Valuation of Townscapes and Pedestrianisation

Final Report

ITS UNIVERSITY OF LEEDS ATKINS

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Executive Summary

Atkins and the Institute of Transport Studies, University of Leeds were commissioned by the Department for Transport (DfT) to carry out research into users' valuations of townscape improvements and pedestrianisation.

The study requirement arose from the Department's need to assess Major Scheme Business Cases (MSBCs), where townscape improvement benefits have been claimed as part of various scheme submissions, however the methodology and guidance on this subject within WebTAG is not as developed as other areas of appraisal.

Whilst in the medium term DfT wish to have a complete appraisal method for townscape improvements and pedestrianisation, in the short term the **objectives** of this initial study were to explore potential approaches to valuation of these benefits through:

- a review of the relevant literature;
- an assessment of possible approaches to valuation of townscape and pedestrianisation, and;
- a willingness-to-pay (WTP) pilot study, to test the feasibility of the preferred valuation technique emerging from the review, and - provided it is successful - to estimate values for two real cases* which will indicate the possible range of valuations for townscape and pedestrianisation benefits (*values for four real cases have been estimated).

The **literature review** identified previous valuation research on pedestrian amenity benefits in London and Oxford, using stated preference (SP), property market revealed preference (RP) and the contingent valuation method (CVM). Whilst these studies produced important evidence and the London SP findings have been incorporated into Transport for London appraisal guidance, there would be some issues in using these directly for major schemes outside London:

- transferability of the values is not assured;
- the payment mechanism used in the London SP studies may overstate individuals' true aggregate willingness-to-pay;
- the property market RP study in London did not produce statistically significant results at a 95% confidence level;
- the Oxford study, although methodologically very interesting and a source of ideas for this study, was limited by its sample size (117) – it was carried out as part of an MSc dissertation;
- overall there is a lack of direct evidence on willingness-to-pay for townscape improvements and pedestrianisation outside London.

Five **valuation approaches** were considered, these being: the contingent valuation method (CVM); discrete choice stated preference (SP); revealed preference (RP); priority evaluator / priority ranking (PR), and; cost saving approaches.

For the **WTP pilot study**, with the agreement of the Steering Group, the study team decided to use a two-level experiment combining PR and SP questions. The priority ranking (PR) technique has the specific advantages that:

- it introduces respondents to the trade-offs more gradually, providing them with an opportunity to become familiar with the idea of townscape improvements before they encounter the more detailed SP questions;
- the priority ranking question sets townscape and pedestrianisation in the wider context of local quality of life – there is evidence from previous studies (e.g. Wardman and Bristow,

2008) that these aspects of PR are useful in obtaining plausible values for environmental quality (in that study, community noise);

- the PR evidence provides a useful check on the WTP values emerging from the SP evidence.

For the WTP pilot study, there were also practical advantages in choosing a hypothetical choice method (CVM, SP, or PR), in particular:

- We could be reasonably confident that implementation was feasible within the timeframe required by DfT;
- These methods allowed different hypothetical improvement scenarios to be tested, and different townscape attributes to be varied, all within each survey location – this was valuable since the budget was for just two locations.

There are known risks of bias associated with hypothetical choice methods (e.g. strategic bias; hypothetical bias). However, in well-designed WTP studies these biases have been addressed – the studies reviewed were well-designed in most respects, and we aimed to mitigate and where possible eliminate these biases in our experimental design. In particular this study sought to:

- Ensure that the payment mechanism is perceived as real by the respondents – i.e. the improvement scenario includes payment for the improvements by the respondent using a credible payment vehicle (i.e. Council Tax – as in Willis et al, 2005 – or a generic local payment – as in Walker, 1997);
- Make use of best practice informing the respondents – including familiarisation questions at the start of the survey to introduce respondents to the subject matter;
- Make use of visualisation techniques to give respondents a clear impression of the scheme in comparison with the status quo (as in Laing et al, 2009 and Sheldon et al, 2007).

The **survey** was conducted in four locations:

- New Road Side, Horsforth – a suburban high street within the city of Leeds, which is directly on and part of the A65 main route from Leeds to the north west;
- Micklegate, York – a historic street within the city walls, well known as a destination for eating, drinking and shopping activities, and for local services, but not currently pedestrianised;
- St. Benedict's Street, Norwich – a radial street near to Norwich city centre that is not currently upgraded with any significant townscape/pedestrian improvements, but appears to have the potential to benefit from them;
- Kirkgate, Otley – one of the main streets in the centre of this town of 14,000 inhabitants in West Yorkshire, which currently has a limited amount of pedestrianised space, mainly on side streets, and which does have a bypass and alternative traffic routes to make pedestrianisation feasible.

758 usable responses were obtained across four locations. Respondents were recruited on the street in question, and invited to participate in a hall test lasting up to 25 minutes in a venue on the street itself or very nearby. The survey was presented as a local Quality of Life questionnaire to avoid focusing respondents immediately on townscape (with implications for framing effects on WTP). Compensation of £5 was given for participation.

The PR and SP data was analysed using **logit models of individual choice behaviour**, from which estimates of willingness-to-pay for townscape improvements and pedestrianisation were inferred.

The **findings** on WTP are shown in Tables ES1,2&3. Table ES1 shows the willingness-to-pay at the sample mean implied by the final Stated Choice model. This model has an acceptable fit to the data (ρ^2=0.127) and coefficients are significant at 95% (except those on Surface (Lo;Lo) which are significant at 92%). The model is fitted using a pooled dataset across all four locations.

Table ES1 – Willingness-to-pay for streetscape improvements in the Stated Choice model

Attribute	Willingness-to-pay, £ per annum			
	Norwich (Base)	York	Otley	Horsforth
Priority: Shared Space	24	68	24	-40
Priority: Full Pedestrianisation	64	64	64	-174
Priority: Limited Vehicle Access	74	74	74	-58
Activity (high)	-30	31	-30	-30
Surface (material Hi; contrast Lo)	30	30	30	30
Surface (material Hi; contrast Hi)	21	21	21	21

WTP for some townscape elements varies by location, and we have explained in the report (section 4.2) why we think this is the case. In particular, York residents are familiar with Shared Space type improvements in the city centre and are therefore, we believe, less resistant to them. The street surveyed in York is a centre for cafes, bars and restaurants so is suitable location for outdoor Activity provision (e.g. tables and seating), whilst in the other three locations this is not so clearly a valuable addition to the scheme. Finally, respondents rejected the Horsforth scheme, on the whole preferring the As Now. We believe this occurred because the access implications for through traffic and/or local access to the street were felt to be too severe – our exposition of the 'bypass' element of the scheme may have been at fault here.

In addition to the variation in WTP between locations shown in the table, we found significant random taste variation across individuals within each location for Full Pedestrianisation: this policy polarises respondents and is in practice a rather inflexible form of pedestrian improvement.

Table ES2 shows the confidence intervals on WTP for main effects in the final model.

Table ES2 – Confidence intervals on WTP for main effects in the Stated Choice model

Attribute	Willingness-to-pay, £ per annum		
	Central estimate (Base=Norwich)	95% confidence interval on WTP	
		Lower bound	Upper bound
Priority: Shared Space	24	2	46
Priority: Full Pedestrianisation	64	34	95
Priority: Limited Vehicle Access	74	44	103
Activity (high)	-30	-10	-50
Surface (material Hi; contrast Lo)	30	7	53
Surface (material Hi; contrast Hi)	21	4	39

Both the PR experiment and the SP analysis using Payment data only (excluding all Repayments) indicate WTPs that are lower than the final Stated Choice model above, by a factor of about 3 (see Table ES3). We think it would be prudent for DfT to use the WTP from the final Stated Choice model, rescaled in line with the results for SP (Payment) and for PR, for two reasons: (i)

policies will usually involve townscape *improvements* at substantial expense to the public purse, rather than deteriorations (DfT may want to include a caution in any advice, that marginal amenity disbenefits of townscape deterioration could be substantially greater, on our evidence); (ii) the PR experiment was designed to anchor the WTP values in the context of wider local quality of life, and the results are in scale with the SP Payment results.

Table ES3 – WTP for Townscape Improvements and Pedestrianisation, comparison of models, York

Attribute	Willingness-to-pay, £ per annum		
	Priority Ranking	Stated Choice (Payments)	Stated Choice (final model, scaled for Payments)
Priority: Shared Space	19	33	23
Priority: Full Pedestrianisation	9	21	21
Priority: Limited Vehicle Access	26	24	25
Surface (material Hi; contrast Lo)		8	10
Surface (material Hi; contrast Hi)		6	7
Activity (high)		12	10

In the light of the evidence as a whole, Table ES4 gives **indicative ranges of values for appraisal of schemes outside London**, which incorporate an element of judgement in the confidence intervals since they are based on multiple sources.

Table ES4 – Indicative ranges of WTP for Townscape Improvements and Pedestrianisation, 2010

Attribute	Willingness-to-pay, £ per annum		
	Central estimate	Judgemental 95% confidence interval on WTP	
		Lower bound	Upper bound
Priority: Shared Space	20 to 25	2	50
Priority: Full Pedestrianisation		10	30
Priority: Limited Vehicle Access		15	35
Surface (material high quality)	10	2	17
Activity (high, where complementary to uses on street)	10	3	16

WTP for better lighting furniture or for raised (or lowered) kerbs was not significantly different from zero, however it was a limitation of the survey that kerbs and lighting stands/light projection could not be shown in much detail/at all in the visualisations.

In comparison with the London evidence contained in the literature review:

- the values from this study are in the region of £20 to £45 per annum, per person using the street, outside London at 2010 prices, depending on the elements in the townscape package;
- for London, Sheldon et al (2007) recommended a value that is equivalent to £50 per

annum in 2010 prices, which seems consistent with the income differential (outside London at survey locations, 13-22% lower Gross Domestic Household Income per capita).

We believe the WTP values reported in Table ES4 are suitable as order-of-magnitude estimates of potential WTP for well-designed schemes, where a well-designed scheme is characterised by:

i) minimal disruption to accessibility by any mode;

ii) a location with significant pedestrian amenity issues and therefore room for improvement;

iii) raises the design of the street to high modern standards – e.g. Manual for Streets;

iv) attributes complement the uses on the street – e.g. restaurants and cafes, shopping.

Values could be transferred between the survey sites and a policy site using an elasticity with respect to income (e.g. 0.7) combined with available income data; similarly values could be updated using a time-series income elasticity (e.g. 1.0) combined with forecast GDP per capita.

Aggregation to a total benefit for the scheme will need to consider:

- total benefit being driven by both the benefit per user (the WTP values) and the number of users;
- the number of users will need to be estimated from pedestrian survey data including frequency of visit, in order to derive the number of distinct individuals (the unit used for WTP) from the number of visits;
- visitors from outside the local authority area, who were not included in this valuation study, will need to be re-integrated if they are a significant group.

The report contains **recommendations** to DfT on a valuation framework and on future research needs (see Chapter 6).

1. Introduction

Atkins and the Institute of Transport Studies, University of Leeds have together been commissioned by the Department for Transport (DfT) to undertake research into users' valuation of townscape improvements and pedestrianisation.

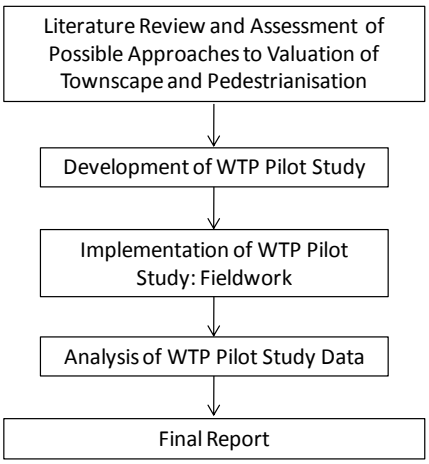
The study requirement has arisen from the Department's need to assess major scheme business cases (MSBCs), where townscape improvement benefits have been claimed as part of various scheme submissions. Due to a lack of existing research evidence, and a lack of an established methodology, the guidance currently available within WebTAG is limited, which therefore brings ambiguity to benefit valuation both for scheme promoters and for the Department.

Whilst a comprehensive appraisal methodology is desirable in the medium- to long-term, the objectives of this initial study are to explore potential approaches to valuation of these benefits through:

- A review of the relevant literature;
- An assessment of possible approaches to valuation of townscape and pedestrianisation, and;
- A willingness-to-pay (WTP) pilot study, to test the feasibility of the preferred valuation technique emerging from the review, and – provided it is successful – to estimate values for two real cases* which will indicate the possible range of valuations for townscape and pedestrianisation benefits (*values for four real cases have now been estimated).

The following figure shows the main stages of the study. The findings of the literature review stage were provided in the report entitled "Literature Review and Assessment of Approaches", whilst reports on the Survey and Revised Survey Approaches were provided during the second stage of the study 'Development of WTP Pilot Study'.

Figure 1.1 – Overview of Study



The purpose of this report is to provide a final overall report of the study, where the structure is as follows:

- Section 2 describes the background and literature review findings;
- Section 3 describes the survey approach and method;
- Section 4 presents and discusses the analysis of the survey data and survey results;
- Section 5 discusses the use of the results in appraisal of schemes including townscape improvements and pedestrianisation; and
- Section 6 provides conclusions and recommendations for DfT.

2. Background

2.1 Review of Existing Literature

The main purpose of the review was to identify methods suitable for valuation of townscape improvements and pedestrianisation schemes of the types evaluated by DfT. These Major Scheme Business Cases often include:

- bypasses of existing town centres, with an element of new pedestrianisation or pedestrian priority in the existing town centre; and
- incremental improvements to existing pedestrianised or pedestrian priority areas – e.g. the addition of another street to a town's pedestrian core.

The literature review included:

- assessment and design guidance covering townscape, streetscape and the urban realm – including recent valuation work on behalf of Transport for London (TfL), and;
- valuation approaches which could be used in this study.

DfT has good tools to evaluate the impact of these on motorised travel (car and PT), but lacks sufficient evidence on the amenity impact on pedestrian users of the improved town centre. The amenity value in question is not simply the value of faster access for pedestrians (time savings) or increased pedestrian safety, but also the value of the street as a place to be and to conduct activities. We will say more about this in the review.

In the selection of literature to review we were guided by the following questions:

1. What are the current best practice approaches that have been used to measure and value the user experience of pedestrian and public realm improvement schemes?
2. Of those approaches that have been able to identify a monetary value, what is the monetary value per user of a pedestrianisation scheme?
3. More widely, what potential valuation approaches exist which could be applied to address DfT's needs, and what are their strengths and weaknesses?

When reviewing the valuation of pedestrianisation schemes, there is a distinction to be made between valuation of benefits to users and the wider value impacts that a scheme may or may not have. For example, such schemes may have a rental value impact on retail or other properties, and may stimulate local economic performance (e.g. productivity/GVA). Whilst these are interesting issues, it was agreed at the outset that they are out of scope for this study: to keep the study feasible, it is focused on the valuation of improvements to the user experience and not on impacts to other groups. In the literature review, wider benefits are considered where they provide substantial evidence on the value of townscape improvements, e.g. the CABE/Buchanan studies in London. Generally, though, we focus directly on users' perceptions and valuation of pedestrian improvements, which potentially drive the attraction of new users to the space and could in turn lead to wider impacts.

2.1.1 Townscape: Assessment and Design Guidance

Transport Analysis Guidance (DfT, 2010)

The Department for Transport's Transport Analysis Guidance (TAG) was first published in 2003 and is used by local authorities, scheme promoters, DfT and practitioners in general, to appraise transport projects and proposals. The guidance is made available online (WebTAG, www.dft.gov.uk/webtag). Its strengths are in providing for a uniform and transparent approach to the appraisal of schemes, including valuation of the benefits of a proposed scheme to users,

which should allow a fair comparison between bids and help ensure the most effective distribution of public funds.

The scope of TAG includes impacts on:

- Environment, including noise, local air quality, greenhouse gases, landscape, townscape, biodiversity, heritage of historic resources, water environment, physical fitness, journey ambience;
- Safety, including accidents and security;
- Economy, including public accounts, transport economic efficiency, reliability, wider economic impacts;
- Accessibility, including option value, severance, access to the transport system, and;
- Integration, including transport interchange, land use policy, other government policies.

Townscape (TAG Unit 3.3.8)

In the TAG guidance, Townscape is defined according to the following combination of physical and cultural characteristics, and the public perceptions of them (TAG Unit 3.3.8, The Townscape Sub-Objective, DfT, 2004):

- layout, density and mix of buildings;
- scale of buildings in context with surroundings;
- appearance and local distinctiveness of buildings and structures;
- human interaction with the urban environment, cultural factors, and;
- land use.

For the purpose of this study, there is particular interest in the "human interaction with the urban environment" characteristic. Quoting in full from TAG:

> *"Human interaction - this term relates to the way people - rather than vehicles - interact with the urban environment. A major element in this relationship is how the community works in terms of interactions in those places that together contribute to townscape. It is important to appraise how social interactions and their relationship with townscape may be changed by the implementation of a transport proposal. In an urban environment communities are omnipresent. However the centres of those communities (e.g. main shopping areas) may be more highly valued. One indicator of whether a strong community exists will often be the presence and scale of pedestrian activity (particularly in the centres of communities), together with the quality of the pedestrian environment (excluding any noise or air quality factors, covered elsewhere). One can imagine an environment where, for example, high levels of pedestrian activity on narrow pavements are in close proximity to heavy vehicle flows. This attribute should also take account of more static interactions between townscape and people, such as the presence of shops, pavement cafes, and seating".*

Each characteristic is to be assessed *qualitatively*, using descriptions of geographical scale, rarity, importance, substitutability, and impact. The overall impact on townscape is summarised using the standard seven-point textual scale ranging from a 'Large Beneficial' (positive) effect to a 'Large Adverse' (negative) effect (see Appendix A). This score is recorded in the Appraisal Summary Table for the scheme.

This guidance recognises that development or redevelopment influences the pattern of uses, activity and movement, and the experiences of those who visit, work and live in the space. It is noted that the success of interaction between townscape, landscape and heritage determines how a place operates and performs. Moreover, the social characteristics of a townscape are influenced by how the physical characteristics (i.e. buildings, structures and open spaces) are used and

managed. Pedestrianisation of an urban square is cited as one example of a development which could create value, however methods for quantification of this value are not discussed.

Appraisal of Walking and Cycling Schemes (TAG Unit 3.14.1)

TAG also includes guidance on the appraisal of walking and cycling schemes (TAG Unit 3.14.1, DfT, 2010). Of key relevance to the valuation of pedestrianisation schemes to its users are factors affecting journey ambience, safety and accessibility (inclusive of all users). Current guidance to value walking schemes recognises that very little work has been done to quantify and monetise journey ambience benefits of walking schemes. Heuman (2005) supplies monetised values based on evaluation of the Strategic Walk Network in London for TfL. These are shown in the table below.

Table 2.1 - Values of different aspects of the pedestrian environment used in the evaluation of London's Strategic Walking Network

Scheme type	Value	Source
Street lighting	3.4p/km	Heuman (2005)
Crowding	1.7p/km	
Kerb level	2.4p/km	
Information panels	0.8p/km	
Pavement evenness	0.8p/km	
Directional signage	0.5p/km	
Benches	0.5p/km	

Within WebTAG, it is stated that studying the value of different aspects of the pedestrian environment is inherently difficult as pedestrians often do not regard their journey in a similar way to the users of other modes of transport (and it is likely that different types of pedestrians regard their journeys differently).

It is therefore unlikely that such monetised values are standardised across all different types of pedestrian schemes, and their application may therefore be limited. WebTAG concludes that monetised values such as those presented above should be treated with caution, and where comparisons are made with other schemes, consistent assumptions need to be made.

We would add that:

- these values may not fully capture the value of streets as places to be and a location for activities (e.g. shopping, eating, drinking, and social contact);
- applying these values would require a model of pedestrian movement to estimate flows with and without the scheme – although they exist, such models are still not in widespread use across the UK.

Pedestrian Environment Review System (PERS) (TRL, 2006)

The PERS walking audit tool was developed originally by Transport Research Laboratory (TRL) and has been in use since 2001 to evaluate pedestrian environmental quality. The tool is both a methodology and an application, and having been further developed in 2005 by TRL and Transport for London, is being used by authorities and stakeholders to collect both quantitative and qualitative data on the walking environment.

The PERS approach to evaluating the pedestrian environment asserts that the environment can be assessed according to the degree to which it meets pedestrians' needs. Similarly to assumptions made by the DfT as part of WebTAG, there is recognition that pedestrian movements exhibit a unique character that distinguishes them from other transport modes, and assessment should encompass the full range of static and through-movement activity exhibited by pedestrians.

PERS recognises that although the characteristics of individual pedestrians may be diverse, their basic concerns are shared. This assumption and its relation to monetised values is not fully supported by other sources such as Colin Buchanan and Accent in their Valuing Walking report (2005) .

Pedestrian needs are summarised into five categories, being convenience, connectivity, conviviality, coherence and conspicuity. The review process includes 5 main stages:

- Study area definition;
- Desk-top identifications of links, crossings, routes and/or spaces for review;
- On-street evaluation;
- Data analysis using PERS software, and;
- Review outputs.

Elements of the pedestrian realm are defined according to the following categories. On-street evaluation is undertaken using a review framework specific to that category of space:

- Links (sub parameters include effective width, dropped kerbs, gradient, obstructions, permeability, legibility, lighting, tactile information, colour contrast, personal security, surface quality, user conflict, quality of the environment, maintenance);
- Crossings;
- Routes;
- Public transport waiting areas;
- Interchange spaces, and;
- Public spaces (sub parameters include moving in the space, interpreting the space, personal safety, feeling comfortable, sense of place, opportunity for activity).

Each review framework comprises a series of sub parameters that prompt quantitative grading of individual attributes of the streetscape, from -3 (poor) to +3 (good). Scoring guidelines are informed by established standards in streetscape design where possible, and reviewers are encouraged by the methodology to evaluate the streetscape from the perspective of more vulnerable pedestrians.

PERS methodology captures sub parameter scores only at the specific time of the on-street evaluation. Though assumptions could be made to evaluate the urban realm at other times (e.g. at night) scores may not fully take into account the quality of the urban realm outside of normal daylight hours or in adverse weather. This could be of particular significance to pedestrianisation schemes that can have very different social characteristics according to time of day (for example, a Friday night compared to a Saturday afternoon).

Although the 6 PERS frameworks above can be used individually or in any combination as appropriate to the site context, there is a risk that the urban realm is not assessed holistically, and as such key issues are not identified across the range of different frameworks. Pedestrianisation schemes are likely to require a rigorous review of key attributes that can be reviewed holistically to allow comparisons and prioritisations to be made.

The outputs of a PERS Review may be used to assist with strategic planning and to establish the relative quality of different pedestrian environments within a framework that promotes objectivity. The outputs are not directly monetised, though evidence based attempts have been made.

The Buchanan and Accent “Valuing Walking” Studies (2005)

A series of reports by Colin Buchanan and Accent have developed an approach to monetising walking benefits. The 2005 study commissioned by TfL provides a methodology and the data

required to allow ambience benefits to be quantified in business cases for urban realm improvements, recognising that strong qualitative cases for improving public realm needs to be supported by a quantitative business case to do so.

At the core of this research were stated preference techniques to conduct research into how users value improvements to the public realm. The key finding is that the traditional focus of public realm business cases (on time and safety benefits) does not capture ambience benefits appropriately. There are two main effects of this traditional approach:

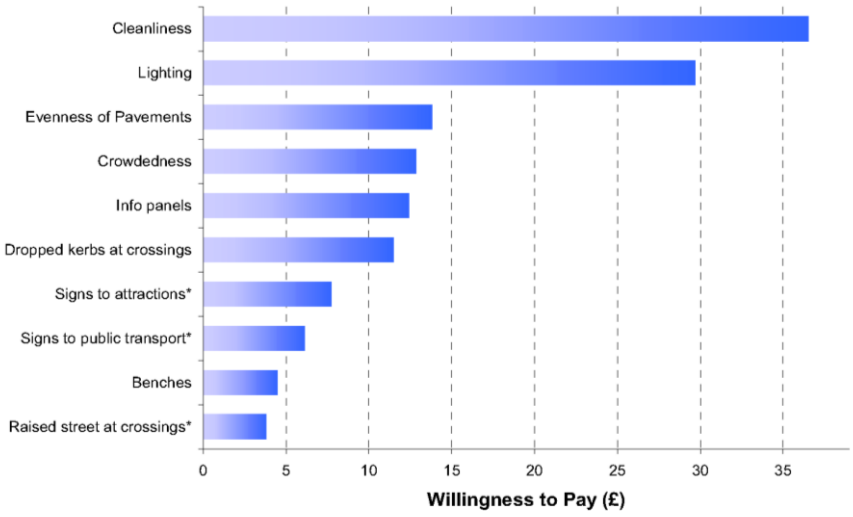
- It is difficult to prioritise between public realm improvement schemes, and;
- Other modes are able to more easily demonstrate wider set of benefits.

Stated preference surveys captured public WTP value of street improvement works at two locations on the strategic walking location in London. Types of user were categorised as being either:

- Pleasure users: walking solely for the pleasure of going for a walk (including dog walkers) or with pleasure as a stated element of their journey purpose;
- Shopping users: walking as part of a shopping or personal business trip;
- Leisure users: walking to or from a leisure trip destination or visiting friends or relatives;
- Commuters: walking as part of the trip to or from work or in work time, or;
- Non-users: those living within 20 minutes walking distance of the survey site, but visiting it less often than once every three months.

Results are shown in the figure below, where the findings demonstrate that street design improvements can be quantitatively evaluated for cost effectiveness against perceived value to pedestrians.

Figure 2.1 - Willingness to Pay for Improvements (all respondents)

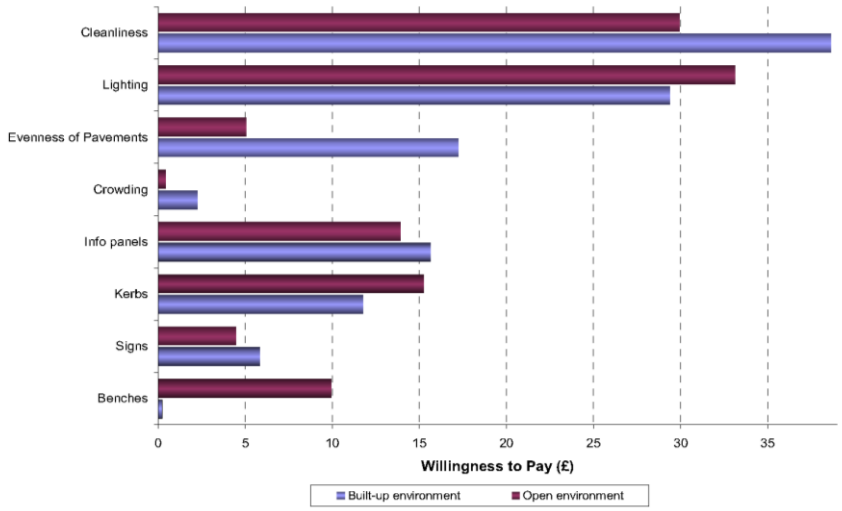


** There is reason to believe that this result offers only a partial valuation*

Source: Colin Buchanan and Accent (2005)

The stated preference research determined values that suggest significant differences between sample groups. Values vary by context, by journey purpose and whether respondents were users or non-users. The most important of these differences was variation by environment as shown within the following figure.

Figure 2.2 - Willingness to Pay for Improvements by location



Source: Colin Buchanan and Accent (2005)

However, the evaluation did not cover a wide variety of investments in the walking environment. In order to improve this, research needs to be focussed on the elements of walking projects that require the most funding, in particular, on elements of expenditure that relate to the interaction of vehicles and pedestrians (which was outside the remit of the Strategic Walks).

Areas for further research were also stated, including:

- A better understanding of how the removal of clutter is valued and how this relates to provision;
- A better understanding of how levels of crowding relate to security benefits;
- An understanding of the link between investment in infrastructure and trip generation, and;
- The need to value measures such as segregation, the removal of guard-rails, reductions in vehicle noise/speeds/volumes, improvement of store frontages, renovation or replacement of pedestrian subways, street art and the impact of part-pedestrianisation.

Nonetheless, PERS has been monetised for links and public spaces by Colin Buchanan and Accent (2006) for TfL , according to values of pence per person per minute (shown in the two figures below). Though some attributes shown below are transferable to pedestrianisation schemes, the relative importance and monetisation of each factor could be tested in SP research specific to pedestrianisation schemes.

Figure 2.3 - Ambience benefits for improvements to links (pence per person per minute)

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

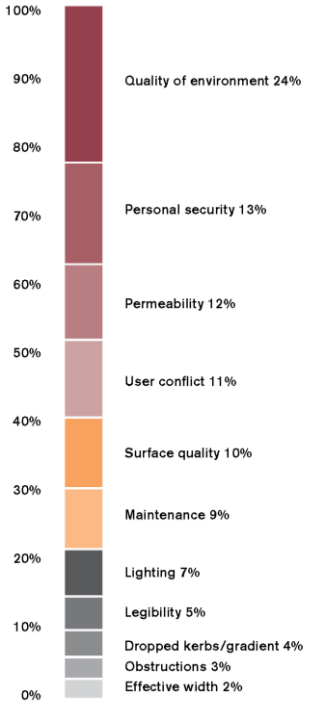
Source: Colin Buchanan and Accent (2005)

Figure 2.4 - 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

Source: Colin Buchanan and Accent (2005)

Figure 2.5 - Individual Importance of PERS sub parameters (for Links)



Source: Colin Buchanan and Accent (2005)

The "Paved With Gold" Studies (2006/7)

Building upon the "Valuing Walking Schemes" research (2005), further studies have been undertaken to better understand the value of good street design, for TfL (2006) and CABE (2007) For TfL, WTP research was undertaken on two high streets environments (Edgware Road and Holloway Road), testing the relative priorities for improvements to the urban realm (15 variables were tested), and the willingness to pay for public realm improvements using three payment mechanisms (council tax, public transport fares/joining cost, rent). There were no significant differences between the evaluation to WTP of commuters and non-commuters. The findings also suggest that results are transferable between high street locations in London. Results are shown in the table below.

