



Valuing Urban Realm – Business Cases for Public Spaces

Summary Report

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DRND URBAN ENVIRONMENT



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1. INTRODUCTION

1.1 Business Cases for Urban Realm Improvements

To obtain funding for improvements, urban realm schemes require robust business cases that demonstrate the benefits of investment outweigh the costs. Benefits can be assessed both qualitatively and quantitatively in order to make the case for improvements.

There is a strong qualitative case for investment in urban realm improvements. As part of a mix of policies, urban realm improvements can encourage walking, improve health outcomes, benefit the environment, reduce congestion, enhance social cohesion and assist local economies. However, in order to best demonstrate the case for funding, it is important that benefits are also assessed quantitatively.

TfL is undertaking further research in this area within a multi-modal study intended to produce a consistent approach to scheme appraisal across all modes. Those results should be available by the end of 2007 but these can be applied in the interim.

1.2 Quantitative Assessment of Benefits

Traditionally, the benefits assessed for urban realm businesses cases are time savings and safety benefits. Time savings are particularly important for schemes that relieve crowding or re-phase pedestrian signals. Safety benefits are generated where accidents are reduced, including pedestrianisation and part-pedestrianisation schemes. However, many schemes have impacts that are not covered by quantitative measurement of time savings and safety benefits. In particular, this approach underestimates the benefits of schemes that improve ambience.

Ambience is assessed quantitatively in TfL business cases. It is a measure of the improvement to the quality of environment that users experience. In appraisals of rail, bus, station and LUL improvements, ambience is quantified and valued. However, in the past, few urban realm schemes included valuation of ambience benefits in their business case. Despite the fact that a variety of urban realm schemes focus on improving the experience for users, benefits have not been included. This puts the schemes at a disadvantage because:

- It is difficult to prioritise between urban realm schemes. As a result, obtaining funding can be more difficult as there is a lack of quantitative evidence to suggest the scheme is the best option among alternatives.
- Other modes have a wider set of benefits included in evaluations. Since other modes demonstrate ambience improvements, they may be better placed to receive funding.

The reason why ambience benefits have not been included in business cases for urban realm improvements is that neither the methodology nor the data was available. This report shows the findings of recent research conducted for TfL by Accent MR and Colin Buchanan. It provides the data and methodology needed to include ambience benefits in business cases for a wide variety of schemes, including the World Squares Programme, Network Management Plans, BSP Walking, BSP Area-based Schemes and a variety of public space and highway improvements that affect pedestrians.

The report has two further chapters. The following section outlines the methodology for valuing ambience improvements. The final section provides a series of worked examples to demonstrate how this can be carried out.

2. METHOD FOR VALUING IMPROVEMENTS

2.1 Outline

Measuring ambience benefits for businesses cases is about quantifying and valuing the extent of the change for users. That requires an understanding of both the ‘start’ and ‘end’ condition as well as the nature of use. This section explains the data required to measure ambience benefits, the values that are applied and the way in which that is evaluated.

2.2 Data

The data requirements are:

- A measure of the condition of urban realm
- User numbers
- Distance / time

These are explained below.

Measuring the condition of urban realm

In order to assess the improvement to the public realm, values have been developed linked to an evaluation framework that provides quantitative assessment of the start and end condition of infrastructure. This ensures that values:

- Reflect how different aspects of a scheme interact and support each other
- Cover a wide range of scheme types
- Offer consistency in measuring the extent of improvements

The Pedestrian Environment Review System 2.0 (PERS) provides this framework. PERS is an audit tool developed by TRL and which is already in use at TfL to assess the walking environment. PERS can assess infrastructure provision of links and public spaces by placing scores on a number of established characteristics. In a PERS audit, a scorecard, detailed instruction manual and a series of prompts are used to score these characteristics on a 7 point scale between -3 and +3. An example scorecard used for assessing links is shown in Figure 1.

