dedicated shuttle bus services. The car parks are typically up to 5 km from the town centres they serve. Local authorities that implement bus P&R usually have aspirations to develop a ring of sites at the periphery, located on all or most of the principal inter-urban routes to the town.

Bus-based P&R has operated in the Christmas season for several London borough centres, (e.g. Kingston), and in central London a shuttle service from the Park Lane car park links a major local department store. Additionally, it can also be assumed

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<sup>4</sup> It has been estimated that there are 85,000 *official* parking spaces throughout the southeast of England including those at London Underground stations (Pickett, M W & Gray, S M, 1993. *Informal Park and Ride Behaviour in London*. Project Report 51, Transport Research Laboratory, Crowthorne).

that some level of informal P&R trips are made using non-dedicated parking facilities near the London Bus network, whilst the phenomenon of informal P&R also occurs in the longer-range bus and coach market for London (for example in the M3<sup>5</sup> and M40<sup>6</sup> corridors).

## 2 PROPOSALS FOR AN EXPANDED PARK & RIDE ROLE IN LONDON

As implied by the TfL P&R policy principles in Part A, there is potentially a role for enhanced park and ride facilities in areas of London where it is not cost effective to provide extensive bus feeder services - so as to attract longer distance car users to access the public transport network, primarily the light and heavy rail network. Bus-based park and ride to Central London has little potential due to the longer journey times by bus. There may be potential for local or temporary bus based park and ride to outer London town centres but in these cases it may be envisaged that the existing conventional bus network would be used rather than new bus services.

There are a number of specific park and ride proposals, generally at or adjacent to LU stations. In addition, there is potential for park and ride access to some Crossrail stations and there have been some proposals for dedicated car parking on the Tramlink system<sup>7</sup>.

It can be expected that an increased number of P&R proposals will emerge for Greater London in future years. The MTS acknowledges the possibility of greater P&R provision in outer London (outside zones 1-3). The Ten-year Plan for Transport envisages a doubling in bus P&R capacity nationally. However, not only is current P&R capacity mainly provided on the heavy rail systems, many commentators see these networks as most likely to offer attractive opportunities for future development.

In addition to the LUP review, the Strategic Rail Authority (SRA) has considered how far P&R is a means by which we can "make better use of our railways". Whilst the SRA policy is a national one, and the main thrust of any expansion is likely to fall outside the GLA area, some sites may be within that area, and many are likely to influence travel to central London. Network Rail would also be willing to support P&R proposals provided they meet the right criteria.

In July 2003 the Secretary of State for Transport confirmed that Cross London Rail Links (CLRL) Line 1 should, in principle, be constructed. The new railway construction would not itself incorporate additional P&R capacity provision, but, by linking existing P&R capacity on the Great Western, Shenfield and Ebbsfleet lines directly to central London, can be assumed to increase its attractiveness and raise questions about providing extra spaces on the network.

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<sup>5</sup> Near Camberley, next to express bus service stops serving central London.

<sup>6</sup> Unofficially, around Junction 6 and semi-officially from the Oxford Thornhill P&R site (primarily intended to serve trips to Oxford city centre). Perhaps a quarter and a third of car park users use this site for travel towards London, Heathrow and Gatwick, rather than Oxford.

<sup>7</sup> The most immediate application would be to apply the policy to the LU strategy for P&R adjoining or close to identified 'Gateway' stations, work on which has been underway for some years. The short-term sites identified to date include Hatton Cross, Newbury Park, Redbridge, South Ruislip, Cockfosters, Ickenham and Hillingdon. Only Hatton Cross has been progressed to date. The proposal submitted by LU to the London Borough of Hounslow was rejected on a number of grounds, but is currently the subject of an appeal.

Concerning the lighter rail systems, P&R trips using the Docklands Light Railway are currently informal, but a major extension of the railway eastwards might encourage proposals for sites in outer London, perhaps with Canary Wharf as an important target destination rather than central London, due to the journey times on the network.

The boroughs may include light rail P&R proposals for the London 'town centres'. P&R is discussed for the Croydon Tramlink at New Addington and, in the context of possible extensions to the network, at Purley, near the northern terminus of the M23. Central Croydon would be the most important destination for the target market. However, given the limited scope of existing and projected light rail development, it is suggested that the Boroughs will generally bring forward bus-based schemes.

Finally, there may be limited potential for river-based services, although there are substantial constraints to implementation, and due to low commercial speeds, only short-range trips are likely.

Hence, the nature of P&R provision in London may expand and change, including the emergence of new kinds of location; the latter being a particularly important factor in determining the wider implications of schemes.

### **3 APPRAISING THE POTENTIAL CONTRIBUTION**

These policy developments, together with other policy demands, make the development of a framework for the consistent and comprehensive assessment of proposals necessary and timely. Many of the proposals will require assessment for a range of transport and land use effects at various policy levels, and certainly at a higher level than the single borough<sup>8</sup>. In any case, P&R capacity already exists, and needs managing.

Hence, TfL needs and wishes to be able to provide a coherent and strategic response to such proposals. Whilst the policy of individual boroughs and the stance taken with respect to particular proposals considered by the planning control system will naturally continue to reflect local priorities, the framework is intended to assist that planning control process in taking into account wider objectives.

P&R proposals can have a range of aims, which need to be identified and tested to ensure the contribution of the facility is in keeping with wider land use and transport strategy. In addition to traffic implications, P&R provision may affect policy sectors partly outside the land use and transport planning contexts, for example, pollution control, climate change, and social inclusion. A fuller consideration of the possible roles of P&R schemes is made in Appendix 1.

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<sup>8</sup> It is quite conceivable that, for a range of reasons, such proposals might seek the siting of a P&R facility (and any concomitant disbenefits) in one borough, in order to benefit another borough, or London overall.



## B - Structure and Application of Assessment Framework

The Framework follows Government guidance on transport appraisal as specified in the New Approach to Appraisal (NATA) and the Green Book (GB), and incorporates principles promoted by the EU Directive on Strategic Environmental Assessment (SEA)<sup>9</sup>, although it does not seek in itself to provide a basis for a full SEA.

The framework is organised in two stages: an initial, strategic assessment and a more detailed, specific assessment. There is an intended temporal prioritisation, so that the initial strategic assessment may be followed by the more detailed assessments – either immediately or at a subsequent point in time (although not necessarily at all, if the initial investigations indicate that the proposals have little merit). Further prioritisation between questions is not made, for example through weightings. One reason for this is that the assessment of P&R schemes is very site specific. Another is that weightings may appear to offer an external objectivity, but in fact only add another level of subjectivity, and mean that the most important decisions about what is important for a particular case become more remote from the decision-making process<sup>10</sup>. Instead, by not predetermining which questions are most important for each case, decision-makers will be encouraged to make those intellectual judgements and justifications themselves, and the maximum level of information about negative and positive impacts will be preserved and presented within the assessment. However, it is acknowledged that there are different categories of P&R scheme, in particular dependent on the mode used to provide the 'ride', and it is hence appropriate to 'streamline' the framework by placing certain questions in sections specific to particular kinds of scheme.

One of the fundamental principles of SEA is that no decision to implement a specific policy solution should be undertaken before the likely effects of that policy are assessed against those of alternative policies which are also capable of achieving the policy goals. Further, SEA holds that the goals and policy options can only be said to have been fully appraised if subject to full and open public scrutiny, at a stage when new options can be promoted, *i.e.*, in advance of the implementation options being closed down. These considerations need to be made, then, ahead of the detailed scheme appraisal.

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<sup>9</sup> Commission of the European Communities, (2001). Directive 2001/42/EC of the European Parliament and of the Council on the assessment of the effects of certain plans and programmes on the environment. *Official Journal of the European Communities* L197. The directive applies to plans and programmes whose formal preparation begins after 21 July 2004. SEAs will be necessary for Local Transport Plans, which may contain P&R proposals, and could apply specifically to major P&R strategies.

<sup>10</sup> It is further noted that NATA does not use weightings, as a result of similar reasoning, and hence the P&R assessment framework is consistent with this.

## Assessment Framework Sequence

Turning to the detailed appraisal, certain factors, such as environmental ones, cannot be appraised without knowing the transport market and road network effects. The main sections and sequence of the framework are hence:-

|   |           |
|---|-----------|
| <b>C – INITIAL STRATEGIC ASSESSMENT.....</b>                              | <b>13</b> |
| <b>D – DETAILED ASSESSMENT: TRANSPORT MARKET CONSIDERATIONS.....</b>      | <b>17</b> |
| <b>E1 –SCHEMES BASED ON SEGREGATED PUBLIC TRANSPORT ALIGNMENTS.....</b>   | <b>22</b> |
| <b>E2 – SCHEMES BASED ON PUBLIC TRANSPORT USING THE ROAD NETWORK.....</b> | <b>23</b> |
| <b>F – ENVIRONMENT, ECONOMY AND ACCESSIBILITY .....</b>                   | <b>26</b> |

Parts C, D & F will apply to all schemes. Parts E1 and E2 are relevant to P&R schemes involving public transport traffic that uses the road network or is segregated from the road network respectively. This is a dimension that affects certain constraints and considerations and can be distinguished from other issues.

The GB refers to ‘economic appraisal’ as taking into account all the economic, social, environmental and financial consequences of an intervention, and using an integrated method combining cost benefit analysis with supplementary techniques to be used for weighing up those costs and benefits that remain unvalued in quantitative terms.

In general, most assessment issues apply to most P&R (and indeed transport development) proposals to some extent. Where it can be argued that they do not apply, it is part of the exercise to confirm and justify that point, as the assessor may require firm assurance.

It is recognised, though, that the stage of development of any particular proposal will often strongly influence the level and accuracy of detail that can be supplied in response to the framework. In offering guidance about what level of response is appropriate, a starting point is to identify:-

### Q1 What is the current stage of the proposal with respect to the planning control system?

Here, possible responses can be subdivided as:

- A conceptual, feasibility
- B pre-application
- C outline application
- D detailed application

Supporting documentation could include any statutory planning documentation, either in full, or in summary form with a list of the full documentation available. Additionally it would be appropriate to indicate whether the proposal is in fact identified in a development plan or if it has formed part of a rail franchise bid.