Table 2.2 - Stated Preference valuation by element and level

(levels defined fully in source. Low = adverse effect, high = beneficial effect)

Stated Preference Element	Low (£ pa)	Medium (£ pa)	High (£ pa)
Number of people in daylight	0		1.11
Kerbs	0	2.40	2.79
View of the street	0	1.89	2.64
Crossing the road	0	3.40	4.34
Signs to public transport and attractions	0	-	3.11
Street lighting	0	2.99	4.94
Number of people after dark	0	0.77	1.36
Pavement condition	0	3.37	4.07
Vehicles on the pavement	0	-	4.54
Cycles on the pavement	0	-	2.81
Plants and public art	0	1.65	2.23
Seating	0	-	3.07
Physical intrusion of traffic	0	-	2.14
Graffiti and fly-posting	0	-	1.93
Litter	0	2.29	3.90

Source: TfL (2006)

Due to nature of the locations where this research was undertaken (on two corridors of arterial movement in London), the findings are not necessarily transferable to other pedestrianisation schemes.

In addition, Colin Buchanan's study for CABE (2007) investigated the link between property prices and the quality of street design. 10 exemplar High Streets in London were used as comparable case studies (from a shortlist of 50 sites). Data collection covers retail, housing, PERS (links and public spaces), accessibility and socio-economic data. Regression analysis of PERS scores and house prices was undertaken on streets with residential land use. The findings suggest that 5.2% increase in residential flat prices and also showed 4.9% increase in retail rent value, for each PERS point increase.

TfL's Business Case Development Manual (BCDM) (2008)

As expected, there is a strong transport focus in the TfL business case development manual (TfL, 2008), with evaluation of the impact on strategies to deliver value for money, improve door-to-door journey times and reliability across London's transport system, as well as other objectives including operating a safe and secure transport system, influencing a shift towards more sustainable modes of transport, providing accessible, affordable and inclusive links between communities and the employment, education and other opportunities London offers, improving the local environment in and around our transport system and enhance the urban realm.

Monetised social benefits for all schemes appraised using the business case include:

- Changes in time for all components of passengers' journeys:
    - including: travelling time / waiting time / access times / interchange times
- "Ambience" benefits/disbenefits:

    - Including: appearance / ride or journey / noise / perceived security
- Accessibility benefits/disbenefits for people whose mobility is impaired
- Safety benefits/disbenefits.

The evaluation of walking improvements for TfL business cases differs from PERS in that the evaluation for the business case is undertaken on a route-by-route basis, thereby assessing key walking routes based on the performance of their weakest links. The assessment quantifies the following factors, which are then monetised and weighted according to user flows :

- Crossings (proximity of 'green man' crossing / directness of green man crossing / crossing elsewhere / speed limit)
- Street security (lighting quality / litter & graffiti / chewing gum on pavement / CCTV provision)
- Street Signs (directions / street names)
- Pavements (width / surface / dropped kerbs / clutter / overhang of trees and plants / parked vehicles / schemes with shared walking & cycling)
- Facilities and visual attractions (seating / quality of areas at side of road where there are no buildings / public art)

The valuation of functional walking improvements is unlikely to be transferable to pedestrian improvements in pedestrianisation schemes, whereby other factors are likely to be relevant, such as the positive impact of the ‘place’ function of a pedestrianisation scheme on static space use.

Wider environmental impacts are taken into account, including noise, air quality, physical fitness, townscape, landscape, heritage. The impact of townscape improvements is measured according to pavement quality, building facade materials, new pedestrian links following sightlines (for example, through to public space with seating and flowerbeds). The strength of this assessment is that it links the assessment of townscape directly with journey ambience, though is not comprehensive.

Manual for Streets, Department for Transport (2007), CIHT (2010)

The initial guidance document is aimed at practitioners involved in the planning, design, provision and approval of new streets, and modifications to existing ones. The guidance recognises people-orientated streets as a key tenet of quality of life. Although the focus of the document is mainly on residential streets, the overall design principles can be applied to all urban streets. A revised document (Manual for Streets 2, CIHT, 2010) has been developed to address this application more comprehensively.

The guidance introduces a user hierarchy in which pedestrians are given priority over vehicular considerations in the design process. The key recommendation of the Manual is that increased consideration should be given to the ‘place’ function of streets, recognising that streets have important public realm functions beyond merely supporting throughput of motorised traffic on a wider network.

Design principles are separated into layout and connectivity, and quality places.

Further detailed design issues are grouped into:

- Street users’ needs;
- Street geometry;
- Parking, traffic signs and markings;
- Street furniture and street lighting, and;
- Materials, adoption and maintenance

The document does not provide technical design standards, and instead provides examples of best practice and emphasising a collaborative approach to the delivery of improved public realm/streets.

Although valuing the urban realm or monetising factors of the pedestrian environment are not part of the scope of the guidance document, there is recognition of certain key design features, such as the preference for designers to keep vehicle speeds at or below 20 mph on residential streets unless there are overriding reasons for not doing so. This is supported by MVA (2009) as part of new shared space research commissioned by DfT .

In summary, there are a number of applications of urban realm improvement valuation techniques. Whilst the evidence is varied, each study has a range of issues and limitations that help provide focus to this study as further outlined within the Key Gaps section.

2.1.2 Valuation Approaches

In this section, we survey the literature on five existing approaches to valuation of improvements to townscapes, including through pedestrianisation. In the following section (2.1.3), we focus on the needs set out in the study brief, and the strengths and weaknesses of the methods in relation to that. The five approaches considered are:

- Contingent valuation method (CVM);
- Discrete choice stated preference (SP);
- Revealed preference (RP) in the property market;
- Priority evaluator / priority ranking (PR), and;
- Cost saving approaches.

Contingent valuation method (CVM)

The contingent valuation method (CVM) is a hypothetical questioning method, where respondents are asked to state their willingness-to-pay (WTP) for a potential environmental improvement or to avoid an environmental loss. Conversely they may be asked their willingness-to-accept (WTA) money compensation in order to tolerate an environmental loss or forfeit an improvement. Respondents' money bids are interpreted as their compensating variation (or equivalent variation) – i.e. the amount of money required to leave them feeling as well off as they would otherwise have been without (with) the improvement. The results are analysed in the framework of utility maximisation, with non-market goods as well as market goods included in the utility function (Varian, 1992). CVM can be traced back to Ciriacy-Wantrup (1947). The major developments in CVM during the 1980s were brought together by Mitchell and Carson (1989).

There are various implementation issues with CVM, many of which are shared by other hypothetical questioning methods. One is that the respondent is a human being with his or her own motivations, which can lead to 'strategic' responses not reflecting true WTP but designed to achieve the desired outcome from the CVM exercise & the associated public decision ('strategic bias'). Another issue is that the human respondent often has far-from-perfect information about the subject matter of the survey – their responses are therefore conditioned by their prior knowledge, and by the information provided within the CVM exercise itself ('information bias'). A further issue is that even with full information, there is a risk that respondents will interpret the hypothetical improvements differently from the way the analysts had intended ('hypothetical bias'). There may also be issues of credibility or lack of trust – i.e. the respondent disbelieving that the proposals are really feasible or will in fact be implemented. The respondent may even object in principle to the proposal or the payment mechanism. These issues require that careful attention is paid to survey design. A key reference on CVM implementation is the NOAA panel report by Arrow et al (1993).

In the context of streetscape and streetscape elements, CVM has been used by Willis, Powe and Garrod (2005), and by Walker (1997). Willis et al estimated the value of street lighting in England, using a survey in three shire counties: Bedfordshire; North Yorkshire; and Wiltshire. 1,214 questionnaires were completed. A stratified random sample was used (by gender, age and income) which was confirmed to be comparable with the age and socio-economic distribution of the population in England. Council tax was used as the numeraire and payment mechanism for street lighting improvements. Payments were described as being for a 25 year period, matching the specific PFI arrangements for street lighting – the payments in our WTP pilot study need not be over such a long period. The contact with the respondents included:

- Recruitment by a market research firm;
- Focus group meetings lasting 1.5 to 2 hours, including a discussion covering street lighting and respondents' attitudes to it, and;
- Face-to-face interviews at home covering current levels of local taxation, the street lighting improvement scheme and the payment mechanism, and the CVM questions themselves.

Willis et al's CVM questions used photographs to present different street lighting scenarios, accompanied by an explanation from the interviewer. Initial bid levels (BL) were put forward by the interviewer, randomly selected from a set of possible BLs (£1, £2.50, £5, £20, £15, £20, £25). The BL was adjusted up or down and the question asked again in view of the response given. Respondents were asked to choose one of four responses: willing to pay the amount stated; not willing to pay the amount stated; not willing to pay anything towards the scheme; or don't know.

Willis et al's results show that WTP for improved street lighting is strongly skewed, with the mean much higher than the median (Table 2.3). WTP is highest in urban areas and lowest in villages. Confidence intervals (95%) are shown in brackets.

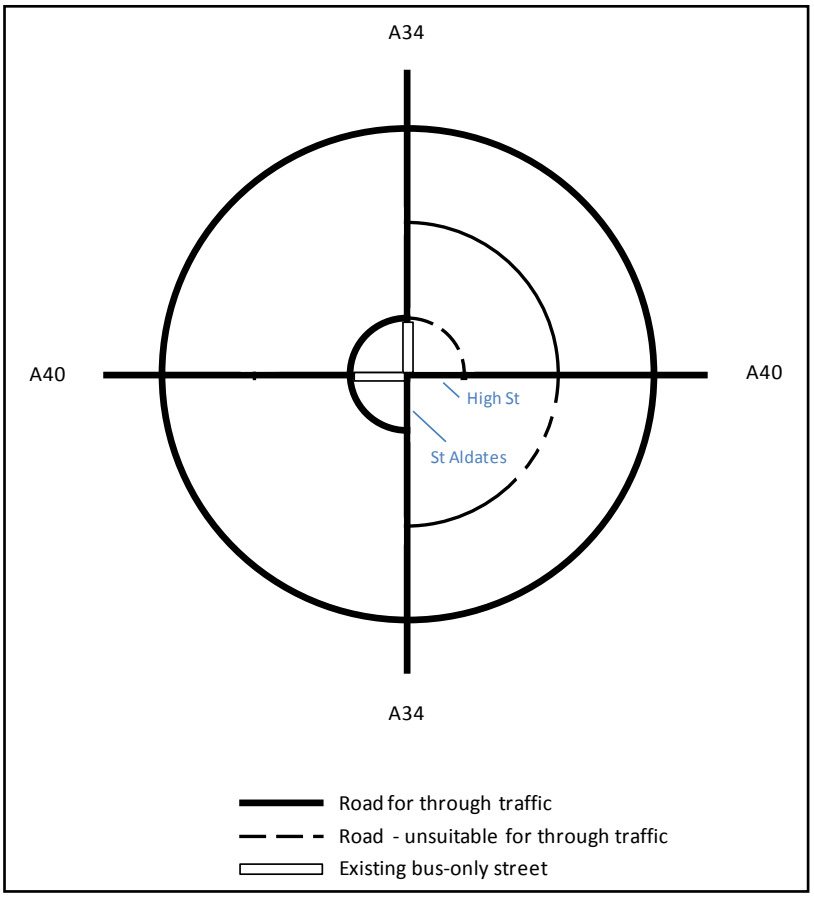
Table 2.3 - WTP for improved street lighting in England, 2003

	Whole sample (N=1080)	Urban areas (n=384)	Market towns (n=357)	Villages (n=339)
Median WTP	3.14 (1.80-5.38)	11.26 (8.14-16.47)	2.57 (1.44-4.88)	0.54 (0.18-1.28)
Mean WTP	11.87 (10.32-13.47)	15.91 (14.11-17.85)	11.32 (9.77-13.13)	9.22 (7.92-10.60)

Source: Willis, Powe and Garrod (2005), Table 3

Walker's study (1997) was much more exploratory in nature, but much closer to the topic of this research. It purpose was to obtain WTP values for a pedestrianisation scheme in Oxford, specifically a partial closure of two streets in the city centre – leaving access only for buses, cycles and pedestrians during daytime (see Figure 2.6). Two adjoining streets had already received a similar treatment. The scheme would increase journey times for many car users who would be required to reroute, leading to a disbenefit of £6.2m per annum in the scheme appraisal. Even taking into account the transport benefits to users of other modes, the overall disbenefit would be £4.6m per annum. However, the amenity benefits from the improved city centre environment had not been taken into account.

Figure 2.6 - Schematic of Oxford road network showing the function of High St and St Aldates



Source: Walker (1997)

A CVM study was undertaken using on-street interviews, to elicit willingness-to-pay for the amenity benefits. The use of on-street interviews made it possible to point to stretches of the street which would be affected and to examples of which vehicles would be allowed and which not, to refer directly to conditions on the two adjoining streets (already improved) and generally to locate the exercise in the streetscape which would be affected. Whilst in some ways potentially helpful in avoiding hypothetical bias, this approach did place a greater burden on the respondents to visualise (consistently) the streetscape with the changes in place.

Walker's survey design was a transfer pricing CVM of a kind still found in the environment literature. 117 interviews were conducted, of which 69 were on a Saturday and 48 on a weekday. The age and gender profiles were compared with High Street users in a pedestrian count with a much larger sample size, and found to be comparable. Respondents were first taken through a series of factual questions (e.g. home location, mode, purpose, frequency of visit) and opinion questions regarding the plans for Oxford City Centre. The specific scheme was then introduced, and respondents were asked if they were aware of it, and if they were in favour of it.

Those who indicated support at this stage were taken into a WTP bidding game. Car users in favour were asked to bid how much extra time in minutes they would be willing to spend accessing the city centre by car as a result of the scheme (26 responses). Car users against the proposal were asked to state the maximum charge they would be prepared to pay to continue drive in central Oxford (21 responses). All those in favour of the proposal were asked to indicate how much they were willing-to-pay for it through a tax or charge – this was an open-ended question (67 responses). The interview protocol was as follows:

'If you have supported the proposals for High Street, you will find that the traffic congestion, noise and air pollution you experience today will be much reduced. However, do you value less traffic in the High Street enough to be willing to pay for it? You should know that there will be significant costs to bring the plan in and to police the new restrictions.

(to locals) *This might be financed by a new local tax. The details of the tax are not known yet, but it might be a sales tax, or a surcharge on your Council Tax, or be taken off your wages/grant/benefit.*

(to visitors) *As a visitor you might be charged an entrance fee into the street.*

Whichever way you would definitely have to pay something out of your own pocket. You might say that the amount of tax you would be willing to pay is the value to you of less traffic in the High Street. How much would you be willing to pay?

If a respondent was WTP nothing, a debrief question was asked to find out whether this was due to a zero valuation of amenity, a budget constraint or other personal reasons. If a positive bid was made, "the interviewer clarified whether this was a payment per visit, per week, or per year. The interviewer then used a reckoner to express the sum back to the respondent as an amount per week, per visit or per year in whichever time interval he/she had not used. ... If a prompt was asked for, the interviewer started low at £1 per year or 10p per visit for infrequent visitors" (p13).

There are at least two noteworthy features of this approach:

- the payment vehicle is kept deliberately vague, however examples are given which include Council Tax increments (for Council Tax payers) as well as possible payment vehicles for students, people on benefits, tourists and others in general – this helps to expand the sample for the WTP survey, and to bring in groups who might have systematically different preferences from resident Council Tax payers;
- frequency of visit is recorded, and WTP per trip is estimated for each frequency category – indeed is found to be much higher for infrequent visitors – which provides a basis for aggregating to total WTP using pedestrian counts combined with the frequency shares from the survey.

The following table shows Walker's WTP results, including aggregation (Table 2.4)

Table 2.4 - WTP per annum for amenity benefits of Oxford city centre scheme (High St / St Aldates)

	Frequency category							
	Daily	2xWeek	Weekly	2xMonth	Monthly	4xYear	Yearly	**TOTAL**
Mean WTP/yr	£39.90	£37.20	£28.20	£13.80	£19.30	£8.30	£2.50	
Trips/yr	300	150	50	24	12	4	1	
(A) WTP/trip	£0.13	£0.25	£0.56	£0.58	£1.61	£2.08	£2.50	**£0.73**
Share / freq category	39.1%	18.3%	11.3%	7.9%	4.7%	4.4%	14.2%	
High St users/day	6,256	2,928	1,808	1,264	752	704	2,272	**16,000**
Days yr / trips yr	1	2	6	12.5	25	75	300	
High St users /yr	6,256	5,856	10,848	15,800	18,800	52,800	681,600	
(B) High St trips /yr	1,876,800	878,400	542,400	379,200	225,600	211,200	681,600	**4,795,200**
(C) Proportion WTP>0	60.7%	60.7%	60.7%	60.7%	60.7%	60.7%	60.7%	
(A)*(B)*(C) Amenity benefit /yr	£151,516	£132,231	£185,690	£132,350	£220,244	£266,012	£1,034,328	**£2,122,370**

A key limitation of this study is the small sample size – which is a particular problem at the level of some frequency categories, and hence a problem for aggregation. Associated with this is the lack of confidence intervals on the results. Also the row (C) in the table contains the proportion 60.7% for all frequency categories because the sample size is too small in some categories to give a

meaningful estimate. The study was undertaken as part of an MSc thesis which helps to explain the small sample. Nevertheless, the concept of the study interesting for present purposes.

Not shown in Table 2.4 is the scheme cost including capital and operating expenditure (incl. enforcement costs), equivalent to £1.5million per annum. If this and the estimated amenity benefits in Table 2.4 are accurate, then it is hard to see how the inclusion of amenity will overturn the CBA results and give the scheme a Benefit:Cost Ratio >1. The accuracy of the results is open to question, however, given the small sample size.

Further questions raised by this study are:

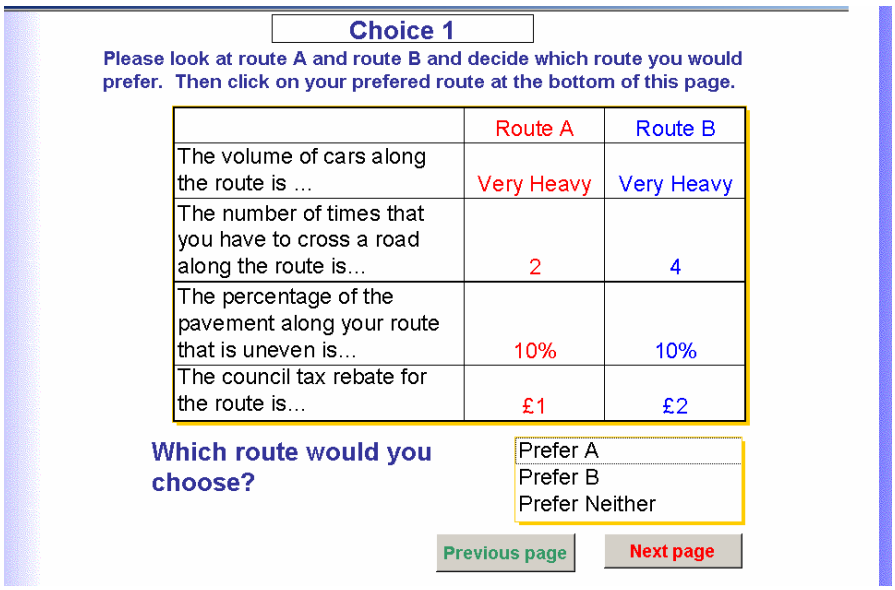
- whether the respondents have taken into account the transport (dis)benefits to themselves when expressing their WTP for the amenity benefits of the scheme, in effect giving an overall individual WTP for the scheme;
- whether wider impacts on road safety, public health, and economic performance are taken into account by individuals when responding to the WTP questions: three issues are relevant, (i) whether the individual will in fact face these costs (& benefits); (ii) whether the individual is concerned only with their own costs (& benefits) or also with those of the wider community; and (iii) whether individuals have sufficient knowledge/information about the processes involved to be able to weigh up these wider impacts.

Discrete choice stated preference (SP)

Discrete choice stated preference (SP) studies in this field are represented by Sheldon et al (2007) and Kelly et al (forthcoming), with earlier work by Davies et al (2002). A comparison of SP with an innovative approach based on the priority evaluator, called ‘priority ranking’, is given by Wardman and Bristow (2008) and Bristow and Wardman (2006). The context of that study is aircraft noise as part of overall quality of life, however the methodology is of interest here. We return to that work in the section below on priority evaluator.

In the discrete choice SP approach, the respondent is presented with a series of choices – usually pairwise choices between ‘Option A’ and ‘Option B’, although in principle three-way choices (and greater numbers) are possible. Each option comprises a bundle of attributes, several of which vary between Option A and Option B. The attributes are allowed to take a number of levels – for example, the attribute ‘view of the street’ can be set up to take three possible levels: ‘blocked view of the street’ (low); ‘mainly clear view of the street’ (medium); or ‘clear view of the street’ (high). These levels are presented in words and images. The pattern in which the attributes are varied is part of the experimental design – for example, a fractional factorial design is used by Kelly et al and by Wardman and Bristow. Figure 2.7 shows the first pairwise choice in a computer-based experiment by Kelly et al, in which the choice is “Which route would you choose?” – prefer A, prefer B or prefer neither.

Figure 2.7 - SP choice example



Both Sheldon et al and Kelly et al break down the full set of attributes into groups for experimental purposes, however Kelly et al include the payment vehicle (or numeraire) in each group, whilst Sheldon et al allow the respondent to trade-off the attributes first, then later ask questions about WTP for the package of improvements.

In the example shown in Figure 2.7, four attributes are listed and two of these are varied between Options A&B. The full set of attributes and levels used by Kelly et al was larger than this. Sheldon et al used 15 attributes plus a payment vehicle, and in the first stage of their SP these 15 are traded-off within each group of 5 by the respondents. In the second stage of their SP, each group of 5 attributes is set either to 'high' or 'low' levels, and the 3 groups are traded-off against each other. The set of 15 attributes in Sheldon et al's work were agreed with TfL in advance, taking into account TfL's experience of assessing urban realm improvements using the pedestrian environmental review system (PERS) (TRL, 2005). Table 2.5 shows these 15 attributes.

Table 2.5 - WTP for attributes in the urban realm

Attribute	Low, £p.a.	Medium, £p.a.	High, £p.a.
Number of people in daylight	0		1.11
Kerbs	0	2.40	2.79
View of the street	0	1.89	2.64
Crossing the road	0	3.40	4.34
Signs to public transport and attractions	0		3.11
Street lighting	0	2.99	4.94
Number of people after dark	0	0.77	1.36
Pavement condition	0	3.37	4.07
Vehicles on the pavement	0		4.54
Cycles on the pavement	0		2.81
Plants and public art	0	1.65	2.23
Seating	0		3.07
Physical intrusion of traffic	0		2.14
Graffiti and fly-posting	0		1.93
Litter	0	2.29	3.90

Source: Sheldon *et al* (2007)

At the final stage of the Sheldon et al survey, a transfer pricing approach was used. Respondents were asked whether they would pay an amount using one of three payment mechanisms to obtain the package of urban realm improvements: Council Tax (BLs: £5p.a., £2p.a. or £10p.a.); public transport fares (BLs: 5p, 2p or 10p per journey); or rent increases (BLs: 10p, 2p or 20p per week). If the answer was 'Yes' at the highest BL, respondents were asked what was their maximum WTP. Table 2.6 shows the results.

Table 2.6 - Comparison of WTP using different payment mechanisms

	Holloway Road	Edgware Road
Council Tax		
Annual amount	£14.78	£17.35
(sample)	167	225
Rent		
Weekly amount	£1.90	£2.02
Annual amount	£98.80	£105.04
(sample)	226	220
Public Transport Fares		
Per trip	18p	17p
Weekly number of trips	12.40	13.82
Annual amount	£107.14	£112.77
(sample)	222	210

Source: Sheldon *et al* (2007)

It is evident from Table 2.6 that there is a large inconsistency between Council Tax and the other payment mechanisms. The authors explain that this "is probably largely because the values were asked for in weekly amounts for rent (although the annual amount was mentioned) and per trip for public transport users whereas for the Council tax they were always asked in annual amounts". If so, then Walker's technique of reckoning all bids to an annual amount, stating it back to the respondent and asking whether they are sure, could potentially be a useful way to manage this issue.

Sheldon et al usefully demonstrate that model coefficients are consistent across the two sites, between residents and visitors, and between commuters and non-commuters (with the single exception of the 'direct green man crossing'), which gives some confidence that the results are transferable – at least between high streets in London.

In order to select a set of WTP values to take forward, Sheldon et al have to decide between the different payment mechanisms. They settle on the PT Fares-based values, adjusted for:

- a £100 cap on WTP per respondent; and
- a 17% proportion valuing improvements at zero.

Hence £45 is taken as the annual WTP valuation for the package of improvements, across all high streets visited. The amount in the final column of Table 2.5 is the WTP for a change from Low to High on each particular attribute.

For use in appraisal, the £45 is divided by 4,800 minutes, representing the average time per person per annum spent in high streets (taking into account: frequency of visits; type of use of the high street; resident/visitor split; and length of time spent by purpose – commuting/shopping/ leisure). Hence the appraisal values per attribute are those given in Table 2.5 divided by 4,800, per person per minute.

For TfL specifically, there is a further mapping from the 15 SP attributes onto the PERS characteristics for links and for public spaces. Each point on the PERS scoring scale (-3 to +3) for that characteristic then carries a value per person per minute.

In common with Willis et al's CVM study, both these SP studies used focus groups to lay the groundwork for the main survey. Kelly et al carried out some factor analysis – as did Willis et al – whilst Sheldon et al used the focus groups to test and develop the visuals and descriptions to be used in the SP, the factors already having been determined in consultation with TfL based on previous work.

On a side note, Laing et al (2009) give many useful references on the visualisation aspects of WTP surveys relating to the built environment, which can be incorporated into the WTP survey being developed in this study.

Revealed preference (RP) in the property market

Property market RP studies are exemplified by CABE (2007), Buchanan and Gay (2009) for which the research was carried out by Colin Buchanan consultants. This was based on a sample of 10 London high streets and their immediate neighbourhoods: Chiswick; North Finchley; Hampstead; Clapham; Streatham; Swiss Cottage; Kilburn; Tooting; West Ealing; and Walworth.

The design quality of each high street was assessed using PERS (TRL, 2005), the results ranging from +0.98 for Chiswick to –1.70 for Walworth, on a scale of +3 (best) to -3 (worst).

Other explanatory variables were collected under the following headings:

- socio-economic variables – including population, employment, deprivation, income, expenditure
- retail – number and types of shops, comparison spend, size of retail catchment, extent of competition

- accessibility – number of people within specific travel times by public and private transport
- property prices – flats on the high street, surrounding streets, retail rents and value of sales
- pedestrian movement – ped. counts on each high street throughout the day.

Correlation analyses were performed to explore and validate the relationships between variables, for example a positive relationship was found between street design quality and house prices.

Finally, regression modelling was undertaken, leading to models with best fit for Housing and for Retail, as follows:

High street flat price, £ = £129k + 0.28*terraced house price in surroundings (1)
+ £13,600*street design quality score

Zone A retail rent, £/m^2 = (-£4,600*V) + 0.26*E + £5,000*C (2)
+ £25*street design quality score

where V is proportion of units vacant, charity shops or betting shops/amusements;
E is total weekly expenditure in 800m buffer per km^2 (£000)
C is CACI core catchment market potential (measure of competiton).

Standard deviations are large, and the regressions are not statistically significant, however it should be remembered that the sample size is 10. Overall, the study seems to provide promising, and not surprising, evidence that high street quality has a positive impact on surrounding property values. A further study with a larger sample could perhaps overcome the statistical issue.

In broad terms, a +1 point change in the PERS score appears to produce a 5% increase in both residential and commercial property values. Going forward this needs to be compared with the CVM and SP findings (Buchanan and Gay, 2009, have made a start at this and find some consistency with the earlier SP findings for Retail, but less so for Housing), to understand the range of the results.

It also needs to be considered whether these results – or perhaps only the methodological approach – are transferable outside London.

Priority evaluator / priority ranking (PR)

Priority evaluator is represented in the recent literature on environmental quality by Wardman and Bristow (2008) and Bristow and Wardman (2006), who use a 'priority ranking' (PR) technique developed from priority evaluator. The focus of their study is on valuation of aircraft noise, which is one element within a wider picture of quality of life.

Priority evaluator originated with Hoinville (1971, 1977); Hoinville and Johnson (1978). The approach begins with a respondent being asked to indicate their existing situation on each of a set of variables (attributes of their home, for example). The respondent is then asked to consider which attributes they would like to improve - at the expense of others which are less important to them. Each level of each variable is 'priced' in the priority evaluator game, so the respondent can only reallocate his/her current endowment. The differences between his/her existing and preferred situations on each attribute scale tell us something about his/her trade-off preferences.

