

Identifying and Prioritising Walking Investment through the PERS audit tool

Walk21 Conference 2009 – New York

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ABSTRACT

In the current economic climate, justifying and prioritising walking investment is especially important as walking competes with other transport modes for limited funding. Walking audit tools allow for evaluation and prioritisation of walking improvements through justifiable methodology. One such example, PERS (Pedestrian Environment Review System), is maturing and changing in response to demand and now offers additional functionality and usefulness that supports the case for continued walking investment in London.

This paper explains how a new version of PERS (v3) has been developed by Transport for London (TfL) and TRL to provide more usable and defined outputs that better support prioritisation and decision making in walking investment.

The improvements within PERS v3 are two-fold firstly: focused 'quick-win' work-lists and secondly; GIS data that can be imported and opened within other GIS systems.

'Quick-win' improvements revolve around easily implemented infrastructure or repair and maintenance of existing walking facilities. Such improvements can be implemented in short time-frames at low cost to greatly enhance the walking experience of pedestrians. The v3 'quick wins' outputs direct maintenance recommendations for immediate use by highway repair teams at TfL.

Complementary to this is the new ability to compare, analyse and view audited areas. PERS v3 audit data is now outputted in GIS format that can be imported and opened within any industry standard compatible GIS system to quickly visualise areas audited, findings and walking environment performance. The GIS functionality allows TfL to monitor and prioritise walking London's audited walking environments and share this data with other teams and organisations.

A case study of how TfL have used PERS v3 in prioritising a walking route for the 2012 London Olympics is outlined to show how PERS can be used to assess, prioritise and invest in improving walking provision in London.

Biographies

Spencer Clark

Spencer manages the Transport for London (TfL) Borough Walking programme which is responsible for delivering over 140 walking schemes annually across London, mostly involving new walking infrastructure. Measuring walking, the indicators and techniques involved are a particular interest and he is involved in a number of projects in this area. Spencer also leads on walking audit tools at TfL and has widespread experience of the Pedestrian Environment Review System (PERS) and other audit methodologies. He has worked at TfL for 5 years within the Walking & Accessibility team and has a first degree in Geography and a Masters in Built Environment Studies.

Adam Davies

Adam works in the Centre for Sustainability at TRL, looking particularly at walkability, sustainable transport, accessibility, inequalities and environmental justice. Adam is the lead project manager for a large scale pedestrian auditing programme for TfL, to date over 170km of street network has been audited using PERS. In addition Adam is currently leading TRLs contribution to a 2-year research project into Shared Space and Shared Use for the UK Department for Transport. Adam gained his first degree in Human Geography and recently completed a Masters in Urban Sociology at Goldsmiths, University of London.

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1. Background and Context

In the current economic climate, justifying and prioritising walking investment is especially important as walking competes with other transport modes for limited funding. This is despite the fact that walking access can often be improved through low-cost interventions and getting more people walking is very desirable as it:

- offers the potential to reduce congestion;
- provides social and economic benefits;
- improves health and;
- tackles climate change concerns.

Walking audit tools allow for evaluation and prioritisation of walking improvements through justifiable methodology. One such example, Pedestrian Environment Review System (PERS), is maturing and changing in response to demand and now offers additional functionality and usefulness that supports the case for continued walking investment in London.

This paper will explain how a new version of PERS (v3) has been developed to provide more usable and defined outputs that better support prioritisation and decision making in walking investment. These improvements will be explained in the context of London's ongoing PERS programme and how the data outputs are being used to guide real walking environment enhancements.

2. What is PERS?

TRL and TfL co-developed PERS¹ which provides a holistic and cost effective method for reviewing and rating all types of pedestrian space and identifying 'quality gaps' in the walking environment.