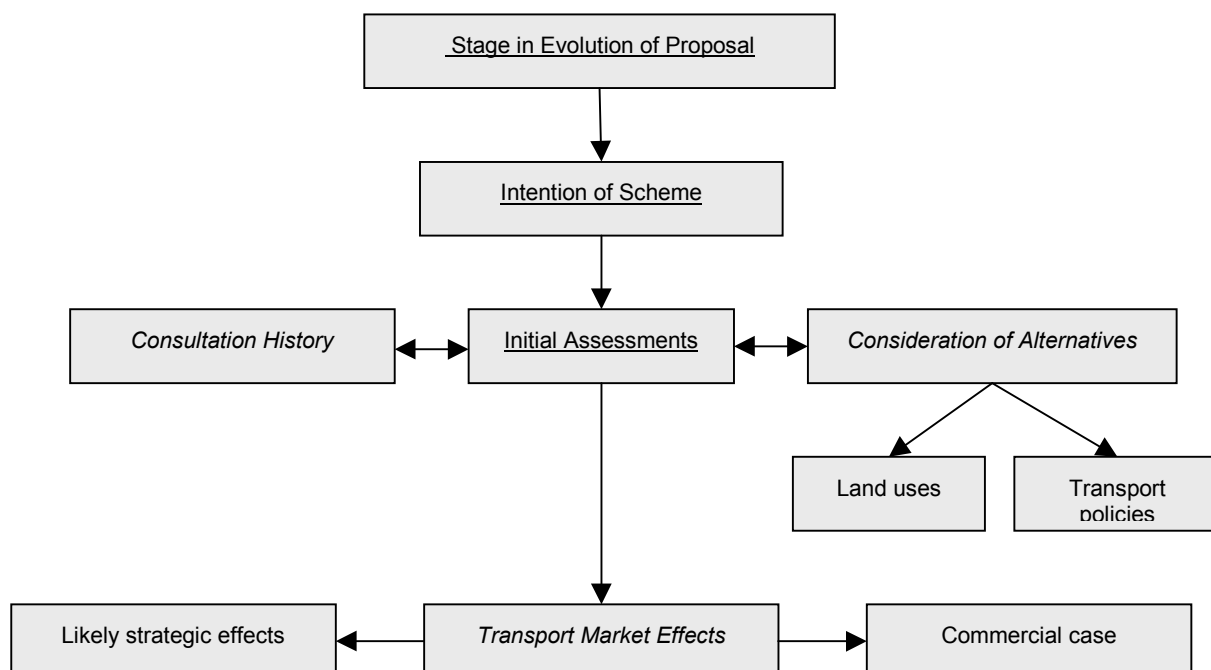
It is accepted that proposers at the *conceptual, feasibility, and pre-application* stages would be able to respond fully to the *Initial, Strategic Assessment (Part C)*, which includes consideration of alternative policies, although they are welcomed to consider the later parts as this may assist in the development of the proposal.

Parts D and F are common detailed assessment components for the later stages, whilst, as noted above, Parts E1 and E2 refer to broad scheme types. Where the proposer has reached the point of submitting an *outline planning application* it is expected that responses will be as full as possible to all relevant parts, but accepted that in practice the available data may be limited for particular questions. By the time a *detailed planning* application submitted, however, full responses will be necessary.

Some questions are framed in such a way that they seek responses from a fixed range of options as well as a more open-ended response. This normally occurs where it is necessary to establish points of fact, which is not necessary and/or appropriate for all issues.

The responses from the detailed appraisals are then brought together in NATA-style Appraisal Summary Table, designed to provide decision takers with a concise overview of consequences across the full range of variables. Distributional effects are fully integrated in this summary appraisal. Following government guidance, the summary table of the detailed appraisal is restricted to one page in length, to include key decision-taking factors only, although supplementary information should normally be provided separately. Chart 1 provides a diagrammatic overview of Part C, designed to be applied to proposals at a relatively early stage of conception.

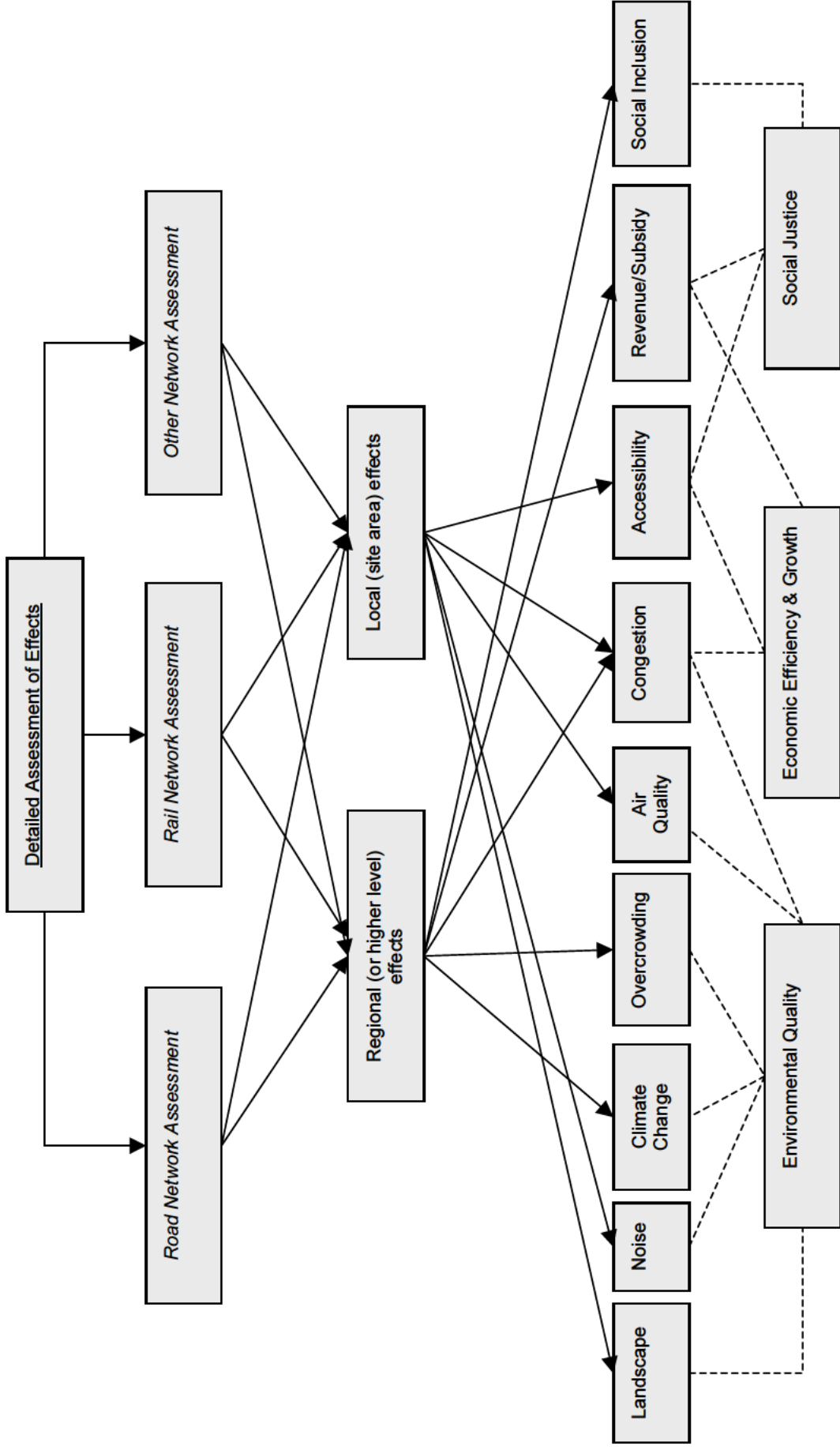
Chart 1: Initial appraisal of proposal



Subsequent parts are outlined in Chart 2 (overleaf). Part D intends to provide a detailed understanding of the scale of P&R proposals and their likely effects on the relative attractiveness on the transport market once the strategic issues have been considered and the proposal is demonstrated to have merit. It considers factors that apply to all types of P&R scheme. For example, the initial appraisal provided an indication of the likely traffic consequences of introducing P&R in the particular transport market context. In the detailed appraisal estimates are sought for those effects. Hence, the framework provides an *incremental* and *sequential* test, potentially minimising the resource costs of appraisal.

Finally, it is noted that real-world observations of the operation of the proposal will, by definition, generally not be available, except where the proposal is for an expansion of an existing facility. Here, real world data can be used, although with some caveats, for example it needs to be ascertained that the new patronage to be attracted will be drawn from the same market (or population) as the existing users. Where real-world data are not available, forecasts based on potential user surveys may inform the return.

Chart 2: P&R assessment framework – detailed effects



## C – Initial Strategic Assessment

Sections C1 and C2 seek the clarification of policy goals, and which alternative policies have also been subject to consideration and appraisal. Section C3 addresses the issue of consultation, whilst Section C4 seeks basic factual information about the P&R option under consideration, such as the scale of scheme proposed and the intended user group.

### 1 INTENTION OF SCHEME, PROGRAMME OF SCHEMES OR POLICY

#### Q2 How will the scheme assist achievement of the overarching London Plan objectives?

- A Objective 1: To accommodate London's growth within its boundaries without encroaching on open spaces.
- B Objective 2: To make London a better city for people to live in.
- C Objective 3: To make London a more prosperous city with strong and diverse economic growth.
- D Objective 4: To promote social inclusion and tackle deprivation and discrimination.
- E Objective 5: To improve London's accessibility.
- F Objective 6: To make London a more attractive, well-designed and green city.

The intention here is to assess the overall ethos for providing the P&R scheme. It is requested that responses seek to demonstrate how the proposed scheme will contribute to the six overarching Mayoral objectives listed above. Supporting documentation should identify the relevant supporting sections of strategic planning documents, in particular the London Plan, the Mayoral Transport Strategy, and borough transport strategies. At an early stage of a proposal, it is accepted that responses may be largely or entirely in qualitative terms.

### 2 CONSIDERATION OF ALTERNATIVE POLICIES

#### Q3 To what extent have alternative policies been considered?

- A Alternative transport policies have been examined but would not achieve the same policy aims using fewer resources or with fewer unwanted consequences,
- B Alternative uses of the land would not be more likely to contribute to the broad agenda of sustainable spatial as well as transport planning,
- C The P&R option remains the preferred option due to other factors.

Proposers should indicate whether P&R scheme options or entirely alternative policies have been considered in addition to the specific proposal. These might be capable of achieving the same transport policy objectives for lower levels of cost or consequence, or make a larger contribution to other objectives, e.g., such as land use coordination to reduce the need for travel. The nature of response here is expected to vary widely according to circumstances, perhaps from a statement why alternative policies are not appropriate up to a detailed evaluation supporting P&R as the best case. Some possible alternative policies are to increase frequency of public transport services without providing additional P&R opportunities, to promote an alternative modal combination or the substitution of Information-Communication Technologies for physical mobility.

### 3 CONSULTATIONS CONDUCTED WITH STAKEHOLDERS INCLUDING THE PUBLIC

#### Q4 What consultations have been conducted with stakeholders to date?

- A proposals discussed informally
- B formal consultation in progress
- C formal agreement in principle obtained

Proposers should indicate the extent to which formal consultations have been carried out with the relevant local, highway, transport and regulatory authorities and with the relevant landowners and public transport operators and the London Transport Users' Committee.

(The exact list of relevant stakeholder consultees is likely to vary between proposals).

#### Q5 What consultations have been conducted with the general public to date?

- A proposal not previously subject to consultation
- B consultations scheduled to begin at a particular future time
- C proposal subject to some consultative exposure
- D significant consultation already undertaken

Proposers should indicate the extent to which the proposal is within the public domain, and whether formal consultations have yet been carried out. A schedule of proposed or undertaken activities could be provided.

### 4 INITIAL APPRAISAL OF EFFECTS ON TRANSPORT MARKET

#### Q6 Will new assets be required to provide the P&R or will existing assets be employed?

Proposers are asked to provide a summary of any existing assets to be employed and any new capital investments to be made in the new P&R capacity, such as car park infrastructure, modifications to the road network, or additional public transport vehicles. Please indicate where public funds will be used in providing the necessary new infrastructure.