Wardman and Bristow developed a new variant of priority evaluator, which can be explained using Table 2.7.

Table 2.7 - Priority ranking exercise for noise valuation purposes – example: Manchester (Cheadle area)

Local crime: burglaries per 1000 households	**10**	**5**	**2**	**1**		**0.5**	
Local schools: %GCSE pass rate	10	25	40	55		70	
Area wide road traffic congestion	10% more traffic	5% more traffic	As now	5% less traffic		10% less traffic	
Street cleanliness	Very dirty and untidy	Dirty and untidy	Neither clean nor dirty	Clean		Very clean	
Traffic noise at home	Extremely noisy	Very noisy	Moderately noisy	Slightly noisy		Not at all noisy	
Neighbourhood air quality	Very poor	Poor	Neither good nor poor	Good		Very good	
General condition of local roads and pavements	Very poor	Poor	Neither good nor poor	Good		Very good	
Planes go by	Every 2m daytime Every 2m evenings	Every 4m daytime Every 2m evenings	Every 4m daytime Every 4m evenings	Every 4m daytime Every 7.5m evenings		Every 7.5m daytime Every 7.5m evenings	
Council tax	£10 more a week	£5 more a week	£2 more a week	As Now	£2 less a week	£5 less a week	£10 less a week
Recreation facilities locally available	No Library No sports/leisure facilities			Library Sports/leisure facilities			
Amenities within walking distance	No local food shops No local GP			Local food shops Local GP			

Table 2.7 contains 11 attributes. Whereas in a conventional SP, varying 11 attributes could lead to overburdening of the respondent, in a PR experiment the respondent can focus on one attribute at a time, reducing the task complexity. The process is as follows. First the respondent identifies where they currently lie in the table (with the help of the facilitator if necessary) on every attribute. Second, the respondent considers all the possible improvements – to the right of the existing points – and states which one would be the biggest improvement to them. That cell is then discarded, and the respondent chooses the next most favourable improvement, and so on until the respondent has in effect ranked all the possible improvements in order of preference. Next, the respondent proceeds to rank all the possible deteriorations, starting with the worst and progressing step by step until the least bad is identified.

The data produced by the PR process allows for a logit choice model to be estimated, as with SP. Wardman and Bristow gathered data using PR and SP from the same set of respondents for three European cities (200 in Manchester, 210 in Lyon and 237 in Bucharest), and found that the values for aircraft noise emerging from the PR experiment were significantly lower than the values from the SP experiment. Intuitively, this can be understood as: removal of strategic bias, since in the SP exercise it may be quite apparent to some respondents that the higher the weight placed on noise the more likely are the public authorities to act on noise reduction, whilst the chances of having to pay for it are slight – meanwhile in the broad 'quality of life' PR exercise it is not transparent to the respondents what the purpose of the survey is.

Bristow and Wardman (2006) tested this interpretation of the evidence by conducting a third experiment in which the PR method was adopted, but the Table was populated with many variables concerning different aspects of aircraft movement. The values found were comparable to the SP and not to the quality of life PR experiment. Thus it seems likely that the quality of life PR experiment has fulfilled it role of estimating monetary values for aircraft noise in a broad context that are not overestimates due to the focusing effect of a more typical, narrower survey design.

Cost savings approach

Finally, we should include the cost savings approach, for example the work by Painter and Farrington (2001) on the value of improved street lighting. Rather like the traditional COBA method for road schemes, this places much emphasis on estimating changes in real resource costs (or benefits) rather than changes in people's subjective utility as a result of the scheme. Thus, for example, a key component of the benefits of improved street lighting has been the demonstrated crime reduction effect. The cost savings associated with crime reduction can be estimated, therefore an aggregate PVB and hence NPV can be derived.

In the context of improvements to townscapes and pedestrianisation, we might include the crime reduction effects of better street lighting and better informal surveillance through urban design – for example. However, it is harder to argue that these measurements include the full perceived impact of crime (e.g. think of the fear of crime and its effects). And less still the full impact of pedestrianisation, since such schemes are largely about generating economic and social activity, rather than reducing the costs of the existing activity patterns.

In summary, the cost savings approach is not a particularly promising approach to the valuation of townscapes and pedestrianisation. It lacks comprehensiveness by design, and in practice therefore needs to be supplemented with other methods in order to deliver values that are relevant to policy.

2.2 Summary of Findings and Implications for Survey Design

The principal findings from the literature review were as follows:

- Previous research studies where pedestrian improvements to the urban realm were examined, have generally not taken this forward and sought to monetise these benefits.
- The exceptions are the Buchanan/Accent studies in London (2005-7) and Walker's work in Oxford (1997).
- The London studies and the associated appraisal guidance (TfL, 2006/8) certainly represent best current practice, although it is uncertain to what extent they are transferable to locations outside London.
- The PERS audit tool, being a framework which sets out to appraise pedestrianisation and incremental improvements, does provide an extremely detailed method with which to appraise urban realm schemes, with parameters weighted according to relative importance. Combined with the monetisation of PERS attributes by Buchanan/Accent (2006) this provides a basis for cost-benefit analysis, which has been used subsequently for appraisals, including by Atkins.
- Residual concerns over the PERS+money values approach are that:
    - Transferability outside London is not assured.
    - We have reservations about the inconsistency found between payment mechanisms – three were tested: annual council tax; weekly rent; and public transport fares per trip, and the results differed by a factor of around 6 to 7 once aggregated up to a year. The decision to base appraisal values on WTP through public transport fares per trip (even capped from £107/112 to £100) introduces a risk of overstating true WTP, if people do not carefully consider their whole annual budget when answering questions about WTP per trip. Walker (1997) found that when respondents were informed of the annual equivalent of weekly/monthly amounts their WTP reduced.
    - Whilst Buchanan/Accent have carefully used a nested SP experiment to manage the packaging effects* for two particular London high street schemes (Sheldon et al, 2007), there would be no guarantee that packaging effects for other schemes would follow the same pattern. *By packaging effects we mean the phenomenon where the amenity value of the whole is greater than (or less than) the sum of the parts due to complementarily or substitutability between particular elements of the improvement scheme. Packaging effects are endemic throughout service quality and environmental quality valuation.
- In drawing conclusions about the strengths and weaknesses of the different valuation methods described in this review, we must bear in mind that:
    - DfT is interested, in general, in the strengths and weaknesses of these methods for the purposes of appraisal of townscape and pedestrianisation; and
    - For the WTP Pilot Study, there is a specific need for a method which stands a good chance of being successful in that particular application.
- The review has found that both hypothetical choice methods (CVM,SP,PE/PR) and actual choice methods (property market RP in particular, and to a lesser extent cost saving methods) are useful approaches to valuation of townscape improvements and pedestrianisation. The work by Sheldon et al using SP in London (for example), and the

RP work by Buchanan, illustrates that both approaches are feasible. Comparability of the results between the two approaches is not yet assured. Furthermore, the results of the RP research to date are not statistically significant and further work would be required to achieve that. In the medium term, the results from both approaches *should* be capable of being reconciled.

For the WTP Pilot Study, there are considerable advantages in choosing a hypothetical choice method (CVM,SP,PE/PR), in particular:

- We can be reasonably confident that implementation is feasible within the timeframe required by DfT;
- These methods allow different hypothetical improvement scenarios to be tested, and different streetscape attributes to be varied, all within each survey location – this will be valuable since we have budgeted for just two locations.

Furthermore, the review has noted that there are known risks of bias associated with hypothetical choice methods (in particular strategic bias, information bias and hypothetical bias – as discussed above). However in well-designed WTP studies these biases have been addressed – most of those reviewed are well-designed in most respects, and we have indicated where deficiencies are evident. Our intention going forward is to mitigate and where possible eliminate these biases. To do this, we intend in particular to:

- Ensure that the payment mechanism is perceived as real by the respondents – i.e. the improvement scenario includes payment for the improvements by the respondent using a credible payment vehicle (either Council Tax – as in Willis et al (2005) – or a generic local payment – as in Walker (1997));
- Make use of the best practice reported above in informing the respondents – including familiarisation questions or focus group work at the start of the survey to introduce respondents to the subject matter (as in e.g. Kelly et al and Willis et al);
- Make use of visualisation techniques to give respondents a clear impression of the scheme in comparison with the status quo (as in Laing et al, 2009 and Sheldon et al, 2007).

There is a specific strength associated with the priority evaluator/priority ranking approach (PE/PR), which is that it introduces respondents to the trade-offs gradually:

- First it asks respondents to identify the current situation regarding streetscape quality – this helps to ground the choice experiment in the respondent's current reality;
- Second it asks respondents to identify their priorities for improvement – this generates significant choice data, but does not introduce the WTP question which is possibly the hardest to answer;
- Finally the payment mechanism is introduced and WTP questions asked.

Wardman and Bristow (2008) found these aspects of PR useful in obtaining plausible values for environmental quality (in that study, community noise).

Finally, the technique used by Walker (1997) of using a reckoner to convert any WTP responses expressed in daily or weekly amounts into an annual amount, and reading it back to the respondent to check whether they are willing to pay, is a useful one which could help to address the weakness in the results of Sheldon et al (2007) – that WTPs expressed over different periods were inconsistent.

Based on the literature review, and in consultation with the client (DfT) and Steering Group, it was decided to use a two-level hypothetical choice survey combining priority ranking (PR) at the top level with stated preference (SP) at the lower level – this would help to ensure that WTP was anchored in the context of the respondent's overall local quality of life (in the PR experiment),

whilst picking up detailed choices within townscape improvements/pedestrianisation schemes in a lower level SP experiment that is closer in concept to the Walker, Sheldon et al, and Kelly et al experimental designs. Hypothetical bias would be controlled through realism of the options presented, in particular:

- the 'As Now' situation would be included and the alternatives would be shown using computer visualisations using many of the same elements as the As Now – backed up by text and numbers to highlight key differences;
- the payment vehicle would be the one adopted by Walker, i.e. council tax or a proxy for it for non-council tax payers, in the form of an adjustment to wages/rent/benefits for example – we believe the Walker and Sheldon et al experience shows that this is a credible payment vehicle for the types of schemes being proposed.

Rather than focusing on walking routes, the WTP pilot survey will focus on changes in pedestrian amenity in a given location under different policy scenarios. This builds on the approaches of Walker, who had some success methodologically but suffered from a rather small sample size (117), and Sheldon et al in London. The use of the two-level PR/SP design differs from either study, and promises to add an overall 'sense check' on the level of WTP for townscape improvements in the wider context of local quality of life.

The design is explained in more detail, together with the sampling strategy, the survey locations and the analysis method, in the following chapter.

3. Survey Approach and Method

The key aim for this study was to develop, deliver and analyse a pilot Willingness to Pay (WTP) study in order to understand whether a framework could be adopted for valuation of townscape benefits. It is important to note that, due to the timescale and resources available, the WTP survey is a pilot survey, yet the WTP modelling section has shown that a technical framework is possible from these results.

The approach adopted as part of this study is reported as part of two key study technical notes, namely;

- Survey Approach 3/3/10, and;
- Re-survey Approach 2/6/10.

The remainder of this section provides a summary of the overall survey approach. From analysis of the initial survey, a potential interpretational issue was discovered which led to a counter-intuitive set of results from the responses. Whilst the overall approach to developing and delivering the re-survey remained largely consistent, this section also discusses the revisions made to rectify this issue.

3.1 Site Selection

As part of the short-listing of locations, a selection matrix was first defined in order to provide an evidence based framework behind the decision making process. The following survey requirements were taken into account, then being used to choose formally between short-listed locations. The requirements were drawn up to ensure that the chosen locations would theoretically provide a statistically relevant sample for the survey programme, in line with the practicalities of undertaking surveys at two locations within the short timescales of this study.

Usage

Even in the *status quo*, there must be sufficient pedestrian usage of the street(s) to make it feasible to recruit a statistically significant sample (~200 per site) within a practicable time period.

Range of movements for origins and destinations across the street

The site is not simply a linear walkway, but a space in which there are pedestrian origins and destinations along the street – e.g. homes, shops and restaurants – and in which there are significant crossing movements between the two sides of the street.

Pedestrian severance and permeability are existing issues

The site is not already an optimised pedestrian environment. Thus we will not choose locations such as the shopping street of Briggate in Leeds, which was fully pedestrianised in 1996 and has recently undergone a programme of work to further raise the quality of the streetscape.

Appropriate demographic mix

Both sites should have a diverse set of users, particularly in terms of income – given the influence of income on WTP – but also in terms of age and gender. Initially, consideration was given to two sites representing different levels of GDP per capita (one affluent, one low income site). However, given the decision to use the two different sites to test other locational differences – in particular one incremental improvement to an existing high quality city centre versus one substantial new pedestrianisation/townscape scheme in a town or suburb, it was decided to select two locations where average household income is broadly consistent with average household income in

England outside London[1], but where there is a broad social mix from high to low income earners.

Appropriate activity mix

Both sites should attract pedestrian use, not for a narrow set of purposes (e.g. commuter flows across the street to a rail station in the peak hours, or tourism only), but for a range of purposes including personal business (e.g. solicitors, accountants) as well as retail, leisure and services (e.g. dentistry, hairdressing). This will help to ensure that respondents include a mix of employed, retirees, students, homeworkers, those seeking work, and so on.

Appropriate mix of visitors and continual users

In historic towns and cities particularly, we need to be sensitive to the need to recruit a sufficient number of residents as well as visitors to the survey. Previous research has shown that WTP per visit differs significantly between these groups.

Absence of contentious issues

To avoid bias to the survey from protest responses, we need to avoid locations where there is substantial risk that the respondents will link the questioning to a contentious issue. For example, where the townscape/pedestrianisation scheme would likely be linked to a contentious bypass project to absorb traffic displaced by the pedestrianisation scheme.

The sites chosen for both survey programmes are discussed in more detail later in this section.

3.2 Sampling Strategy

The sampling strategy is driven by both statistical performance and the Department's wish to be able to apply the results in Value for Money assessments, by aggregation from the sample to a total WTP for a scheme. We therefore needed to address the major sources of variation in personal WTP for townscape improvements and pedestrianisation. In particular, previous studies indicate WTP varies a great deal with frequency of visit (e.g. Walker, 1997): annual WTP increases with frequency of visit, whilst WTP per visit declines with frequency of visit.

Based on our experience with SP data gathering and analysis, we proposed collecting 400 responses across the two survey locations (200 at each) in order to obtain robust modelling results in this study. The Literature Review showed how this compares with other the published peer-reviewed studies:

- Wardman and Bristow (2008) gathered approx 200 in each of three locations (for a total of 647);
- Sheldon et al (2007 – the London study) gathered 600; and
- Willis, Powe and Garrod (2005) gathered 1,214.

Although the study by Walker (1997) gathered only 117 responses and found that it was possible to determine mean WTP, it was not possible to determine WTP by frequency of visit for all frequency categories, which then impacts on the ability to use the results in Cost Benefit Analysis. For the purposes of this study, which is explicitly to pilot a proposed WTP approach and obtain ranges of valuations, the goal of 400 responses was deemed appropriate.

Population and Sample Frame

In principle, the study was interested in determining the WTP of anyone who may benefit from an improvement in the townscape at the chosen location. This group potentially includes:

[1] the areas to which MSBCs relate

- Both residents (of the city/town/suburb in which the study site is located) and visitors; and
- Both users of the study site and non-users.

While ideally we would capture all these categories, the plausibility of the payment vehicle for visitors was a source of concern – e.g. is it credible that a visitor's home council would collect local tax changes on behalf of another council that the individual was visiting? It was judged that this was not plausible. Alternative payment vehicles were considered specifically for visitors, however Sheldon et al (2007) showed what significant biases can be introduced by differences in the payment vehicle. On balance, a judgement was made and agreed with the client that individuals living outside the district/unitary council area would be excluded at the recruitment stage.

Moreover, whilst it is interesting to consider the WTP of non-users, an entirely different survey method would be needed to reach them, Give the constraints imposed by the pilot survey and its resources, we could not afford to run a separate household survey, and the need for computer visualisations and in many cases explanations from survey staff limited the potential for postal or online questionnaires.

In the end, it was decided to focus on two core groups:

- residents who live within 10 mins walk of the street – and for whom it is therefore their 'local high street'; and
- residents who live in the same local authority area and could therefore potentially contribute through council tax, but who are not resident nearby – i.e. not within 10 mins walk – and therefore include a range of different frequencies of visit extending down to 'once a month or less'.

This leaves visitors from outside the local authority area, and non-users as potential targets for future research to broaden the base of the findings.

Sampling Method

The survey programmes recruited a sample of users on street in two survey locations for each programme, where the following variables were collected:

- Frequency of visit;
- Gender;
- Age;
- Income;
- Employment status;
- Residency (resident/visitor, and for residents: distance of home postcode from centre);
- Purpose of visit;
- Duration of visit, and;
- Main mode of access.

The aim of the recruitment stage was to collate a sample which matches the relevant population with respect to these variables. As part of the recruitment of residents, the study team monitored population characteristics to ensure consistency between sites as well as a robust representation against local socio-demographics. However, it must be noted that the proportions among users and the proportions among residents will not necessarily match exactly due to different rates of use, and the presence of visitors.

Aggregation

The intention was that once the survey data had been analysed, evidence about WTP variation by respondent characteristics would used as the basis for aggregation to give an estimate of total WTP for the scheme. WTP would be summed over 5 years of payments, to which discounting needs to be applied in line with WebTAG/HM Treasury guidance. The present value of benefits (PVB) which emerges could then be compared with scheme cost, where benefits to motorised traffic (positive or negative) will typically be a part of the overall VfM calculation. In practice, WTP was surprisingly found not to vary significantly with a set of personal characteristics tested, although some variation across locations and some random taste variation were observed.

3.3 Initial Survey Design

The survey design aims to minimise the biases which can arise in stated preference work, by paying close attention to:

- *realism* – presenting respondents with realistic options they can comprehend and accept, including plausible changes to the city/town/suburb in which they live;
- *strategic bias* – avoiding tempting respondents to 'game' the survey – in particular, any payment mechanism should be plausible, otherwise respondents will assume they will get a free ride;
- *information* – using visualisations to help ensure that respondents are fully and consistently informed about the scenarios they are asked to choose between, and using the introductory stage of the survey to build up respondents' familiarity with: streetscapes & components; their preferences over streetscape designs and attributes; and the relevant payment vehicles.

The survey includes a small number of very simple questions at the recruitment stage, then the majority of the questions as part of a hall test held at a nearby venue in the city/town/suburb centre concerned. The hall test comprises of:

- introductory information – to introduce respondents to the topic in general and the concepts needed later (for the WTP part);
- Prioritisation work – to build respondents' familiarity and allow them the opportunity to exercise their judgement over different townscape attributes and packages of attributes – this stage also generates data that is useful in checking the plausibility of the WTP results;
- WTP experiment – the part of the survey in which the trade-off questions involving money payment are asked.

This allows the respondent to be 'warmed up' through easier questions at the start to harder, more focused questions, including the SP choice questions, then another set of background questions to 'warm-down' at the end. This makes for an efficient use of time in the hall test environment.

Thus the stages of the hall test are:

- Introduction
- Priority questions
- SP questions
- Background questions

The Introduction includes questions about frequency of visits, purpose of trip, where priority questions start to focus on the attributes we want to include in the SP – i.e. to introduce the respondent to the attributes they will be asked to trade off in the next stage, and serve to raise the

respondent's awareness of and familiarity with the topic.

Priority questions ask for feedback on the current level of key attributes. For example, we ask 'how satisfied are you with the current level of [attribute]?' and then ask the respondent to rate that on a scale that is shown to them.

Other questions asked at this stage are of the type: 'what attributes are most important to you?' and 'what attributes are most important to improve'?

The data arising from priority questions gives some support to the SP results, e.g. if pedestrian priority is the most important issue for an individual, they should have the highest WTP for that issue. Also dissatisfaction with the status quo should be linked to higher WTP (ceteris paribus). This data is useful for 'debugging' the SP as discussed later in this report.

Attributes and Levels

The attributes and their levels included in the survey are shown in table below.

Table 3.1 - Attributes and levels in the WTP pilot study design

Attribute	Level 1	Level 2	Level 3	Level 4
Pedestrian Priority	Mixed Traffic	Shared Space	Pedestrian Only	Pedestrians, Cycles & limited motor vehicle access
Level of Activities	Low	High		
Kerbs	Near Level	Raised		
Surfacing	Good Quality Material, Colour Contrast	Good Quality Material, No Colour Contrast	Low Quality Material, Colour Contrast	Low Quality Material, No colour contrast
Lighting Furniture	Normal	Heritage		
Cost	Range			

The most important attribute to be varied in the SP questions is called *pedestrian priority*. This can take 4 levels, defined as follows:

i. *mixed traffic* – this is the status quo at survey sites, where the roadway is open to all forms of motorised traffic at all times of day, whilst pedestrians have priority on side pavements;

ii. *shared space* – a package which overall reallocates space and priority towards pedestrians without barring any vehicle type – comprising wide useable pavements, near-level surfaces, informal measures or potentially changed rights of way to reduce traffic speed below 20mph, within an attractive streetscape design;

iii. *pedestrians, cycles and limited motor vehicle access* – exclusion of most motor vehicles from the street during daytime, with the exception of blue badge holders, and;

iv. *pedestrianisation* – this is the complete exclusion of motor vehicles from the street during daytime.

Note that ii), iii) and iv) are all 'townscape improvements' or 'pedestrianisation' of some form, whilst i) is the status quo or comparator. Also note that 'pedestrian priority' is a composite attribute.

A much longer list of detailed attributes of the pedestrian environment could have been provided, covering:

- Rights of way;
- Traffic levels and speeds;
- Roadway/pavement levels;
- Surfacing materials;
- Design (many detailed elements combine);
- Width of useable pavement;
- Barriers (guard rails);
- Clutter;
- Signs (for vehicular traffic or pedestrians);
- Benches;
- Street lighting (for carriageway, or pavements), and;
- Use of pavement space, e.g. tables outside.

Within the confines of this SP pilot survey, it is not possible to test how WTP responds to all attributes, and certainly not to all combinations of levels. What this study is designed to do above all is to provide WTP for a credible package of well designed streetscape improvements; hence the focus is on the package versus the status quo.

In addition, some attributes may be switched in and out to test respondents' sensitivity to variations around that package. We have therefore set out to explore the sensitivity to:

- Near-level surfaces (minimised kerbs – the remaining kerb line provides a guide for all street users as to the difference in rights of way, and is useful for visually impaired people navigating the street) versus traditional deep kerbs;
- Surfacing (materials used – high vs low quality, i.e. natural stone vs tarmac or concrete slabs; and contrast – high or low contrast between the pedestrian versus vehicle priority zones in the street)
- Quality of lighting stands – heritage vs basic, and;
- Level of activities – denoted by tables outside on the pavement vs none.

It is important for the credibility of the questions that each option presented to respondents is a feasible combination of attribute levels, and that the do-minimum fairly reflects the current qualities of the streetscape. This has been carefully considered for all survey locations, as reported later in this section. Thus, for example, Micklegate in the first survey programme currently has heritage lighting over the pavements, whilst New Road Side, Horsforth has basic lampposts positioned over the roadway – hence there is a feasible option to improve Horsforth but not York on that attribute.

Payment Vehicle

For the payment vehicle in the SP questions we have two options: either the option offered by

Walker (1997), which is to describe a generic payment vehicle costing (e.g.) £10 a year for 5 years, and to indicate that this might be an increment to council tax if the respondent is a council tax payer, a reduction in benefits, etc; or to focus solely on council tax and hence council tax payers. The latter wastes potential respondents, and we have therefore adopted the Walker option.

Walker's questions were:

'If you have supported the proposals for High Street, you will find that the traffic congestion, noise and air pollution you experience today will be much reduced. However, do you value less traffic in the High Street enough to be willing to pay for it? You should know that there will be significant costs to bring the plan in and to police the new restrictions.

(to locals) *This might be financed by a new local tax. The details of the tax are not known yet, but it might be a sales tax, or a surcharge on your Council Tax, or be taken off your wages/grant/benefit.*

(to visitors) *As a visitor you might be charged an entrance fee into the street.*
Whichever way you would definitely have to pay something out of your own pocket. You might say that the amount of tax you would be willing to pay is the value to you of less traffic in the High Street. How much would you be willing to pay?

For this survey programme, our questions were phrased the same for both residents and visitors, where the payment was based upon their "financial status" rather than residency, being;

- An addition to / reduction in your current annual Council Tax bill if you are a Council Tax payer;
- An addition to/ reduction in annual Benefits if you are on Benefits;
- An addition to / reduction in annual Pension if you are on a Pension, or;
- Increase / reduction in annual accommodation cost if you are a student.

Based on a review of bid levels and estimated WTP in previous relevant experiments (see the 'Literature Review and Assessment of Approaches' report, Atkins and ITS, 2010) bid levels were developed. These were set out in the range -£10 to £30 per annum (i.e. a repayment or a payment), and discussed in more detail later in this report.

SP Experimental Design

A D-optimal efficient design has been generated using the set of attributes and levels. Although the main criterion is level balancing, a compromise has been made in order to impose certain constraints on the appearance of the levels of different attributes in a choice set.

The design produced has choice sets that consist of three alternatives; one of them being the status quo. Each respondent was presented with eight choice sets and asked to choose one of the three alternatives, and then to choose between the remaining two (see example of a choice set in Table 3.2 below). This design reduces the number of choice sets a respondent has to evaluate (eight versus approximately 16 otherwise) and thereby minimises the fatigue effect.

Two separate designs for the two locations have been prepared to suit the local current scenario. On each 'improvement' option in the SP experiment, a randomly generated figure between -£30

and £30 per annum was shown for the payment amount (bid level).

Table 3.2 below shows an example of the choice set offered to respondents on one SP 'card'. The SP 'cards' themselves were presented as a set of three images of the streetscape on a colour computer monitor, with some variations between the images. The only words shown (to the right of each streetscape image) were the payment amount in £ per annum, and the name of the scenario. There were 8 cards in total within the SP stage of the questionnaire, shown in Appendix A as questions 12 to 19.

Table 3.2 - Example SP choice set

	Alternative 1	Alternative 2	Alternative 3 (Status Quo)
Pedestrian Priority	Mixed Traffic	Pedestrians, Cycles and Buses Only	
Level of Activities	High	Low	
Kerbs	Near Level Kerbs	Raised Kerbs	
Surfacing	Low quality material, no colour contrast	Good quality material, no colour contrast	
Lighting Furniture	Normal	Heritage	
Amount to be paid / returned per annum	£5	£10	-£10
I would Choose	x		
Then I would choose (from the remaining two)		x	

Use of Visualisations

A key element of SP survey design was the use of visualisations to describe to the participant how the options could look against the status quo. Quality was therefore important, where elements of continuity between each was vital, including:

- Weather;
- Land Use (Shops, vacant units etc..)
- Light (Brightness / Contrast), and;
- Angle of view.

The following figure provides an example of a visualisation for the Horsforth site selected as part of the initial survey programme, where the status quo (to the left) can be compared with an improved urban realm scheme based around the concept of shared space (as defined within DfTs Shared Space Project – Stage 1 Appraisal of Shared Space report (2009)).

Figure 3.1 - Example Visualisation

3.4 "Piloting" the Pilot Survey

The survey design was piloted with staff and students at the University of Leeds and Atkins who are familiar with two study locations chosen for the initial survey programme.

Feedback from the pilot programme was used to tighten both the wording, sequence and overall delivery of the questions, along with the range and quality of visualisations developed for the study.

It was also important that The Department fed back into the survey programme, and therefore a review was undertaken by DfT in order to ensure that the locations, survey dates, questionnaire and other elements fitted within the objectives of the study.

The Hall-Test questionnaire for the initial survey programme finalised post piloting is contained within Appendix A of this report.

3.5 Survey Delivery

Staff placed on-site at each chosen location were used to recruit potential respondents, and carry out a short questionnaire in-situ to determine applicability in terms of the sampling strategy. If suitable, respondents were led to a nearby indoor venue from where the survey was administered electronically.

For each survey response, a £5 incentive was given.

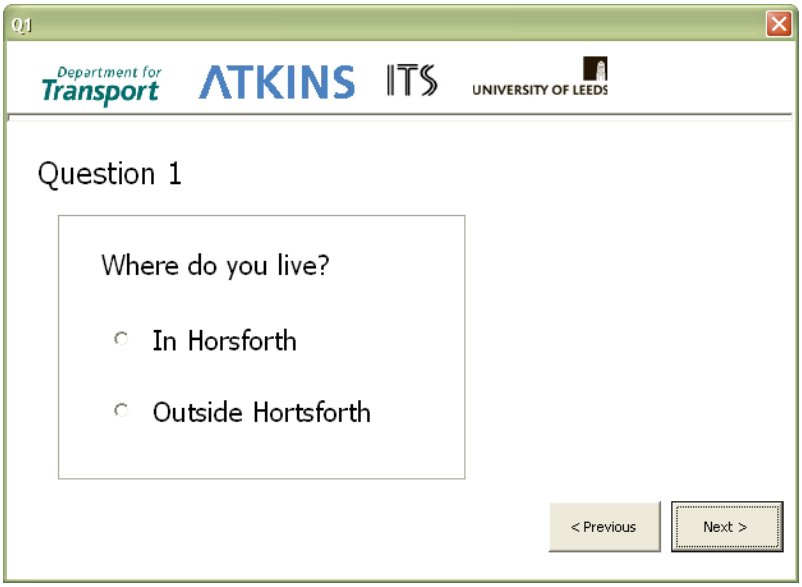
Resourcing

The coordination of the event and the Hall test was undertaken by the study management team, drawing upon experience from other SP and face-to-face survey programmes. Two survey specialists were on-site at each location to recruit potential respondents, and ensure sampling strategy was implemented and monitored throughout the survey duration.