A PERS walking audit consists of an on-street review of the walking environment broken down into 6 review frameworks which apply to specific components of the pedestrian environment, namely:

- Links (footways, subways and footbridges)
- Crossings (formal and informal)
- Routes (between key destinations)
- Public Transport Waiting Areas (bus stops, tram stops, taxi ranks)
- Public Spaces (squares and parks)
- Interchange Spaces (spaces between different modes)

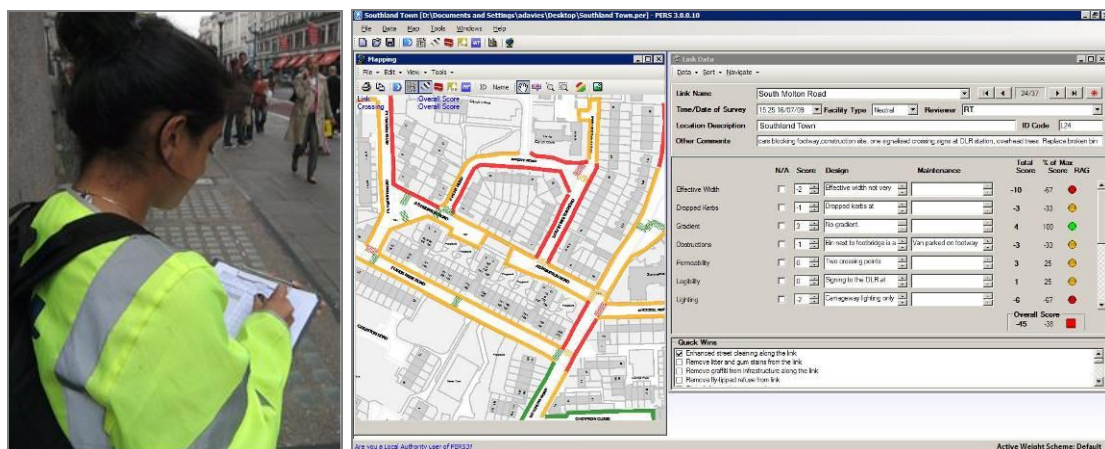
¹ TRL developed PERS v1 in 2001 with the London Borough of Bromley and further expanded it into PERS v2 and v3 for Transport for London in 2004 and 2009.

These components are further broken down into parameters that examine both infrastructure and interaction in the pedestrian environment (these parameters are shown in Table 1).

Table 1: PERS review parameters

Link review	Crossing review	Route review
Effective width	Crossing provision	Directness
Dropped kerbs	Deviation from desire line	Permeability
Gradient	Performance	Road safety
Obstructions	Capacity	Personal security
Permeability	Delay	Legibility
Legibility	Legibility	Rest points
Lighting	Legibility for sensory impaired people	Quality of the environment
Tactile Information	Dropped kerbs	
Colour contrast	Gradient	
Personal security	Obstructions	
Surface quality	Surface quality	
User conflict	Maintenance	
Quality of the environment		
Maintenance		
Public transport waiting area review	Interchange Space review	Public Space review
Information to the waiting area	Moving between modes	Moving in the space
Infrastructure to the waiting area	Identifying where to go	Interpreting the space
Boarding public transport	Personal safety	Personal safety
Information at the waiting area	Feeling comfortable	Feeling comfortable
Safety perceptions	Quality of the environment	Sense of place
Security measures	Maintenance	Opportunity for activity
Lighting		
Quality of the environment		
Maintenance and cleanliness		
Waiting area comfort		

A trained assessor will give each parameter a score (on a 7 point scale from -3 to +3) and will justify these scores with detailed comments. This data is then entered into the PERS software where it can be sorted, analysed and outputted as graphs, tables and maps showing Red/Amber/Green (RAG) ratings (see Figure 1). PERS data can also be compared to maps of pedestrian casualties, crime statistics and land use to add contextual and enriching data. Collectively, this very often this analysis forms the basis of a walking audit report with recommendations for improvement.