#### Q7 Where are the parking site(s) to be located?

- A Specific areas of search
- B Specific locations
- C No locations yet known

If specific locations or areas of search are not yet known, approximate ideas of the catchment areas and intended ultimate destination(s) within the regional context may be identified.

Q8 Are proposed car park capacities known at this stage?

- A Yes, precisely
- B Yes, approximately
- C No

Detailed specifications should be provided if known. It should be identified clearly whether the proposal relates to the expansion of existing capacity or new site(s).

Boroughs will refer all applications for more than 200 non-residential parking spaces to the Mayor for scrutiny.

Q9 Has the intended/target market been specified at this stage?

- A Yes, at the broad level of likely users' journey purposes
- B Yes, in terms of journey purposes, but also in terms of spatial catchment area
- C No

Common journey purposes include commuting to work, leisure shopping, other social and leisure and for specific events.

Detailed specifications of the target market should be provided if known, e.g., indications of intended origin-destination matrix of target market and modal shift.

Q10 Which mode(s) will be used to provide the 'ride'?

- A Dedicated bus shuttle service
- B Parking facilities associated with established bus services
- C National Rail services
- D London Underground services
- E Light rail or tram service
- F Other (e.g. waterbus/taxi/demand-responsive bus)

Please indicate proposed services and stopping patterns if already identified.

Q11 Will public subsidies be sought in order to support operation of the services?

- A Yes, but for 'pump-priming' the operation only
- B Yes, 'structural', long-term subsidy
- C No

Please indicate how the demand is expected to evolve.

For a rail-based scheme, please indicate how the P&R sites relate to the franchise arrangements e.g. offered in bid, rented with station facilities.

For a bus-based scheme, please indicate whether it will be necessary to subsidise fares in order to attract the target patronage.



**Q12 What is the intended impact on car travel?**

Proposers are asked to give an initial indication of the intended effect of the P&R scheme on car travel, i.e., whether reduce car traffic is expected, or whether the proposals are expected to be neutral with respect to overall car use, and actually increase car traffic. Particular consideration should be given to the potential for railheading and abstraction from existing public transport.

*Table 1: Initial appraisal at strategic level only*

| <b>Part C</b>                                 | <b>Summary of Quantitative Information</b> | <b>Summary of Qualitative Information</b> |
|---|--|---|
| Stage of Development of Proposal              |  |   |
| Intention of scheme                           |  |   |
| Extent of consultation                        |  |   |
| Alternatives considered                       |  |   |
| Initial appraisal of transport market effects |  |   |

## D – Detailed Assessment: Transport Market Considerations

For reasons of assessment logic, certain factors such as environmental effects cannot be calculated until the effects of the scheme on the transport market (road network, public transport networks, modal share) are estimated.

### 1 TRANSPORT MARKET EFFECTS

#### Q13 What is the target market for the P&R system?

Information about the target market should ideally be expressed in terms of numbers of expected users in a specific period and the average origin-destination distance for journeys to specific car park sites. The information provided may be based on detailed or limited market research. Alternatively it may be based on experience of schemes elsewhere which the promoters can reasonably consider to be comparable.

Where detailed information about likely behavioural preferences is available, a computer-based transport model may be adapted to include P&R as an additional modal choice or a destination choice. Where sophisticated modelling is available, a detailed matrix of trips forecast from particular areas (spatial zones defined in the model) of known distances from the sites could be provided. Alternatively, evidence may be based on less sophisticated analyses and include qualitative judgements

#### Q14 What is the relationship between the intended parking capacity and forecast demand?

- A Proposed capacity meets predicted demand in full
- B Proposed capacity allows for possible growth beyond currently predicted demand
- C Current provision is shown to be inadequate – the proposal is to provide additional capacity.

Please provide supporting information.

#### Q15 Has consideration been given to the management of who uses the P&R capacity?

Pricing or regulatory control may be necessary to avoid the use of P&R facilities by non-users of the 'ride' service. In some cases unintended use can be significant and risks directly undermining any local policies of parking supply restraint. Mitigation measures might include higher 'penalty' use rates for travellers unable to produce a public transport travel ticket relevant for the circumstances.

Q16 What is the expected turnover in use of parking spaces?

- A Predominantly long-stay usage (8+ hours), e.g. providing for commuting journeys
- B Predominantly short-stay usage (>3 hours) e.g. providing for shopping journeys
- C Other pattern (please specify)
- D No typical length of stay expected to dominate overall usage

Turnover is an important variable in appraisal as it affects the overall site use and hence level of traffic expected to and from a particular site, the pattern of demand, and the economic viability of the scheme.

Data provided here could include a simple ratio of: TOTAL DEMAND : NUMBER OF SPACES, combined with an indication of the number of hours and arrivals expected each hour, or at least each broad period of the day (morning, afternoon, evening).

The estimation of occupancy and occupancy will require information about the total number of users expected together with evidence or judgements about the likely journey purposes, and hence lengths of stay, of users. High turnover may allow for many more trips than if each space is used once per day: perhaps three times the number of spaces provided. Information about turnover also contributes to the understanding of whether there will be peak hours for arrivals and departures. Those peak hours may or may not coincide with the more general peak in road traffic. Naturally, turnover will also be of interest to those concerned about patronage and revenue. Generally speaking, high turnover is likely to be welcomed from the point of view of economic efficiency, and may be associated with a spreading of demand broadly in time, but also tends to be associated with higher total levels of car traffic compared with a similar-sized site with low turnover.

Occupancy data should be expressed in terms of the maximum expected occupancy of parking spaces (%) and average occupancy (%). Turnover can be calculated by dividing the total number of parking acts by the number of spaces provided. Fuller understanding is given by a schedule of expected arrivals and departures during particular periods of the day (e.g. hours).

Q17 What will be the approach to charging users of the car park and public transport?

- A 'Free' parking, with payment for public transport in normal way
- B Paid parking, with public transport use fee included in ticket
- C No charge paid at all
- D Separate fees paid for parking and travel
- E Other approach (please specify)

P&R involves two separate activities – parking and riding - with discrete costs involved. In practice the user may pay not all of these costs and, where they are paid, different recovery mechanisms are applied.

The nature of user charges should be explained in terms of price levels, where known, and mode of recovery. If a single fee is intended to cover both elements, then an indication of how these costs will be apportioned between the costs heads should be indicated. If the ride is to be provided using existing or non-dedicated public transport services, any discounts or surcharges with respect to non-P&R use of the public transport system should be explained.

Q18 How will the P&R travel option costs compare with the costs of alternative modes?

- A Public transport cost<sup>11</sup> < P&R cost<sup>12</sup> < Car to destination cost<sup>13</sup>
- B P&R cost < Car to destination cost < Public transport cost
- C Car to destination cost < P&R cost < Public transport cost
- D P&R cost < Public transport cost < Car to destination cost

In general terms, it is most likely that the Mayoral objectives will be met where 'A' applies, as conventional public transport will remain the most attractive travel option and car use to the destination least attractive.

Data may be presented as averages and/or ranges but more sophisticated analyses could compare generalised costs in which relative time costs are presented in terms of money costs.

For car use between the origin and destination (O-D), the most salient costs for users will be the variable costs of fuel and parking charges. The estimation of fuel costs is relevant because P&R may result in relatively large components of overall journeys being converted from public transport to car, and vice versa. Fuel consumption estimates could be derived from typical vehicle fuel consumption data for cars appropriate for congested urban conditions (i.e. to reflect typical road conditions in and around London).

Where the target market includes weekday journeys to central London, car user costs should reflect the cost of the congestion charge, which for most purposes can be assumed to be £5 per car. Parking costs should reflect the expected length(s) of stay of users

Fixed costs such as insurance and semi-fixed costs such as maintenance also contribute to the perceived costs of travel for some car users, but it is generally considered that their contribution to overall perceived costs is disproportionately small, and it is not suggested that attempts be made to include these.

Public transport costs can be derived from published information, whilst indicative taxi costs could be obtained by approaching local operators. Where there is the potential for taxi use or lift-giving ('kiss and ride') to the public transport facility, the car traffic should allow for two return trips per day to the site.

Where costs are converted into values of time for comparison, it would only be appropriate to apply the same value for all modes, given that the analysis is for the 'same' users travelling by different modes (as is the official procedure in any case for non-work journeys).

<sup>11</sup> Travel without the use of a car or taxi as an access mode to reach either the public transport service or the final destination.

<sup>12</sup> Travel with the use of a car (e.g. P&R or taxi or 'kiss and ride') as an access mode to reach either the public transport service and/or the final destination.

<sup>13</sup> Car travel with parking at or within walking range of the destination: the additional marginal cost of making a journey on a particular day. For the purposes of analysis these can be assumed to be restricted to payments for petrol, parking and road user charges.

## 2 TRAVEL BEHAVIOUR EFFECTS

### Q19 What will be the change in car traffic (only) resulting from mode switches to P&R?

P&R is intended to result in a shortening of car trips as a proportion of car travellers change mode. Calculating the total traffic reduced ideally requires information about:

- the proportion of all users who are expected to switch from car use and the length of their car trips prior to switching to P&R
- the length of trips to the sites, ideally specific to the use of cars as an access mode.

*However, car trips may be lengthened as well as shortened, as a result of complete abstraction from public transport services or shortening of the public transport leg (e.g. through railheading). The magnitude of these effects should also be taken into account, in terms of the number of trips involved and the additional car traffic.*

### Q20 What is the expected extent of additional car traffic generated by the P&R facility?

Proposers are asked to indicate the significance of additional trip-making that is likely and the characteristics of those trips. The scale will be given by the proportion of all trips that are expected to be new ones to the destination and the length of trips to the sites (ideally specific to the subset of travellers expected to use cars as an access mode).

It is accepted that new trips to the destination may in fact be established trips that are redirected from other destinations. Under some circumstances it may be possible to distinguish these trips using survey evidence, but in the absence of such data it may be necessary to consider the trips as novel, with appropriate caveats attached.

### Q21 Has consideration been given to the role of High-Occupancy Vehicle policies in association with the P&R proposal?

- A Yes  
B No

P&R facilities will be used most efficiently, and traffic reduction maximised, where car users making similar access journeys can be encouraged to share cars. This may be achieved by:

- user-charging policies, most obviously by having a separate charge for parking;
- providing preferential parking or riding conditions for sharers, such as cheaper parking, reserved parking nearer the public transport stop, or discounts for group travel; and
- priority access and/or exit lanes to/from the P&R site.

Any discounts offered should be proportionate to the benefits derived, and should unusually not undercut the costs of providing the service. Hence, measures based on spatial advantage, such as special lanes or preferential parking location, or the means of levying the charge, rather than the level of charge levied, may be preferable.

Q22 What will be the net car traffic impact on the road network?

The response here is the net outcome for questions 19-21. Where the public transport element of a P&R scheme is provided entirely on a segregated alignment (e.g. National Rail, London Underground) the response here is also the estimation of the total change in road traffic. The overall net road traffic impact where the public transport route uses the road network is considered in Part E2.