The survey programme was delivered both electronically and by paper, where the hall test used a range of electronic input forms to ensure both reliability of results and consistency of delivery. Paper resources were required for on-street recruitment in line with the survey specification.

The following figure shows an example screen-shot from the electronic questionnaire, where two sets of the questionnaires (with different SP choice sets) were presented at each location to collate a target of 100 responses per set.

Figure 3.2 - Example Electronic Question



Quality Assurance

The computerised survey delivery ensured a consistent approach to each and every survey undertaken.

On site support, where requested by respondents, was available from the on-site team, where it was important to ensure that a consistent response was given to each respondent. It was also vital that no bias was introduced through this assistance, and therefore any help with the questionnaire was purely technical assistance such as where some respondents were less computer-literate than others. This is discussed in more detail below.

3.6 Initial Survey Programme

3.6.1 Survey Locations

The initial survey programme was developed in February 2010, where following a discussion of numerous sites throughout the country including London, locations were shortlisted to focus towards a single region of the country (West Yorkshire). This assisted with survey delivery practicalities, as well as a broadly consistent demographic and income mix. The shortlist consisted of:

- Micklegate, York;
- Museum Street, York;
- New Road Side, Horsforth, West Yorkshire, and;
- Bingley Road, Saltaire, West Yorkshire.

A full review of the shortlisting is set out within 'DfT Pedestrianisation Benefits - Survey Approach', Atkins and ITS, 2010. The two chosen sites, however, are presented below compared with Museum Street in York, and Bingley Road in Saltaire.

Micklegate, York, is a radial street within the city walls of York, known locally for a mix of shops, entertainment venues, and historic buildings (Figure 3.3 below). At the southern end of Micklegate is Micklegate Bar, a stone gateway through the city walls, and at the northern end is Ouse Bridge which leads to the core of York city centre on the other side of the River Ouse.

Figure 3.3 - Micklegate, York

New Road Side, Horsforth, is a suburban high street within the city of Leeds, 7km from Leeds City Centre, and 1km inside Leeds Outer Ring Road . It is located on the A65 road towards Skipton and the Yorkshire Dales.

Figure 3.4 - New Road Side, Horsforth

The following table shows how the four shortlisted sites were assessed against the survey requirements.

Table 3.3 - Selection matrix

Site	1) Usage	2) Range of movements	3) Existing issues	4) Demographic mix	5) Activity mix	6) Resident/ visitor mix	7) Non-contentious
Micklegate, York	✓	✓	✓	✓	✓	✓	✓
Museum Street, York	✓	✓	✓	✓	?	✓	×
New Road Side, Horsforth	✓	✓	✓	✓	✓	✓	✓
Bingley Road, Saltaire	?	✓	✓	✓	✓	✓	×

Key: ✓ satisfactory; × unsatisfactory; ? substantial doubt over suitability.

Furthermore, site visits were undertaken at each of the above in order to understand the effective footfall for each location. The following table summarises the usage data from basic pedestrian counts at each site in February 2010.

Table 3.4 - Basic pedestrian counts

Site	Equivalent Pedestrian Flow (15 mins both directions and pavements)	Survey Time
Micklegate, York	261	Friday 14.10 – 15.30
Museum Street, York	709	Saturday 12.54 – 13.09
New Road Side, Horsforth	83	Friday 14.30 – 15.30
Bingley Road, Saltaire	91	Saturday 15.10 – 15.25

The Micklegate and New Road Side surveys are comparable as they were carried out simultaneously using the same method, whilst the Museum Street and Saltaire surveys were carried out on a different day and at differing times, and hence are not directly comparable but provide an understanding of weekend flows which *should* be greater than weekday.

In the Saltaire case, the number of separate individuals is lower than the number of people counted since it was observed that some pedestrians visited the shops and returned within the survey period. On the basis of a 10 hour recruitment period on one pavement, and a 20% (cautious estimate) recruitment rate, it is open to doubt whether 200 respondents could be recruited in the Saltaire case.

For Museum Street in York, there was a significant concern following the site visit that this is a thoroughfare and not a destination street, and in that respect not representative of the type of street which it has been decided the pilot study will focus upon. Another concern is that the issue of where to reroute the displaced traffic (in the WTP scenario) would be very contentious, since there would be significant engineering challenges and heritage issues in any attempt to reroute this section of the inner ring road – for example, there are very few bridges over the Ouse, so an additional bridge and approach roads may be required. This issue does not arise for Micklegate because the *status quo* traffic level is much lower and a reasonable alternative route through the road network is available.

Bingley Road in Saltaire could be associated in the respondents' minds with both the Saltaire Bypass – various proposals for which have been put forward over many years (including a current proposal) – and the Bingley Relief Road, opened in 2003. The latter, although conforming in many ways to the 'town centre traffic relief' type of bypass scheme, in fact involves a new dual carriageway road (50mph limit) running through the centre of the town, causing significant noise and landscape impacts. Both of these associations are potentially contentious and have had ongoing and recent press in the media.

Chosen Locations

In summary, although all of the short-listed sites have some merit, the following two sites most suit the specification, and thus formed the two chosen locations:

- York, Micklegate – is preferred due to not having any specific, known contentious issues, and the broader range of pedestrian movements associated with its high street style environment / mix of land use.
- New Road Side, Horsforth – is another location where a scenario of traffic rerouting could be played out in the questionnaire. A rapid scoping study indicates it is feasible to achieve the sample size required for the study.

For both locations, visualisations were developed for the chosen street which provided a clear representation of how such options could look if implemented, with a range of financial trade-offs between the options from which the analysis would infer willingness to pay. The visualisations are presented within the overall questionnaire reported as part of Appendix A

Attribute Review

A review of each site against the Attributes and Levels of Section 2.1.3 was undertaken, as summarised in the following table.

Table 3.5 – Review of Attributes and Levels for Initial Survey

Pedestrian priority	York	Horsforth	Kerbs		Surfacing				Lighting		Level of Activities	
			Near level	Raised	Material Lo, Contrast Lo	Material Lo, Contrast Hi	Material Hi; Contrast Lo	Material Hi; Contrast Hi	Basic	Heritage	High	Low
Status quo – mixed traffic	✓	✓	×	✓	✓	×	×	×	H✓ Y×	H× Y✓	×	✓
Shared space	✓	✓	✓	×	✓	✓	✓	✓	H✓ Y×	✓	✓	✓
Pedestrians, cyclists & limited motor vehicle access	✓	✓	✓	✓	✓	✓	✓	✓	H✓ Y×	✓	✓	✓
Pedestrianisation	✓	✓	✓	×	✓	✓	✓	✓	H✓ Y×	✓	✓	✓

As noted earlier, it is important for the credibility of the questions that each option presented to respondents is a feasible combination of attribute levels, and that the do-minimum fairly reflects the current qualities of the streetscape. The above table allowed the study team to carefully consider for each of the two survey locations. Thus, for example, Micklegate currently has

heritage lighting over the pavements, whilst New Road Side, Horsforth has basic lampposts positioned over the roadway – hence it there is a feasible option to improve Horsforth but not York on that attribute.

This review allowed the survey Hall-Test to be finalised for each location.

3.6.2 Survey Dates

Surveys were undertaken at both chosen locations back-to-back in the week commencing Monday 15th March 2010. It was proposed that two days of surveying took place at each location in order to capture the agreed sample size of 200 respondents per location, with a third day (being Saturday 20th March 2010) retained as contingency yet not required. The survey was therefore delivered as follows:

- York – Thursday 18th and Friday 19th March, and;
- Horsforth – Tuesday 16th and Wednesday 17th March.

3.6.3 Survey Outcome

The survey contained two key elements for valuation purposes, namely a Quality of Life question using the Priority Ranking technique, and a set of Stated Preference questions focused on townscape. The overall aim is to gain an understanding of users' preferences for the urban realm they are visiting and willingness to pay for potential improvements including pedestrianisation and shared space options.

The survey results were therefore processed an analysed across two key areas, namely;

- Descriptive Statistics – providing a socio-demographic overview of the surveyed responses, and;
- Willingness to Pay modelling – undertake logit modelling to derive a set of valuations from the Stated Preference survey element of the Hall Test.

Descriptive Statistics

The following table sets out the number of survey respondents collected for each survey day.

Table 3.6 – Survey Responses

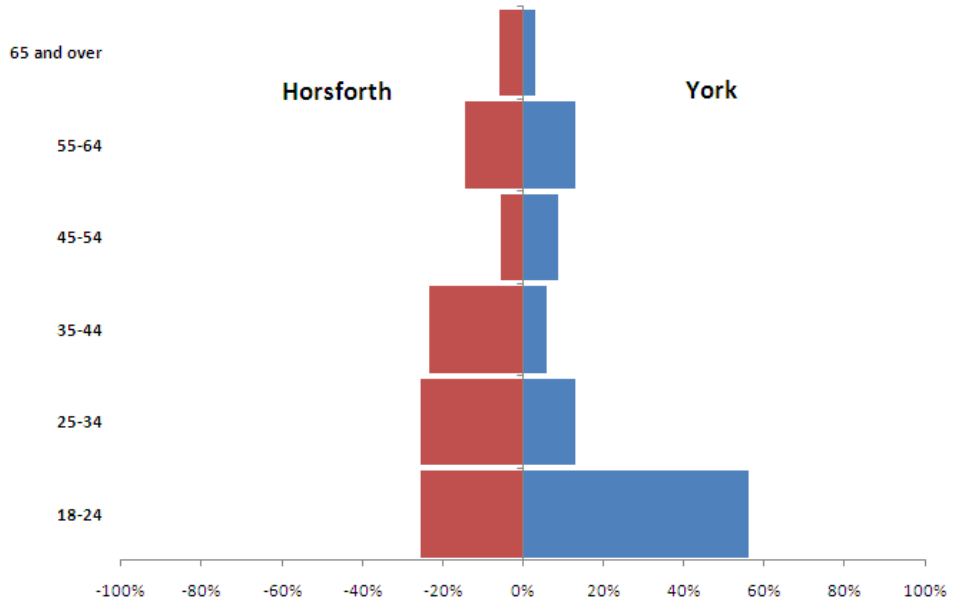
Site	Day 1	Day 2	Total
York	98	100	198
Horsforth	71	97	168

Overall, a good number of respondents were obtained, 168 in Horsforth and 198 in York. Of these, 168 and 191 respectively were usable (where a number of responses were illogical as respondents had clearly clicked the first / same option for all questions in order to finish the survey quickly).

Interestingly, the sample for the two locations showed an opposite split of local residents to visitors, with 68% of Horsforth respondents living within a 10 minute walk and 64% of York respondents living outside the 10 min area. This provides a clear distinction of attractiveness between the sites, where Horsforth New Road Side operates very much as a local destination with facilities used each day, whereas York Micklegate is more of a route to other destinations in the surrounding urban area.

Both surveys showed a similar split between gender (57% Female for Horsforth, and 51% Female for York), yet the distribution in age ranges was markedly different as shown Figure 3.5.

Figure 3.5 – Age distribution of respondents (Initial Survey)



The distribution for York is clearly over-biased towards younger respondents. Whilst the population of Central York is similar with a large proportion of younger residents (due to the university population for example), the survey attracted a large proportion of people living further than 10 mins from the site (and therefore potentially outside of Central York yet still within the urban area) where population distribution is less weighted towards younger people. Although this presented a potential issue with using the valuation data for other studies, the survey field-notes showed that this was a representative sample for those passing through the area on the survey days.

Initial Willingness to Pay Modelling

An initial set of Logit Model runs were undertaken on the data collected in SP exercise of the Hall Test, where the parameters appeared to be telling us that: Shared Space is preferred to Full Pedestrianisation or Limited Motor Vehicle Access options; and that there is positive utility associated with elements of the package, e.g. high quality surface materials and heritage lighting.

However, early in the analysis an issue with the Cost parameter was discovered, where in most models the sign on this parameter is positive. Since payments by the respondent to the local authority are coded as + and repayments are coded as -, the expected sign is negative. This is clearly counter-intuitive, and therefore it was important to understand why this has happened

An investigation was undertaken to discuss possible reasons for this, and given attention to the following possibilities (among others):

- Possible misunderstanding by respondents of the “payment” and “repayment”. In principle it is possible that some or all respondents misunderstood the payment vehicle that was offered. The payment vehicle included repayments as well as payments (via council tax or an equivalent method), which makes it slightly more complex. However, the survey team were clear about the meaning of both “payment” and “repayment” as part of guiding respondents in how to complete the questionnaire, and that no feedback of misunderstanding was given at either survey location;
- The role played by the Status Quo (Alternative ‘Alt 3’ in each choice set). When analysing the data, it was noted that respondents who were offered a choice between the Status Quo with a repayment of £20, and the Status Quo with a payment of £5, showed that most respondents chose the first option despite the less attractive financial offer. The implication could be that there is a perceived inconsistency between the Status Quo and the other

alternatives (Alt 1 & Alt 2), so that the same levels in the variables, e.g. pedestrian priority = Mixed Traffic, has a different meaning for different alternatives, and;

- The survey team noted that a number of people appeared to be responding as though they were insensitive to the payment values being presented. One case in Horsforth observed that the values they were looking at were very low (with a respondent quote being "equivalent to 2 pints of beer") for a tangible change to the urban realm they saw in front of them.

Assuming that respondents misunderstood the idea of a "payment" and "repayment", a model was run based on the assumption that all Cost numbers are absolute values, i.e. positive numbers, indicating a payment (whether the intention of the design was to present a payment or a repayment).

In this model, the Cost coefficient is remarkably good, with the expected sign and a very significant t-statistic of 11.37. The overall rho-squared is also acceptable (0.12).

The only potential scenario to match this finding is that many respondents have misinterpreted the repayments as payments, which we believe is demonstrated by the results. This also shows that the third scenario above is not the main reason for the wrong sign on Cost, since the highly significant result above would not have been obtained in that case.

To support this conclusion a model based ONLY on the ranking of alternatives Alt 1 and Alt 2 was run to exclude the Status Quo, as assumed with the second possibility above. The rho squared in this model is low (0.02 to 0.03) indicating a poor fit to the data. Although the sign for the cost term is logical i.e. a negative if expected (depending on which dataset is used) and the others remain plausible, the low rho squared makes the model of little use. The low rho squared remains if the York and Horsforth data are analysed separately or pooled together. The Cost term in these models is insignificant at a 95% confidence level, even where only the first choice data was used, or excluding those who normally spend <10min on the street. As a satisfactory model did not emerge from this analysis, it was deemed that this was not the main problem behind the counter-intuitive results.

It was therefore believed that the negative sign presented in the questionnaire has been ignored by a substantial number of respondents. Whilst this was not presented as an issue in the review of the survey design, "piloting" of the pilot survey, or in queries from respondents on site (where a debrief at the end of Days 1 & 2 was held to discuss feedback and possible issues arising), it appears as though a significant number of the respondents misinterpreted this aspect of the choice set.

3.7 Re-survey Programme

As noted above, analysis of the SP data brought to light an issue with the presentation of the payment vehicle that had not been picked up within the piloting of this pilot survey. Specifically, the modelling results indicated that a negative sign presented on screen to respondents had been ignored in a significant number of cases.

In order to obtain convincing WTP results, changes would be required to address this issue. A subsequent re-survey programme was therefore developed to adopt these revisions.

3.7.1 Survey Locations

It was noted that the pool of potential respondents in Horsforth (New Road Side) was becoming exhausted by the end of the second day of the March survey. Many pedestrians appeared to be repeat visitors both within and between days, and we believe that any further surveys conducted there might suffer from a depleted response rate (albeit on a lesser scale as time goes by). A replacement survey location was therefore suggested for Horsforth, alongside a replacement for

York Micklegate – also due to the age distribution observed at that site.

A number of locations were reviewed for the re-survey programme. Each were again appraised against the selection criteria as set out earlier within this chapter, where full details of all sites and their relative performance are contained within 'DfT Pedestrianisation Benefits – Survey Location Review', Atkins and ITS, 2010.

The sites under review were;

- Otley – Kirkgate, Market Place;
- Lewes – Eastgate;
- Bristol – Queens Road, Corn Street;
- Bath – Upper Borough Walls;
- Dudley – High Street;
- Gloucester – Southgate, and;
- Norwich – St Stephens St, Westlegate, Exchange St, Tombland and St Benedicts St.

Smaller Urban Areas / Towns

The review of Lewes and Otley showed that, potentially, the study may be able to use both these locations as the two survey sites. To do so would have obviously changed the balance of sites surveyed from that indicated in the original approach, i.e. these are both towns of approx 15,000 people, with limited existing pedestrianisation and an existing bypass and road network which would allow for further pedestrian amenity improvements. These were attractive characteristics from our study viewpoint, although they reduced the 'range' of survey sites and left open the question of valuation in larger cities / PTE areas, both city centres and suburb centres.

Of the two towns, Otley appeared to suffer more from poor street environments caused by through traffic, and therefore was assumed to potentially have the greater scope for improvement.

Larger Urban Areas

Whilst a considerable number of larger urban areas have already seen comprehensive pedestrianisation, the review had shown that there were still sites which could be appropriately used in this study.

For the five cities/ towns introduced above, all did not have a fully compelling case for use within this study. Of the apparent compromises that needed to be made, the previous survey programme had shown that the key areas which needed to drive the decision on site selection were:

- Appropriateness for a pedestrianisation type scheme – being that survey respondents can visualise such a scheme being adopted in the area, and that an appropriate scheme to provide a traffic bypass is realistic, and;
- Footfall on survey days is sufficient to provide an adequate response rate based on demographics and income ranges.

To this end, the realism of using each site was as follows;

- Bristol – for Queens Road, the site offered real potential for all metrics set out above. However, a question remains with the locality of the university and therefore needing a careful recruitment campaign. For the other location, whilst there appeared to be sufficient absolute levels of footfall in the area, the cross-street movements could be potentially too low. However, the overall appropriateness for the scheme could be questionable as the benefits could be perceived to be limited by the respondents.

- Bath – the levels of activity, particularly in cross-street movements, suggested that there would have been adequate footfall at this site along with range of movements. One area that did bring some concern was that the existing urban realm is of quite high quality and therefore may understate the benefits of a scheme.
- Dudley – although the apparent low quality retail environment and demographic range of the catchment area required careful consideration within the overall site selection for the study, the area provided a potentially realistic location for schemes to be presented as part of MSBC submissions.
- Gloucester – similar to the assessment for Bristol, there was a strong potential for the site both in general, and for use as part of the survey programme. Yet again, the benefits may have been underestimated by respondents;
- Norwich – there appeared to be strong potential for some sites in Norwich. St Stephens street could benefit considerably from pedestrian improvements, yet this may be only achievable as part of a wider plan, or may be hard for the respondent to visualise in the context of the area. There was no clear benefit to fully pedestrianising Exchange Street, which is currently a link for motorists whilst being suitably designed and comfortable for existing pedestrian movement. Of all locations in Norwich, St Benedicts Street remains widely unchanged in recent years and suffers from existing pedestrian issues in terms of characteristic, narrow footways and poor surface quality. Any suggested level of improvements at this location could be tangible due to its location and current character, and therefore was considered as a suitable location for surveys.

Although the findings of the desktop analysis were not fully conclusive, it was clear that there were a number of sites which could feasibly be adopted for this study. The selection of sites was finalised through more practical considerations, such as location of a Hall Test venue and level of footfall. The two sites chosen were St Benedicts Street in Norwich, and Otley.

St Benedicts Street - Norwich

Norwich has a population of over 130,000, again with appropriate split of income and demographics for this survey programme. The city centre has mixed land use, and contains many shops within a pedestrianised area (west of the Castle), with cycle friendly infrastructure encouraging permeability for cyclists.

Some areas of Norwich have recently undergone, or may soon undergo, transformation, and as a result there may be contentious issues involved with any proposed scenario. Nonetheless, there are opportunities for potential testing within the city centre.

St Benedicts Street is located to the north-west of Norwich city centre, in the Norwich Lanes area of the city. It contains a mix of land uses, including retail, institutional and residential.

Figure 3.6 – Location of St Benedicts St, Norwich

Traffic is two-way on this street, and there is a feasible alternative for traffic movement parallel to the north along Westwick Street. There appears to be a range of movements in this area due to its permeability into Norwich city centre to the south. Some visitors walk in the road due to capacity issued caused by narrow footways

Of all locations assessed, this area has not undergone significant regeneration and the existing footway and carriageway is of low quality. Therefore surveys would provide respondents with tangible options for the area that would lead to improvements for pedestrians.

Figure 3.7 - St Benedicts St facing east (left)and facing west (right)

Otley

Otley is a town of 14,000 people in West Yorkshire, 15km north west of Leeds. Its demographics are unexceptional, being home to a number of commuters to Leeds and other economic centres – it is neither an exclusive high cost location nor a focus of deprivation, but importantly has a mix of incomes and ages.

Figure 3.8 – Location of Otley

The pedestrian and traffic situation in the centre of Otley could be summarised as follows:

- The town centre is large enough to have a main street network rather than just one main thoroughfare. Key streets for activities *and* traffic are: Kirkgate (Figure 3.9 below), Market

Place/Boroughgate and Bondgate. These are linked by other substantial streets including Crossgate, Nelson St/Walkergate and Charles St;

- At weekends as well as weekdays (peak hours) there is considerable congestion in Otley;
- At present there is a limited amount of pedestrianisation, on side-streets such as Market St just to the south of Market Place;
- A pedestrian priority scheme could be attractive on either Kirkgate (between Bondgate and Market Place) or on Market Place/Boroughgate (between Kirkgate and Crossgate). Either scheme would connect into the market place itself which can be seen at the junction of these two streets, and;
- In each case, local traffic would be able to use the remaining network to pass through the town.

In terms of the criteria for selection of locations, both streets in Otley that have been shortlisted appear to satisfy the criteria. Footfall is equivalent to Horsforth, and there are a mix of retail and other business activities on both streets. The street taken forward as part of the re-survey programme was Kirkgate in Otley, shown within the following figure.

Figure 3.9 – Kirkgate, Otley

The following table shows how both chosen sites compare to the selection criteria developed as part of the early stages of the study, showing that both sites meet all selection criteria.

Table 3.7 – Re-survey locations selection criteria

Site	1) Usage	2) Range of movements	3) Existing issues	4) Demographic mix	5) Activity mix	6) Resident/ visitor mix	7) Non-contentious
Kirkgate, Otley	✓	✓	✓	✓	✓	✓	✓
St Benedicts Street, Norwich	✓	✓	✓	✓	✓	✓	✓

Key: ✓ satisfactory; × unsatisfactory; ? substantial doubt over suitability; - uncertain.

3.7.2 Revisions to Survey Design

Revisions to the questionnaire and to the computer tool used to present it to respondents fall into two categories:

- Changes that are necessary to resolve the issue which arose in the March survey, or;
- Other optional changes aimed at improve the results, taking advantage of the opportunity of a second survey.

Necessary changes

In order to address the interpretation issue discussed above, the presentation of the payment vehicle was changed to spell out in words the sign of the money impact on the respondent, i.e. whether the amount is a payment to the council or a repayment *from* the council. These were also placed on separate lines, to further differentiate and minimise the chances of confusion. The following table shows how this appeared in the stated preference questions.

Table 3.8 - Revised payment and repayment presentation

	Option 1	Option 2	Option 3
Amount extra you would pay to the council, per annum OR Amount of money you would get back from the council, per annum	pay £10	£0 (zero)	 £50 money back

Other changes

Update Q5 to simplify input method

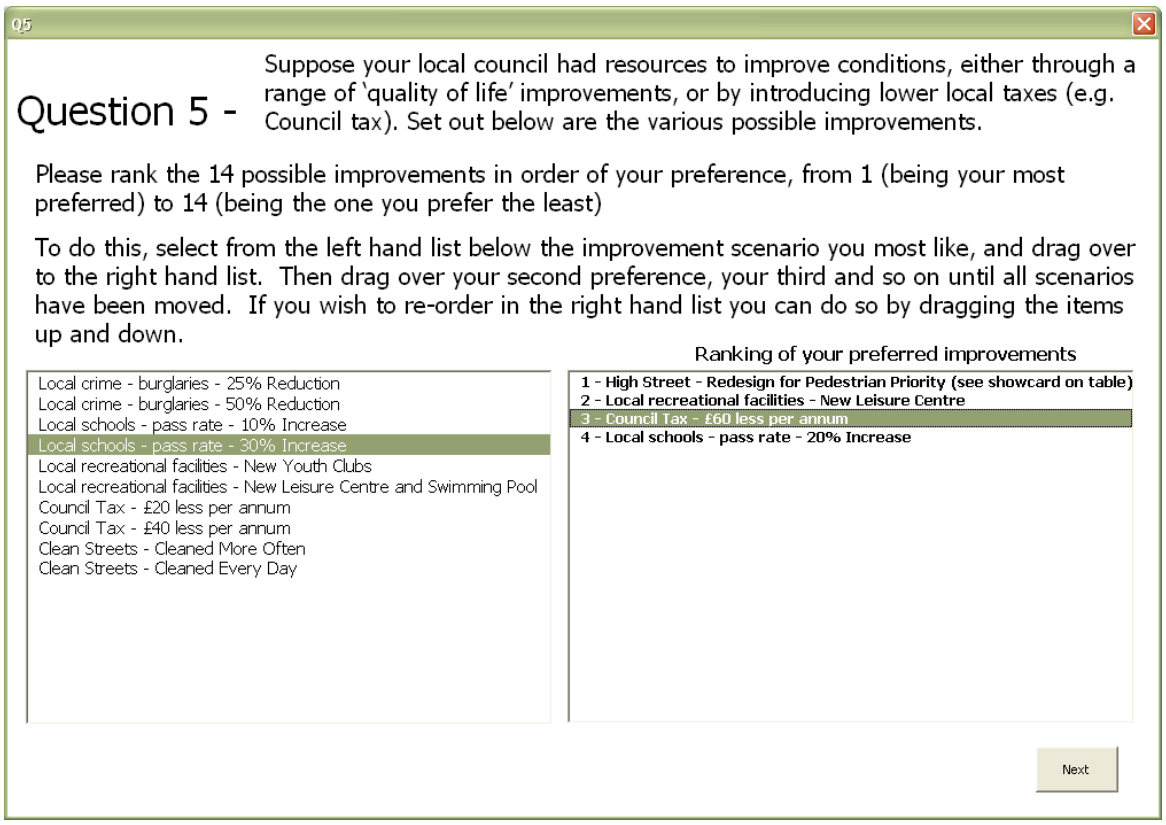
Question 5, which asks respondents to rank their preference over 16 scenarios, had been noted by survey staff as generating a number of requests for assistance from respondents. Also this question by its nature does take a considerable time to complete.

Whilst respondents do eventually work out how to complete the table, the study team were able to review and change the way that users interact with the question on screen. Specifically, the Priority Ranking table was replaced with a list of improvement options on the left hand side.

Users select options from the left hand list and drop into the right hand list, whereon they are numbered ‘1st preference’, ‘2nd preference’ and so on. They can then re-rank the options as required.

The following figure shows the simplified Q5 (where the original question can be seen in Appendix A).

Figure 3.10 - Simplified Q5 presentation



The options within Q5 were also reduced from 16 to 14 through removing the detailed scenarios for high street improvements and focussing on the shared space package which respondents appeared to value most highly from the first survey.

The wording for this scenario is shown in the above figure as the first chosen option, where it was complemented by a showcard on the table visualising the streetscape scheme.

Other changes

Other changes, with a view to reducing noise in the data and making the respondent's task easier reducing fatigue and improving concentration, are listed below:

- Amended presentation of the 'Status Quo' scenario (Option 3). In particular: identify this as 'As Now' on screen; making the levels of each variable explicit; and review definition of levels between 'As Now' and the other Options;
- Inform respondents at the start of SP what to assume about parking and other context;
- Widen the range of money amounts slightly, in view of the modelling results using the original data (see Table 3.9 below).

Table 3.9 - Model Results

Model 2089_VTP_ABS(cost) HORSFORTH

Utility parameters

Name	Value	Std err	t-test	
Act2	0.0703	0.112	0.63	*
Cost	-0.0407	0.00358	-11.37	
Kerb2	0.636	0.166	3.83	
Light2	0.200	0.0886	2.26	
Prior2	1.55	0.255	6.06	
Prior3	0.684	0.248	2.76	
Prior4	0.829	0.167	4.98	
Surf2	-0.0598	0.155	-0.39	*
Surf3	0.888	0.165	5.39	
Surf4	0.383	0.126	3.03	

Comparing the coefficients on Cost and Prior2 suggests that respondents are willing to pay on average £38.10 per annum for the Shared Space package (to replace the status quo). Willingness-to-pay for other packages appears to be on average: £20.40 per annum for Limited Access; and £16.80 per annum for Full Pedestrianisation.

