

‘LINK’ AND ‘PLACE’: A NEW APPROACH TO STREET PLANNING AND DESIGN

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The paper describes the development and application of a new approach to planning and designing urban streets, based on their ‘Link’ and ‘Place’ functions, which include transport performance, economy and environmental indicators. As a Link, a street is for movement and designed for users to pass through as quickly and conveniently as possible, in order to minimise travel time; while as a Place, the street is a destination in its own right, where people are encouraged to spend time taking part in activities. Both functions have their own sets of design requirements. This approach has led to the development of new ways of:

- *Classifying all urban streets, using a two-dimensional Link/Place matrix*
- *Measuring street performance and identifying aspects that are underperforming*
- *Prioritising areas for improvement*
- *Comprehensively assessing design area requirements*
- *Developing design options*
- *Appraising design options*

The approach has been applied in several English cities, in a wide range of applications, from assessing the performance of London’s strategic road network, and engaging stakeholders in the redesign of busy shopping streets, to specifying maintenance requirements in an area-wide Private Finance Initiative highway contract.

1. BACKGROUND

Over the past decade, there has been an increasing recognition that urban streets contribute in many ways to the economic, environmental and social functioning of cities, and do much more than simply provide the infrastructure for vehicle-based transport systems - they are important public places too. Streets represent around 80% of public space in cities, and most buildings and urban activities front onto streets. So that most urban activity and much urban identity is closely associated with the urban street network.

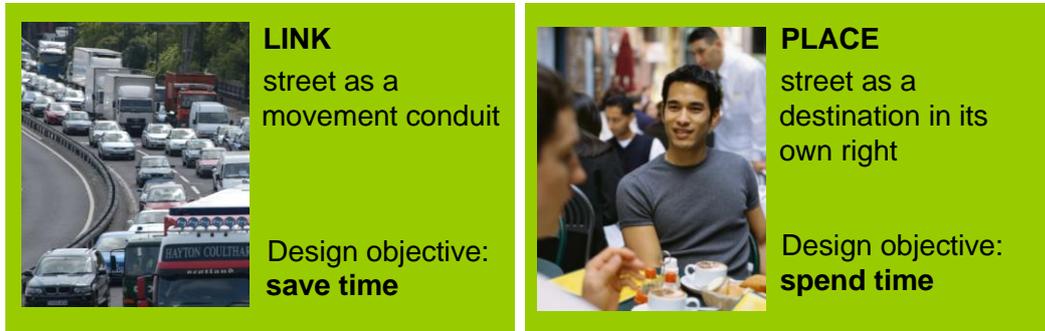
Several recent publications have recognised the broader functions of urban streets. In Australia, the Roads and Traffic Authority NSW (2000) has highlighted the special needs associated with streets passing through commercial centres, and Curtis and Tiwari (2008) have proposed the development of multi-functional ‘Activity Corridors’ in Perth. In the UK, the *Manual for Streets*, jointly published by the Department for Transport and the Department for Communities and Local Government (DfT and CLG, 2007), has signalled a fundamental change in national policy. This stresses the role of streets as ‘places’ as well as channels for movement (‘links’), and goes on to show how a more balanced approach to street planning and design can be applied in the case of lightly-trafficked residential roads in new housing developments.

What the *Manual for Streets* does not address in any detail is how to approach the planning of an entire urban street network, nor how to design appropriately for competing street uses on the busier sections of street, where space is limited. These issues have been addressed in a recent publication “*Link and Place: A Guide to Street Planning and Design*” (Jones *et al*, 2007a). This paper briefly outlines some of the principles behind ‘Link and Place’. It then explains some of the implications of this approach for various stages of street planning and design, and gives some case study examples of how the approach has been applied in different contexts in the UK.

2. PRINCIPLES

2.1 'Link' and 'Place'

The wide range of activities to be found on urban streets can be associated with one of two broad types of street functions: 'Link' and 'Place'.