## E1 –Schemes Based on Segregated Public Transport Alignments

Section E1 includes specific questions for schemes with public transport traffic fully segregated from the road network. Although it is phrased in terms of segregated rail travel, it would apply also to guided buses and light rail vehicles, where they run on segregated alignments.

### 1 RAIL CAPACITY CONSTRAINTS

Q23 Is the capacity of existing rail facilities sufficient to provide for additional P&R traffic?

Responses are likely to require a detailed understanding of existing trip patterns and the likely journey purposes and patterns of new journeys to be attracted. These will need to cover both the part of the network immediately serving the site and 'downstream' of it, particularly on the approaches to central London.

*Importantly, considerations should consider both the passenger capacity of services, and the pedestrian-flow capacity of stations.*

Q24 Is it intended to increase available capacity in conjunction with P&R provision?

It is observed that capacity may be increased as a result of policy, for example to preserve a capacity margin, as well as in order to resolve capacity constraints. Please indicate how the additional capacity is to be provided (e.g. longer compositions or additional services) and whether along the full length of route to receive P&R or on a specific section.

### 2 RAILHEADING

Q25 What is the likelihood of railheading occurring to a significant degree?

Proposers are asked to indicate whether consideration has been given to the potential for rail P&R provided in the relevant locations to abstract from other rail services. Please append details of any assessment and any possible mitigation measures that are being considered. It is expected that such assessments will make reference to net changes in passenger-km as a result of providing the scheme.

Or, if an assessment has not been carried out, indicate why it is not thought to be necessary in the particular context.

## E2 – Schemes Based on Public Transport Using the Road Network

Section E2 includes specific questions for schemes making use of the public road network to provide the public transport service. Although this Part makes reference to bus services, it could also be relevant for a light rail scheme making use of the road network rather than a segregated alignment. It includes a final section (Section 3) requiring an estimation of the net road traffic implications of the proposed scheme.

### 1 ABSTRACTION FROM PUBLIC TRANSPORT

#### Q26 What will be the effect on the level of existing public transport trips?

Some existing trips on non-P&R public transport services may be abstracted by P&R services where they are superior or perceived to be superior. This occurs because some bus users do have a car available. The consequences of these effects can be estimated in terms of:

- the absolute level of passengers that are likely to be lost from conventional services,
- the proportional level that are likely to be lost,
- the passenger-km and fares that will be lost.

### 2 ADDITIONAL PUBLIC TRANSPORT ROAD TRAFFIC

#### Q27 Will there be additional public transport traffic to serve the P&R facility?

A Yes

B No

Additional passenger transport-km on the road network will be necessary if the service is operated by bus and a dedicated service is proposed for full or part of the overall public transport schedule.

Alternatively, additional services maybe needed if the overall existing capacity is insufficient or there is strong peaking in demand will require supplementary services at peak times only.

Finally, the location of a site may require an existing public transport route to be lengthened to reach it. Responses should indicate the additional vehicle-km necessary to operate new, extended, or intensified routes.



Q28 Has consideration been given to the provision of stopping, manoeuvring and layover arrangements on the bus route away from the P&R site?

In particular, arrangements will need to be made for turning buses at the end of the route. Where the route terminates at an underground, national rail or bus station then space may need to be negotiated with other claimants on forecourt space, such as existing bus routes, taxi ranks, setting down areas for private cars and cycle racks.

Q29 Are new public transport priority schemes associated with the P&R proposal?

A Yes

B No

The inclusion of public transport priority schemes in a P&R proposal, such as bus lanes and traffic control priority systems, may influence the evaluation of that proposal in a number of ways:-

- Priority schemes in association with P&R may alter the attractiveness (e.g. in terms of generalised cost) of bus use to the extent that mode-switching from car occurs.
- Such schemes will often benefit non-P&R public transport vehicles, so creating non-user benefits.
- Creating priorities may reduce the road capacity available for other traffic. Reductions in road capacity may be an appropriate policy tool, but it is appropriate to indicate the likely extent of capacity changes and to indicate any management and/or mitigation measures that are proposed.

### 3 ESTIMATION OF NET ROAD TRAFFIC IMPLICATIONS

#### Q30 What will be the overall impact on the road network in car-km terms?

Estimation of the changes in road traffic are complicated in the case of bus-based P&R by the fact that both the access and public transport mode make use of the road network. Hence, in addition to the car traffic factor calculated in Q22, the estimation of any additional public transport traffic from Q27 must be included.

Further, the different types of vehicle-km must be converted to comparable units in order for the calculation to have relevance. One means of doing this is to convert the additional traffic to car-equivalent kilometres, using an appropriate factor to allow for the greater level of congestion, energy consumption, air pollution and physical intrusion of a bus *per vehicle*, compared with a car.

The choice of an appropriate value to apply for the purposes of analysis is a debatable. A full-sized bus uses around three times as much as fuel as a medium-sized car in urban conditions, whilst for the specific purposes of modelling congested junctions, the values of 2 and 2.25 cars have been variously applied. However, these conditions at saturated junctions are likely to differ from the values applied to links and, in particular, would not make any allowance for bus stopping arrangements or bus lanes. More subjective issues are the perceptual intrusion of buses in urban areas; in terms of noise and 'footprint' a bus arguably makes a per car contribution greater than this. The value applied in appraisals of net traffic changes as a result of bus-based P&R schemes is 1 bus-km is equivalent to 2.5 car-km.

Where reasonable assumptions can be made about likely patronage levels, it could also be useful and meaningful to conduct the analyses for some of the environmental impacts (energy consumption and emissions) at the level of passenger-km, by dividing the bus and car-level impacts by expected occupancy. In London conditions it might be appropriate to use ridership factors agreed with TfL as appropriate to the locality.

Where private hire vehicles and/or hackney carriages are likely to constitute modal alternatives to private car use or public transport use, the analyses should include those modes, taking into account the typical ridership and significant 'empty running' mileage involved.

## F – Environment, Economy and Accessibility

Government Transport Appraisal Guidance<sup>14</sup> does not specify the sequence in which the various appraisal criteria should be considered; the sequence adopted here follows the relevant aspects of the model Appraisal Summary Table, which places 'environment' first, 'economy' third, and 'accessibility' fourth. This has the effect of emphasising that factors which are not primary in terms of economic development (and are generally harder to quantify) are not secondary considerations. The environmental considerations are divided between Section F1 on emissions and F2 on the implications of site location. The economic factors (Section F3) include consideration of cost-benefits, economic competition, and traffic congestion. Section 4 concerns accessibility in terms of managing the transport networks after implementation, whilst Section 5 explicitly addresses the issue of social inclusion.

### 1 ENVIRONMENT: EMISSIONS FROM OPERATIONS

#### Q31 Is the scheme expected to contribute to greater or fewer climate change emissions?

The essence of the procedure here is to estimate emissions changes by applying emissions factors to the changes in traffic calculated above. It is suggested that in practice CO<sub>2</sub> emissions, which form the bulk of climate change gases emitted from vehicle exhausts, can be used as a proxy for the purposes of global warming considerations. Average per-km emissions factors for the various modes in urban operating conditions can be applied to the overall traffic change data applied in Q22 (for schemes using segregated alignments only e.g. rail) or Q30 (for schemes using the road network for public transport traffic e.g. bus).

#### Q32 What is the likely change in distribution of noxious air pollution as a result of P&R?

- A The load will increase in one or more locations (please specify) and/or
- B the load will reduce in one or more locations (please specify)

Appraisal of air quality effects is complex. The procedure is in part similar to that for climate change emissions, although requires consideration of the locality where emissions occur, and which kind of fuel is being consumed. Modelling would be necessary for a detailed understanding of the situation, and the P&R component may be hard to identify, except perhaps around the site itself. As in the case of climate change emissions, however, an indication can be given of potential contributions by combining emissions factors for vehicle types with the expected change in traffic for each class.

Responses here may be informed by a Traffic Assessment of the likely redistribution of traffic, e.g. perhaps relocate some pollution from urban to rural area.

Vehicles vary widely in their performance with respect to particular pollutants. Nitrogen dioxide and particulate levels are proving to be the largest cause of problems in UK urban areas including London. *Large diesel-engine vehicles produce a disproportionate quantity of these pollutants, even after allowing for the higher average occupancy.* The proposer may be able to enhance the performance of the scheme against this measure by specifying alternative fuel buses.

<sup>14</sup> I.e. Department for Transport (2004). *Transport Appraisal and the New Green Book*. Transport Appraisal Guidance Unit 2.7.1.

Q33 What measures are proposed to avoid watercourse and land pollution from contaminated surface run-off water from the car park?

The need and extent of mitigations measures will reflect the scale of car park proposed and the local conditions, particularly hydrology. Please indicate whether features such as streams are adjacent to the site, and whether any mitigation measures such as pollution traps are proposed.

Q34 How does the scheme relate to local air quality policy?

- A An Air Quality Management Area is likely to be affected by the proposals, and consideration has been given to mitigation measures
- B An Air Quality Management Area is likely to be affected by the proposals, but no consideration has been given to mitigation measures
- C No Air Quality Management Area is thought to be affected by the proposals

Where the areas around a road network likely to be influenced by P&R do have an air pollution problem, possibly with Air Quality Management Areas (AQMA) being in force, the appraisal will be more critical. Attention will need to be given to the particular pollutants which are in excess of the statutory objectives and how different modes contribute to them. A possible mitigation measures would be the use of low emission buses.

Q35 To what extent will there be additional sources of nuisance noise as a result of P&R provision?

- A From car traffic concentrated around site
- B From high-noise emission vehicles (e.g. bus engines, steel wheel on rail)
- C other

Respondents are encouraged to indicate whether mitigation measures for particular sources of noise are proposed.

Q36 Has an appraisal of the effects of high-security lighting on neighbours and wildlife been carried out?

- A No, this is not seen to be necessary
- B Yes, and none was identified
- C Yes, but mitigation measures are not proposed at this stage
- D Yes, and mitigation measures are identified.

Please provide supporting information.

Q37 Has the proposal been prepared with reference to the Mayoral London Noise Strategy (LNS)<sup>15</sup> for limiting and reducing noise at source and public exposure to noise?

In the case of noise, the average level of emissions is often not the key factor for the human 'recipient' or perceiver. The frequency with which road and rail vehicles pass as well as the level of emissions from individual vehicles are also important: under some circumstances individuals may perceive a larger number of individually quieter vehicles to be more irritating than they do fewer, noisier ones. Hence, the frequency and peak level of noise emissions are likely to be important measures for the purposes of monitoring and mitigation, not solely average emissions and exposure levels.

The LNS (Paragraph 4.9) notes three key ways in which noise from transport operations can be mitigated:

- Minimising noise generation at source (e.g., using electric/fuel cell rather than diesel vehicles).
- Limiting the propagation or transmission of noise on the 'pathway' (e.g. erecting a barrier alongside a busy road).
- Protecting the receptor (e.g. adding secondary glazing to rooms overlooking a busy road).

All three have a role to play depending on relative costs and effectiveness in given situations.

Reference may be made here to the role of attitude and measurement surveys, not only in scheme design but in post-implementation monitoring and management.

Q38 Has a plan been prepared to manage site construction?