The maximum difference shown to respondents between Options was £40, and the minimum difference shown was £5. In view of the WTP results, it was deemed appropriate to widen the maximum difference to £75. This was implemented by using the following levels on the status quo:

- £20, £30, £40, £50 or £60 money back,

And the following levels on the streetscape improvement options:

- pay £15 or £10, or zero, or £10 or £15 money back.

This would be consistent with one of the observations from the survey debrief: some respondents commented that the amounts of money asked seemed small in return for significant high street improvements (the maximum amount of money asked was £10 per annum and the maximum repayment was £30 in the March survey). On the other hand, the status quo option was chosen in a significant minority of cases, so the improvement options were not completely dominating and respondents were being faced with a real choice.

For comparison, £45 was adopted as the annual WTP valuation for a package of high street

improvements in London by Sheldon et al (2007) in their work for TfL (see §2.71 in the Literature Review report). Walker (1997) found a lower average figure of around £25 for two streets in central Oxford in the mid-1990s. The retail prices index (RPI) increased by around 31% between these two surveys, which accounts for some of the differential. Also Gross Disposable Household Income (GDHI) per capita[2] is approximately 6% lower in Oxfordshire than in London – and we would expect ability to pay to influence willingness-to-pay. Finally note that GDHI per capita is approximately 13% lower in York than in London, and 20% lower in Leeds than in London – this would be expected to influence the WTP findings in this study.

The final Hall-Test re-survey form is included within Appendix B.

The following two sections provide a summary of the re-survey programme delivered in July 2010.

3.8 Survey Overview

The re-survey was undertaken at the two revised locations introduced as part of the previous section, namely;

- Norwich St Benedicts St – Tuesday 13th July and Wednesday 14th July, and;
- Otley Kirkgate – Thursday 15th July and Friday 16th July 2010.

For both locations and dates, a Hall was hired close to the venue where laptops were setup to run the Hall Test.

Each location had a team of recruitment staff (with previous SP recruitment experience) working on the survey street, with Hall Test staff directing the respondents once in the Hall.

The weather was fine for all survey days at both locations, with no recorded adverse transport conditions (such as roadworks or adverse traffic congestion).

Although the surveys were taking place at the time of the 2010 FIFA World Cup, the venues were not interrupted by these or other ad-hoc events. However, there was a local market at Otley on the Friday, yet the recruitment programme and subsequent analysis has been reviewed to ensure that this did not present any bias to the results.

For the Norwich survey, the respondents were keen to be involved in the study, where a small "flyer" was handed out to promote the survey for those who only had time to return later in the day. The discussions with local users raised a number of interesting points, including;

- Some people were concerned about narrow pavements and uneven surfaces in certain areas. This was apparently quite a big problem for people on mobility scooters;
- Retailers in the area had mixed feelings about pedestrianisation. Generally, smaller retailers and cafes were positive as they thought it could increase footfall, but larger retailers had reservations about servicing;
- The council is perceived as not having a great deal of funds available for schemes such as those proposed, and;
- Council tax is perceived to be very high in the area, which may have influenced people's opinions on spending/saving money.

In Otley, people appeared concerned about the current state of the road network and activities on the Kirkgate road. The majority of the respondents were very keen to engage with the survey, and

[2] *Office of National Statistics (ONS) (2002), Regional, sub-regional and local area household income, 'Economic Trends' No. 582 May 2002. London: TSO.

raised questions during the survey to ensure they understood the aims and how their responses would be analysed. Outlined below are a number of key observations made during these discussions.

- Irrespective of the amount to be paid, a number of respondents were completely favourable to improvements;
- The majority of the respondents wanted the improvements in terms of the pedestrian priority to take place, but were cautious about the payment;
- A significant number of respondents expressed that the shared space is not a better option for blind and disabled people, and;
- People expressed concerns about the routing of traffic should a change to the pedestrian priority be made, yet understood that this should not cloud their judgement as to the "performance" of the scheme.

As with the initial survey programme, a target of 400 respondents was set to ensure statistical significance of the results. The following table sets out the number of survey respondents collected for each survey day.

Table 3.10 – Re-Survey Responses

Site	Day 1	Day 2	Total
Norwich	116	85	201
Otley	104	101	205

As with the initial survey, a number of responses were incomplete, and therefore 198 and 201 responses for Norwich and Otley respectively were taken forward to the analysis and modelling.

The remainder of this section summarises the descriptive statistics collected as part of the re-survey, with results from the valuation WTP modelling contained in the next section.

3.9 Descriptive Statistics

The following table summarises the descriptive statistics from across all four survey sites.

Table 3.11 – Summary Descriptive Statistics

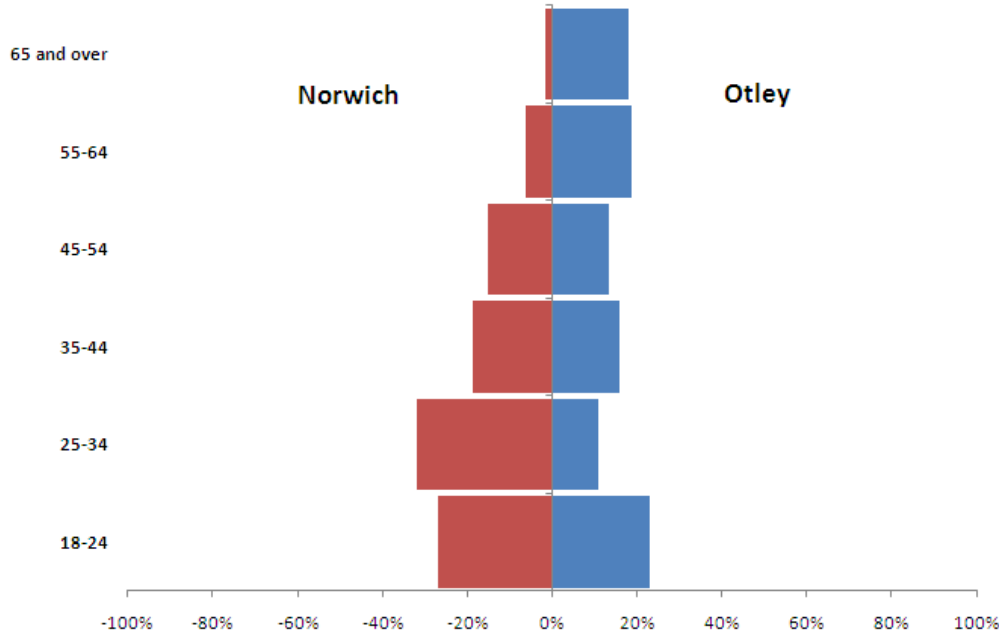
Characteristics	Locations				Total
	Horsforth	York	Norwich	Otley	
Sample size	168	198	201	205	772
Sample size (usable responses)	168	191	198	201	758
Gender: % Female	51%	57%	35%	52%	360
Age:					
18-34	86	132	116	68	402
35-54	48	28	67	59	202
55+	34	31	15	74	154

Characteristics	Locations				Total
	Horsforth	York	Norwich	Otley	
Employment status:					
Employed	15	23	91	79	208
Self-employed	13	4	23	12	52
Other	140	164	84	110	498
Income (household), per annum:					
>£50,000	43	29	18	14	104
£30,000-49,999	25	24	19	22	90
£20,000-29,999	25	19	21	20	85
<£20,000	17	33	44	63	157
Undisclosed	58	86	96	82	322
Frequency of visit:					
once a month, or less	16	4	22	6	48
1 or 2 days a week	38	45	55	52	190
3 or 4 days a week	35	53	36	65	189
5 or more days a week	79	89	85	78	331
Time spent at survey location:					
full day	28	30	43	14	115
1-2 hours	18	19	28	48	113
20-59 mins	59	38	57	69	223
<20 minutes	63	104	70	70	307
Trip purpose:					
work	4	12	64	30	110
shop	77	83	108	159	427
pass through	55	64	115	85	319
eat/drink	31	29	75	81	216
other	1	3	26	21	51
Access mode:					
Car	59	11	39	35	144
Public transport	17	34	20	12	83
Taxi	7	2	0	1	10
Walk	84	129	114	146	473
Bicycle	0	14	25	2	41
Other	1	1	0	5	7
Residence:					

Characteristics	Locations				Total
	Horsforth	York	Norwich	Otley	
within 10 mins walk	114	68	89	130	401
wider local area	54	123	109	71	357
Length of residence:					
<1 year	25	35	45	12	117
1-3 years	35	21	53	23	132
>3 years	108	135	100	166	509

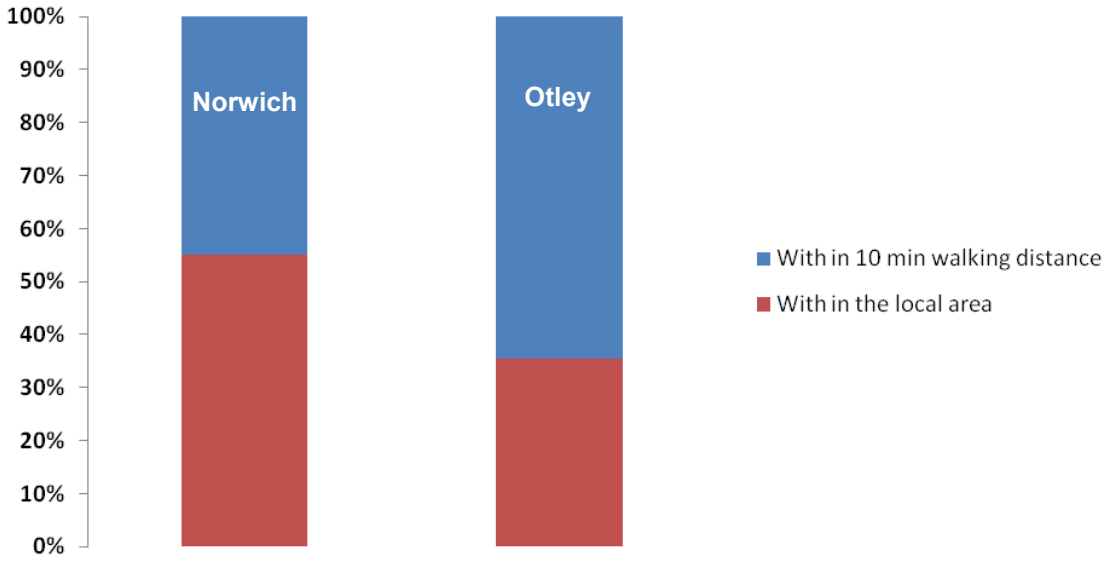
Responses from the two re-survey locations have been further analysed to understand how the population of the sample differs between the two sites.

Figure 3.11 - Age distribution of respondents (Re-Survey)



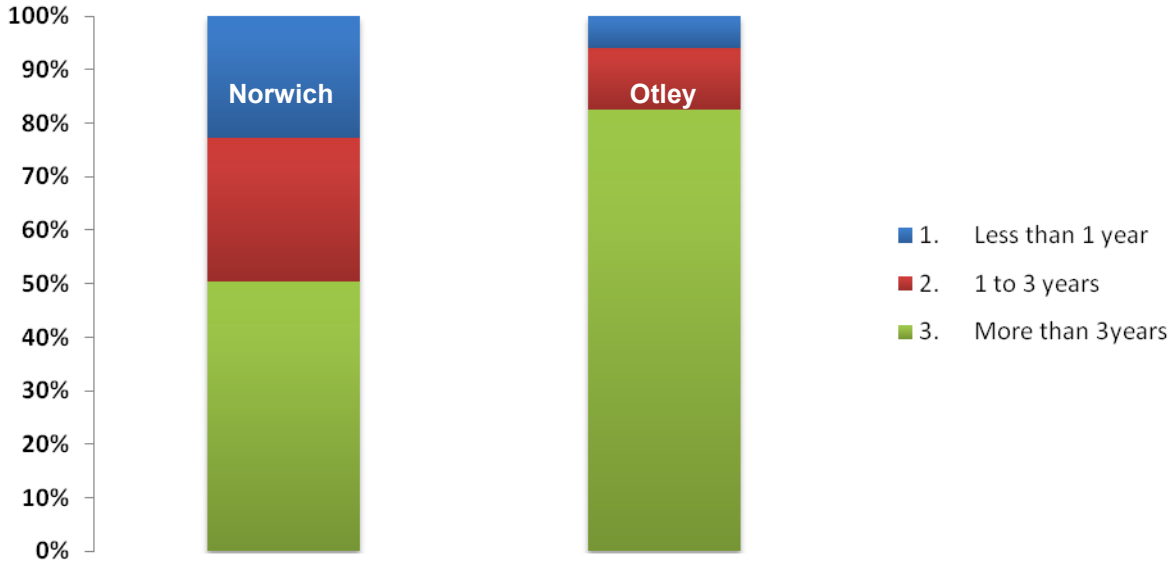
Overall, the data has slightly more than 50% of the respondents who are living within 10 minutes walking distance from the study areas, as shown within the following figure. There is a marked difference between Norwich and Otley, where more people visit from outside of a 10 min radius at Otley than Norwich. This is potentially due to the market held each week in Otley which attracts people from across and close to the town.

Figure 3.12 – Locality of Respondents (Re-Survey)



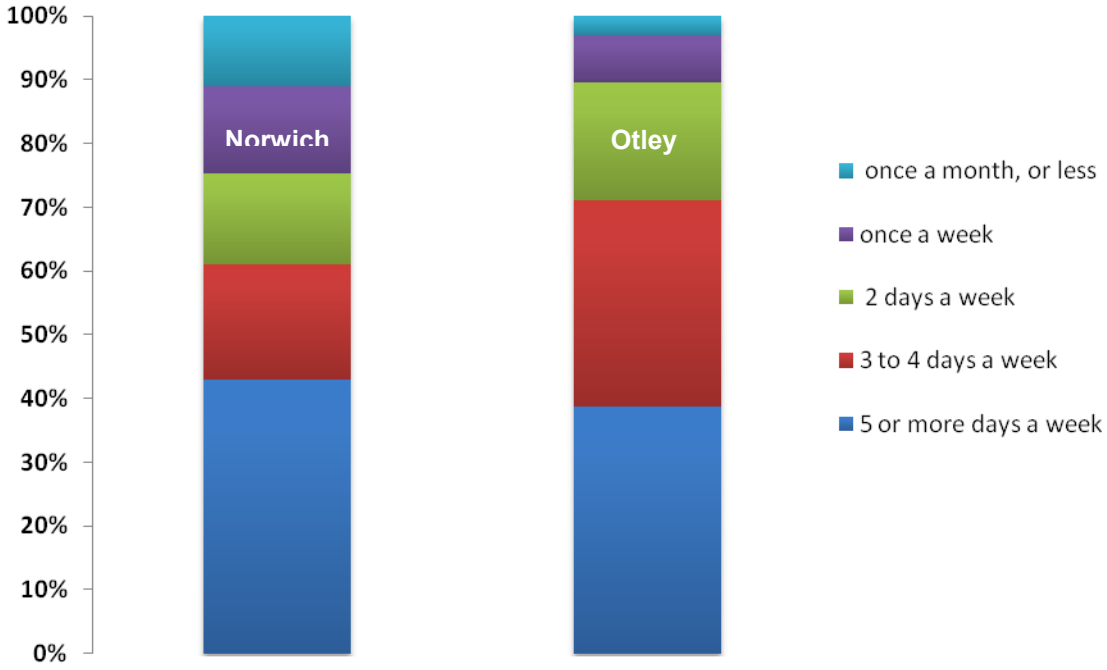
As the following figure shows, the majority of people surveyed in Otley have lived in the town for more than 3 years. In Norwich, however, there is a more equal split, particularly as Norwich is a university town with an associated higher turnover of residents.

Figure 3.13 – Time spent living in survey area (Re-survey)



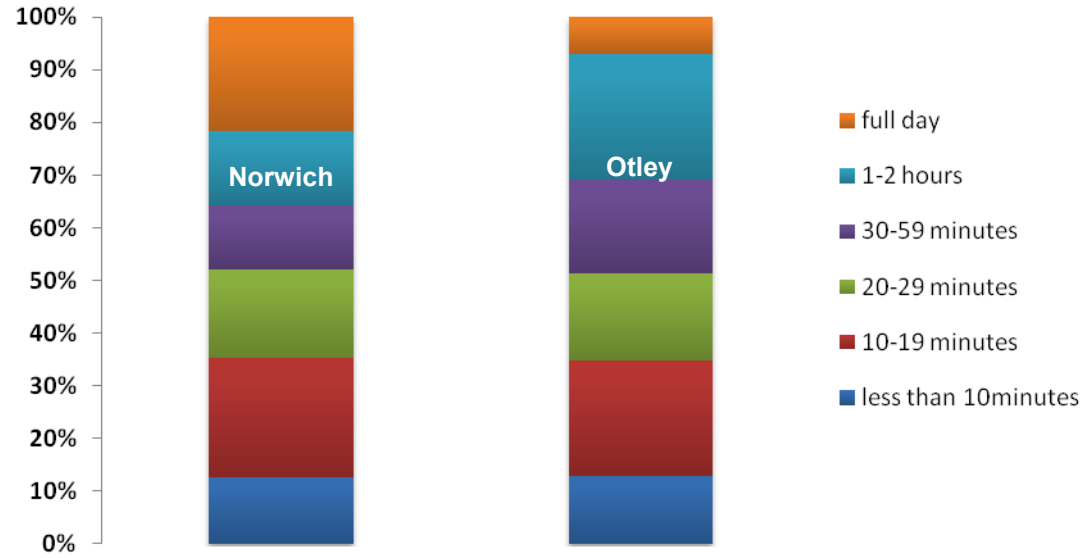
Number of visits to the study area by respondents indicates that more 60% of the respondents visit 3 or more times a week, therefore in both survey locations the site knowledge will be strong.

Figure 3.14 – Frequency of survey location visits (Re-survey)



The amount of time spent at the study areas indicates that nearly half of the respondents spend more than 30minutes on an average, with 30% or less spending between an hour and full day.

Figure 3.15 – Time spent at survey location (Re-survey)

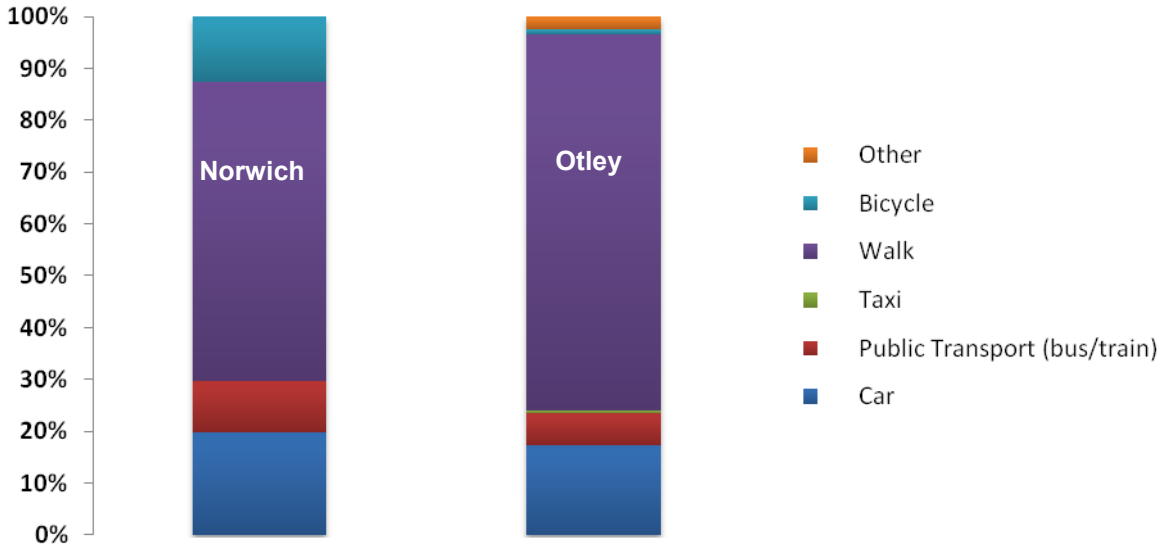


Respondents predominantly make shopping trips to Otley (potentially due to the market location). Both survey locations saw 70-80% of all respondents using the survey area as a destination, rather than just passing through.

Figure 3.16 – Trip purpose (Re-survey)

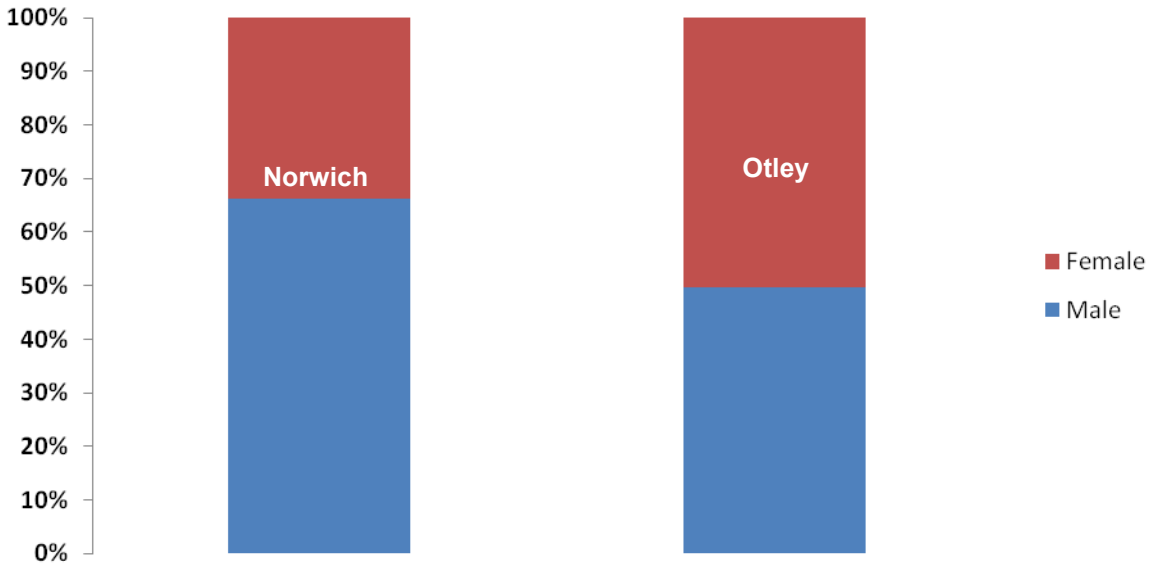
As the following figure shows, largely 'walk' trips dominate the modes of travel at both sites, followed by car trips. This high level of pedestrian usage is important for the survey implications.

Figure 3.17 – Access Mode Share (Re-survey)



There appears a fairly equal distribution of gender across the sample in Otley, while it is 65% male and 35% female in Norwich.

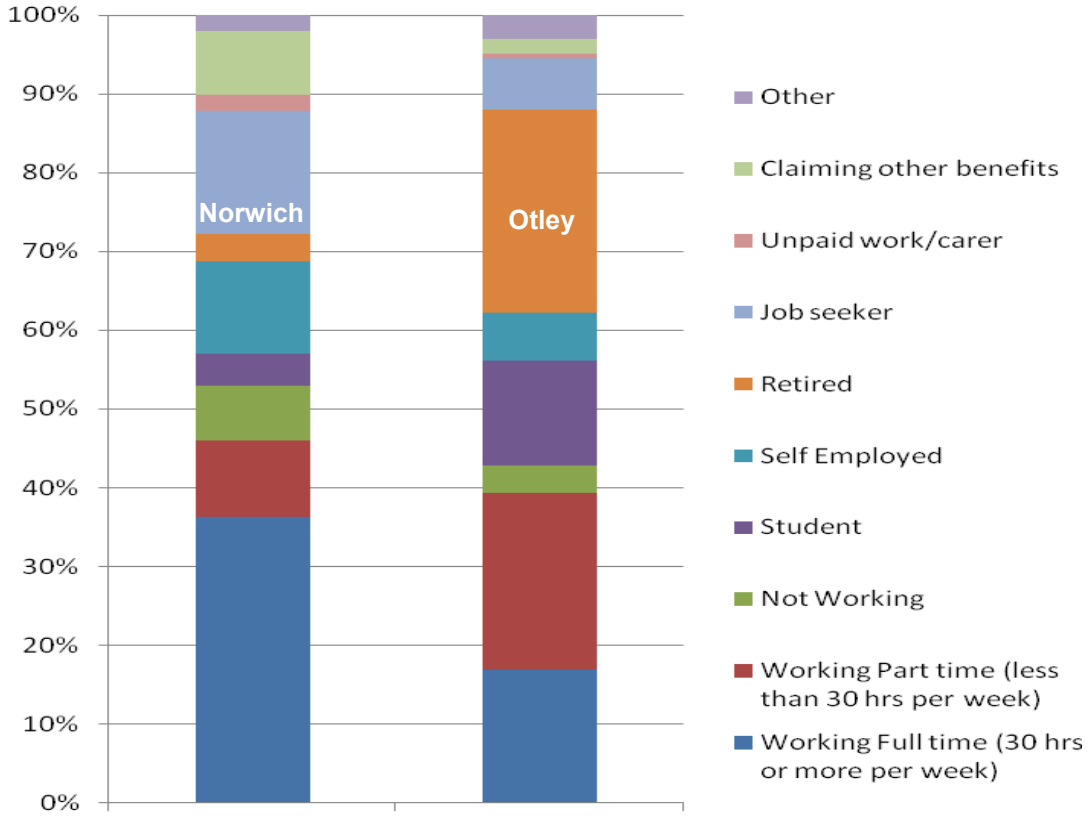
Figure 3.18 – Gender distribution (Re-survey)



The following figure shows the employment status of the respondents at both survey locations. In summary, approximately 60% of the respondents in Norwich are working (self employed, part time or full time), compared to 45% in Otley. A far larger proportion of respondents in Otley were retired or working Part Time, and therefore one would assume that the WTP for Otley will be lower, but analysis of income below is also important.

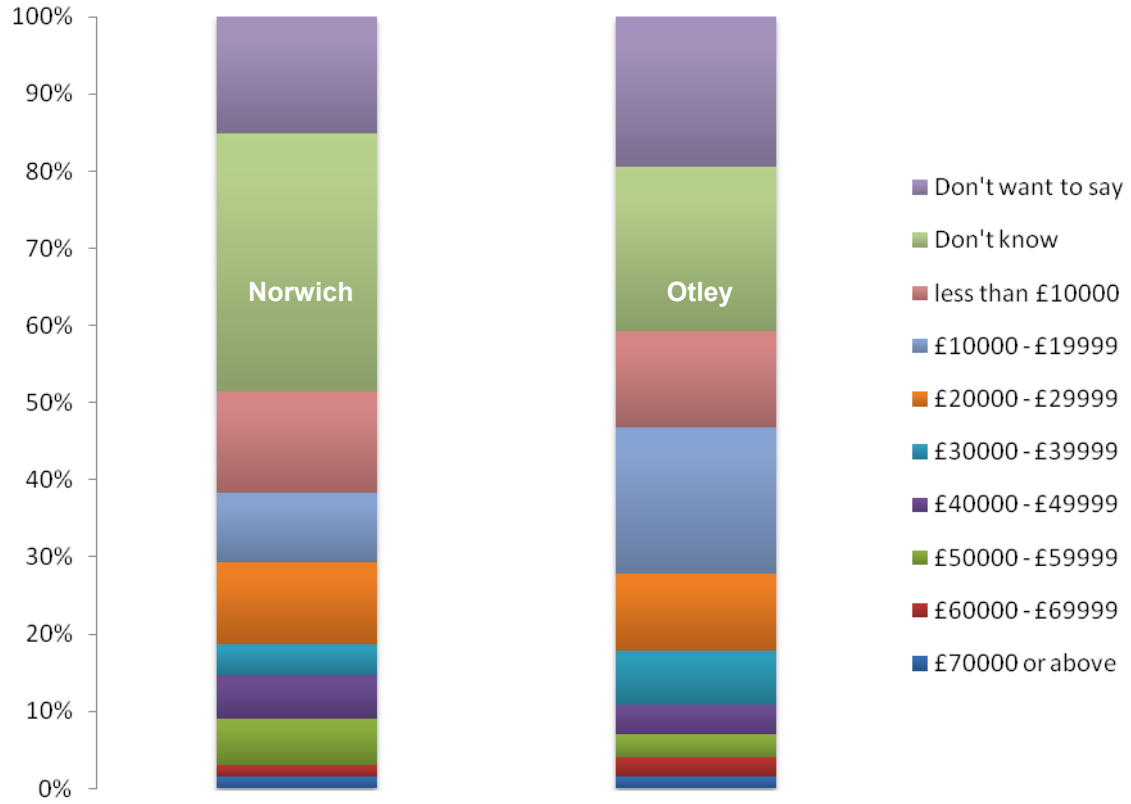
Interestingly, although Norwich is a university town and, despite being some way from Leeds / Bradford (closest university locations), there were more students surveyed in Otley.

Figure 3.19 – Employment Status (Re-survey)



Finally, the following figure shows the household income spectrum. About 40% to 50% of the respondents either do not know or reluctant to disclose their income, where the respondents at the Norwich site appeared to have proportionally higher incomes than those at Otley.

Figure 3.20 – Income distribution (Re-survey)



On the whole, the distribution of sample appears to be fairly equal and is likely to allow us to study the differences between these groups.

3.10 Logit Modelling

Once data had been collated and analysed, mathematical models were constructed for a number of scenarios in order to derived stated willingness to pay.