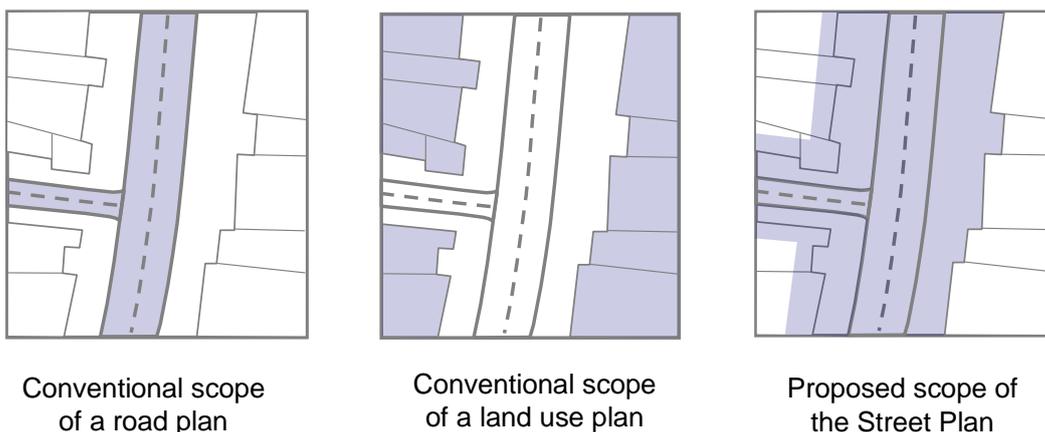


As a **Link**, a street provides a conduit for through movement; it forms an integral part of the whole urban street network and other, more specialised, urban transport networks (e.g. on-street light rail network, or cycle network). Link users may travel by a variety of modes, from private car or truck to bus, bicycle or on foot. Their primary requirement is to follow a continuous, linear path through the street network, with minimum disruption and a seamless connection from one street to the next, from the beginning to the end of their journey. In general they are seeking to minimise travel time along each section of street.

In contrast, as a **Place**, a street is a destination in its own right: a location where activities occur on or adjacent to the street. A Place user is someone wishing to make use of certain facilities that are provided on or alongside that particular street, and will usually access them on foot. While such people are normally classified as 'pedestrians', they are not passing through the area – they are spending time in the area, and may be carrying out a wide variety of activities (e.g. shopping, working, eating, talking, waiting, resting). Such typical high street activities are described and illustrated in Jones *et al* (2007b).

However, not all of the traffic and transport-related activities observed on urban streets are part of that street's Link function. There are also some types of Place-related activities that are directly connected with traffic and transport, and occur within and adjacent to the carriageway. For example: loading/unloading; parking by employees, customers, residents, etc.; and buses, trams and taxis stopping to drop off/pick up passengers.

Recognition of the entire spectrum of Link and Place activities results in a more comprehensive and complete consideration of street functions, than would traditionally be addressed by a combination of a conventional Road Plan and a Land Use Plan, as illustrated below.



2.2 Street Classification Matrix

Conventionally, the urban road network is classified along one dimension, primarily reflecting the importance of its traffic movement function. The twin concepts of ‘Link’ and ‘Place’ provide the basis for developing a more comprehensive two-dimensional street classification, in which every kind of urban street is represented by a cell within that matrix. An equal number of Link and Place categories are first defined, which reflect the relative importance of each function. For example, the Link categories may make use of an existing road classification system (e.g. from principal routes down to local access roads); while Place categories may reflect the size of the catchment area for activities associated with that street (e.g. for shops and services) or the cultural or heritage significance of the buildings fronting that section of street.

This approach can be used to generate the kind of street classification matrix shown in Figure 1. Here a ‘5 x 5’ matrix has categories ‘I to V’ for Link and ‘A to E’ for Place, with a total of 25 cells covering a wide range of street types, from major arterials down to residential cul-de-sacs. For a large metropolitan area, a ‘6 x 6’ matrix may be more appropriate (as trialled in London), while the street network in smaller urban areas may be adequately reflected in a ‘4 x 4’ matrix. These two dimensions are independent, covering both extreme cases of urban motorways (i.e. I-E) and pedestrianised regional shopping areas (V-A), as well as streets catering for both significant Link and Place activities (e.g. a traditional main street would be classified as II-C). In practice, additional factors are taken into account when classifying streets, such as the predominant type of land use as a component of the Place description, and any modal priorities (e.g. part of national cycle network) on the Link side.

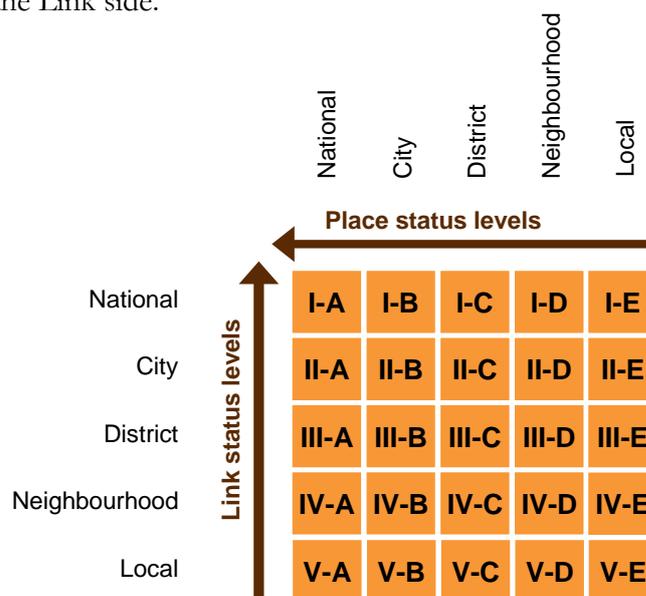


Figure 1: A five-by-five Link/Place street classification matrix
Source: Extracted from Jones *et al* (2007a), Example 6.