A Yes

B No

Like many developments, P&R sites pose special and different management issues during the phases of construction and operation. Construction of P&R sites will lead to temporary but potentially significant short-term environmental and practical consequences of infrastructure provision. Specified lorry access routes may be required if the site is near residential areas. Where a P&R site is on a railway line, construction management will need to ensure that there is no unscheduled interference with railway operations, and that railway safety procedures are observed.

<sup>15</sup> See the noise strategy for London published by the Greater London Authority (*Mayor of London (2004) - Souther City: The Mayor's London Ambient Noise Strategy*) for a discussion of these issues, particularly paragraphs 1.3-1.8, 2.6, where key points noted include the explanation that noise is a complex environmental pollutant, not just related to loudness, and that a cost-effective, strategic approach to reducing the nuisance is required; paragraphs 3.4-3.8 on guidelines and limits; 4A.1-4A.4 on road traffic noise in general; 4A.53-4A.58 on bus services in particular; and Chapter 4B on railway noise.

## 2 ENVIRONMENT: SITE SELECTION

### Q39 What was the basis of the selection of the proposed site(s)?

- A Detailed consideration of site options within an area of search
- B Site chosen for pragmatic reasons
- C Site is associated with a specific commercial opportunity

In some cases P&R sites are selected through a process which appraises many potential options before selecting one or more. In other cases, the decision is more pragmatic, taking advantage of the availability or ownership of a particular site, and/or its proximity to public transport services.

Please append details of any site selection procedure followed or an outline of the wider development context linked to the P&R.

### Q40 Has an assessment of land quality at the site been made?

Please indicate the current land use at the site. Where appropriate please indicate the agricultural grade(s) of the land and whether part or whole of the site is likely to have incurred industrial pollution and/or appears in the register of contaminated land.

### Q41 Is the site liable to flooding, or likely to increase the flood risk for other land in the vicinity?

Please indicate if the land appears on the Environment Agency (EA) or other map or register as land at risk of flooding.

### Q42 What is the relationship between the site(s) and existing land uses in the locality?

- A remote from residential or commercial development or
- B near residential and/or commercial development

Please define 'remote' and 'near' in the above context in terms of the proximity of the nearest development and indicate the nature of neighbouring land-use activities.

Q43 Is the proposed site(s) subject to a land use conservation designation?

- A Yes (please specify)  
 B No

Examples of conservation designations are 'Green Belt' (GB) and 'Metropolitan Open Land' (MOL). As noted in Section A5, Boroughs will refer some proposals for GB or MOL to the Mayor for scrutiny and national spatial planning policy (PPG2, PPG13) applies special assessment criteria where P&R proposals refer to Green Belt land. Essentially these amount to a sequential test that a Green Belt site is the most sustainable one in broad terms of a range of options. Proposers intending to make use of Green Belt land are asked to indicate how they have observed these special procedures.

Q44 Does the proposed site(s) conform to the relevant borough or boroughs' Unitary Development Plan(s)?

In addition to designating intended land uses, the UDP may seek full utilisation of land or density considerations may imply multi-storey car park development.

**3 ECONOMIC EFFECTS**Q45 Has a formal cost-benefit appraisal been conducted?

- A Yes  
 B No

Proposers may choose to undertake a cost-benefit appraisal in support of their applications. Typically, these involve converting the economic costs and benefits into money terms, in particular by applying values to the timesavings expected to be enjoyed by travellers (users and non-users) as a result of providing the scheme.

Such information is a useful tool in the overall appraisal process but should not be given an inappropriately high status in comparison with other assessments of the economic, environmental and social implications, which may not be so easily quantified or expressed in monetary terms.

Q46 Will there be an overall increase in person-traffic as a result of P&R?

In practice this outcome will be determined by the net effects of:

- mode-switches to P&R,
- traffic generation by P&R and the
- subsequent traffic levels on modes/networks which loose patronage to P&R but may experience additional demand if they were previously congested.

However, the release of 'suppressed demand' is most likely where traffic restraint measures (e.g. road narrowings and restrictions or bus lanes or new charges) are not introduced in association with P&R provision.

Q47 Is there potential for decreased congestion?

Any demonstration of reduced congestion is likely to be notional (implied), due to the complex nature of the urban travel market and the effect of even large schemes likely to be at the margin. Nonetheless, it is reasonable to suppose there will be traffic congestion reduction benefits if the scheme can be assumed to successfully attract car users to public transport services whilst preventing the released road space from accommodating the suppressed demand of other road users. Congestion charging, access restrictions and parking policy tools may represent means of achieving this outcome.

Q48 Is there potential or the intention for greater inter-centre competition

Is it likely that providing P&R will attract custom from another Borough centre or an 'out of town' shopping centre? Does the locality suffer from poor economic performance? Is there particular evidence that greater car accessibility would improve the situation or are other economic factors holding the centre back?

Q49 Are 'vitality benefits' expected as a result of P&R provision?

Vitality can be expressed in terms of quantitative comparisons (footfall, retail turnover, retail unit availability). These comparisons may be drawn from within the study area (current versus expected) or make reference to external comparators (e.g. transport systems in Paris or another metropolis). However, vitality is also a strongly perceptual dimension, and qualitative judgements, particularly where these relate to local social-cultural norms, may also be important.

Q50 Will town centre land be released for other purposes as a result of the P&R proposal?

The London Plan supports making efficient use of space, particularly in the London suburban centres, where there are likely to be more economically advantageous competing uses to car parking. P&R may assist the release of this land by relocating essential parking requirements.

Q51 Will there be an economic opportunity cost?

P&R will consume resources which may include land, local authority staff time, and public transport capacity etc., which may in principle have been allocated to other purposes.

Is the proposal for an area covered by a special designation, such as an *area for intensification* or *opportunity area*?



#### 4 ACCESS: MANAGEMENT OF TRAFFIC CHANGES AND PARKING CAPACITY

##### Q52 Will traffic be added to saturated parts of the road network?

Whilst an aggregate measure of total traffic change is important from the global environmental perspective, where these changes occur on the network is also an important consideration: in some places reductions in traffic may be particularly beneficial in local environmental terms, and increases particularly problematic.

Responses may be quantitative or qualitative terms (e.g. reduction in town centre area, increase in suburbs).

Where the Transport for London Road Network and/or Highways Agency roads are affected it will be important to be clear if key junctions have sufficient capacity and whether links can cope with additional road access arrangements.

##### Q53 Are new access arrangements to the parking sites from the road network proposed?

Where new capacity is being provided or existing capacity expanded, this is likely to require an assessment of the capacity and safety implications for the existing highway network in the immediate vicinity of the site.

*Where the Transport for London Road Network or Highways Agency roads are affected it will be important to be clear whether new road access arrangements will be possible.*

##### Q54 Are road traffic (and pedestrian flow) mitigation measures proposed?

- A Yes
- B No, but it is accepted that they may be necessary
- C No, but it is thought they will be unnecessary

Mitigation measures may be targeted at possible problems arising from increased road traffic and/or additional demand for parking outside of the official P&R facility. Occasionally, where P&R user flows are expected to be high, there may be a need to consider whether arrangements for pedestrian access and egress traffic at the 'destination' end of the route are adequate.

Respondents are asked to describe proposed mitigation measures or explain why they are not thought to be necessary.

**Q55 Is a plan in place to review parking demand with respect to site capacity?**

- A Yes, with the intention of increasing capacity at this or another site as necessary
- B Yes, with plans to manage demand (e.g. by pricing or the use of on-street parking controls such as Controlled Parking Zones) if necessary
- C No specific plan as such developed at this stage

Like many travel opportunities, P&R patronage can be expected to develop over time, whilst forecasting techniques, although increasingly sophisticated, often show large margins of error compared with out-turn patronage, or only provide forecasts for a limited period of operational life. Hence there is potential for parking demand to exceed capacity provided within the site, risking overspill into less satisfactory locations, e.g. residential streets or nearby off-street car parks (public or belonging to commercial premises).

If A, please specify whether there scope to provide additional capacity at this or other sites if demand requires. If a CPZ is proposed, please indicate whether negotiations with the relevant borough have taken place.

**5 ACCESS: SOCIAL INCLUSION****Q56 Will the infrastructure be easily accessible to all groups of travellers?**

Accessibility here means physical access, but also financial, i.e., will the fares be comparable with most public transport in London or will there be a premium fare\*?

Where possible, there should be direct walkways (with escalators and lifts where appropriate) to connect the P&R facility with the bus stop or rail station, designed so as to minimise transfer time.

\*For example as charged for the Heathrow Express.

**Q57 Will the mobility impaired be able to use the infrastructure?**

- A Yes
- B No

Physical access here means both access by car (disabled car user) or access without a car. Will physical barriers exist (e.g. steps preventing access by wheelchair users)?

Will the system comply with the Disabilities Discrimination Act and meet the specifications of the Disabled Persons' Transport Advisory Committee (DipTAC)?

Q58 Has consideration been given to safety and security issues?

Where possible car parks should conform to the standards for secure car parks, secure stations, as advised by the Home Office, the Association of Chief Police Officers, the motoring organisations and other organisations concerned with reducing crime.

Q59 Will there be a social opportunity cost?

Whilst in economic terms the opportunity costs of alternative schemes which are candidates for public funds would ultimately be evaluated against the expected contribution to local and (national) economic growth, the concept of opportunity cost in the social sphere is more specific, and makes reference to the particular needs of currently excluded groups. For example, a scheme may perform well against economic growth considerations but, perhaps because it is car oriented, it may do nothing to address a pressing local mobility need for those without car access, whilst consuming the public funds that were available to meet them.

An important consideration here will be whether any public financial support for the P&R scheme is drawn from the same budget which targets the presence of social exclusion in the transport sector.

*Summary Table: Appraisal at detailed level*

| <b>Parts D-F</b>                    | <b>Summary of Quantitative Information</b> | <b>Summary of Qualitative Information</b> |
|-------------------------------------|--|---|
| <b>D: Core Factors</b>              |  |   |
| Transport market effects            |  |   |
| Travel behaviour effects            |  |   |
| <b>E1: Segregated Schemes</b>       |  |   |
| Rail capacity constraints           |  |   |
| Railheading                         |  |   |
| <b>E2: Road-based Schemes</b>       |  |   |
| Abstraction (bus P&R)               |  |   |
| Additional road public transport    |  |   |
| Road traffic implications (bus P&R) |  |   |
| <b>F: Env't/Economy/Access</b>      |  |   |
| Emissions from operations           |  |   |
| Site selection                      |  |   |
| Economic effects                    |  |   |
| Management of traffic/parking       |  |   |
| Accessibility/social inclusion      |  |   |

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## Appendix 1: The Future Role of Park and Ride in London

### 1 WHAT POLICY OBJECTIVES MIGHT PARK & RIDE SERVE?

Specific transport policy roles will depend on the agenda of the institution promoting P&R. One obvious dimension is whether the lead promoter is in the public or private sector, but public sector and not-for-profit organisations may not (perhaps by statute) be directly concerned with the full range of GLA policies. The key policy motivations are expected to be:

- a) reduction in road traffic and associated local congestion and noise and pollution emissions, by intercepting private vehicle trips;
- b) the increase of bus and rail traffic;
- c) traffic management (on the rail network as well as the road network);
- d) economic development (or possibly economic competition), through enhanced accessibility; and
- e) raising of additional revenue through additional public transport and car park charges.