By far the most common method used to explain discrete or categorical stated preference data is the multinomial logit (MNL) model. It is assumed that each agent *i* chooses that option from the *n* on offer, which yields maximum utility (U) or satisfaction. Thus option 1 is chosen if:

$$U_{i1} > U_{in} \ for\ all\ n, n \neq 1$$

In turn, the overall utility for each option is made up of the part-worth utilities associated with a range of explanatory variables. An error term (ε_i) is introduced to represent the net effect of unobserved influences on an individual's choices. Hence individual *i* bases decision making on what might be termed random utility which for option 1 (U_{i1}) is made up as:

$$U_{i1} = V_{i1} + \varepsilon_{i1}$$

V_{i1} is the deterministic part of utility which can be related to those attributes (X_k), such as those characterising the SC options, which can be observed and measured. This could be represented as:

$$V_{i1} = \sum_{k=1}^{K} \alpha_k X_{ki1}$$

The utility functions for other options are specified in an entirely analogous fashion and can be extended to cover attributes specific to the individual and other functional forms.

As analysts, by definition we can proceed only by observation of V, yet this ignores the influence of what is to us unobservable. We cannot be sure that option 1 is preferred if V_{i1} is the highest, yet the analysis must proceed on the basis of this observable component of utility alone. The way forward is to specify the problem as one of explaining the probability of an individual choosing a particular option.

By assuming some probability distribution for the ε_{in}, the probability of choosing option 1 (P_{i1}) can be specified solely as a function of the observable component of utility. Assuming that the errors associated with each option have a type I extreme value distribution and are independently and identically distributed yields the MNL model:

$$P_{i1} = \frac{e^{V_{i1}}}{\sum_{j=1}^{n} e^{V_{ij}}}$$

The coefficients of the MNL's utility functions are estimated by maximum likelihood to provide the best explanation of individuals' discrete choices and denote the relative importance of the attributes. We will have expectations as to the sign of the coefficient estimates, although the absolute magnitudes of the coefficients have no meaning since they are estimated in units of residual variation. The more random error there is in the stated preference data and the larger the error variance, then the smaller the coefficient estimates. This scaling does not impact on the relative importance of the coefficient estimates, since it applies equally to all coefficients.

However, when estimating a model that pools data across, say, different stated preference exercises, as we have here, it is essential to allow for possible scale differences across the data sets, otherwise scale variation due to random error can be erroneously attributed to a coefficient estimate. Logit models were estimated using the package 'Biogeme', authored by Michel Bierlaire.

Modelling strategy

The modelling strategy pursued in this study was as follows:

- initially develop simple models based on the chosen policy variables, using the whole dataset;
- then explore differences between the four survey locations
- explore random taste variation within each survey location;
- then explore the role of personal characteristics with a view to segmentation;
- then develop a final single model incorporating incremental variables for locations, personal characteristics (if justified by significant differences in WTP) and taste variation – WTP will be derived from this final model.

The following sections set out the results from the modelling programme, and address the interpretation and use of the results.

4. Results

This chapter reports on the results of our analysis using the sample of 758 usable responses across four locations: Horsforth; York; Norwich; and Otley. The results comprise: logit models of individual choice behaviour estimated on the survey data; estimates of willingness to pay for townscape improvements and pedestrianisation based on those models; an investigation of potential segmentation of WTP by personal characteristics; variation in WTP by locations; random taste variation; and confidence intervals on the results.

4.1 Modelling Results (Stated Choice)

Models were estimated using data from both levels of the two-level stated choice (SP) and priority ranking (PR) experiment. The stated choice (SP) results are presented first, in some depth. The priority ranking (PR) results and the assessment of those in relation to the SP results are given in later sections.

Stated Choice Results – Initial Model

The 'initial model' (Table 4.1) is a simple one using the full dataset, pooled across the four locations: Horsforth; York; Norwich; and Otley. Separate models had in fact been run first and the key coefficients and WTP had been found to be encouragingly similar – it appeared reasonable to pool the data. Note that the model included scale parameters which capture some site-specific variation (Table 4.2). Careful tests on location-specific effects were carried out and are reported in full within the final model (Table 4.3).

The 'initial model' indicates that respondents are sensitive to Cost, with the expected negative sign. Respondents are also sensitive to the streetscape policy packages, labelled Priority in the table, in each case with a positive sign indicating a favourable response to the 'improved' pedestrian environment. Statistical performance of the 'initial model' is acceptable, although it became clear through the modelling process that there is scope to improve the model by adding more detail. We report on the more detailed models below.

Table 4.1 – Initial model using pooled Stated Choice data for all four locations

Attribute	Coefficient	*t*-ratio	Confidence level (*insignificant at 95%)
Cost	-0.0105	-5.84	>99%
Activity (high)	-0.155	-2.24	97%
Kerb (raised)	-0.0203	-0.21	*17%
Lighting (heritage)	-0.00636	-0.12	*10%
Priority: Shared Space	0.298	1.75	*92%
Priority: Full Pedestrianisation	0.414	2.55	99%
Priority: Limited Vehicle Access	0.580	5.06	>99%
Surface (material Lo; contrast Hi)	0.0487	0.57	*43%
Surface (material Hi; contrast Lo)	0.155	1.69	*91%
Surface (material Hi; contrast Hi)	0.143	2.19	97%
ASC	-1.220	-8.04	>99%

Of the three policy packages, the greatest utility appears to be offered by Limited Vehicle Access,

which is the package consisting mainly of traffic reduction achieved by making the street accessible only to selected vehicles at selected times of day. This is essentially the same package investigated by Walker (1997) in Oxford. The second package, when ranked by coefficients in this model, is Full Pedestrianisation. The third package is Shared Space, whose coefficient is significant only at an 92% confidence level. The utility associated with Shared Space is approximately half that of Limited Vehicle Access.

The effects of detailed streetscape changes around those packages are as follows:

- The Activity (high) variant included outdoor seating and eating/drinking opportunities in the street – the initial model suggests a negative utility, which surprised the research team and prompted further investigation, see later models.
- The Kerb and Lighting variables were found to be insignificant in this model.
- The coefficients on Surface suggest that respondents expect a positive utility from high quality surfacing materials, i.e. stone in place of tarmac/concrete slabs, although confidence is not consistently greater than 95%. Their response to high colour contrast between the roadway and the pavement is ambiguous.

Confidence levels are shown in Table 4.1. The adjusted rho-squared statistic for the model is 0.114, which is an acceptable fit for a model of this type.

There is also an alternative specific constant (ASC) on the streetscape As Now. The presence and significance of such an ASC is typical in stated choice models, not only in this application. In general, it can be interpreted as capturing unobserved differences between the options, i.e. differences which are not explained by the attributes in the model. In this case, it may relate to the presentation of the As Now using real photographs versus computer visualisations for the policy scenarios (albeit with many of the same elements and carefully controlled for consistency of lighting, for example), or to respondents' generalised dissatisfaction with the As Now. It was found not to relate to the base levels of other attributes. For completeness, models without an ASC were tested and found to give implausibly high valuations for streetscape improvements, combined with insignificant cost coefficients.

The scale parameters for this model are shown in Table 4.2. These indicate whether there are significant differences of scale between the four survey locations: in this case there are, and the implication is that it is not ideal to use a single set of parameters across all four. Instead, we should investigate incremental variables for each attribute in each location. The reason for Norwich and Otley both having scale parameter 1.000 is that preliminary investigation found their scale parameters not to be significantly different, hence they were set to unity.

Table 4.2 – Scale parameters for the Initial model

Scale parameters by location	Coefficient	*t*-ratio	Confidence level (*insignificant at 95%)
Scale 1 (Horsforth)	0.375	-13.62	>99%
Scale 2 (York)	0.818	-2.28	98%
Scale 3 (Norwich)	1.000	fixed	
Scale 4 (Otley)	1.000	fixed	

Following the 'initial model', the modelling strategy outlined at the end of Chapter 3 was completed, step-by-step. For clarity, we next present the 'final model', which of all the models tested, is the one we judge gives the best representation of preferences and hence WTP. This is the main outcome of the modelling process. Later, we will discuss some of the intermediate models which give insights into particular issues *en route* to the final model.

Stated Choice Results – Final Model

The 'final' stated choice model is shown in Table 4.3. This includes a number of incremental variables whose purpose is explained below. It also includes a number of variables which were found to be insignificant and were then fixed at zero.

Table 4.3 – Final Stated Choice model

Attribute	Coefficient	*t*-ratio	Confidence level (*insignificant at 95%)
Cost (phase 2)	-0.00928	-5.16	>99%
+ Cost (phase 2, non council tax)	0	fixed	
+ Cost (phase 2, income not revealed)	0	fixed	
Cost (phase 1)	0	fixed	
+ Cost (phase 1, non council tax)	0	fixed	
+ Cost (phase 1, income not revealed)	0	fixed	
Activity (high)	-0.280	-4.57	>99%
+ Activity (high, York)	0.570	5.35	>99%
Kerb (raised)	0	fixed	
Lighting (heritage)	0	fixed	
Priority: Shared Space	0.223	2.10	96%
+ Priority: Shared Space (Hor.)	-0.596	-4.37	>99%
+ Priority: Shared Space (Otl.)	0	fixed	
+ Priority: Shared Space (York)	0.411	3.81	>99%
Priority: Full Pedestrianisation	0.598	5.96	>99%
+ Priority: Full Ped'n (Hor.)	-2.21	-10.31	>99%
+ Priority: Full Ped'n (Otl.)	0	fixed	
+ Priority: Full Ped'n (York)	0	fixed	
Priority: Limited Vehicle Access	0.684	7.66	>99%
+ Priority: Limit Veh's (Hor.)	-1.22	-11.18	>99%
+ Priority: Limit Veh's (Otl.)	0	fixed	
+ Priority: Limit Veh's (York)	0	fixed	
Surface (material Lo; contrast Hi)	0.151	1.73	*92%
+ Surface (Lo;Hi, Hor.)	0	fixed	
+ Surface (Lo;Hi, Otl.)	0	fixed	
+ Surface (Lo;Hi, York)	-0.236	-1.91	*92%
Surface (material Hi; contrast Lo)	0.275	3.38	>99%
+ Surface (Hi;Lo, Hor.)	0	fixed	
+ Surface (Hi;Lo, Otl.)	0	fixed	
+ Surface (Hi;Lo, York)	0	fixed	
Surface (material Hi; contrast Hi)	0.199	2.72	99%
+ Surface (Hi;Hi, Hor.)	0	fixed	
+ Surface (Hi;Hi, Otl.)	0	fixed	
+ Surface (Hi;Hi, York)	0	fixed	
sig_Activity	0	fixed	
sig_Priority: Shared Space	0	fixed	
sig_Priority: Full Pedestrianisation	1.56	5.60	>99%
sig_Priority: Limited Veh. Access	0	fixed	
sig_Surface (Hi;Lo)	0	fixed	
sig_Surface (Hi;Hi)	1.02	2.00	95%
ASC	-1.14	-13.02	>99%

The adjusted rho-squared statistic for this model was 0.127, indicating acceptable fit to the data. There is a substantial ASC on the As Now – our interpretation of which is the same as in the Initial Model.

In this model, incremental variables (indicated by the '+' sign) are included for:

- council taxpayer status, shown as 'non council tax' for those who do not pay council tax or do not know – usefully, this was found to have no significant influence over utility (or WTP);
- 'income not revealed', for those who chose not to reveal their income in the survey – this was also found to have no significant influence over utility (or WTP);
- location-specific effects, where the value of the coefficient is allowed to vary between Norwich (which is used as the Base), and Horsforth, York and Otley.

These incremental variables can be interpreted by adding the coefficient on the incremental variable to the Base, e.g. the coefficient on Activity in York is equal to -0.280+0.570 = +0.290.

Random taste variation – i.e. variation between individuals but not related to location – is captured by including the standard deviations of key variables in the model (labelled "sig_").

Insights provided by the final model are as follows:

- Utility of all the streetscape packages (labelled 'Priority') was found to be positive in all locations except Horsforth, where all are negative. The ranking of the three policy packages by utility in this model matches the ranking in the initial model: Limited Vehicle Access > Full Pedestrianisation > Shared Space.
- In Norwich (the Base) and in Otley, the utility of Shared Space is approximately one third that of Limited Vehicle Access. However, in York the utility of Shared Space is much higher, above Full Pedestrianisation and close to Limited Vehicle Access (0.223+0.411=0.634). We hypothesise that this is because York already has an extensive area in the City Centre which has features of Shared Space and Limited Vehicle Access, which is widely perceived to be successful – respondents probably perceived the Micklegate 'scheme' as an extension of the existing City Centre design.
- The negative Horsforth results can be interpreted as a judgement on the desirability of closing the Horsforth street in question to through traffic. The Horsforth case was one of two where the As Now includes a main arterial route (in that case the A65 running northwest from Leeds). Implicit in all the Do-Something options was the need for a diversionary route of some kind. Whilst the study team selected this location because the engineering challenge of such a diversion seemed modest, and the survey staff sought to reassure respondents on this point, on reflection it seems likely that this issue may have generated substantial resistance. The circumstances in Otley were different in two respects: (i) alternative routes through the town centre are already used by through traffic; and (ii) the Otley location is a town centre rather than a suburb centre straddling a radial road.
- Across individuals (rather than locations) there is significant taste variation over Full Pedestrianisation, though not over the other two policy packages. This can be interpreted as opinion being widely spread (or polarised), for example between those who strongly prefer motor vehicle access and those who do not. Full Pedestrianisation is a rather absolute policy in this sense, whilst the developing policy area of 'Shared Space' and also Limited Vehicle Access are more flexible.
- The concerns over Activity in the initial model are resolved: it is clear that in the one location where there is a concentration of activities such as cafes, bars and restaurants on the street already, respondents expect a significant positive amenity for additional outdoor tables and activity on street (York, Micklegate). I.e. the streetscape improvements would be complementary to the existing activity mix. In the other three locations, other activities and

street attributes likely act against this factor: an existing market in Otley (Kirkgate); dominant through traffic in Horsforth; and a narrow trafficked street in Norwich. Also in those three cases, there are other streets nearby which better fulfil the leisure/activity role fulfilled by Micklegate in York.

- Raised versus level kerbs, and Heritage versus standard lighting furniture, were found to have no significant effect on utility (or WTP), confirming the findings of the initial model and all other models tested.
- When separate Cost coefficients for the phase 1 survey and the phase 2 survey are used, the phase 1 coefficient is found to be insignificant. Setting the Cost (phase 1) coefficient to zero in the final model (Table 4.3) still allows phase 1 responses to other variables to contribute to the model. This makes the maximum use of the data whilst taking account of the difficulty experienced by some respondents in interpreting the sign on the money payment in the phase 1 survey questionnaire. The models including the Horsforth and York data for non-Cost variables have good statistical properties and are consistent in their results with phase 2 alone. Also, note that the final model includes site-specific parameters for every variable, and the coefficients on those indicate sensible and generally consistent results across locations.

Influence of Income, Frequency of Visit and other factors on Stated Choice results

Most of these results were either insignificant, or showed inconsistent patterns of variation by segments, despite there being a reasonable number of observations in the dataset.

For income, the following models were run:

- separate models by Income group;
- models with Cost divided by Income (equivalised, and/or raised to power of lambda – using some specific lambda values *or* leaving lambda to be determined by the model in recognition that it is sometimes unhelpful to impose an elasticity on the income effect);
- Income dummies included as incremental variables on Cost; and
- also compared Income Revealed vs Income Not Revealed (separate models) and tested an Income Not Revealed incremental variable – see the Final Model.

A fair summary of the findings with respect to income is given by the following results which are from a model similar to the Final Model but including incremental variables on Cost (Phase 2):

- The incremental variables for Income were all insignificant at the 95% confidence level.
- The Income coefficients were as shown in Table 4.4 – these can be interpreted as the effect of Income on the respondents' sensitivity to Cost. The Household Income range £20,000-29,999 was used as the Base: this contains the UK median household income at approximately £23,000 original, £25,000 final income (2008/9, National Statistics data).

Table 4.4 – Coefficients on Income as an incremental variable

Attribute	Coefficient	*t*-ratio (*insignificant at 95%)	Observations
Cost (phase 2; Household income £20-29.9k = Base)	-0.0126	-3.42	85 (758 total)
+ Cost (phase 2; >£50k)	0.00217	*0.42	104
+ Cost (phase 2; £30-49.9k)	0.00433	*0.90	90
+ Cost (phase 2; <£20k)	0.00663	*1.68	157
+ Cost (phase 2; Income not Revealed)	-0.00445	*-1.17	322

- As well as being insignificant, these coefficients suggest that sensitivity to Cost is not decreasing monotonically as income rises, as would be expected. Both low income and high income groups appear less sensitive to Cost changes than the Base group containing the median income. Moreover the low income groups appear to be less Cost-sensitive than the highest income group, which is a counterintuitive result ($|-0.0126+0.00663| < |-0.0126+0.00217|$). We emphasise that these differences are not statistically significant at the 95% level.
- The adjusted rho-squared statistic for this model was 0.127, indicating acceptable fit to the data.
- Other coefficients were comparable to the Final Model.

For frequency of visit, the following models were run:

- separate models by Frequency of visit;
- models with incremental variables on the non-Cost variables for Frequency of visit.

The following results are representative: they suggest a pattern in which WTP rises with Frequency of visit between <3 days per week and 3/4 days per week, but then falls back for 5+ days per week; many of the incremental variables are insignificant, and the utilities do not change in a consistent proportion across the table (Table 4.5).

Table 4.5 – Coefficients on Frequency of Visit as an incremental variable on 'Priority'

Attribute	Infrequent visits to the street (<3 days per week)		+ Frequent visits to the street (3/4 days per week)		+ Very frequent visits to the street (5+ days per week)	
	Coefficient	*t*-ratio (*insignificant at 95%)	Coefficient	*t*-ratio (*insignificant at 95%)	Coefficient	*t*-ratio (*insignificant at 95%)
Priority: Shared Space (Base)	0.172	*1.01	0.385	1.97	0.0117	*0.07
Priority: Full Pedestrianisation (Base)	0.270	*1.51	0.647	3.20	0.340	1.99
Priority: Limited Vehicle Access (Base)	0.561	3.91	0.302	*1.69	0.0312	*0.20

For the Surface attributes – high/low quality paving material and high/low contrast – all Frequency of visit variables were found to be insignificant.

Overall, we would find it hard to justify any systematic variation in WTP for Income or Frequency of Visit based on this evidence.

Finally, we examined whether there was any evidence of an effect on WTP from the sign of the cost change in each particular Stated Choice option, i.e. whether the respondent was being asked to make a money payment or being offered a money repayment. A model was run using separate Cost coefficients for payment and repayment. The finding was that the Cost coefficient for repayments was smaller and also not significantly different from zero at 95% confidence (-0.00355 with a *t*-ratio of -1.11 versus -0.0233 with a *t*-ratio of -4.52). The WTP implications of this difference are interesting and are reported at the end of the following section. The fact that the coefficient for repayments was smaller than for payments was in line with the literature on asymmetric response to gains and losses in stated preference experiments.

4.2 Willingness-to-Pay for Townscape Improvements and Pedestrianisation (Stated Choice)

Willingness-to-Pay, based on the Stated Choice model

Table 4.6 shows the willingness-to-pay at the sample mean implied by the final model.

Table 4.6 – Willingness-to-pay for streetscape improvements in the Stated Choice model

Attribute	Willingness-to-pay, £ per annum			
	Norwich (Base)	York	Otley	Horsforth
Priority: Shared Space	24	68	24	-40
Priority: Full Pedestrianisation	64	64	64	-174
Priority: Limited Vehicle Access	74	74	74	-58
Activity (high)	-30	31	-30	-30
Surface (material Hi; contrast Lo)	30	30	30	30
Surface (material Hi; contrast Hi)	21	21	21	21

In order to obtain meaningful WTP values for the phase 1 locations (Horsforth and York), the marginal utility of money was taken from the Cost(phase 2) parameter (Table 4.3) – the consistency of many of the WTP results across the four locations gives encouragement that this approach is appropriate.

Table 4.7 shows the confidence intervals on WTP for main effects in the final model.

Table 4.7 – Confidence intervals on WTP for main effects in the Stated Choice model

Attribute	Willingness-to-pay, £ per annum		
	Central estimate (Base)	95% confidence interval on WTP	
		Lower bound	Upper bound
Priority: Shared Space	24	2	46
Priority: Full Pedestrianisation	64	34	95
Priority: Limited Vehicle Access	74	44	103
Activity (high)	-30	-10	-50
Surface (material Hi; contrast Lo)	30	7	53
Surface (material Hi; contrast Hi)	21	4	39

Our interpretation of these willingness-to-pay results is as follows.

There is positive willingness-to-pay for Shared Space, Full Pedestrianisation or Limited Vehicle Access in most of the locations surveyed. The exception is Horsforth, for very specific reasons – we believe as explained above (section 4.1) that respondents were strongly resistant to any scheme which involved closing this road to through traffic and their negative WTP reflects this.

In Norwich and Otley, WTP for Shared Space was lower than for Limited Vehicle Access, but in York WTP for Shared Space was very similar to WTP for Limited Vehicle Access. We believe that this is because in York the city centre has a well-established and popular (based on respondents'

comments) scheme in place, with characteristics of Shared Space and Limited Vehicle Access, i.e. pedestrians and vehicles mix on many streets, kerbs are often low or absent, vehicular access is limited to disabled badge holders and other very specific user types for much of the day. Since most York residents are familiar with these arrangements, we believe they were better informed about the meaning of Shared Space, can see how it works and would be less inclined to scepticism. The idea of Shared Space does still create some resistance in localities which have yet to implement it.

There was evidence of positive WTP for high quality surfacing materials, such as natural stone, across the four locations. Focusing on the York results, we believe the evidence indicates that WTP for high quality surfacing is equal to approximately one third to one half of WTP for one of the Priority improvements.

In the one location where there is a concentration of activities such as cafes, bars and restaurants on the street already, positive WTP was found for additional outdoor tables and activity on street (York, Micklegate). I.e. the streetscape improvements would be complementary to the existing activity mix. Although not shown in Table 4.7, the 95% confidence interval for Activity (high,York) is also in positive territory. In the other three locations, other activities and street attributes likely act against the success of this townscape element, and WTP was negative.

Two other attributes tested – Kerb height high/low and Lighting furniture 'heritage'/standard – were found to have no significant value. Nor was there a significant WTP for high contrast surfacing to distinguish the roadway from the pavement, in the absence of high quality surfacing materials (at 95% confidence).

Each of the four survey locations was chosen because it appeared to the study team to offer potential gains from pedestrian improvements. It should not be expected that any street randomly selected would offer such large gains. Thus for the application of these values we suggest that either specific criteria be applied to the street in question, or fieldwork be carried out on a case-specific basis. These issues are discussed under 'Transferability' (section 5.1).

In summary, these results give confidence that WTP for the townscape improvement packages (labelled 'Priority' in the tables), and additionally for high quality surfacing, is greater than zero in carefully-chosen locations outside London.

Willingness-to-Pay or -Accept, distinguishing Payments and Repayments

Table 4.8 shows the consequences of distinguishing money payments from money repayments in a model similar to the final model, at the sample mean. It is expected, *a priori*, that willingness-to-accept (WTA) for deteriorations will exceed WTP for improvements. This is what is shown in Table 4.8. An important caveat is that the coefficients for Repayment on which the WTPs are based are not significant at 95%, so those figures should be treated with caution, and we would not recommend using them in any applied work at this stage.

Table 4.8 – WTP and WTA Estimates Distinguishing Payments and Repayments (Stated Choice)

Attribute	Willingness-to-pay, £ per annum		Willingness-to-accept, £ per annum	
	Payment		Repayment	
	Norwich (Base)	York	Norwich (Base)	York
Priority: Shared Space	9	33	60	216
Priority: Full Pedestrianisation	21	21	136	136
Priority: Limited Vehicle Access	24	24	156	156
Activity (high)	-13	12	-83	79
Surface (material Hi; contrast Lo)	8	8	54	54
Surface (material Hi; contrast Hi)	6	6	41	41

4.3 Modelling and WTP Results (Priority Ranking)

The purpose of the Priority Ranking question was to encourage respondents to evaluate townscape improvements in the wider context of their local quality of life.

As explained in Chapter 2, if we were comparing a Priority Ranking-based quality of life survey with a pure Stated Choice survey focused on Townscape attributes, we would expect *a priori* that the PR survey would lead to lower estimates of WTP. In this particular study, the quality of life (PR) question was schedule just before the stated choice (SP) questions. Hence, this was an opportunity to assess whether the contextualising (or 'anchoring') effect of PR flowed through to the SP, or whether the 'framing effect' reasserted itself, with higher WTP results arising from the SP exercise.

The Priority Ranking model results from York and Horsforth are shown in Table 4.9.

Table 4.9 – Models and WTP based on the Priority Ranking question

Attribute	York			
	Coefficient	*t*-ratio	Confidence level (*insignificant at 95%)	WTP, £ per annum
Cost	-0.0452	-4.92	>99%	
Priority: Shared Space (Base) + Priority: Shared Space (York)	0.304 0.558	1.31 2.19	*81% 97%	 19
Priority: Full Pedestrianisation (Base) + Priority: Full Ped. (York)	-0.713 1.14	-2.81 3.99	99% >99%	 9
Priority: Limited Veh. Access (Base) + Priority: Limited Veh. Acc. (York)	0.0450 1.12	0.19 4.27	*15% >99%	 26
Attribute	Horsforth			
	Coefficient	*t*-ratio	Confidence level (*insignificant at 95%)	WTP, £ per annum
Cost	-0.0409	-3.53	>99%	
Priority: Shared Space	0.221	0.82	*59%	5
Priority: Full Pedestrianisation	-0.792	-2.75	99%	-19
Priority: Limited Vehicle Access	-0.0365	-0.14	*89%	-1

We need to explain briefly how these results were derived, and note two caveats. The survey data give each respondent's ranking of the improvement options offered in Question 5, which include – amongst other quality of life improvements – townscape improvements to the local High Street and changes in local tax. By comparing the ranking of each of the townscape improvements versus each of the council tax changes, it is possible to create a set of binary choices, which can modelled using the same logit technique as the Stated Choice data.

The questionnaire design was changed between Phase 1 and Phase 2 of the study, so that in Phase 2 there was only one townscape improvement offered instead of three. In the modelling, it was found that this made it difficult to extract meaningful results from the data available. The results in Table 4.9 are therefore based on Phase 1. A second caveat is that checks were made for illogical responses, by focusing on the ranking of the three council tax changes offered. Only respondents living within 10 minutes' walk of the street were asked Question 5, and of the 386 total responses to this question 224 were logical. The remaining 'illogical' responses were removed from the data for modelling purposes, and it was found that this did make a material difference to the results. The adjusted rho-squared statistics on these models are 0.176 for Horsforth, which is acceptable, and 0.028 for a York-only model, which is not. Another model run on the combined dataset, with incremental variables for York, produced broadly comparable WTP results for York, with an acceptable adjusted rho-spared of 0.129. This is the York model reported in the table above.

In broad terms, the implied WTP in York from the Priority Ranking analysis is around one third that from the Stated Choice final model (Table 4.6), comparing the results for Shared Space and Limited Vehicle Access, i.e. in the region of £20 rather than £70. This suggests that the 'framing effect' becomes an issue in Stated Choice even if the wider quality of life question is asked immediately beforehand.

4.4 Synthesis of the valuation evidence

In this Chapter, willingness-to-pay values have been reported to the nearest £ per annum – we think that is appropriate to avoid implying greater accuracy than exists in these results.

We think there are good reasons to be believe people's response to Payments are a suitable basis for appraisal values – these are most likely to be relevant in a world where the costs of streetscape improvements will need to be financed (Table 4.8). The evidence indicates that these values are substantially lower than for Repayments, and approximately one third of the values in the Stated Choice final model (Table 4.6).

Also, we think there are good reasons to believe the Priority Ranking/Quality of Life values are better at anchoring WTP in wider context, the individual being less likely to suffer a framing effect which we think is observed in the results of this pilot study, despite running the Stated Choice exercise just after the Priority Ranking question. The PR/QoL values are substantially lower than the Stated Choice values from the final model, but are much more in line with those for Payments (Table 4.8).

Comparing the Priority Ranking values (York) with the Stated Choice (Payments, York) with the Stated Choice (final model, York, scaled down by a factor of 3 for Payments (≈26/74)) we obtain Table 4.10.

Table 4.10 – WTP for Townscape Improvements and Pedestrianisation, comparison of models, York

Attribute	Willingness-to-pay, £ per annum		
	Priority Ranking	Stated Choice (Payments)	Stated Choice (final model, scaled for Payments)
Priority: Shared Space	19	33	23
Priority: Full Pedestrianisation	9	21	21
Priority: Limited Vehicle Access	26	24	25
Surface (material Hi; contrast Lo)		8	10
Surface (material Hi; contrast Hi)		6	7
Activity (high)		12	10

We should also refer back to Walker (1997), to Willis, Powe and Garrod (2005) and to the London research (Sheldon et al, 2007). WTP values arising from those was as follows:

- Sheldon et al (2007) in their work for TfL adopted a value of £45 per person per annum for a package of High Street improvements in London, although if the Council Tax is taken as the payment vehicle instead of public transport fares, WTP is in the region of £17 at Edgware Road and £15 at Holloway Road. Allowing for CPI inflation from 2006 to mid-2010, these amounts would be expected to be:
    - £50 if surveyed today, using public transport fares as payment vehicle – note that given the regulated structure of public transport in London, fares may be a more natural and credible payment vehicle than outside London, where public transport was largely deregulated in the 1980s. It is worth bearing in mind the income differential between London and our four survey locations: gross domestic household income is approximately 13% lower in York than in London, and 20% lower in Leeds (Horsforth, Otley) than in London.