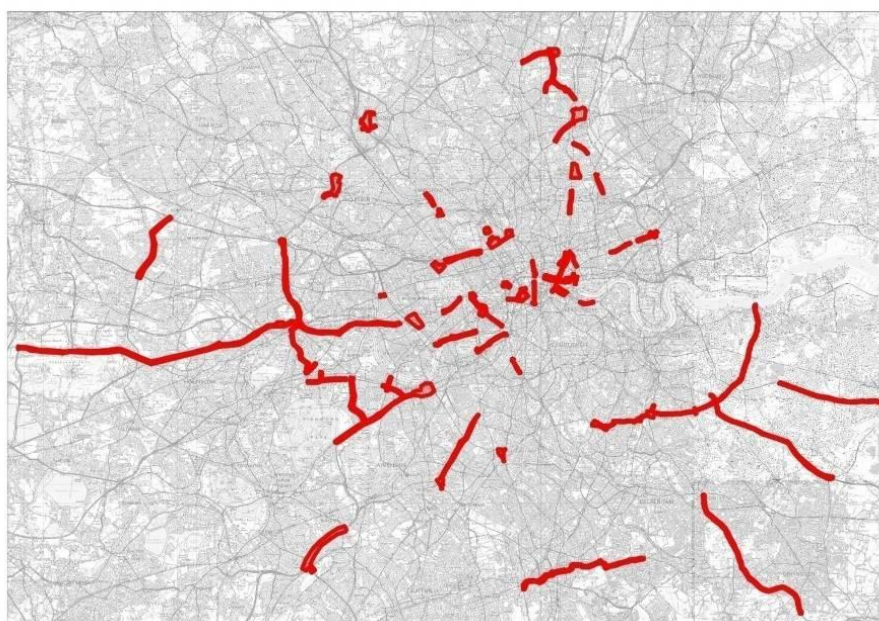


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Figure 1: PERS data is captured on-street and then analysed using the PERS software tool

PERS has been applied in a range of environments to assess:

- Transport for London Road Network (TLRN)
- Strategic walking routes
- Town centres
- Residential streets
- Trunk roads
- Legibility and wayfinding provision
- School environments

Having co-developed PERS v2 together in 2004, TfL and TRL have been using the tool to assess and improve street environments around London. On behalf of TfL, the TRL PERS audit team have used PERS v2 to assess over 170km of the Transport for London Road Network (TLRN). This process produced over 80 walking audit reports which have provided TfL with specific detailed recommendations for making the TLRN more pedestrian friendly.



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Figure 2: Sections of the TLRN audited using PERS in London

In addition TRL have used PERS to assess several unique projects within London including:

- 2012 Olympic games walking routes in Hackney, Brent and Newham
- Legible London wayfinding scheme pilots at Oxford Street, Covent Garden, Southbank, Richmond and Twickenham
- The proposed Parliament Square enhancement scheme

Research using PERS undertaken by the Commission for Architecture and Built Environment (CABE) and Design for London² has shown that high

² CABE (2007) 'Paved with gold' and Design for London (forthcoming) identified a definite link between street quality (measured by PERS scores), property values and stated preference of pedestrians.

quality street design that focuses on the needs of pedestrians can increase the value of the urban realm and regenerate failing high street commercial environments. Utilising this research it has been possible to use PERS data to predict and monetise the benefits gained by making streets more walkable and build a business case for making the improvements.

But it's not just TfL who are using PERS, the tool is also increasingly being used by several London Boroughs, has been purchased by organisations in many different countries and TRL have undertaken PERS audits in several other UK and European cities including:

- Manchester
- Newcastle
- Nottingham
- Coventry
- Dublin
- Amsterdam
- Frankfurt
- Vienna

3. Improvements to PERS v3

The PERS audit tool is a tried and tested system which has been proven to provide cost effective, easy to understand and robust walking audit data that can be used to deliver real improvements to walking environments.

However in response to new customer requirements, TRL and TfL co-developed PERS v3 in 2009. This new version features a number of improvements from the previous version (v2) that better support walking investment and delivery in London.

3.1 Quick wins

The vast majority of identified deficiencies (70-80%) from London PERS audits to date have centred on what can be termed 'quick-win' improvements that revolve around easily implemented infrastructure or repair and maintenance of existing walking facilities. Examples of common 'quick win' improvements include:

- Installing tactile paving or dropped kerbs at a crossing point
- Removing redundant posts or obstructions that block the footway
- Clear foliage or overhanging branches from footway

Such improvements can be implemented in short time-frames at low cost to greatly enhance the walking experience of pedestrians, which is supported by TfL research into stated preferences of London pedestrians.