On the other hand, wider policies that P&R might influence include:

- f) pollution control,
- g) climate change emissions reduction,
- h) social inclusion,
- i) improved journey quality for travellers.

Overall, TfL wishes to identify which proposals comply with the various types of policy guidance at the national and London levels, and the framework is intended to provide a means of checking whether they do.

Whilst the focus of both the LP and strategic assessment of P&R by TfL is naturally the GLA area itself, the objectives, and particularly Objective 6 invoke the significance of the ecological footprint of the city, which is much wider than the administrative boundary. Further, other statutory consultees, notably the SRA and Highways Agency (HA), will need to consider the effects of P&R on their networks overall. Hence, it is recognised that a full assessment will need to consider the implications of P&R schemes for London with site locations beyond the GLA area<sup>16</sup>.

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<sup>16</sup> For example, a P&R facility at a railway station beyond the GLA boundary might intercept some car trips before they reach London, with consequent environmental benefits in terms of reduced congestion and pollution for people living on the road corridor within London relieved by the P&R. However, there may be disbenefits for people living around that P&R station outside London due to an increase in road traffic around the station. Similarly, there may be disbenefits for existing rail passengers in that particular corridor, if the trains become excessively full, so reducing the quality of their journeys, or even preventing them boarding at stations down-line of the P&R facility.

Amongst these objectives, four crosscutting themes relevant to P&R appraisal can be observed. These can also be seen as corresponding to four out of five of the key objectives of national policy, as specified in the New Approach to Appraisal<sup>17</sup>:

- Accessibility - does the plan/scheme improve accessibility for all (social inclusion), including those who do not own cars?
- Integration - is the plan/scheme consistent with the objectives of other policy areas such as land use planning, health, education, and sustainable development? Furthermore, does it compliment and enhance travel by other modes?
- Environment - is the impact of the scheme on the environment minimised? In the case of P&R this might be defined as whether the scheme genuinely reduces overall car mileage and increases overall public transport use.
- Economy - does the scheme promote the objectives of regeneration and economic development in the surrounding area and return a positive net present value?

Section 2 evaluates P&R in conceptual terms for its likely implications with respect to these regional and national objectives.

## 2 PARK & RIDE AS AN ACCESSIBILITY-ENHANCEMENT TOOL

In theory, P&R schemes might enhance accessibility by:

- increasing the ridership of a public transport system by bringing more potential travellers into the effective catchment, and by doing so increasing the range of activity opportunities they can access,
- increasing the overall availability of parking opportunities, which again may enable more people to travel to opportunities they could not previously reach, or
- reducing journey times (mainly for non-users) by reducing road network congestion by intercepting car traffic.

However, three important caveats affect the likelihood of these objectives being realised. First it has to be observed that the conditions under which genuine, worthwhile and significant increases in the accessibility of opportunities are achieved are theoretically stringent, and so in practice are likely to be rare. Second, it is likely to be hard to demonstrate that some level of congestion is actually avoided as a result of P&R implementation. Third, due to the reliance of P&R on the availability of a car to the traveller, it is very likely that accessibility will not be enhanced equally for everyone.

Furthermore, closely related to the objective of enhancing accessibility (generally seen in positive terms as it enables more people to access a wider range of facilities) is the phenomenon of increasing mobility (generally viewed negatively<sup>18</sup>, as levels of

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<sup>17</sup> The fifth NATA objective is safety, i.e., whether a scheme reduce the numbers and severity of accidents, but this is unlikely to be a specific objective of a P&R proposal, and road safety benefits or disbenefits which are specifically due to P&R schemes are unlikely to be reliably and validly measurable against the context of background change on the local road network.

<sup>18</sup> Indeed, UK and European Union transport policy seeks to 'decouple' economic growth and mobility growth, although monitoring this relationship may prove hard in practice.

movement increase without bringing more people into contact with genuinely new opportunities). The issue of lengthening travel to work journeys exemplifies this point: where new P&R schemes enable people to access work opportunities which would not have been feasible for them before - perhaps due to the high cost of car parking in an urban area - they could be said to increase accessibility. However, particularly in the London context, they may enable people who already participate in the labour market to change job, or change mode of travel to work, with a tendency to increase mobility rather than accessibility.

Notably, the widened labour market may also bring economic benefits to London, but the implications of greater mobility for the road and rail networks within and beyond London must be considered.

## **2.1 Congestion**

Models and observations can offer information about the effect of P&R on road traffic congestion, particularly in the vicinity of a car park. Here, the general expectation is that provision will result in a local increase in traffic, and possibly congestion. Hence, there will certainly be negative effects to some extent, which will need to be evaluated against other expected benefits and costs.

In return, there may be benefits for users and non-users if there is traffic reduction at particular congestion hotspots, with the result of faster journey times by both bus and car. This is particularly likely to be the case for bus passengers (a group in which the temporally excluded are likely to be well represented), if the reduction in traffic is combined with the reallocation of road space through the introduction of bus priorities.

However, direct evaluation (with causal attribution) of the effect of P&R on overall congestion levels over a wider area – the kind of area likely to be relevant for measures of network performance or economic activity - is likely to be impossible when it is considered that any particular scheme will have influence only at the margin, and that many other changes occur simultaneously, including other transport policies and background trends in travel demands.

## **2.2 Social inclusion – variations in mobility opportunities**

Due to the flexibility of car use, P&R provision will rarely broaden the range of destinations that are available to the motorist. The exception is perhaps the circumstance in which parking is not in sufficient supply at a particular destination to meet demands, so the availability of P&R can increase the number of trips to that destination that can be

Congestion on the rail network is clearly also an important phenomenon to consider. Much of the London heavy rail network operates at, or in excess of, capacity during part of the weekday.

As rail P&R is not necessarily or even usually associated with an increase in rail capacity, it is important that assessment considers the ability of the network to manage with a marginal increase in demand as a result of P&R. It is necessary to understand the journey patterns of both intended and possible unintended users of a service. It would not be sufficient to observe free capacity on a section of line without considering whether additional trips might impact negatively on a more congested part down-line.

However, under particular circumstances it is possible that P&R provision could have the effect of transferring passengers from a very congested to a less congested network.

begun by car. In the context of high London parking charges and the introduction of new charges, notably the central-London congestion charge, though, it is possible to argue that providing additional P&R opportunities might avoid social exclusion for a small group of travellers that is dependent on car access to jobs, health or social activities, but can only just afford access to a car.

A variation on this theme is that car users who experience such levels of road congestion that they are excluded from travel opportunities on time-budget grounds, may be able to take advantage of a public transport that benefits from a segregated right-of-way or on-street priorities, if P&R is provided. A reduction in exclusion resulting from shorter journey times may result if P&R makes travel by rail or some other segregated, high-speed network accessible. This would be dependent, though, on the travel opportunity being inclusive in other terms; in particular having affordable fares.

In most cases, however, the existing public transport networks already provide an attractive alternative for most journeys within much of London, for much of the day, and particularly in the central area. Similarly, at night, the nightbus network provides an alternative. Night-time services are more limited, but the congestion charge is in force only during the day, and parking charges also tend to be lower or completely lifted. In outer London, though, public transport services are not always so frequent, particularly at off-peak times, and there may be a stronger case for a car-access leg. Cars also provide personal security benefits which are particularly valued by certain groups of travellers; confidence in secure travel conditions may determine whether a journey is made at all.

Overall, though, any group for whom P&R access makes the difference between inclusion and exclusion is likely to be very small. It may be possible to assist them more efficiently in other ways, *e.g.*, though more targeted subsidies.

In addition to the benefits for socially-excluded car users being restricted to a small group, at the same time, any facilities which increase the car dependence of society as a whole are likely to be increasing the relative exclusion of those without access to a car. The main motivations behind P&R provision reflect the interests of the majority group of citizens who do have access to a car, and are not excluded from society. Politicians and planners often argue that it is necessary to increase the facilities available for this group, often to make the introduction of modest restraints on car use palatable. These beliefs reflect the influential and powerful position of motorists, and the car, in policy making.

Exclusion effects can be subtle and depend on the nature of the P&R scheme. In practice the means in which the ride is provided is a significant factor.

### 2.2.1 Bus-specific effects

In the past, bus-based P&R has usually been provided as a separate *dedicated* service, often specifically marketed to motorists as a superior product, differentiated from non-P&R services, creating the implication that these latter services would not be attractive to people with cars available. In these cases, the frequencies offered have often been higher than offered on parallel non-P&R routes, due to the high concentration of demand at relatively few stops, which enables efficient utilisation of resources. Given this competitive advantage, and considering that in fact not all bus users are without a car alternative, it is not surprising that bus-based schemes have



been shown to attract a significant proportion of users from existing public transport services.

P&R bus services are often difficult for non-car travellers to access. The sites are often located on the edge of urban areas, not within convenient walking distance for most travellers, or are without attractive, safe, walking routes for those whose origins are within range.

- Despite appealing to a relatively wealthy market, however, many bus-based dedicated schemes have been subsidised to create user-charges significantly below market rates, through low fares and free parking. The subsidies are provided variously:
- to overcome the availability to some car users of free parking near the destination,
- or because commercially-available car parking is offered at low cost,
- and/or in reflection of a possible traffic reduction benefit for some individuals, businesses and other organisations due to lower travel costs.

A number of policy and market context factors suggest that the London P&R experience would be different:

- London bus route frequencies are generally high, and bus P&R frequencies would probably be similar or possibly lower.
- It is likely that P&R fares would match current bus fares for the 'ride' part of the service (although the overall user charge may be higher if it is intended to recover parking costs). Hence, P&R is only likely to be subsidised to a similar extent to all other London bus services.
- Hence, the motivations for travellers with cars available to switch mode of travel from non-P&R public transport to P&R buses is likely to be lower, and will essentially depend on a more straightforward appraisal of the attractiveness of the parking opportunity compared with the egress arrangements available for other modes. Local factors, such as the distribution of traffic congestion on the road network would also play a role in these travel decisions, for example, possibly favouring driving to a P&R site on a bus route experiencing low congestion than walking to a nearer one which suffers badly from road congestion.

For site provision, local authority costs may in whole or part be offset by developer contributions, or by using revenues from local authority-operated car parks in the urban area. These accounting procedures may nonetheless represent an opportunity cost for other local authority services. In other cases revenue support is funded from local taxation. This may potentially result in the residents of one London borough, some of whom may be economically excluded, funding a subsidised P&R scheme which they themselves cannot use and is designed to be attractive to relatively wealthy visitors from other boroughs, or from outside the GLA area.

### 2.2.2 Rail-specific effects

In the case of rail P&R, *railheading* may be a consequence. This occurs when travellers drive along a rail corridor in order to access rail services at a point that is more favourable in price or service quality terms than joining the system at the nearest point to their origins. It is not stimulated solely by official P&R, but capacity provision could encourage that effect. In these cases, the branch line railways or rural bus routes that already have lower service frequencies may lose patronage to the trunk routes, with the possible consequence of a further downward spiral in service levels.