Figure 1: Example PERS Scorecard

Pedestrian Link Assessment Form						
Location:						
Link Name:				Link Ref:		
Auditor:				Date:		Time:
Parameter	Checklist Factors	Checklist			Overall Score -3 to +3	Comments
		+ve	+/-	-ve		
Effective width	Width for pedestrian flow				+	
	Wheelchair use					
	All sections acceptable width					
	Traffic separation				-	
	Width for obstructions					
	Pedestrian congestion					
Dropped kerbs	Location and alignment				+	
	Capacity/width					
	Level dropped/flush					
	Gradient of drop				-	
	Consistency					
	Frequency					
Gradient	Severity				+	
	Steps/ramps					
	Rest points					
	Undulations				-	
	Handrails					
	Regular crossfalls					
Obstructions	Type and frequency				+	
	Location/alignment					
	Overhead obstructions					
	Tapering/opaque obstructions				-	
	Tactile warnings					
Sightline reduction						
Permeability	Frequency of crossing points				+	
	Parked cars/physical barriers					
	Traffic flow					
	Dropped kerbs				-	
	Pedestrian barriers					
	Sightlines					
Legibility	Signage provision				+	
	Signage clarity					
	Information boards					
	Distance on signs				-	
	Sightlines					
	Use built form to navigate, orientation					
Lighting	Intensity/frequency				+	
	Definition/colour					
	Maintenance					
	Context suitability and key features				-	
	After-dark					
	Obstructions					
OTHER NOTES						

To determine values for ambience benefits, a PERS audit (either of links or public spaces) should be conducted on-site to assess the baseline condition. Then the future condition should be assessed with PERS based on scheme design.

User numbers

In most instances, user numbers can be determined through a simple user count. Since user numbers need to be annualised based on the count, it may be important to recognise seasonal variation as well as weekday/weekend patterns. For small schemes, an annualised count based on a day of count data may be sufficient. For larger schemes, a more detailed approach based on modelling and/or the interaction of users with infrastructure may be important.

In each case, it is important to recognise that user numbers may change. Schemes that alter urban realm may attract new users or lead to a redistribution of existing ones. Where it can be shown that users will be attracted to the improved facilities, the future users should be included in the evaluation.

Distance / time

Ambience benefits accrue according to the amount of time that users spend in the improved environment. Where they are passing directly through, distance can be used to determine average time. Where dwell time is increased as a result of improvements to the urban realm (for example in Trafalgar Square), the rule of half should be applied to the calculation of ambience benefits.

2.3 Values

Values for improvements are measured in pence per minute of user time. They are calculated using the PERS scores in the tables below (using either the table for links or public spaces as appropriate).¹

Table 1: Ambience benefits for improvements to links (pence per person per minute)²

Characteristic in PERS	TfL Design Principle	-3	-2	-1	0	1	2	3
Effective width	Create convenient connections	0.000	0.005	0.010	0.014	0.019	0.024	0.029
Dropped kerbs/ gradient	Create convenient connections / Get the detail right	0.000	0.012	0.024	0.036	0.039	0.042	0.045
Obstructions	Create convenient connections	0.000	0.005	0.010	0.016	0.021	0.026	0.031
Permeability	Create clear and easy to understand routes and spaces	0.000	0.032	0.064	0.096	0.108	0.120	0.133
Legibility	Create clear and easy to understand routes and spaces	0.000	0.009	0.019	0.028	0.038	0.047	0.056
Lighting	Get the detail right	0.000	0.018	0.036	0.054	0.064	0.074	0.084
Personal security	Create active and engaging spaces	0.000	0.029	0.057	0.086	0.109	0.130	0.152
Surface quality	Get the detail right	0.000	0.025	0.051	0.076	0.102	0.107	0.112
User Conflict	Create streets and spaces for everyone	0.000	0.027	0.055	0.082	0.099	0.115	0.132
Quality of environment	Get the detail right	0.000	0.060	0.120	0.180	0.215	0.246	0.277
Maintenance	Get the detail right	0.000	0.021	0.042	0.064	0.076	0.089	0.102

¹ For some simple schemes, a PERS audit may not be necessary. Given the interaction between measures and the advantage of including the start and end conditions, there are not likely to be many such schemes. However, if it is decided that PERS is not used, the table of relevant values can be found in the accompanying technical report.

² The -3 to +3 scale from PERS could be adjusted to the 0 to +6 scale more normally used within BCDM without much difficulty

Table 2: Ambience benefits for improvements to public spaces (pence per person per minute)

Characteristic in PERS	TfL Design Principle	-3	-2	-1	0	1	2	3
Moving in the space	Create convenient connections	0.000	0.045	0.091	0.136	0.152	0.168	0.184
Interpreting the space	Create clear and easy to understand routes and spaces	0.000	0.010	0.020	0.030	0.040	0.050	0.061
Personal safety	Create streets and spaces for everyone / Create active and engaging spaces	0.000	0.043	0.086	0.129	0.172	0.212	0.252
Feeling comfortable	Create streets and spaces for everyone	0.000	0.024	0.048	0.072	0.096	0.120	0.144
Sense of place	Create active and engaging space / Get the detail right	0.000	0.013	0.027	0.040	0.049	0.054	0.058
Opportunity for activity	Create active and engaging spaces	0.000	0.074	0.148	0.223	0.252	0.281	0.311

2.4 Evaluation

The ambience value is the difference between the start and end condition values for each PERS characteristic affected. For instance, a raised table might improve the PERS score for ‘dropped kerbs / gradients’ from -1 to +2. The difference between these is about 0.02 pence per minute for each user. The values for all characteristics are totalled and then multiplied by the number of users and the amount of time each spends. This gives the annual ambience benefit.