Therefore in order to make identifying 'quick wins' easier and more accurate, the PERS v3 software allows the user to select multiple 'quick wins' from a

pre-defined list, geo-reference the location and add photographs of the problem (shown in Figure 3).

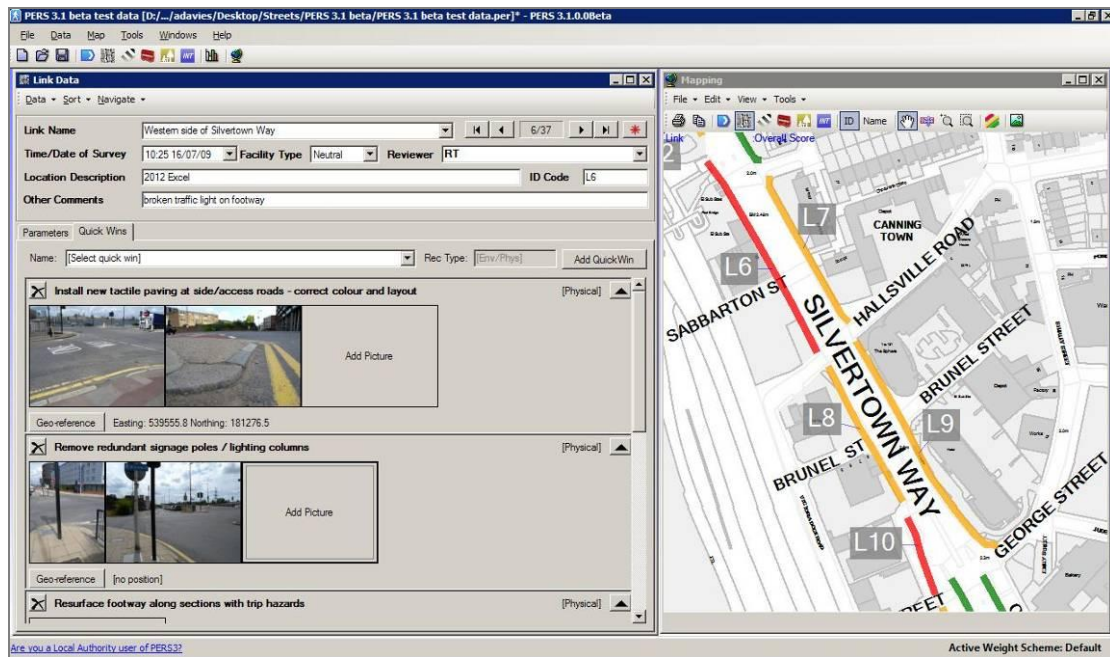


Figure 3: PERS v3 records exact location and photographs of each ‘quick win’

PERS v3 software can then automatically output work-lists of maintenance recommendations (quick wins) in Microsoft Office format for direct use by highway repair teams at TfL to action short-term remedial footway works (shown in Figure 4).

Pedestrian improvements Work List (PERS3)									
Specific Maintenance Recommendations									
Survey Site Name	Unique Facility ID	Type of facility	Date	Time	Facility location	Recommendation	Geographic co-ordinates (OSGB36)	Photograph of problem	Rec Type
2012 Excel	L6	Link	16/07/2009	10:25	Western side of Silvertown Way	Remove redundant signage poles / lighting columns	Easting: 539583.3 Northing: 181217.8		Physical
2012 Excel	L6	Link	16/07/2009	10:25	Western side of Silvertown Way	Install new tactile paving at side/access roads - correct colour and layout	Easting: 539555.8 Northing: 181276.5		Physical
2012 Excel	L7	Link	16/07/2009	09:45	Eastern side of Silvertown Way - Wouldham Rd	Remove graffiti from infrastructure along the link	Easting: 539602.2 Northing: 181201.5		Environmental

Figure 4: Example of PERS v3 automatically generated ‘quick win’ work list

This new functionality allows authorities to quickly identify and implement low cost ‘quick wins’ to improve pedestrian environments without the need for detailed planning documents or processes.