Using this matrix, an urban street network can be divided into discrete segments according to their varying Link/Place category levels – which may vary by time of day, season, etc.

2.3 Street Design: the ‘Trade-off Triangle’

These broad Link and Place functional requirements can be broken down into a more detailed set of street activity requirements, which can in turn be translated into space (or capacity) requirements for the provision of particular street design elements. Each relevant street activity

will have a ‘minimum’ and ‘desirable’ level of space provision, often influenced by the importance category of the street segment. For example, the minimum width of a bus lane on a bus priority route in the UK is 3 metres, but the desirable width may be 4 metres or more. Similarly, the minimum level of provision for seating in a shopping street may be 0, while the desirable level may be 6 seats. While at desirable levels of provision each activity would normally have its own dedicated space, at minimum levels of provision it may sometimes be possible to share space, either by mixing activities (e.g. bus + cycle lane), or by allocating different time slots (e.g. part of carriageway used as a peak period bus lane and off-peak loading bays).

By summing the space requirements for the relevant Link and Place activities, it is possible to identify total Link and total Place requirements, in the street cross section, at minimum and desirable levels of provision. Since cross sectional space is physically constrained, this results in the need to trade-off provision for Link and for Place activities, as illustrated in Figure 2.

The triangle shows the envelope of opportunities for allocating the available cross sectional space between building frontages. At one extreme, the full width could be allocated to Link activities, on the Y axis (e.g. an urban motorway); at the other extreme it could all be allocated to Place activities, on the X axis (e.g. an urban square). Usually, however, a proportion of space is allocated to both functions, which has to be contained within the grey line.

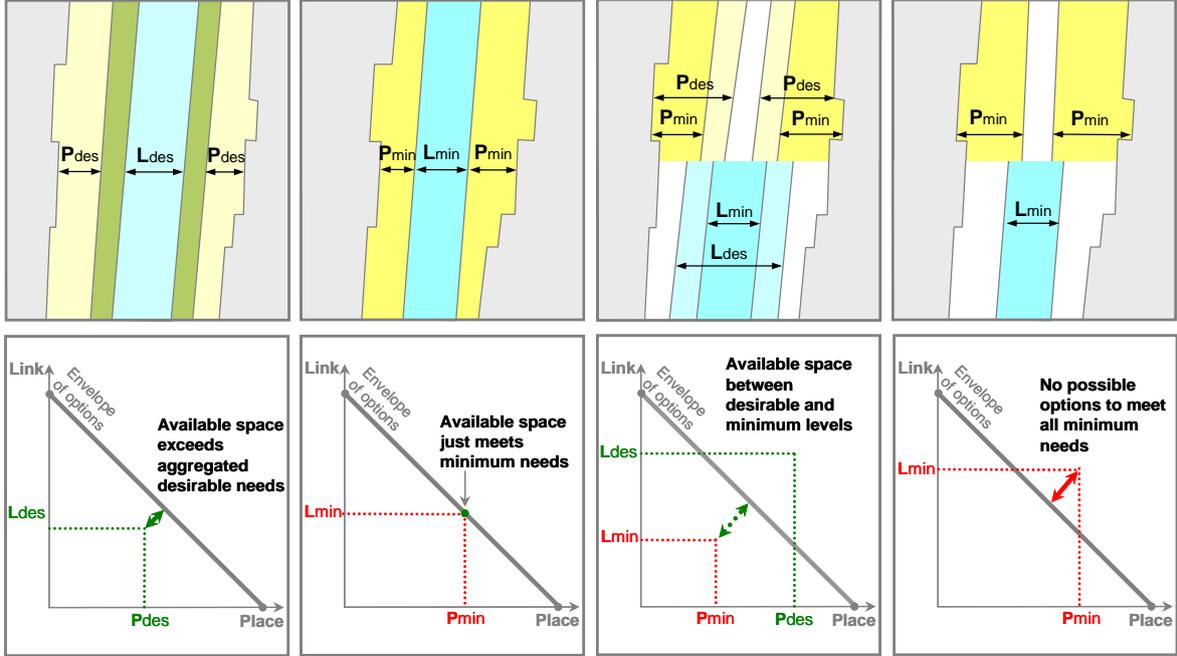


Figure 2: Allocating Link and Place space within the constraint of the ‘trade-off triangle’. Source: Jones *et al* (2007a), Example 60.