Railheading and P&R played a role in the fate of Ongar-Epping branch line services. Analysis of the season ticket database showed that many potential Ongar passengers had been railheading to stations further down the Central Line to take advantage of a more frequent service, with cheaper Zone fares and parking facilities, and avoiding a change of trains. Possible the provision of parking capacity at Ongar could have altered the balance of travel decision-making for some passengers.

Fare structures can encourage or deter such travel behaviour: at the time of writing the Chiltern Railways fare structure was likely to encourage southbound railheading in the M40 corridor due to absence of a distance decay element in the fare structure<sup>19</sup>.

## 3 ENVIRONMENTAL CONSEQUENCES OF SCHEMES MINIMISED?

P&R schemes result in (usually) fairly marginal changes in levels of environmental detriment over wide areas (e.g. air pollution, noise, visual intrusion), combined with higher concentrations of detriment immediately around car park facilities. Overall, the construction of P&R in a particular place is usually justified in terms of a trade-off between benefits to travellers and environmental conditions in the urban area overall and a poorer environment in the immediate environs of the site.

Research on the environmental impacts of rail-based P&R schemes is scarce. However, a number of studies of bus P&R schemes<sup>20,21,22</sup> suggest that the environmental impacts of specific schemes on users' travel behaviour have, hitherto, neither been minimal nor minimised. Indeed, they have often been associated with increases in traffic, rather than reductions.

Whenever significant interventions are made to the transport and land use systems such as the provision, in effect, of a 'new mode', it is inevitable that behavioural responses are complex and contradictory. In others, there may be no intention to attract additional trips, but that nonetheless is a likely outcome where a more

<sup>19</sup> In June 2003, travel to London from Haddenham was £7.40 cheaper than from Bicester North, a similar fare/km. However, the additional petrol costs of driving from Bicester to Haddenham would typically be less than half rail fare savings.

<sup>20</sup> E.g. Pickett, M W, Gray, S M (1996) *The Effectiveness of Bus-Based Park and Ride*. Report 207, TRL, Crowthorne.

<sup>21</sup> W S Atkins, (1998). *The Travel Effects of Park and Ride*. Report to DETR.

<sup>22</sup> Parkhurst, G P Influence of bus-based park and ride facilities on users' car traffic. *Transport Policy*, 7 (2) 159-172 (2000).

attractive (cheaper or faster) journey option is offered. The key task of appraisal is to establish what the likely net balance of the various travel behaviour effects will be (Table 1), and the likely implications on other transport modes.

*Table 1 – Effect of relative price of transport modes on changes in traffic*

| <b>Cost hierarchy</b> | <b>Likely traffic consequences</b>  | <b>Example scenario</b>   |
|-----------------------|---|---|
| Pt<P&R<car            | Reduction in traffic and car use  | Parking near destination expensive; parking charges also at P&R site, conventional bus fares attractive |
| P&R<car<PT            | Increase traffic to site, reduce in urban area, abstraction from PT likely      | P&R subsidised; free parking available near destination; car use costs low;                             |
| Car<P&R<PT            | Increase traffic and car use  | Free parking available near destination; car use costs low; P&R subsidised or PT costs relatively high  |
| P&R<PT<car            | Increase traffic to site, reduce in urban area, abstraction from PT less likely | No free parking near destination; congested urban roads; P&R subsidised, PT costs reasonable            |

Independent of traffic changes immediately around a P&R site, traffic reductions may not necessarily be observed on the road corridor to the destination theoretically relieved by the P&R opportunity, because growth in the local economy means that induced traffic resulting from suppressed demand fills the road-space that becomes available. This is particularly likely to occur where conditions of economic growth are combined with a local transport policy with insufficient traffic restraint measures. In the case of London it can be suggested that in many cases there will be suppressed demand, if not for travel to central London on borough centres, then for trips through the boroughs.

At the same time, there may be an actual increase in car traffic amongst P&R users who switch mode from public transport or travel on different, longer routes to reach P&R facilities or because people choose to travel more when a lower cost, attractive option is provided.

Whilst in global environmental terms any increase in traffic is to be discouraged, the relocation of traffic may be a justifiable policy aim for reasons of local environmental management. However, an over-riding criterion for appraising whether relocation is justified will be whether spare capacity exists on the part of the road network expected to experience an increase in traffic.

One reason for suppressed demand to express itself in the case of outer London is the fact that expensive parking does not always exist, due to the large amount of employer-funded parking and attractive shopper parking.

The most obvious part of the network at which the increase in traffic is likely to be an issue from the point of view of capacity is that part in the vicinity of P&R sites from the point at which car-arrivers' journeys coincide. However, there may also be issues further away from the sites at existing bottlenecks, typically at junction nodes in the network or in settlement centres.

It is observed in the London context that relatively little of the road network is likely to have a free capacity margin. This is particularly true when considering Highways Agency Strategic Road Network (although only a small part of this is actually within

the GLA boundary) and Transport for London Road Network roads. Both these organisations will require satisfaction as highways authorities that P&R proposals will not place unacceptable additional burdens on the road network.

Given that, even where a scheme is effective, reductions in emissions are likely to be balanced in part by increases elsewhere, P&R creates strong potential loser and gainer groups. These categories may coincide with the traditional dimensions of exclusion and inclusion in society, as groups included in the political process are more effective at deflecting unwanted environmental consequences elsewhere. In some cases the 'excluded' in this sense may, however, be otherwise affluent, included groups who happen to live in communities close the P&R car parks.

P&R operations may in themselves not be any noisier than other road or rail transport. However, they may increase and intensify noise production in particularly localities. Levels are most likely to be influenced by the proposal near its termini and stops. Away from these nodal points the scheme is likely to make a marginal contribution to overall noise levels.

In general terms, proximity to nearby development will affect the likely significance of a range of environmental consequences. The risk of noise, light and air pollution affecting the quality of life of neighbours is increased, as is the risk of overspill parking or traffic affecting the accessibility and amenity of the nearby area.

From the point of view of P&R operations and wider transport policy, sensitivity of the site context is also relevant. The presence of nearby commercial premises may increase the risk of the car park being used by non-P&R travellers, who park and walk.

Wider environmental implications of P&R schemes are likely to include:

- changes in the overall levels of emissions, including traffic-derived air pollution, climate change cases, and noise;
- changes in the patterns of emissions of these pollutants. This is likely to take the form of reductions 'downstream' of the sites and increases 'upstream';
- effects on open space, the built environment and biodiversity.

Emissions may be directly from the operation of a P&R car park, or may result additionally from the operation of dedicated infrastructure<sup>23</sup>, or dedicated or extra public transport services. It may be argued that a particular P&R scheme, perhaps of small scale, contributes little either way to global climate change emissions. The success of emissions control policy will be fundamentally dependent, though, on many relatively small decisions at the micro-level.

Similarly, the positive or negative contribution of P&R to traffic may appear minor. However, in principle it could be a critical factor where the pollution levels adjacent to the road network are close to or in excess of a critical pollution threshold, which may be variously defined in terms of average exposure levels, peak exposure levels and frequency of exposure.

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<sup>23</sup> For example, a P&R might operate via a dedicated busway, separate from the road network. However, it is envisaged that such a related proposal would be beyond the remit of the present appraisal framework, as it would require consideration under the Transport and Works Act procedures.

In the case of air pollution, the national Air Quality Strategy is concerned with exposure objectives which consider both mean pollution levels and the extent and frequency of occurrence of peak pollution conditions.

In the case of noise, the average level of noise emissions may not be the key factor for the human 'recipient' or perceiver. The frequency with which road and rail vehicles pass as well as the level of individual emissions are also important: under some circumstances individuals may perceive a larger number of individually quieter trains to be more irritating than they do fewer, noisier ones<sup>24</sup>.

Where sites are proposed in areas designated as greenbelt it is noted that special procedures apply under Planning Policy Guidance Note 13, considered further below. Additionally sites may have specialist protection by virtue of the habitats they provide, or may be eligible for such status if found to harbour certain species of flora or fauna.

If sufficient parking capacity is not provided then this may include *fly-parking*. Sites may attract car-related crime, including theft, vandalism, arson and abandonment, which may increase the perception that an area has a crime problem.

Indeed, P&R car parks provide concentrations of (often high value) cars in locations which may have low levels of passive surveillance for large periods of the day. To a lesser degree (in terms of incidence rather than severity of crime), there are risks to personal safety as a result of the isolated nature of some sites. As a result security measures are usually essential. High-security lighting in car parks is a common security requirement but sometimes has overspill consequences.

One possible response to 'fly parking' would be the introduction of a Controlled Parking Zone (CPZ). However, imposition would not necessarily be universally viewed as an 'ideal' solution to this phenomenon; residents typically object to being asked to pay for a benefit – parking outside their homes – that they have hitherto enjoyed for free, merely to solve a problem caused by 'someone else'.

An alternative mitigation response would be to seek further increases in official P&R capacity.

### **3.1 Implications for bus Park & Ride in London**

At the national level, in most existing cases, local authorities continue to prefer bus P&R schemes which make use of dedicated shuttle bus services, and it is possible that the London boroughs will share these aspirations. The problem of how to mix different kinds of market segments (walk-to-bus, drive to bus, short and long-range trips) on the same bus, particularly at peak times, might encourage that approach. However, the existing London Buses network is of high quality and at particular locations on the network, perhaps for limited times of the day, there is likely to be scope for P&R trips to be added to services on existing bus routes. This notwithstanding, if future proposals do rely on the provision of dedicated services, then allowance must be made in analysis for the significant additional bus movements that will result, and which have a higher environmental impact, when considered in vehicle-km terms.

Further, in practice, evidence of schemes elsewhere suggests that, when the analysis is considered in terms of passenger-km equivalents by car (before) and bus

<sup>24</sup> Mayor of London (2004) - *Southern City: The Mayor's London Ambient Noise Strategy*.

(after), the effect for the road network 'downstream' of the site is one of net traffic reduction. Occasionally, where a scheme is very poorly patronised, a P&R scheme may be shown to create more environmental consequences than it avoids.

Although the group that makes extra journeys or switches from public transport is usually a minority of users, in the case of bus P&R, usually sited close to the final destination, it has a disproportionately high influence on the change in total car use by users, because it adds new car-km equivalent to the majority of the journey distance, whilst the established car users who switch to P&R only transfer the minority of their trips away from car. Often, as a result, analysis of bus-based P&R has been shown traffic growth 'upstream' of the site that is greater than the 'downstream' reduction.

Further, bus-based P&R schemes making use of dedicated services often require large car parks, to ensure sufficient patronage can be supplied to the public transport route. Hence, they have considerable local environmental consequences in terms of land-take, visual intrusion, pollutant run-off, and security lighting. They also affect the quantity and distribution of traffic and parking in the locale. A likely problem in London is that it will not be possible to find large car park sites that do not consume protected land. Hence, sites may be sought close to existing residential areas; this might be a positive development in terms of including non-car users in the travel opportunity, but is likely to bring the environmental problems near to homes.

### **3.2 Implications for rail Park & Ride in London**

In the London case it can be suggested that there is significant risk of abstraction through railheading, due to factors such as the high cost of peak-hour public transport and the effects of fare-boundaries, which encourage travellers near the margins to take advantage of lower fares if the conditions for a car-based access journey are attractive.