3.2 GIS mapping

The second significant improvement to the PERS v3 software is the new ability to map, analyse and view audited areas in GIS (Geographic Information System). PERS v3 audit data is now mapped in GIS format that can be exported and opened within any compatible GIS system to quickly visualise areas audited, findings and walking environment performance.

The PERS v3 GIS mapper can import an unlimited number of background layers such as topographic features, street names, crime data and even pedestrian casualty plots. PERS data (such as links or crossings) can then be mapped over these layers ensuring that the data is geographically accurate (shown in Figure 5). These maps can then be printed, saved as images and inserted into reports or exported as GIS data and used in other GIS software such as Mapinfo and ArcGIS.

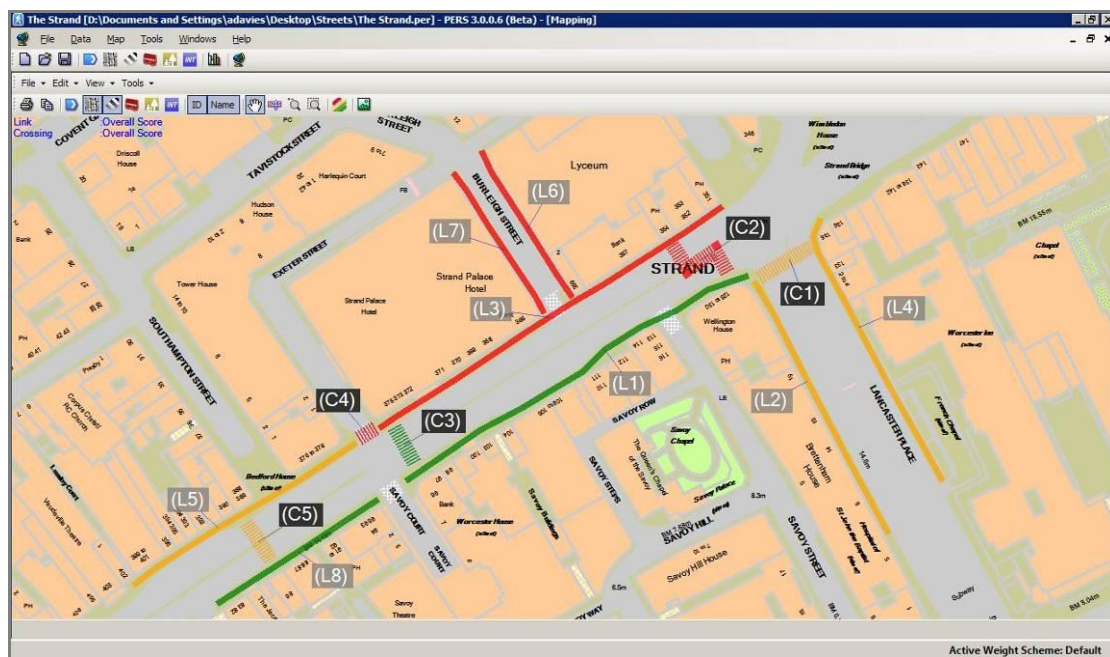


Figure 5: PERS v3 GIS mapping function showing links and crossings

The GIS functionality allows TfL to monitor and prioritise walking London's audited walking environments, comparing needs and share this data with other teams and organisations, even those without the PERS tool. For instance PERS GIS data for the TLRN can be added as a layer to TfL's in-house GIS system (AIMS) so that different teams (such as bus priority or planning) can quickly see how a particular street is performing for pedestrians.

4. Case study: Walking routes to 2012 London Olympics

On behalf of TfL, TRL have recently used PERS v3 to assess and compare four walking route options to a key 2012 Olympics venue in London Docklands. Using the PERS v3 tool allowed the project team to analyse and compare how each walking route is currently performing and the recommended measures that would be required to improve each route. This analysis has provided TfL with the information they need to decide and

prioritise which of the four routes to invest in using the Olympic funds available.

The ExCeL exhibition and conference centre in London's Docklands area will be a key venue for the 2012 London Olympics and Paralympics and will host 11 events including: Boxing, Judo, Table Tennis and Wheelchair Basketball.