Figure 2 illustrates four possible outcomes of matching requirements against the available space, at minimum and desirable levels of provision. In Case 1, there is more than enough space to meet desirable levels of Link and Place provision; in Case 2 there is just enough space to meet minimum levels of provision, and in Case 4 there is insufficient space to accommodate even the minimum levels of provision. Here the best solution is likely to be to downgrade either the Link or Place function of that street segment – as was done in the case of Trafalgar Square in London, where the Link status was downgraded (and traffic capacity reduced by 40%), in order to provide sufficient space to re-design the space as a ‘world square’. Case 3 is likely to be the most common, where the available space is more than sufficient to meet the minimum Link/Place requirements, but insufficient to accommodate desirable levels of provision. Here there is scope

for discretion, with the relative Link and Place status levels on that segment being used as a guide to influence the balance of space allocation.

3. PRACTICAL APPLICATIONS

Four applications of Link and Place are illustrated in this part of the paper, covering: the Link/Place classification of a London Borough's street network, performance shortfalls and prioritisation, stakeholder engagement and specification of standards in a PFI highway contract.

3.1 Link/Place Categorisation of a street network

Figure 3 illustrates the Link/Place categorisation of a part of the London Borough of Hounslow street network, using five Link categories, 1 to 5 (represented by the inner colour), and five Place categories, A to E (shown as the surrounding colour). One colour is used to represent a given Link/Place status level. This representation gives a quick visual sense of the varying Link/Place functions of streets across the network, and was developed as part of the Private Finance Initiative (PFI) highway maintenance scheme outlined in section 3.4

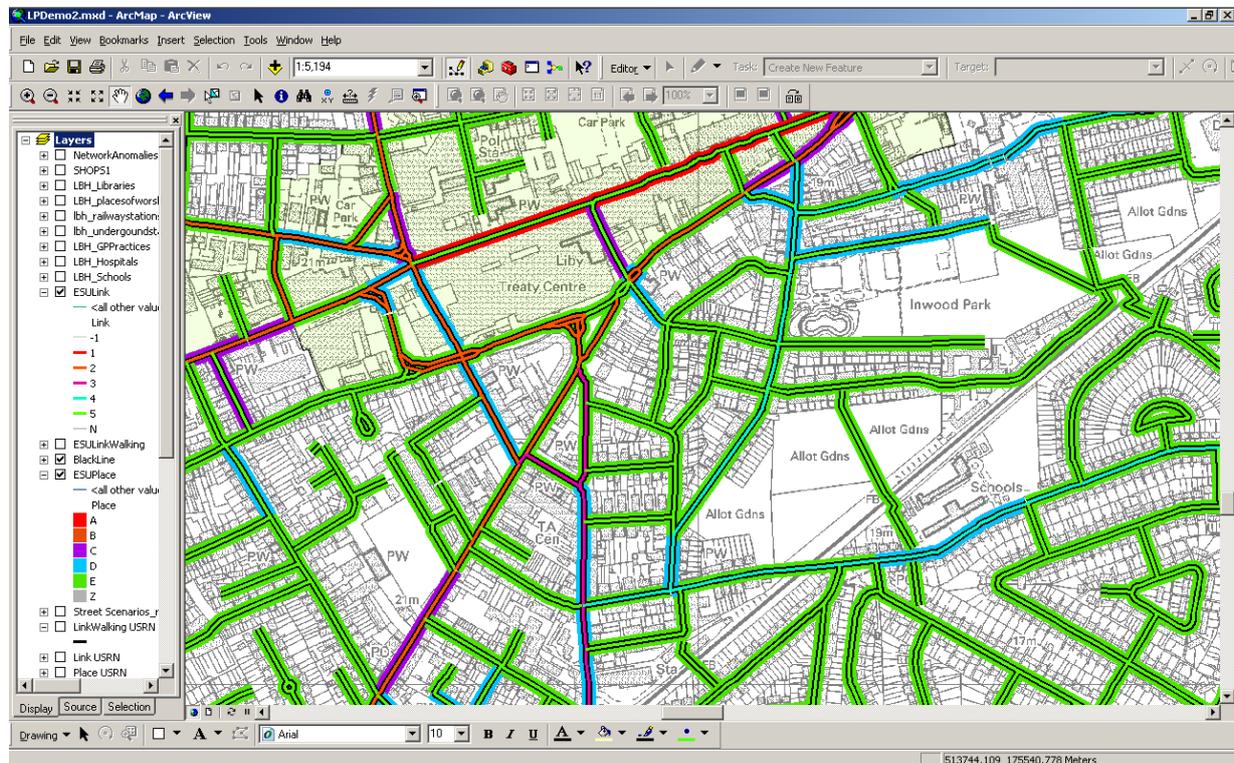


Figure 3: Link/Place categorisation of part of the London Borough of Hounslow street network, using a five-level Link/Place matrix. Source: Steve Williams, Chris Britton Consultancy Ltd.