- £19 and £17 if surveyed today for Edgware Road and Holloway Road specifically, using Council Tax as payment vehicle.

- Willis, Powe and Garrod (2005) found WTP of £11 to £16 per annum in 2003 for improved street lighting in towns and cities, equivalent to £13 to £18 in 2010 – note that this policy affects both residential streets and 'High Streets', so that value of the 'High Streets' element may be much smaller.
- Walker (1997) found an average WTP of around £25 per annum for something comparable to the Limited Vehicle Access package on two streets in central Oxford in the mid-1990s, which is approximately equivalent to £37 per annum in 2010. Summing the WTP values for Limited Vehicle Access and Surface (Hi quality) from Table 4.10 gives a very comparable amount.

In the light of this evidence, it is reasonable to believe there is the potential for positive WTP for townscape improvements and pedestrianisation, in local High Streets in the UK outside London. In the case of schemes like the hypothetical ones put forward in the survey, and the responses studied in York, Norwich and Otley, the values outside London appear to be of the following order of magnitude. Indicative ranges shown are based on judgement in view of the evidence (Table 4.11).

Table 4.11 – Indicative ranges of WTP for Townscape Improvements and Pedestrianisation, 2010

Attribute	Willingness-to-pay, £ per annum		
	Central estimate	Judgemental 95% confidence interval on WTP	
		Lower bound	Upper bound
Priority: Shared Space	20 to 25	2	50
Priority: Full Pedestrianisation		10	30
Priority: Limited Vehicle Access		15	35
Surface (material high quality)	10	2	17
Activity (high, where complementary to uses on street)	10	3	16

The values for the three different types of townscape improvement package (labelled 'Priority) – when well implemented and understood as in York – are very close together, and given the width of the confidence intervals it seems invidious to set a different WTP value on each. Therefore we state a range £20-25 per annum, per person. However, the models did consistently show that:

- there was less confidence in the value of Shared Space than the other packages, even in York, i.e a wider confidence interval and a smaller lower bound;
- the upper and perhaps more importantly (from a risk perspective) lower bound on the confidence interval for Limited Vehicle Access was higher than for Full Pedestrianisation

...therefore we reproduce these features in the confidence intervals above. We emphasise that there is an element of judgement in Table 4.11, although it is based on the patterns seen in the evidence.

Note that no evidence was found of WTP for better lighting furniture or for raised (or lowered) kerbs, but no evidence of WTP is not the same as evidence of no WTP in these cases. It was a limitation of the survey that kerbs and lighting stands/light projection could not be shown in much detail/at all in the visualisations. Given the opportunity we would recommend that future research

revisits these details.

WTP for additional facilities for Activity on street is clearly context-specific: in a location with eating/drinking uses in the 'As Now' situation, it appears there is a modest but significant WTP. Elsewhere this is not the case, and such changes to the townscape may not be appropriate and attract *negative* WTP.

This points to a final, wider issue, that the values reported above relate to proposed schemes which were carefully chosen – much effort across the Study Team and the Steering Group was invested in this. Transferability to other locations raises questions of whether the location and the transport context are comparable, even if the scheme comprises the same attributes from Table 4.11. This is explored further in the next Chapter.

5. Use of the Results

A key output from this study is an understanding as to whether a valuation framework could be developed, and where possible, valuations or a range of valuations could be considered as part of DfT's Major Scheme Business Case appraisal process.

For a valuation framework to be feasible, DfT would probably want to be confident that:

- there is sufficient evidence available now, or a reasonable expectation of sufficient evidence becoming available, on citizens' willingness-to-pay for townscape improvements;
- that the evidence shows WTP is positive, not zero, and gives a grasp of the main drivers of WTP and the associated marginal values or ranges of values;
- that ways exist to transfer values between the survey site and the policy site (i.e. between Norwich/York/Otley and the sites of specific Major Scheme Business Cases);
- that ways exist to update values over time, since the economic life of the townscape assets created is longer than just the current year;
- that ways exist to aggregate from one person's WTP to the total WTP for the scheme across all users; and
- that any important sources of double-counting with other elements of the WebTAG framework have been understood and, if necessary, taken into account.

On the first two points, the evidence base is clearly expanding. In particular, this work and the work by Sheldon et al (2007) in London, have demonstrated that there is statistically significant willingness-to-pay for local High Street improvements in UK towns and cities. TfL has gone ahead and incorporated the London findings into its appraisal procedures. We think it could potentially be valuable for DfT to expose the findings of this study to a workshop or seminar discussion with economists and other professionals, in order to obtain some constructive criticism of the work and an element of peer review. We have a number of other recommendations for DfT, with a view to developing a practical valuation framework that would be fit for inclusion in WebTAG (see Chapter 6).

The values from this study are in the region of £20 to £45 per annum, per person using the street, outside London at 2010 prices, depending on the elements in the townscape package. For London, Sheldon et al (2007) recommended a value that is equivalent to £50 per annum in 2010 prices. It should be noted that mean income is slightly lower at our survey sites than in London, which on first impression seems consistent with the difference in the findings (13% lower in York; 20% lower in Leeds District for Horsforth and Otley; and 22% lower in Norfolk; based on Gross Domestic Household income, GDHI, per capita from ONS, 2002). The role of income in explaining differences in WTP is discussed further in the next section.

On the last four points, we have made an initial assessment which we report below. These are questions on which further analysis could be carried out according to DfT's needs:

- Transferability of values between sites and over time is a key issue – this is discussed in Section 5.1.
- Aggregation from individual to total WTP is addressed in Section 5.2, including the question of double counting.

5.1 Transferability

Scheme Design

It is important not to treat the values in Table 4.11 as if they are applicable without variation to any proposed Townscape Improvement or Pedestrianisation scheme in any location. This is because the four survey locations were very carefully selected as sites where a scheme has a strong chance of success. This took the skills and effort of two sets of staff at Atkins and the Institute for Transport Studies (and extensive consultations with DfT), over a period of weeks. Many sites were considered and rejected in both the Phase 1 and Phase 2 surveys.

Yet despite these efforts, in one case (Horsforth) the study team's judgement did not match the judgement of the respondents, and WTP was in fact not positive or zero but negative. Respondents preferred the street 'As Now' to the 'improvement' packages they were being offered in the experiment, although respondents were willing to pay something for their pavements to be resurfaced using high quality materials such as natural stone (Table 4.6).

Such problems are not restricted to hypothetical schemes. Historically, some of the town centre pedestrianisation schemes of the 1950s and 60s were also not successful, the streets becoming blighted by vacant shop units and low rent uses.

To generalise the point, schemes which include a measure of pedestrian priority, whether it be Shared Space, Full Pedestrianisation or Limited Vehicle Access, are trading vehicle accessibility for pedestrian amenity, and attempting to strike a delicate balance which makes sense to users in the context of that locality and its land use pattern and transport system as a whole. If the design does not strike the right balance, any pedestrian benefits may be overwhelmed by perceived disbenefits in terms of access and, ultimately, the expected future success and quality of the location.

This leads us to the finding that the WTP values reported in Table 4.11 are suitable as order-of-magnitude estimates of potential WTP for well-designed schemes. It is encouraging that the study found consistency in the values across Norwich, York and Otley for a majority of townscape elements (Table 4.6), even though their size and geography differ. The reasons for the differences in WTP for Shared Space and Activity have been discussed above and are understood. However, a note of caution must be added, that for less well-designed schemes WTP could fall short of these numbers.

What, then, is a well-designed scheme? Summarising from the work described in Chapter 3, the following represents a first attempt to give a set of criteria for a well-designed scheme:

i) minimal disruption to accessibility:
   - even if the exact locations of parking spaces and bus stops, for example, will change, the street will remain accessible to those who wish to access the area by all modes;
   - the existence (or creation, if feasible and acceptable) of a bypass or alternative traffic route with sufficient capacity, if there is substantial through traffic currently using the street;

ii) addresses a location with significant pedestrian amenity issues and therefore room for improvement, such as narrow or overcrowded pavements, high levels of traffic, poor quality surfacing, insufficient crossing facilities, or a cluttered design;

iii) raises the design of the street to high modern standards – as set out in design guidance such as the Manual for Streets;

iv) complements the uses on the street – so in a street with a concentration of restaurants and cafes, for example, this could be a scheme which allocates space to outdoor tables

and seating; or in a shopping street this could be a scheme which maximises crossing opportunities and minimises traffic.

In cases where schemes do not meet these criteria, we would be doubtful of the scheme providing the amenity benefits suggested by the values in Table 4.11. For criterion i), there is a risk that the access disbenefits would outweigh the amenity benefits. For criteria ii) to iv), we expect that not meeting the criteria would erode the benefits to a lower, positive amount.

One option for further research would be to enlarge the selection of schemes from the current four to include additional schemes that were known to be less 'well-designed' than Norwich, York and Otley, in order to understand better and in more detail how some of these criteria influence amenity value.

An alternative approach for DfT would be to require case specific fieldwork for each Major Scheme showing significant townscape improvement benefits, which could use survey methods and choice modelling techniques to derive WTP estimates for townscape and pedestrian amenity benefits. In broad terms, the cost for carrying out such a survey and analysis could be in the region £10,000 to £30,000, the cost potentially varying to some extent to be proportionate given the cost of the scheme. The findings accumulated from a series of such surveys could be useful to DfT in developing the WTP evidence base. This approach could be useful in capturing locational or demographic differences in preferences.

Finally, we note that the scheme types covered by this study have been:

- incremental pedestrian improvements in a city centre with an existing pedestrian priority zone (Norwich and York);
- first substantial pedestrian improvement of a main street in a town centre (Otley);
- pedestrian improvements to a suburb centre on radial road (Horsforth) – although this was unsuccessful, negative WTP found.

Not covered were:

- first substantial pedestrian improvement in a city centre – to the best of our knowledge, schemes have been implemented in all English cities leaving no future case to study and no obvious value to DfT from doing so;
- public squares as well as streets;
- incremental pedestrian improvement of additional streets in a town centre;
- village centre schemes – a village scheme is mentioned in the Townscape TAG Unit 3.3.8;
- schemes in residential areas, which are also not ruled out by the TAG Unit.

Along with a potential second attempt to evaluate a suburb centre scheme, these last four scheme types could be tackled in a potential future study. For the moment, we should note that our survey was carried out in terms of improvements to the local High Street/main street, and we do not expect the WTP values in this report would be applicable to residential areas. For the remaining scheme types, provided that the street met the criteria above, we think a reasonable starting point would be to use the values and ranges of values given in Chapter 4.

Transfers between Survey Site and Policy Sites

Income is usually a key factor influencing differences in WTP values between sites. In the environmental economics literature, there is evidence that the cross-sectional elasticity of community noise values, for example, with respect to income lies in the range 0.5-0.9 (Nellthorp, Bristow and Day, 2007). The models estimated for this study failed to find a significant relationship with income (section 4.1), as did Walker (1997). Accepting the insignificance of the relationship,

but plotting it for the income groups from <£20,000 to £59,999 *suggests* that an elasticity in the range 0.5-0.9 might be a reasonable assumption for pedestrian amenity benefits. The >£60,000 income group is an outlier, with an insignificant and wrong sign Cost coefficient (not shown in Table 4.4).

To transfer from the survey sites to a UK basis, which is what would be needed for a UK standard appraisal value for pedestrian amenity, it would be straightforward to use the income elasticity as shown in Table 5.1.

Table 5.1 – Indicative ranges of WTP, transferred from local to UK basis, 2010

Attribute	Willingness-to-pay, £ per annum			
	Norwich (Base)	UK values based on GDHI per capita (UK=100, Norwich=94)		
		elasticity =0.5	elasticity =0.7	elasticity =0.9
Priority: Shared Space Priority: Full Pedestrianisation Priority: Limited Vehicle Access	20 to 25	20.6 to 25.8	20.9 to 26.1	21.1 to 26.4
Surface (material high quality)	10	10.3	10.4	10.6
Activity (high, where complementary to uses on street)	10	10.3	10.4	10.6

If DfT wished to have behavioural values for other locations, GDHI data and income elasticities could again be used to make the transfer. This is, of course, on the basis that there no other factors which would warrant variation by locality – at the moment, that is the case given the lack of significant findings on other segmentation issues.

Transfers over Time

For transfers over time, a time series elasticity of 1.0 with respect to income per capita has traditionally been assumed in WebTAG, and could be assumed here for consistency, combined with forecasts of growth in real GDP per capita, which are available and used in other TAG Units. A caveat is that some repeat studies have found no growth in WTP values over time (Gunn, 2001; Wardman, 2001), however any amendments to the practice of updating WTP values would most likely affect a number of TAG Units, not just pedestrian amenity.

5.2 Aggregation

Aggregation from individual to total WTP

Chapter 3 indicates that the sample is not perfectly segmented, but in most respects it is not badly skewed. The results showing consistent values across survey sites for many attributes (Table 4.6) supports this view, as does the lack of significant variation with Income, Frequency of Visit, Council Tax Payer status and so on. DfT will be the judge, however our advice would be the sample is acceptable for the sort of order of magnitude / ranges of recommended WTP figures for which it is being used.

Aggregation to a total benefit for the scheme will need to consider:

- total benefit being driven by both the benefit per user (the WTP values) and the number of users;

- visitors from outside the local authority area, who were not included in this valuation study, will need to be re-integrated – this may involve reconsidering the payment vehicle, or carrying out research focused on visitors;
- the number of users will need to be estimated from pedestrian survey data including frequency of visit, in order to derive the number of distinct individuals (the unit used for WTP) from the number of visits;
- an alternative unit of measurement is the number of minutes spent on High Streets, which requires a measure of total pedestrian minutes on the street, for implementation (as in London) – DfT may want to consider the feasibility of modelling at this level of detail;
- potential growth in pedestrian numbers or pedestrian flows over the economic life of the townscape scheme;
- the discrepancy between the period over which respondents are told they will be expected to pay for the scheme (5 years in this study) and the economic life of the assets created or improved – which could be resolved either by an adjustment to the values estimated (potentially spreading them over a longer period), or by changing the question to incorporate a reasonable estimate of asset life.

Avoiding double counting within WebTAG

By selecting hypothetical schemes which 'make sense' in accessibility terms in the context of the locality and its transport system, we believe we have neutralised any severe negative impacts on Transport User Benefits which would otherwise have offset part of the WTP and led to an *understatement* of WTP for pedestrian amenity benefits in this study. This is true we believe for the three successful schemes in the study (Norwich, York and Otley).

We also see some potential for double counting, however, in relation to :

- safety benefits – insofar as the respondent's willingness-to-pay for safety improvements is picked up in both their WTP for townscape improvements and in the COBA valuation of the scheme. We note that Personal Safety is one of the PERS characteristics that has been valued in London (Colin Buchanan and Accent, 2005);
- health benefits – insofar as the willingness-to-pay for townscape improvements captures part of the health and physical fitness benefits, although it is usually stated that the health benefits are larger than the perceived health benefits;
- journey ambience benefits – which appear in a different sub-objective within WebTAG, but could include the users' perception of townscape while walking and cycling, and where there is reference to the same London values by Heuman (2005) that were cited in Chapter 2.

At the least, appraisers would need to mindful of the possibility for double counting, and do what they can to avoid it on a case-by-case basis

6. Conclusions and Recommendations

6.1 Main Outcomes of the Research

The Literature Review provides DfT with information on current valuation best practice and potential valuation approaches for townscape improvements and pedestrianisation.

The Assessment of Approaches led to a two-level Priority Ranking / Stated Choice method being proposed and agreed for the WTP Pilot Study.

Implementation of the Pilot Study – in two phases rather than one as originally planned – has provided DfT with:

- a sample of 758 usable responses across four separate locations;
- evidence of significant, positive WTP for townscape improvement packages in towns and cities outside London;
- indicative ranges of values for each type of package and townscape element considered, that are encouragingly consistent with previous valuation research results;
- an understanding of how the values vary and why;
- a discussion and some initial proposals on use of the results;
- recommendations on how to take the outputs forward.

6.2 Recommendations for a Valuation Framework

R1 The evidence produced by this study provides indicative ranges of values for townscape improvement packages and elements, including:

- Shared Space; Full Pedestrianisation; and Limited Vehicle Access;
- high quality Surfacing, for example using natural stone;
- provision for a high level of Activity on the street including outdoor tables and seating.

We recommend that DfT consider the pro's and con's of adopting these values (Table 4.11) for use as a point of reference when evaluating Major Scheme Business Cases. The values should help to answer questions such as: 'what contribution could townscape improvement benefits make to the BCR or NPV for the scheme', although other information will also be required.

R2 We recommend that DfT consider establishing a set of simple criteria to guide scheme promoters and appraisers on what is a well-designed townscape/pedestrianisation scheme, consistent with the Manual for Streets. This would help to verify that the scheme is capable of achieving the value measured in the three successful survey locations (Norwich, York and Otley).

R3 We recommend that DfT consider exposing the findings of this study to a workshop or seminar with economists and other professionals in order to obtain constructive criticism/ peer review.

R4 We recommend that DfT consider how they would wish to apply the WTP values: as a standard appraisal value based on a UK mean value (as for travel time, safety, noise, etc in most cases), or as behavioural value for the particular location – accompanied by

'distributional weighting' for inclusion in a welfare-based CBA.

R5 We recommend that in order to transfer values between the survey sites and the UK, or another specific locality, a simple adjustment be adopted using an income elasticity of 0.5 to 0.9 (perhaps 0.7 as a single value, for practicality). This level of income elasticity would be consistent with the environment literature, and the general approach would be consistent with other parts of WebTAG.

R6 We recommend that to update the values over time, to cover the expected economic life of the assets created, the values be increased in proportion with real GDP per capita (i.e. a time-series income elasticity of 1.0).

6.3 Recommendations for Further Research

R7 We recommend that DfT consider whether it would be desirable to integrate the evidence on WTP for townscape improvements outside London in this study, with the evidence on *relative* valuations of very detailed attributes gathered by Sheldon et al in London (signage, cleanliness, planting, clutter, etc), in order to extend the non-London value set into a wider range of attributes, perhaps via fresh survey work.

R8 We recommend that DfT consider the case for requiring case-specific fieldwork (on WTP) for Major Schemes claiming significant townscape improvement benefits, perhaps for a limited period, in order to expand the sample of scheme types beyond those included in this pilot study, e.g. potentially:

- a public square;
- incremental improvement of additional streets in a town centre;
- a second attempt at a suburb centre scheme;
- a village-based scheme;
- a scheme in a residential area – which may be quite different in nature, and may or may not fit closely within the Townscape

...also to better understand the range of WTP for a set of more or less well-designed schemes. This exercise could gain useful insights from the scheme promoters and local authority/consultant professionals perhaps through a workshop or structured interviews.

R9 Alternatively, DfT might consider enlarging the sample through further focused research into a set of hypothetical schemes, using the methodologies available.

R10 For future surveys we would recommend incorporating a focus group session as part of the methodology, before the Priority Ranking stage, for familiarisation purposes. This would cause the Hall Test to take a little longer, and may mean tests starting at defined intervals rather than on a continuous basis, which would increase the resources required, however it would give respondents a better understanding of the context, the attributes and the task before them. Hall Tests including the focus group stage have been run successfully for the valuation of aircraft noise. Raising the quality of the PR data would be a key aim in any future extension of this study, and is eminently achievable based on experience.

R11 We recommend that the discrepancy between the period over which respondents are told they will be expected to pay for the scheme (5 years in this study) and the economic life of the assets, be resolved either by an adjustment to the values estimated (potentially spreading them over a longer period), or by changing the question to incorporate a reasonable estimate of asset life.

R12 We recommend that DfT consider commissioning a small and very practical piece of research to focus on the link between pedestrian demand modelling and the aggregation task which is needed in order to apply the values produced by this research. Key questions would be:

- what outputs can/could pedestrian models produce that would allow them to drive the valuation framework, e.g. pedestrian flows, frequency of visit, segmentation of pedestrians, time of day/night;
- what is the most suitable format for the values in order to link efficiently with demand models/demand evidence, e.g. a value per person per annum (as the values in this study are presented at present); or a value per minute spent in a particular street environment (as in London).

This should not be an onerous, but could help to overcome an important barrier.

R13 We recommend DfT consider commissioning a targeted piece of research surveying visitors. This could potentially cover their valuation of townscapes and 'heritage of historic resources' since in the case of tourism the two are closely linked. It could also offer a payment mechanism suited to tourists, such as visitor parking charges and public transport fares. By 'visitors', we mean non-residents of the district/unitary authority in which the survey location lies.

R14 Whilst double-counting is a perennial issue in appraisal frameworks with many objectives, DfT should consider whether there is any need to review the way in which safety benefits, health benefits, journey ambience benefits and potentially now pedestrian amenity benefits relate to one another.

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Appendix A – TAG Townscape Assessment

Score	Comment
Large beneficial (positive) effect	The proposals provide an opportunity to enhance the townscape because: • they enhance the layout, mix, scale, appearance, human interaction and cultural aspects of the townscape; • they enable the restoration of the characteristic features of the townscape, partially lost or diminished as the result of changes resulting from inappropriate development • they enable a sense of place and scale to be restored through well-designed mitigation measures, that is, characteristic features are enhanced through the use of local materials to fit the proposal into the townscape • they enhance the character of the townscape through beneficial and sensitive design in a townscape which is not of any formally recognised quality • they facilitate government objectives to regenerate degraded urban areas
Moderate beneficial (positive) effect	The proposals provide an opportunity to enhance the townscape because: • they fit very well with the layout, mix, scale, appearance, human interaction and cultural aspects of the townscape; • there is potential, through mitigation, to enable the restoration of characteristic features, partially lost or diminished as the result of changes resulting from inappropriate development • they will enable a sense of place and scale to be restored through well-designed mitigation measures, that is, characteristic features are enhanced through the use of local materials to fit the proposal into the townscape • they enable some sense of quality to be restored or enhanced through beneficial and sensitive design in a townscape which is not of any formally recognised quality • they further government objectives to regenerate degraded urban areas
Slight beneficial (positive) effect	The proposals: • fit well with the layout, mix, scale, appearance, human interaction and cultural aspects of the townscape; • incorporate measures for mitigation to ensure they will blend in well with surrounding townscape. • will enable some sense of place and scale to be restored through well-designed mitigation measures. • maintain or enhance existing townscape character in an area which is not designated for the quality of its townscape, nor vulnerable to change. • avoid conflict with government policy of enhancing urban environments
Neutral effect	The proposals are well designed to: • complement the layout, mix, scale, appearance, human interaction and cultural aspects of the townscape; • incorporate measures for mitigation to ensure that the scheme will blend in well with surrounding townscape features and elements • avoid being visually intrusive nor have an adverse effect on the current level of tranquillity (where these exist) of the townscape through which the route passes. • maintain existing townscape character in an area which is not a designated townscape, that is, neither national or local high quality, nor is it vulnerable to change. • avoid conflict with government policy towards enhancing urban environments
Slight adverse (negative) effect	The proposals: • do not quite fit the layout, mix, scale, appearance, human interaction and cultural aspects of the townscape • although not very visually intrusive, will impact on certain views into and across the area. • cannot be completely mitigated for because of the nature of the proposal itself or the character of the townscape through which it passes. • affect an area of recognised townscape quality. • conflict with local authority policies for enhancing urban environments
Moderate adverse (negative) effect	The proposals are: • out of scale or at odds with the layout, mix, scale, appearance, human interaction and cultural aspects of the townscape • are visually intrusive and will adversely impact on the townscape • not possible to fully mitigate for, that is, mitigation will not prevent the scheme from scarring the townscape in the longer term, as some features of interest will be partly destroyed or their setting reduced or removed. • will have an adverse impact on a townscape of recognised quality or on vulnerable and important characteristic features or elements. • in conflict with local and national policies to enhance the urban environment
Large adverse (negative) effect	The proposals are very damaging to the landscape in that they: • are at considerable variance with the layout, mix, scale, appearance, human interaction and cultural aspects of the townscape. • are visually intrusive and would disrupt fine and valued views of the area. • are likely to degrade, diminish or even destroy the integrity of a range of characteristic features and elements and their setting. • will be substantially damaging to a high quality or highly vulnerable townscape, causing it to change and be considerably diminished in quality. • cannot be adequately mitigated for • are in serious conflict with government policy for the enhancement of the urban environment

Table A: Townscape – Definitions of Overall Assessment Scores in TAG Unit 3.3.8 (DfT, 2004, Table 1)