It is expected that spectators may choose to walk between from the nearest underground railway station at Canning Town to the ExCeL centre. Furthermore if the Docklands Light Railway (DLR) is temporarily closed during the games for unforeseen reasons then it is expected that even larger numbers of pedestrians will walk between Canning Town Station and ExCeL. Much of the Docklands area is still being redeveloped and experiences high levels of deprivation and crime. Therefore the study had a particular focus upon:

- Capacity for large crowds
- Wayfinding and legibility
- Personal Security
- Quality of the environment

4.1 Comparing the four routes

In the summer of 2009, the TRL PERS audit team undertook a PERS audit along the four route options and then analysed this data within the PERS v3 software. The team also recorded average walking times along each of the routes as requested by TfL.

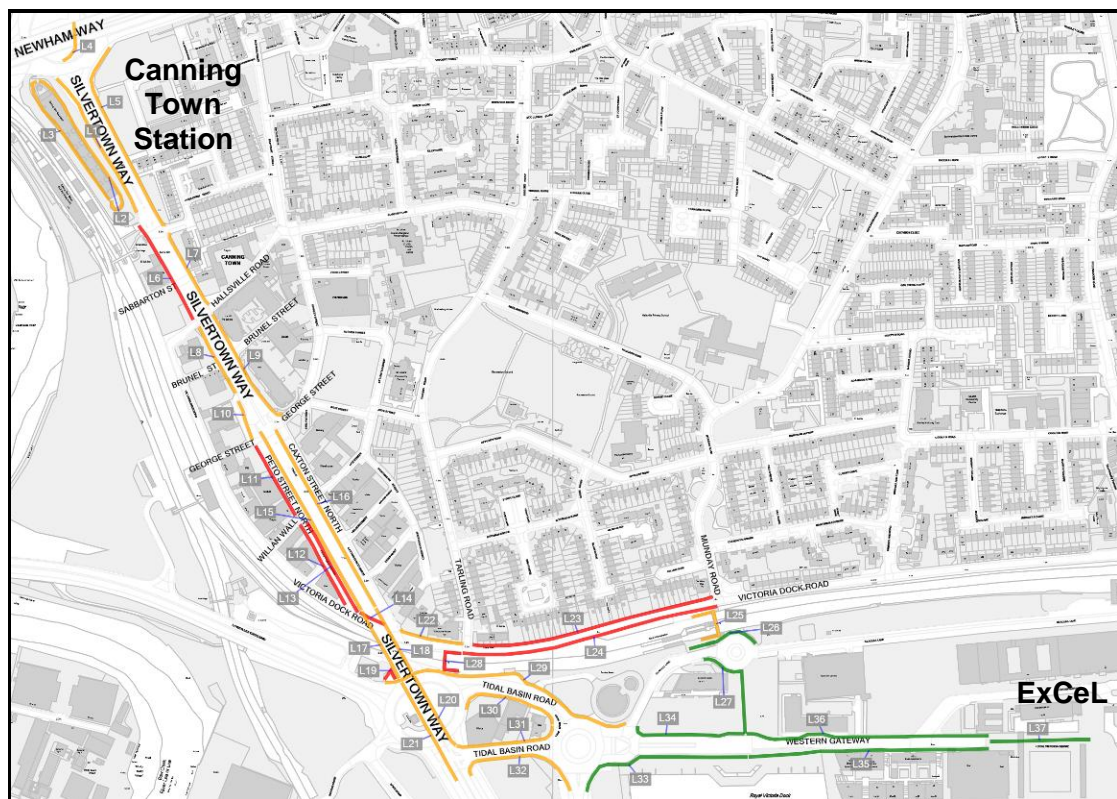


Figure 6: PERS v3 RAG map of the four walking route options between Canning Town Station and ExCeL (Links shown)

Using the PERS v3 tool allowed TRL to compare the PERS scores and problems identified for each of the route options. This provided TfL with a robust and comparable measurement of walkability along each route. In addition the audit team used the new 'quick win' functionality in PERS v3 to automatically produce a work list of over 100 'quick wins' that could improve conditions along the walking routes.