While the Link classification of each street is largely based on an existing Borough road hierarchy, it has been boosted in some places to take account of streets with heavy bus flows, or where the Link function of the street has increased since it was officially designated (e.g. due to increased traffic levels on roads around Heathrow Airport). The local authority did not have an agreed Place classification for its street network, so this had to be developed from scratch. It was developed at workshops involving representatives from the planning, development control, economic development, engineering and heritage departments of the Council; a set of principles was agreed (e.g. a street segment with a junior school has a 'neighbourhood' status level) and applied across the network, and the resulting maps were presented to the group for comment.

3.2 Identifying street performance shortfalls in London

A four-stage approach is recommended for identifying performance shortfalls and prioritising areas for improvement:

1. Identifying set of Link and Place performance indicators, reflecting the potential range of street users and street problems; these include indicators of transport performance, economic vitality and environmental quality.
2. A ‘degree of problem’ is identified for each indicator (i.e. how far away is its performance from a minimum acceptable level on each segment?) This can be assessed on an agreed rating scale, such as from 0 (no problem) to 6 (severe problem).
3. Which function has the higher priority? Here the Link/Place matrix is used to establish relative weightings based on the Link/Place categories for that segment.
4. Application of a policy weighting to some indicators (e.g. higher weighting for the needs of disability groups).

Figure 4 illustrates the outcome of a process of systematically prioritising street user needs on fourteen contiguous segments along a main corridor in London. Here sets of indicators were developed to cover eleven Link and Place activities. The figure shows the weighted ‘degree of problem’ scores for each activity (developed by applying the steps outlined above); these are then summed (in the columns) to give an overall score for each street segment. We can see that Segment 2 has the highest cumulative ‘degree of problem’ scores, with the largest shortfalls being recorded for ‘buses’, ‘road safety’ and ‘environment’, while Segment 14 has the lowest scores.

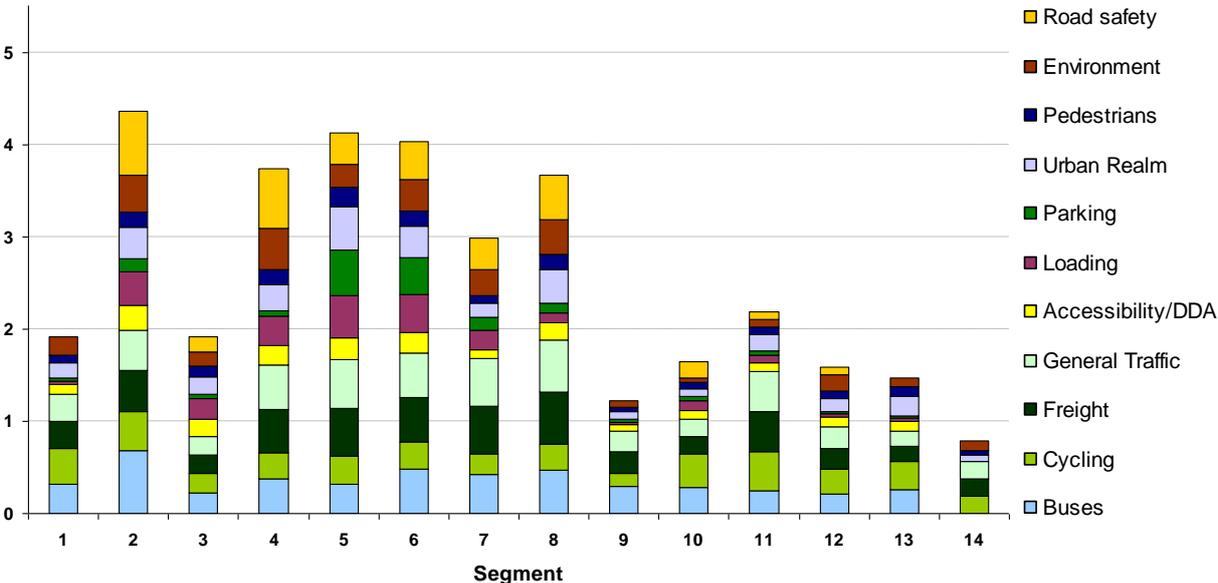


Figure 4: Cumulative shortfall scores as a basis for prioritising attention
Source: Transport for London