Rail P&R operations have been considered to be less prone to overall traffic increases as a result of abstraction. This is because the majority of the trip may still be by public transport, this is not a necessary outcome and will need careful monitoring. It would not require a high proportion of commuter trips from places like Brighton converting from rail to P&R from, say, Croydon, for the net traffic change to be an increase.

Considering the effect immediately around sites, the non-dedicated nature of rail P&R means that sites are often, but not always, smaller. Where rail P&R sites are smaller than bus P&R sites, the associated environmental effects will be more marginal, and more manageable. Suitable sites within the existing built environment are more likely to be identified. However, in some cases large (e.g. 500+ spaces) sites are proposed, and these will generate similar levels of problem as do bus-served sites.

## **4 ECONOMY**

The balance between providing for productive commercial activity and the derived demand for travel to and from activities is the key economic relationship central to considerations of whether to provide additional P&R in the London context. In some cases, attracting additional trips may be part of a P&R strategy, for example, to assist an area that has a relatively stagnating economy.

There is evidence that the land economy in London is operating efficiently in London, with respect to car parking; some car parks in the central areas are being redeveloped to realise the higher value that can be derived from uses other than parking. The congestion charge is likely to increase this value differential. Hence, the allocation of suitable sites in inner or central London is unlikely to be economically efficient or practically affordable. However, obtaining sites is likely to be problematic throughout the London area. The exception might be where there are small areas of railway-related land for which there is no other practical purpose. However, it is likely that many of these sites are already being exploited.

In principle, where land values do permit, P&R could offer benefits to the overall economy by reducing travel costs. In some cases London boroughs may choose to support P&R financially, for example, in the case of Christmas-only bus schemes, as a means of promoting the local economy. The benefit is most likely to be recognised as a relative, competitive benefit experienced by one borough with respect to another, or perhaps in competition with 'out of town' retailing, notably the 'regional shopping centres' at Bluewater and Lakeside.

The pressures from boroughs to increase their relative economic vitality are understandable. However, it is the role of strategic policy to appraise whether moving economic activity from one location to another, and possibly increasing traffic in the process, is a desirable or acceptable objective. It is likely that this will only be testable on a case-by-case basis.

A further economic dimension to P&R is that it may alter the financial performance of public transport. Revenues could go up or down, depending on charging policy. In either case, another effect might be to alter the patronage and revenue shares of routes. This might occur whether or not the overall levels of fares and car park fees paid were to increase.

Further, the heavy rail network as a whole is partly supported by the public sector, so it is important to confirm that P&R schemes will in fact result in an increase in revenue in the longer-term, and not increase revenue for one operator, at the cost of another (with those costs ultimately being met by the taxpayer or rail traveller).

The London Plan (Annex 4 on parking standards) supports the sharing of parking capacity, particularly where time-specific retail and leisure activities are involved. It is known that a certain level of informal and semi-official P&R already occurs, for example, along Docklands Light Railway routes, although it is not known to what proportion of total patronage this would be equivalent. One location is near Galleons' Reach, where on-street parking is possible as much land is yet to be developed. Such informal opportunities are likely to reduce in the future. In addition to the use of street parking, a private car park at Canary Wharf primarily intended for 'park and walk' trips is also advertising its proximity to central London ("10 minutes away") via Poplar Station, and offers parking for a daily charge of around £5-6. This car park is also an 'interim' facility, with the site identified for redevelopment in the future.

A clear distinction needs to be made between 'market assessment' as it applies to the commercial, financial case and as it applies to the wider travel market. An activity may be sufficiently remunerative so as to attract investment from the private sector through Section 106 agreements, or a commercial joint ventures with a public sector operator, but at the same time might be detrimental to wider transport policy objectives.

## 5 INTEGRATION

In the cases of both bus and rail P&R, some commentators see development around P&R facilities as a more realistic approach to managing planned growth than seeking to make residential developments directly accessible by public transport.

However, in the transport and land use policy debate in general, and PPG13 in particular, the areas around railway stations and to some extent bus routes are portrayed as nodes of high public transport accessibility which are ideal locations for significant generators of traffic. Hence, proposals for (not directly productive) rail P&R car parks may be in competition for space with productive commercial development. As nodes of high public transport accessibility, there will also be incumbent transport interests to consider; the needs of bus and taxi operators, but also pedestrians and cyclists (e.g., access routes and parking racks) and for meeting and greeting by private car.

A further debate concerns the more specific use of sites in greenfield or protected sites, notably with greenbelt designation. In addition to the direct land take in providing the P&R, development may increase the pressure for associated development due to the creation of a public transport node of relatively high accessibility.

In appraising the wider spatial land use planning and traffic implications, awareness that plans for specific P&R sites often form part of wider multi-site strategies is also essential.

Government guidance to local authorities on the preparation of Local Transport Plans (LTP), and echoed by the revised PPG13, indicates that

*“[s]chemes need to be developed as an integral part of the transport strategy for an area and subject to robust assessment,*

A related risk here is the likelihood of a P&R facility itself being used as a ‘park and walk’ car park, *i.e.*, to act as a conventional car park for any nearby traffic generators, so encouraging car use into that locale, and defeating the maximum parking limits introduced by guidance and policy such as PPG13.

Rail P&R for a relatively car-dependent location, such as Hammersmith, might be a desirable policy in principle, but, in practice, it might be difficult to provide facilities in such a way as to be attractive to the Hammersmith market without in fact attracting a majority of users with destinations in central London.

Strategic GLA land use planning powers require the Boroughs to refer planning applications which match certain criteria to the Mayor for scrutiny. *Some* of the criteria that apply in the case of P&R proposals would include applications:

- for the provision of more than 200 non-residential parking spaces,
- for new railway, bus or coach stations,
- for developments of 1000m<sup>2</sup> or more in area for any new use or change of use involving Greenbelt or Metropolitan Open Land, or
- any application which departs from the relevant Borough’s Unitary Development Plan.

As part of this process the Mayor can request changes to meet strategic objectives and if not satisfied with the scheme presented can direct refusal by the Borough (although applicants retain the normal right of appeal).

Recently, in the east of England a new station was offered as ‘planning gain’ in conjunction with a proposal for a significant new-town development on green-field land, but there had been no attempt to establish whether rail schedules would (or could) be amended to allow for a stopping pattern (and in this case they could not be amended).



*including: consideration of alternative sites; the impact on local amenity, and; travel impacts” (DETR, 2000c: 51).*

In response to the conflict of interest between transport planners seeking edge of urban area sites for P&R and land-use planners seeking to protect such land with greenbelt designation, the revised PPG13 included a new appendix (E) amending PPG2 on greenbelts (DoE, 1995). In the process of establishing strict conditions for the acceptability of locating P&R greenbelt land, the proviso was included that

*“...the assessment establishes that the proposed green belt site is the most sustainable option taking account of all relevant factors including travel impacts” (DETR, 2001: 3.17d).*

Notably, then, in the case of greenbelt proposals, the assessment demands not only the consideration of alternative *sites* but also entirely different *options* to P&R.

## 6 KEY FACTORS FOR PARK & RIDE POLICY DEVELOPMENT

### 6.1 Reference to Overarching Mayoral Objectives

From the foregoing discussion, it can be expected that P&R schemes may *contribute directly* to Mayoral

**Objective 3 (making London more prosperous).**

Under *some circumstances*, P&R may also contribute to

**Objective 5 (enhancing accessibility).**

But, P&R proposals *pose threats* to three other objectives:

**Objective 1 (open spaces),**

**Objective 4 (social inclusion), and**

**Objective 6 (attractiveness, design, 'greenness').**

Hence, P&R proposals may support or undermine, depending on circumstances:

**Objective 2 (better city for people to live in).**

### 6.2 The Ethos of London Park & Ride Policy

1. At the strategic level Park and Ride will only be appropriate in locations where improved car access to the public transport network helps to achieve wider objectives. These are likely to be in outer London or beyond the London boundary. In many locations, particularly in inner London, public transport does not require a car access leg due to the density of the networks. Moreover, London has a relatively high percentage of households and residents without access to cars who would not benefit from the provision of Park and Ride.

2. Alternative policies will normally exist, and it would be appropriate to appraise their relative attractiveness with respect to the P&R proposal using an equivalent framework to the present document. Strategic Environmental Appraisal offers a means of comparing different policy alternatives at a strategic level prior to detailed planning. P&R schemes may represent an opportunity cost for other projects in the transport sector or alternative land use development proposals.

3. However, specific stakeholders, such as network operators and boroughs may well identify P&R opportunities, which would enhance public transport revenue or the local borough economy. These proposals, too, may be found to have negative environmental or social effects on the wider area, but under certain circumstances these may be justified in net terms.

4. The framework in this document intends to provide the means of identifying whether a specific P&R proposal is in fact the correct and best solution for the relevant policy and land-use context. In making this decision, factors such as social inclusion and environmental pollution will also have importance, in addition to factors such as travel demand, effects on network operation and revenues.

5. Where additional P&R is provided in London it is expected that the ride will be provided mostly by a rail service, particularly for the central area, and probably to a lesser extent by bus services, particularly in the outer area. Other options, such as

tram are also possible in particular locations, although the commercial case for waterbus services in general has yet to be made.

### **6.3 'Positive' Models of Park & Ride**

**The following factors are likely to maximise the benefits and minimise the disbenefits of P&R schemes in most cases:**

- parking provision integrated within public transport networks that are accessible to all traveller groups;
- location of P&R in places and at distances from the destination that are likely to result in significant traffic reduction and that can in turn offer traffic congestion reduction benefits to public transport services;
- user charges levied at market rates, or at least not undercutting the overall money costs of walk-to-public transport travel;
- any financial benefits, i.e., lower ticket prices due to the greater number of travellers and greater system efficiency shared with 'conventional' non-P&R users, through an appropriate user charge structure;
- location near users' origins, to minimise the amounts that low income but car dependent travellers need to spend on car use;
- location near user's origins, to maximise the length of the public transport leg of the journey;
- location near users' origins so that any environmental costs are more likely to be borne by beneficiaries (although it is inevitable that non-users will continue to bear a large share);
- small-scale sites to minimise the potential for living space exclusion resulting from a deterioration in environmental standards; and
- consultation with all affected groups when planning P&R, and considering the full range of travel needs, so maximising political inclusion.

#### ***In addition, for rail-based services:***

- Awareness given in setting user charges, to be the zonal and distance-related dimensions of the existing public transport fare structure - price signals are likely to be significant in generating or deterring public transport abstraction, including rail-heading.

#### ***In addition, for road-based P&R services***

- Careful integration of P&R capacity provision with corridor-length road-space reallocation measures to ensure any travel-time reduction benefits are enjoyed by non-users as well as users.

The largest London Underground P&R car parks are provided near the periphery of the system. Parking charges tend to increase towards the centre of London. Hence, early interception of motorists is encouraged, and fare revenue is maximised. The cost structure also reflects prevailing market rates. The existing Hatton Cross site, for example, is charged at £5.00 per day, due to its proximity to Heathrow.

END