Ambience is just one part of an evaluation. Time savings, safety and any other benefits that can be quantified should also be assessed at this stage. These are then discounted over the life of the scheme and then compared with costs to determine the benefit-cost ratio.

3. VALUING URBAN REALM: EXAMPLE SCHEMES – WORKING PAPER

3.1 Introduction

This section describes how values obtained from the willingness to pay research have been applied to measure the ambience benefits of three schemes:

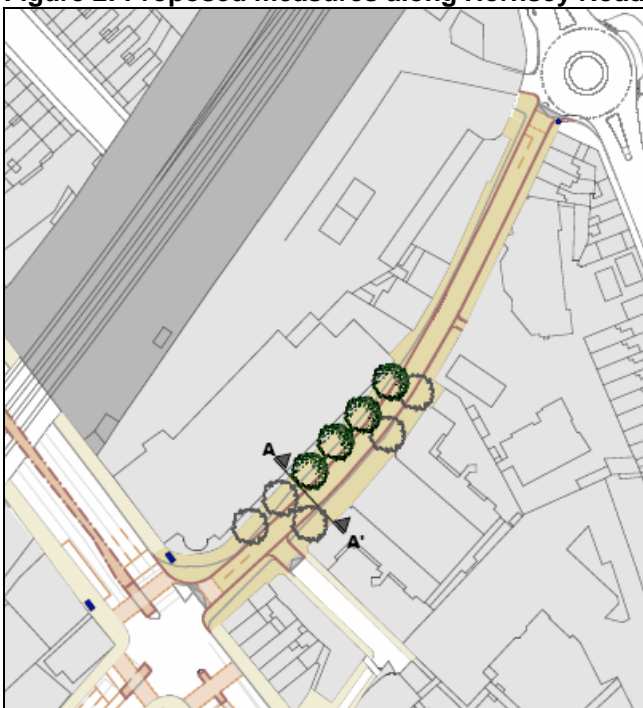
- Hornsey Road Shared Space (LB Islington)
- Castle Street Pedestrianisation (RB Kingston)
- Yerbury Road Home Zone (LB Islington).

The schemes are at different stages of development and data has therefore been taken from a variety of sources, including estimation. The inclusion of these examples is intended to provide guidance and the results are illustrative only. For the purpose of background information, these schemes are briefly summarised below:

Hornsey Road Shared Space

This area would benefit from greater pedestrian priority, especially as it is one of the main routes to the new Emirates Stadium with large match-day flows. Narrowing the carriageway/widening the footway and planting of new trees will form Phase 1 in the creation of a seamless ‘at grade’ surface on Hornsey Road between Holloway Road and the Benwell Road roundabout.

Figure 2: Proposed measures along Hornsey Road (source: Urban Initiatives)



Castle Street Pedestrianisation

Castle Street lies on the main pedestrian link between Kingston Station and Kingston Town Centre. Daily flows can exceed 15,000 persons. The street had been closed to

through traffic for some time, but it continued to suffer from narrow footways with parking movements, motorbikes and delivery vehicles all restricting pedestrian movement. As a result, RB Kingston received funding for this scheme in 2005/6. Measures include closing the street to all motorised vehicles (except for access to dedicated loading bays) with the road space given over to pedestrians and cyclists with improved paving, lighting, planting and seating areas.

Figure 3: Castle Street (before pedestrianisation)



Yerbury Road Home Zone

Yerbury Road has both a school and nursery. Other community sport facilities can be found in the adjacent park. There is some residential and school-related traffic and a Home Zone scheme has been proposed for this part of the street. The scheme includes a shared space road treatment and a mixture of angled and parallel parking to reduce traffic speeds. Informal public spaces have also been suggested as part of the proposal, including seating areas and planting.

Figure 4: Yerbury Road Home Zone (Source: Colin Buchanan)



3.2 Method

For all three projects, the calculation of ambience benefits depends on:

- Measuring the extent of the improvement
- Time spent moving through the improved space
- User numbers.