When this approach is consistently applied across an entire urban street network, then it is possible to build up a comprehensive picture of priority segments and problems for that urban area. Figure 5 illustrates how this approach has been applied experimentally across the full TLRN street network in London. The colour coding reflects the cumulative ‘degree of problem’ on each of the street segments; in effect, the colours reflect categories grouping the different column heights in Figure 4. Here seven categories have been defined, with approximately equal numbers of segments in each category. While the more problematic segments tend to be concentrated in Central and Inner London, they are to be found on all parts of the network.

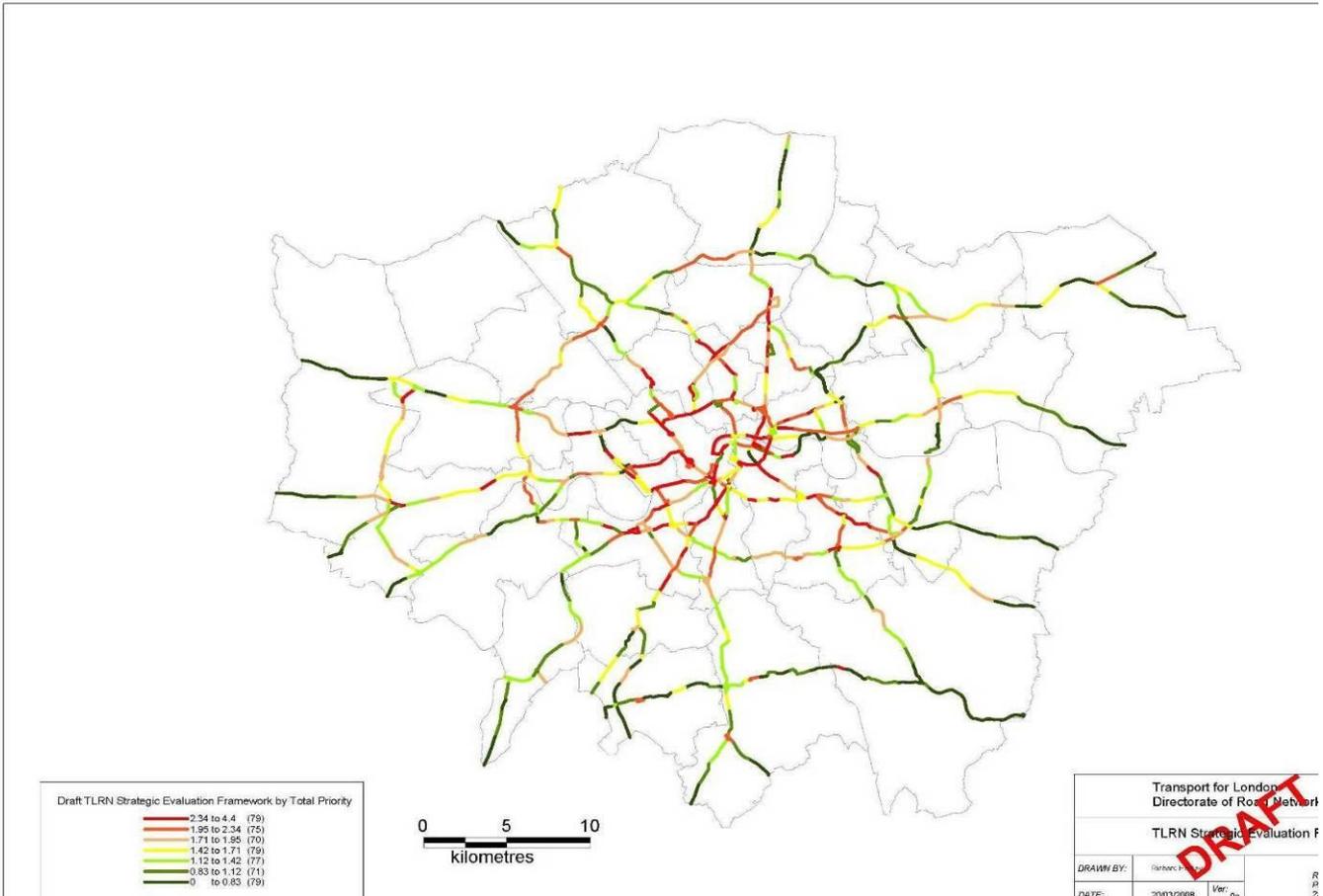


Figure 5: Experimental assessment of the TLRN network priorities, based on the Link/Place performance measurement approach. Source: Transport for London

3.3 Stakeholder engagement

One of the main benefits of adopting the Link/Place approach that has become evident during local applications has been the strong intuitive appeal that it has for a wide range of stakeholders. Both professional stakeholders and the public can relate to this way of viewing urban streets, and all groups can see how their particular activities and needs are recognised and taken into account as part of the planning and design process.