In addition to identifying problems, TRL also produced a report of detailed recommendations for each route. The recommendations ranged from junction redesigns, through enhanced wayfinding information to resurfacing footways. These recommendations aim to improve each route so that it would be usable for large crowds of spectators walking to the games. In addition these improvements could also provide a lasting legacy of a more walkable street environment for the residents of a very deprived area in East London.

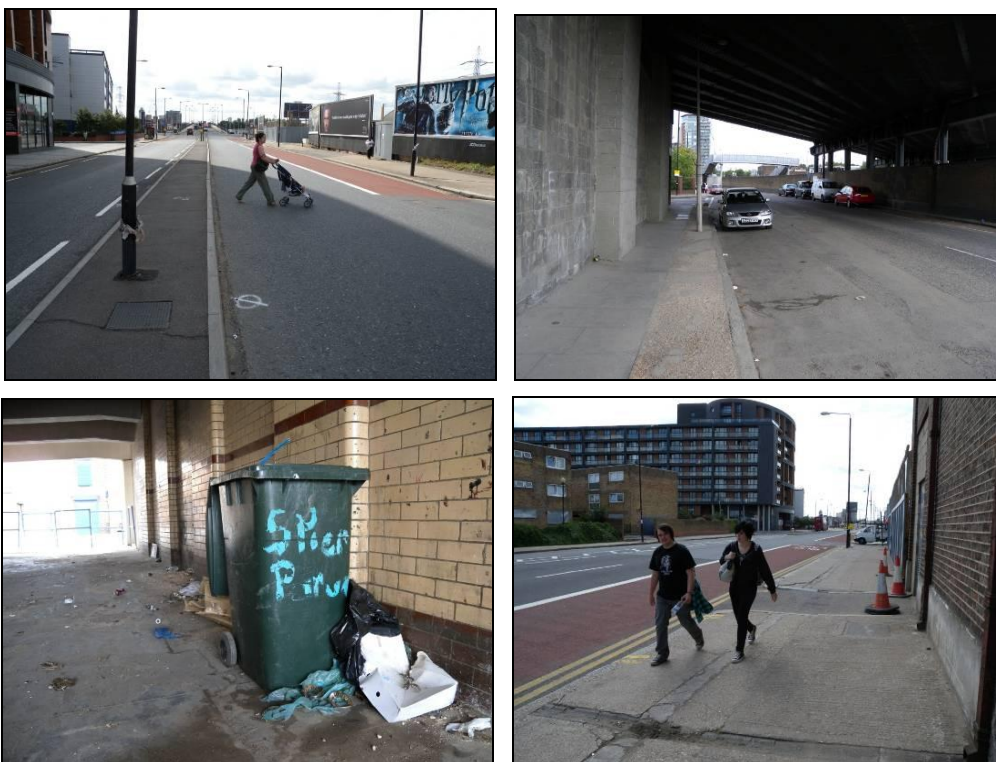


Figure 7: The walking routes to ExCeL run through some high speed streets and isolated areas

Estimated implementation costs were produced for each of the recommendations so that TfL could see the cost implications of choosing which route to improve.

The entire process provided TfL with a comprehensive set of options and cost implications that will allow them to decide and prioritise which walking to improve for the 2012 London Olympics. Furthermore once the route is chosen the PERS v3 data provides TfL with a detailed resource for implementing the improvements to the street environment.

5. Conclusions

The PERS tool used by TfL has evolved to provide greater usefulness and more focused outputs. The new functionality in PERS v3, of GIS mapping and automatic 'quick win' work list generation, provides TfL with a cost-effective, tried and tested tool for assessing, prioritising and investing in pedestrian improvements. PERS is TfL's standard walking audit methodology and increasingly so for other local government organisations in London.

PERS provides enhanced understanding of the performance of walking environments and supports justifiable decision making for walking investment, that was traditionally hampered by a qualitative led approach that lacked the quantitative basis of other transport modes which often resulted in lower levels of investment.

The use of PERS v3 in London's Docklands to assess and prioritise which 2012 Olympics walking route to invest in, shows how this enhanced walking audit tool creates new capabilities for transport professionals. These new capabilities will provide TfL and London Boroughs with the information they need to build on the success already achieved and contribute toward the goal of making London one of the most walking friendly cities in the world.

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