This is demonstrated below.

Measuring the extent of improvements

For each of the three sites, a PERS audit was carried out to assess the baseline condition. Based on the scheme design, a PERS score was then calculated for the post-implementation environment. These are shown for each of the schemes in Table 3 (where no scores are shown, no change is anticipated):

Table 3: Baseline and post-implementation PERS audits

Characteristic in PERS	Hornsey Road		Castle Street		Yerbury Road	
	Before	After	Before	After	Before	After
Effective width	-1	3	-3	3	-1	2
Dropped kerbs / gradient	1	3	0	3	-1	3
Obstructions	0	2	-1	3		
Permeability	0	2	-1	3	0	2
Legibility	1	3	-1	3	-1	3
Lighting			-1	2		
Personal security			1	2		
Surface quality	0	3	-1	3	0	3
User conflict	-1	3	-3	3	-1	3
Quality of environment	1	3	-2	3	-3	3
Maintenance						

A value is placed on the difference between scores using the figures shown in Table 1 in the previous chapter. For instance, on Hornsey Road, the change in user conflict is measured as an improvement from a PERS score of “-1” to a score of “3”. The difference in values for user conflict is 0.08 pence per person per minute (the score for 3 and -1 are 0.13 and 0.05 respectively – subtracting one from the other gives 0.08). Table 4 shows the values obtained as a result of the improvements for each of the PERS characteristics at each site.

Table 4: Values per person from improvements (pence per min)

Characteristic in PERS	Hornsey Road	Castle Street	Yerbury Road
Effective width	0.02	0.03	0.01
Dropped kerbs/gradient	0.01	0.01	0.02
Obstructions	0.01	0.02	
Permeability	0.02	0.07	0.02
Legibility	0.02	0.04	0.04
Lighting	0.00	0.04	
Personal security	0.00	0.02	
Surface quality	0.04	0.06	0.04
User conflict	0.08	0.13	0.08
Quality of environment	0.06	0.22	0.27
Maintenance	0.00		
TOTAL	0.26	0.68	0.48

3.3 Evaluation

The evaluation is completed by incorporating time spent moving through the improved space user numbers. Time spent per person has been calculated for each of the improvements using the distance covered divided by average walking speed. User numbers have been calculated based on manual user counts or an estimate of user numbers. Time spent and user numbers are shown for each of the projects in Table 5.

Table 5: Time and user numbers by scheme

Scheme	Time (mins per person)	User Numbers (per annum)
Hornsey Road	2.4	3,175,000
Castle Street	1.0	6,570,000
Yerbury Road	1.5	255,000

Multiplying value per person for each improvement by the number of people passing the improvement and the amount of time spent gives a measure of the ambience benefit. The annual benefit of each scheme is shown in Table 6.

Table 6: Annual benefit by scheme (£ 000s)

Scheme	PERS Framework	Derivation
Hornsey Road	20	0.26 * 2.4 * 3,175,000/100
Castle Street	45	0.68 * 1 * 6,570,000/100
Yerbury Road	2	0.48 * 1.5 * 255,000/100

3.4 Results

The ambience benefit is just one of the elements that can be included in TfL business cases. A number of other benefits may result from each of these schemes, including time savings (Castle Street), congestion benefits (Hornsey Road) and safety improvements (Yerbury Road). The calculation of time savings, congestion and safety benefits all use standard methods. In the benefit-cost ratios below, none of those benefits have been included.

Each may also have other benefits that are not valued in TfL business cases, including accessibility and local economy benefits. With all of these excluded, the results are only a partial measure of benefits. Nonetheless, this can be discounted to produce a present value and then compared with cost in order to provide a benefit-cost ratio for the measures assessed here. In the absence of data on maintenance and renewals, a discount period of 15 years with a discount rate of 3.5% has been assumed. This produces the evaluation shown in Table 7.

Table 7: Economic evaluation results

Scheme	Present Value Benefits (£ 000)	Present Value Cost (£000)	Partial benefit-cost ratio
Hornsey Road	216	450	0.5
Castle Street	467	250	1.9
Yerbury Road	21	147	0.2

The results show that ambience benefits can have a significant impact on scheme evaluation. Based on ambience alone, the benefit-cost ratio for Castle Street outweighs scheme costs. The other schemes have ambience benefits that may significantly alter the scheme appraisal but do not, on their own, demonstrate returns that are greater than costs.