One type of application has involved the development of an interactive street design workshop exercise, which has proved successful in finding acceptable design solutions on more contentious parts of the urban street network, by directly involving local stakeholders in developing design options (Jones and Thoreau, 2007). The exercise involves a combination of physical and computer-based design aids and has three stages. It was developed in conjunction with the Engineering and Physical Sciences Research Council funded ‘DISTILLATE’ project (May, 2009).

First, participants are given a briefing about the study area (e.g. an arterial high street), including the current conditions, intended functions and the full range of Link and Place problems experienced; and they are invited to discuss how they would like to see the area improved in the future. Agreement is then reached on a set of minimum design requirements – although, where possible, the precise location of that provision is left for the design teams to consider. These reflect regulatory requirements and local policy priorities, and typically include: minimum lane widths for through traffic, the number of bus stops and pedestrian crossings, and the provision of disabled parking places.

Next, participants are divided into design groups, where they are provided with a large scale plan of the street segment and the adjoining area, at a scale of 1:250, and a series of coloured acetates and blocks depicting a range of different Link and Place design features that could be provided along the street (e.g. parking bays, bus lanes, seating), also at 1:250 scale. The scale plans show only the minimum necessary constraints (e.g. protected kerb lines at junctions), as shown below. Each design group is asked to develop street layouts that satisfy the minimum requirements that were agreed at the start of the session, but are free to use the remaining space to address participants' aspirations for the area. In addition to deciding on the number of street design elements of different types to be provided, each group has considerable freedom to decide where design elements are located along the main street – or in adjoining side roads.



Finally, each design option is entered into a GIS-based computer program, developed in conjunction with Buchanan Computing, which displays the street layouts that the groups have developed, both in the coloured block format in which they were developed, and in the corresponding regulatory line marking format. This is presented on a large screen for discussion at a subsequent stakeholder meeting, and can be edited on line. The outcome is then refined by the traffic engineers and put forward for formal public consultation.

Two trials of the method have been carried out in the English West Midlands; one of the design groups from the first of the workshops is shown below.



Both trials have proved highly successful, with the designs that have been developed through stakeholder engagement receiving high levels of public support in formal consultation exercises. They have subsequently been introduced with minimum objection – in situations where previous proposals to reallocate street space had encountered strong local opposition. In both areas the local councillors and professionals involved have been very pleased with the outcome, and one authority is now using the method in areas where contentious situations are encountered.

3.4 Using Link/Place in the specification of a PFI highway maintenance project

The London Borough of Hounslow is to receive nearly £200m of government PFI (Public Finance Initiative) credits in order to bring its highway network up to an acceptable performance standard, based on deficiencies identified during the development of its Highway Asset Management Plan (HAMP).

Figure 6 summarises the proposed structure for the operation of the PFI maintenance contract, which uses information from the HAMP as the basis for defining the set of assets to be covered by the PFI. This figure illustrates various ways in which the development of the Link and Place street classification for Hounslow (see Figure 3) is assisting in this process. In particular, by:

- Determining appropriate Levels of Service (performance standards) for each part of the Borough street network, covering both the amount and quality of provision; in general, the Link classification determines the carriageway standards and the Place classification determines the footway maintenance standards.
- Providing the basis for determining the detailed output specification and targets for each piece of infrastructure for each type of street; a design guide is currently in preparation, which will indicate what types of materials and finishing, and street furniture should be provided on each part of the network.
- Contributing to decisions as to where to carry out a Whole Street Environment enhancement; in which all the assets on sections of street with a high Place status are treated where more than a certain proportion is found to be below standard.

4. CONCLUSIONS

The Link and Place approach provides a more comprehensive way of addressing the transport performance, economic, social and environmental problems facing urban streets, which is more appropriate to the current complex, multi-objective policy climate. It is not vehicle-dominated and explicitly recognises and takes into account the wide range of Place-related functions that streets perform. At the same time, it is not anti-vehicle, since it safeguards the needs of Link users and those requiring parking and loading space; it recognises that the Link requirements have to be balanced against a wide range of other needs that have equal legitimacy. What this means in practice is that optimal design solutions may vary along a corridor, even if the Link status remains the same throughout, due to the varying importance and nature of Place user needs, and differences in the available street width, from one segment to the next.

Link and Place provides a common language for engaging in a closer dialogue with a wide range of professions with specific interests in the various aspects of streets, their development and their operation, as indicated in Figure 7. It has also proved very successful and an easy-to-understand basis for engaging with the public and business communities. Furthermore, the process of getting different departments within a local authority to agree on a Link/Place classification, and on the assignment of each street segment to a specific cell within the resulting matrix, has proved to be very beneficial in encouraging better cross-departmental and cross-agency communication and in ensuring consistency of treatment by the various agents.

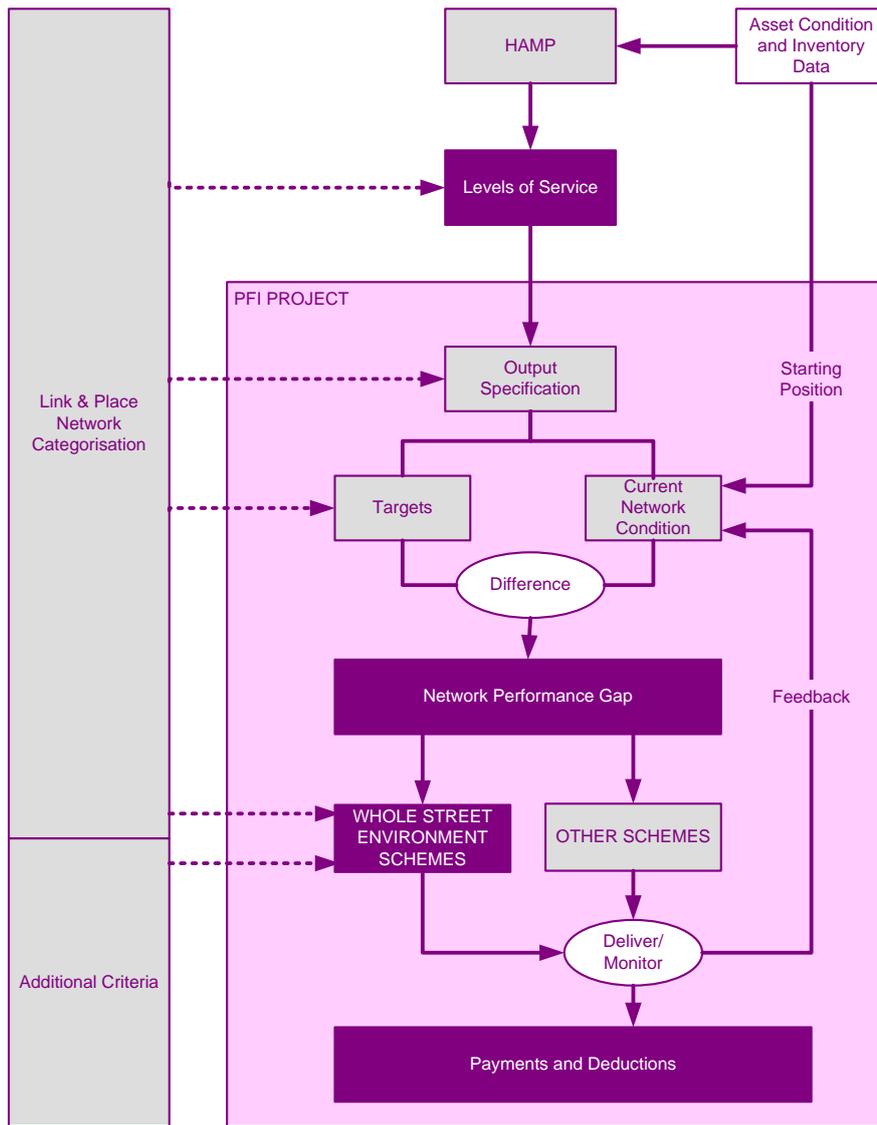


Figure 6: Role of Link and Place in the specification of the London Borough of Hounslow's PFI Highway Maintenance Contract. Source: Chris Briton Consultancy

	Link	Place
Planning	Transport planners	Urban planners
Design	Traffic engineers	Urban designers

Figure 7: How Link/Place planning and design functions relate to different professional interests

In particular, once agreement has been reached by professionals within an authority on the Link and Place functions of each street segment, then there is a shared basis for dialogue between professionals, and an understanding of the principles which each agency will be applying to its operations on that particular street segment.

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