Appendix B – TAG Walking and Cycling Scheme Assessment

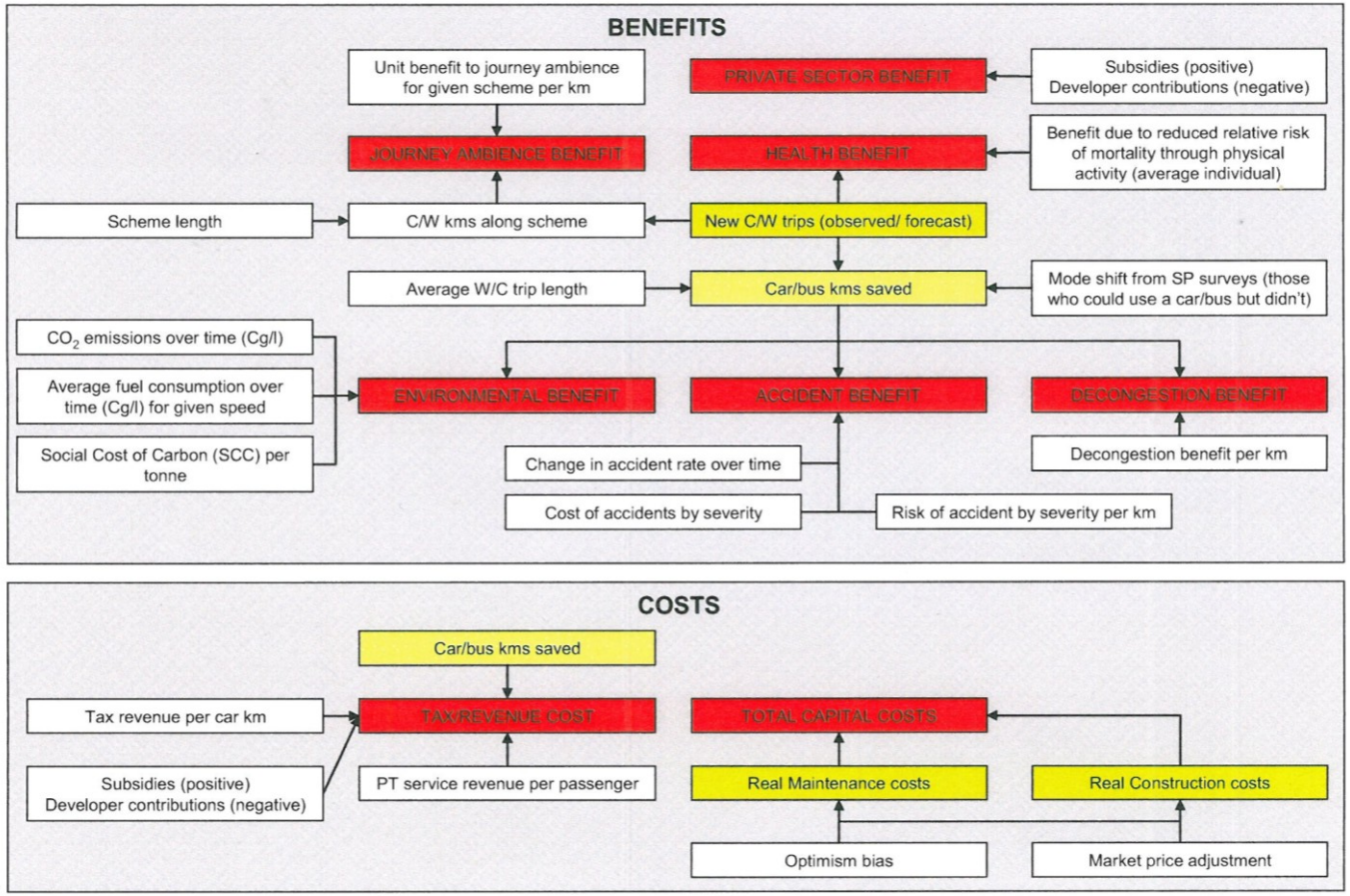
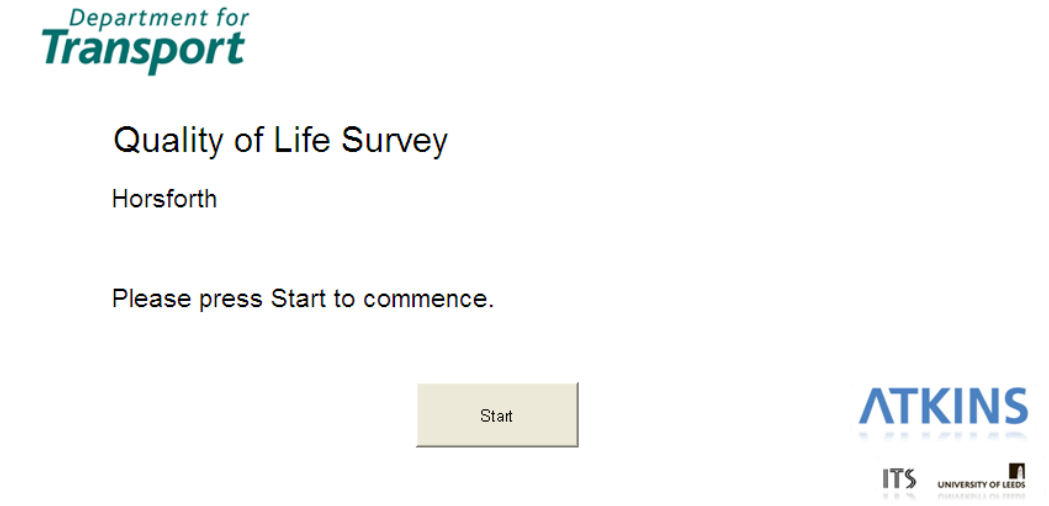
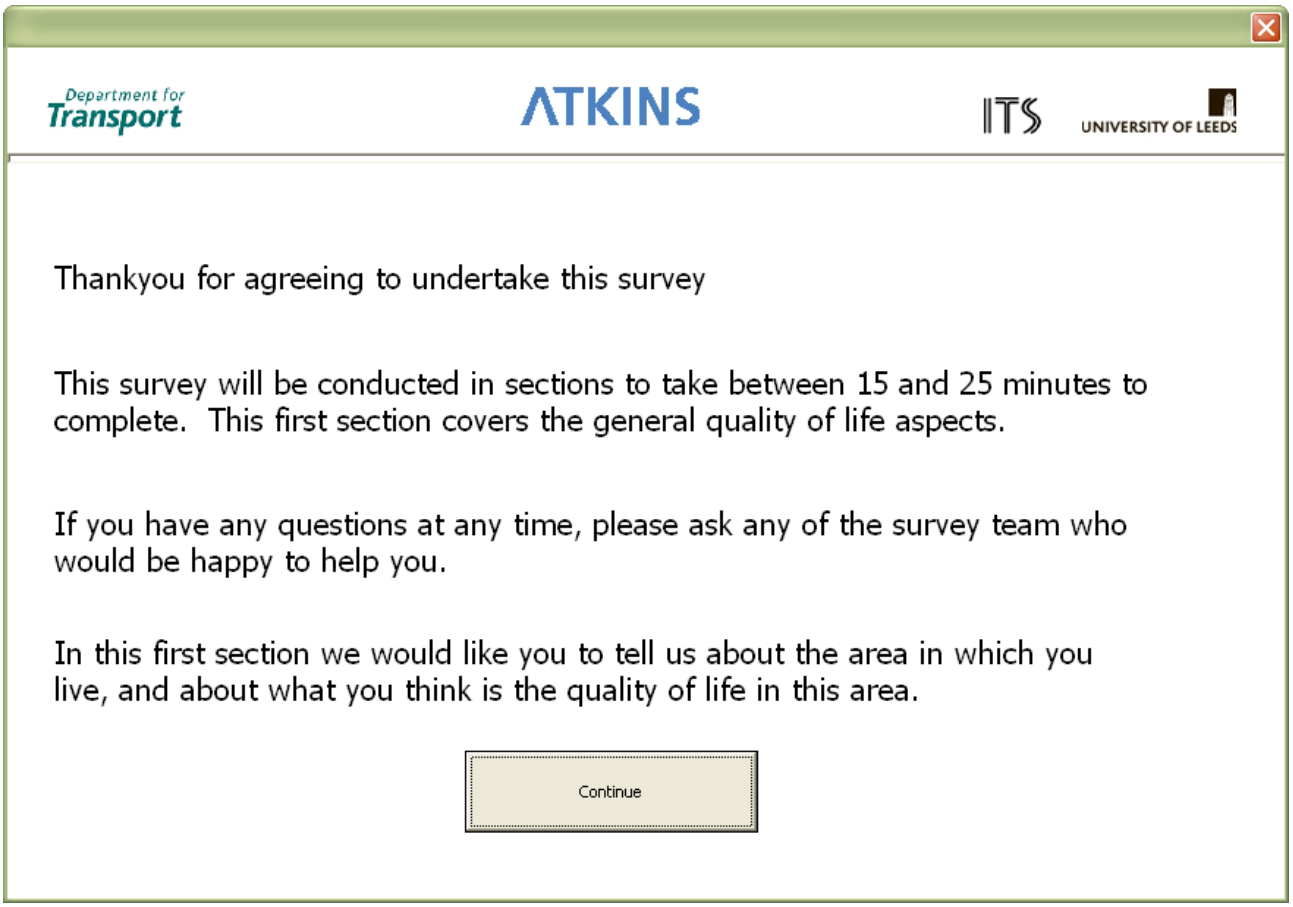
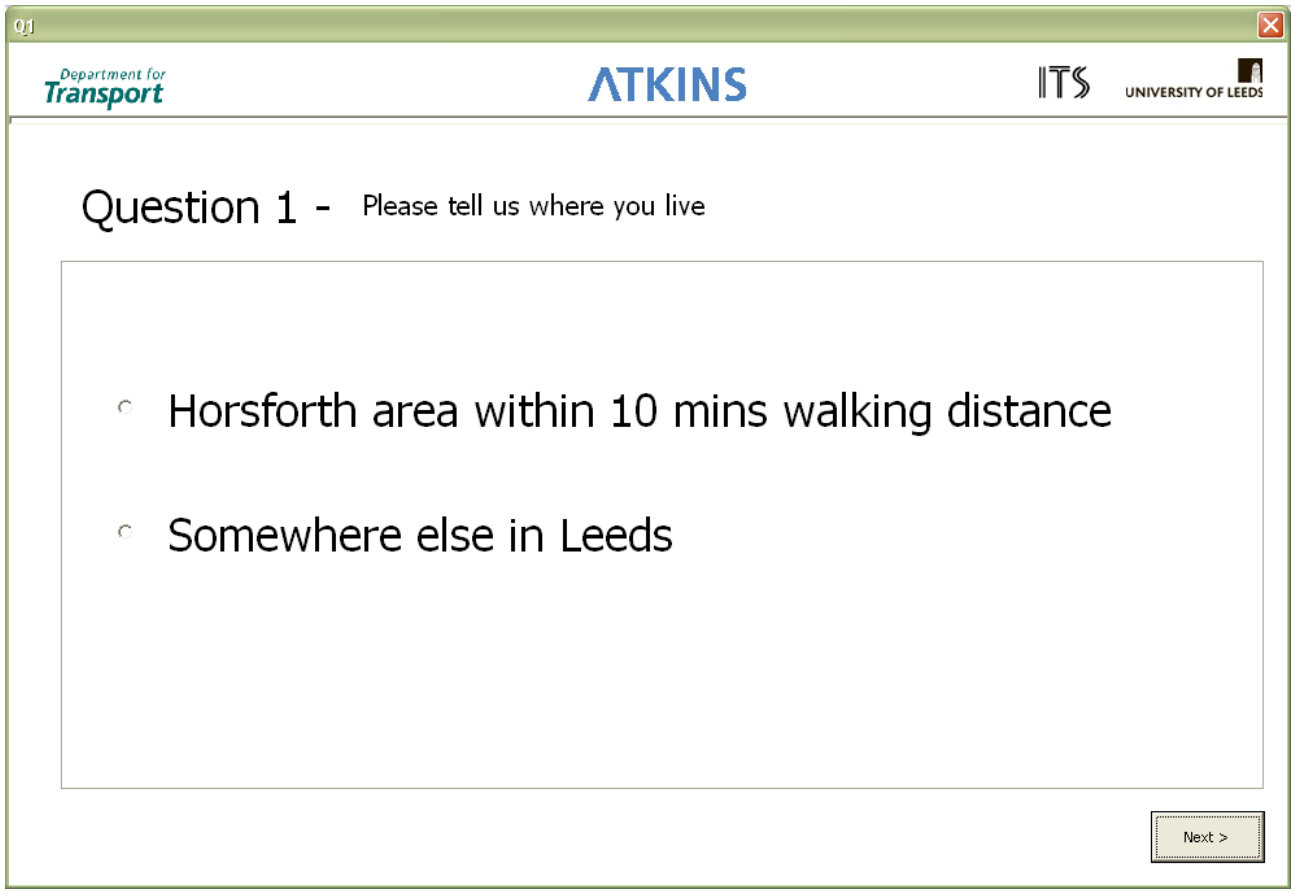


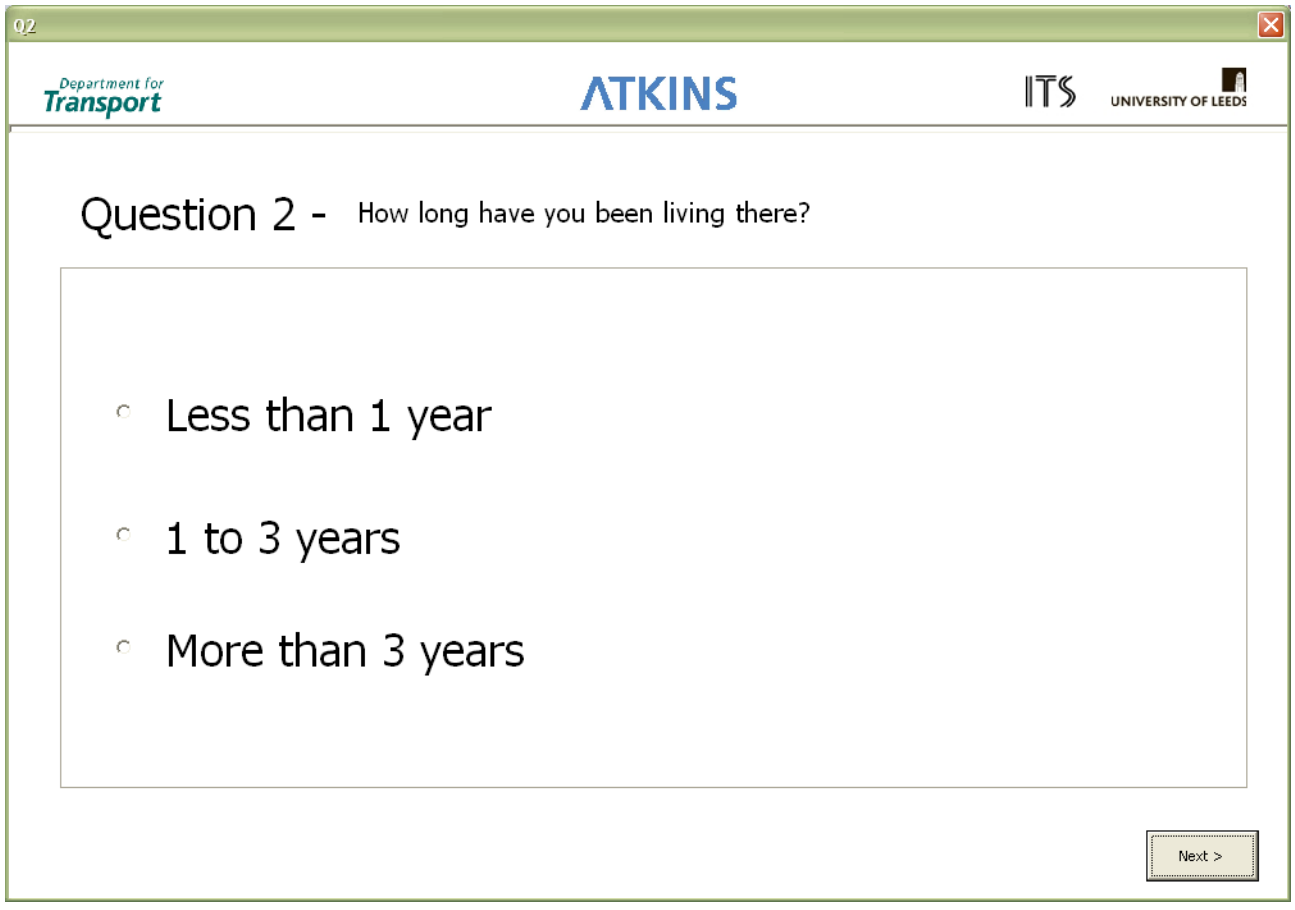
Table B: Components of Walk and Cycle Scheme Cost-Benefit Analysis in TAG Unit 3.14.1 (DfT, 2004, Figure 1)

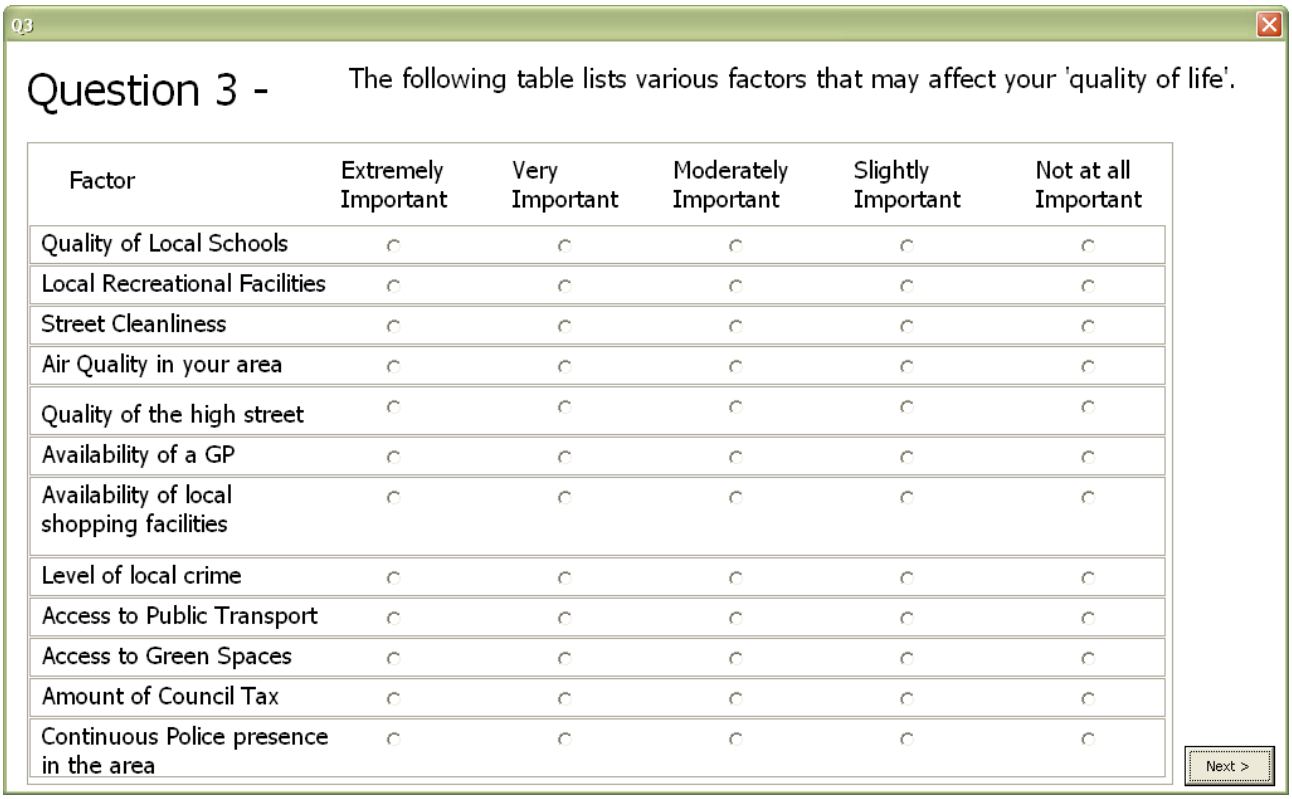
Appendix C - Initial Survey Hall Test Questionnaire


Department for Transport
Quality of Life Survey
Horsforth
Please press Start to commence.
Start
ATKINS
ITS
UNIVERSITY OF LEEDS


Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
Thankyou for agreeing to undertake this survey
This survey will be conducted in sections to take between 15 and 25 minutes to complete. This first section covers the general quality of life aspects.
If you have any questions at any time, please ask any of the survey team who would be happy to help you.
In this first section we would like you to tell us about the area in which you live, and about what you think is the quality of life in this area.
Continue


Q1
Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
Question 1 - Please tell us where you live
Horsforth area within 10 mins walking distance
Somewhere else in Leeds
Next >


Q2
Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
Question 2 - How long have you been living there?
Less than 1 year
1 to 3 years
More than 3 years
Next >

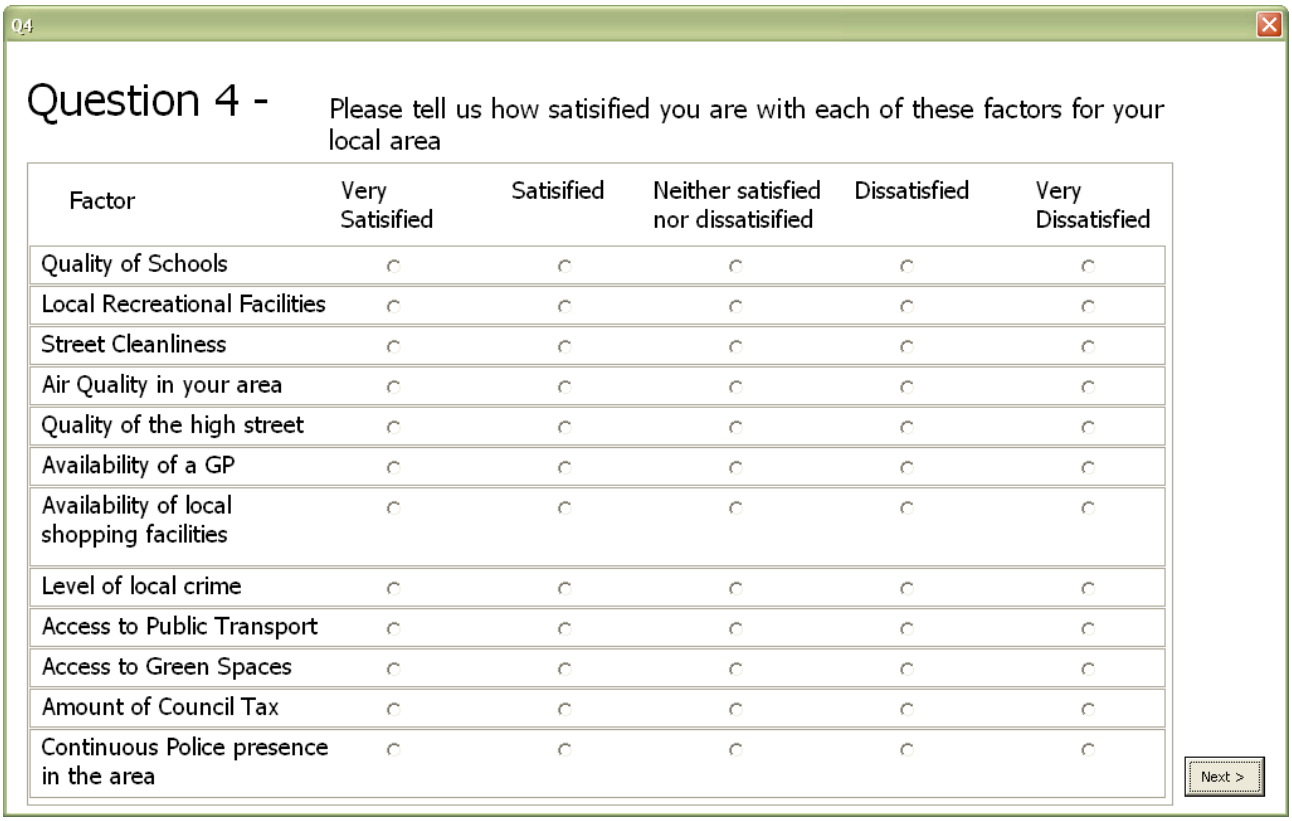


Q3

Question 3 - The following table lists various factors that may affect your 'quality of life'.

Factor	Extremely Important	Very Important	Moderately Important	Slightly Important	Not at all Important
Quality of Local Schools	○	○	○	○	○
Local Recreational Facilities	○	○	○	○	○
Street Cleanliness	○	○	○	○	○
Air Quality in your area	○	○	○	○	○
Quality of the high street	○	○	○	○	○
Availability of a GP	○	○	○	○	○
Availability of local shopping facilities	○	○	○	○	○
Level of local crime	○	○	○	○	○
Access to Public Transport	○	○	○	○	○
Access to Green Spaces	○	○	○	○	○
Amount of Council Tax	○	○	○	○	○
Continuous Police presence in the area	○	○	○	○	○

Next >

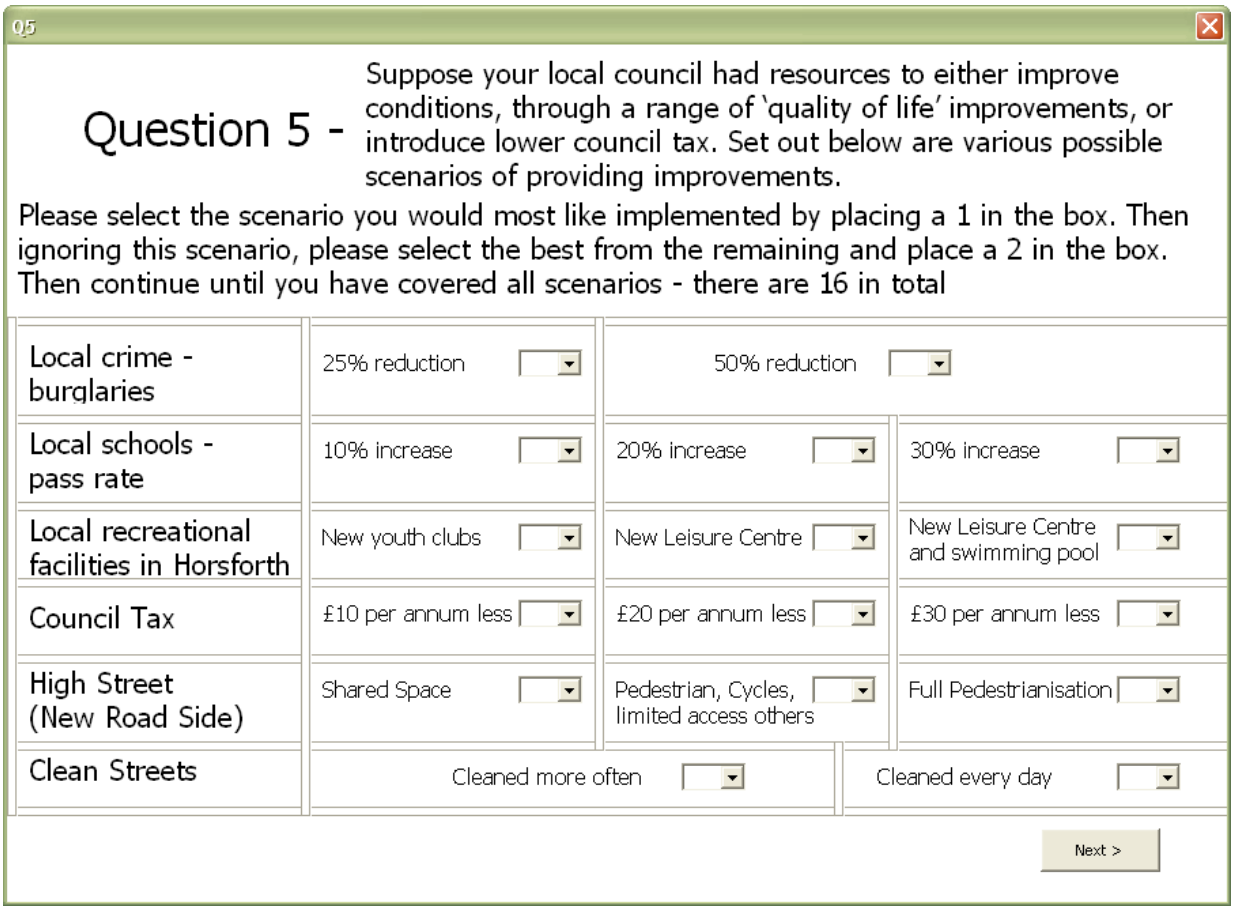


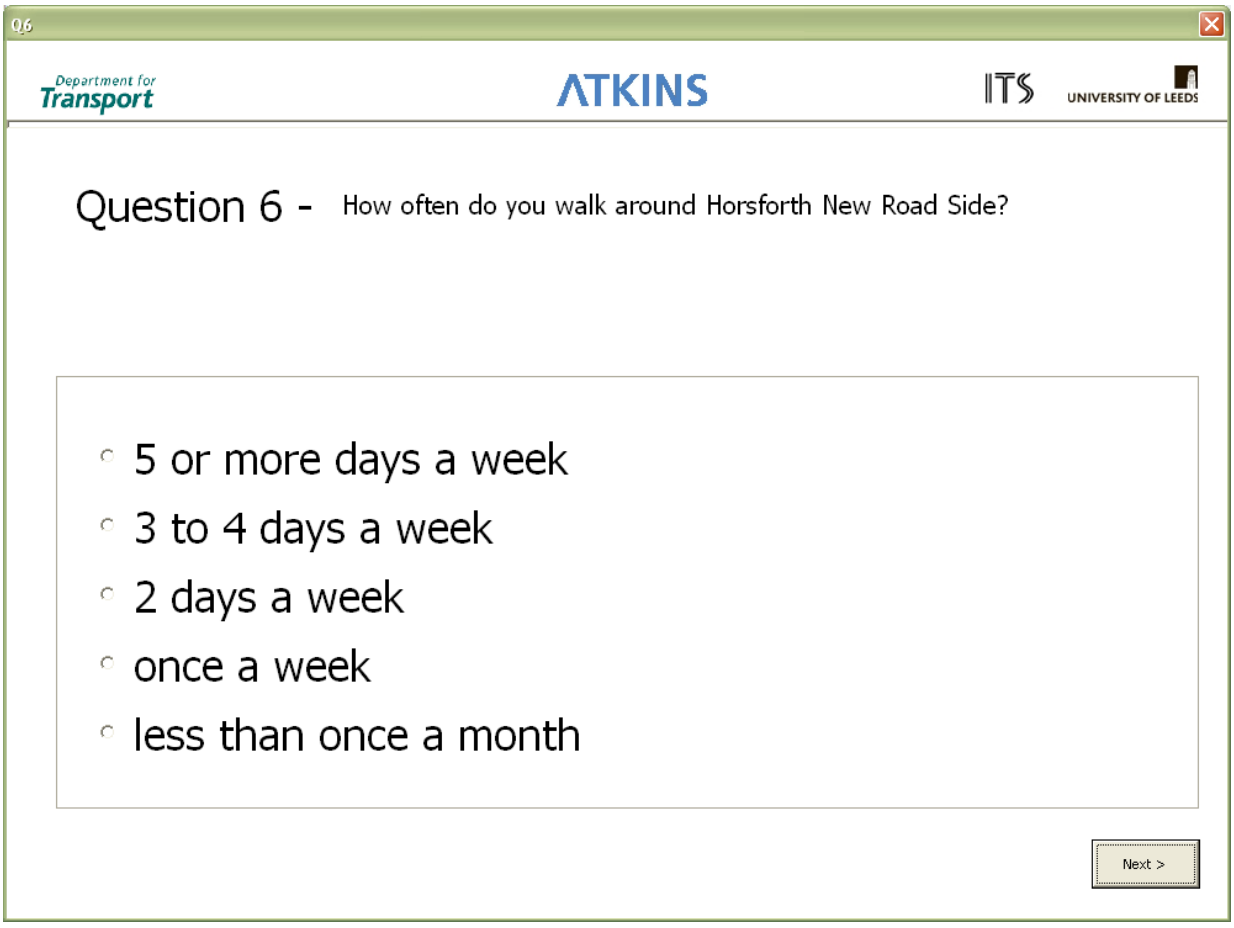
Q4

Question 4 - Please tell us how satisified you are with each of these factors for your local area

Factor	Very Satisified	Satisified	Neither satisfied nor dissatisified	Dissatisfied	Very Dissatisfied
Quality of Schools	○	○	○	○	○
Local Recreational Facilities	○	○	○	○	○
Street Cleanliness	○	○	○	○	○
Air Quality in your area	○	○	○	○	○
Quality of the high street	○	○	○	○	○
Availability of a GP	○	○	○	○	○
Availability of local shopping facilities	○	○	○	○	○
Level of local crime	○	○	○	○	○
Access to Public Transport	○	○	○	○	○
Access to Green Spaces	○	○	○	○	○
Amount of Council Tax	○	○	○	○	○
Continuous Police presence in the area	○	○	○	○	○

Next >


Q5
Question 5 -
Suppose your local council had resources to either improve conditions, through a range of 'quality of life' improvements, or introduce lower council tax. Set out below are various possible scenarios of providing improvements.
Please select the scenario you would most like implemented by placing a 1 in the box. Then ignoring this scenario, please select the best from the remaining and place a 2 in the box. Then continue until you have covered all scenarios - there are 16 in total
Local crime - burglaries
25% reduction
50% reduction
Local schools - pass rate
10% increase
20% increase
30% increase
Local recreational facilities in Horsforth
New youth clubs
New Leisure Centre
New Leisure Centre and swimming pool
Council Tax
£10 per annum less
£20 per annum less
£30 per annum less
High Street (New Road Side)
Shared Space
Pedestrian, Cycles, limited access others
Full Pedestrianisation
Clean Streets
Cleaned more often
Cleaned every day
Next >


Q6
Department for Transport
ATKINS
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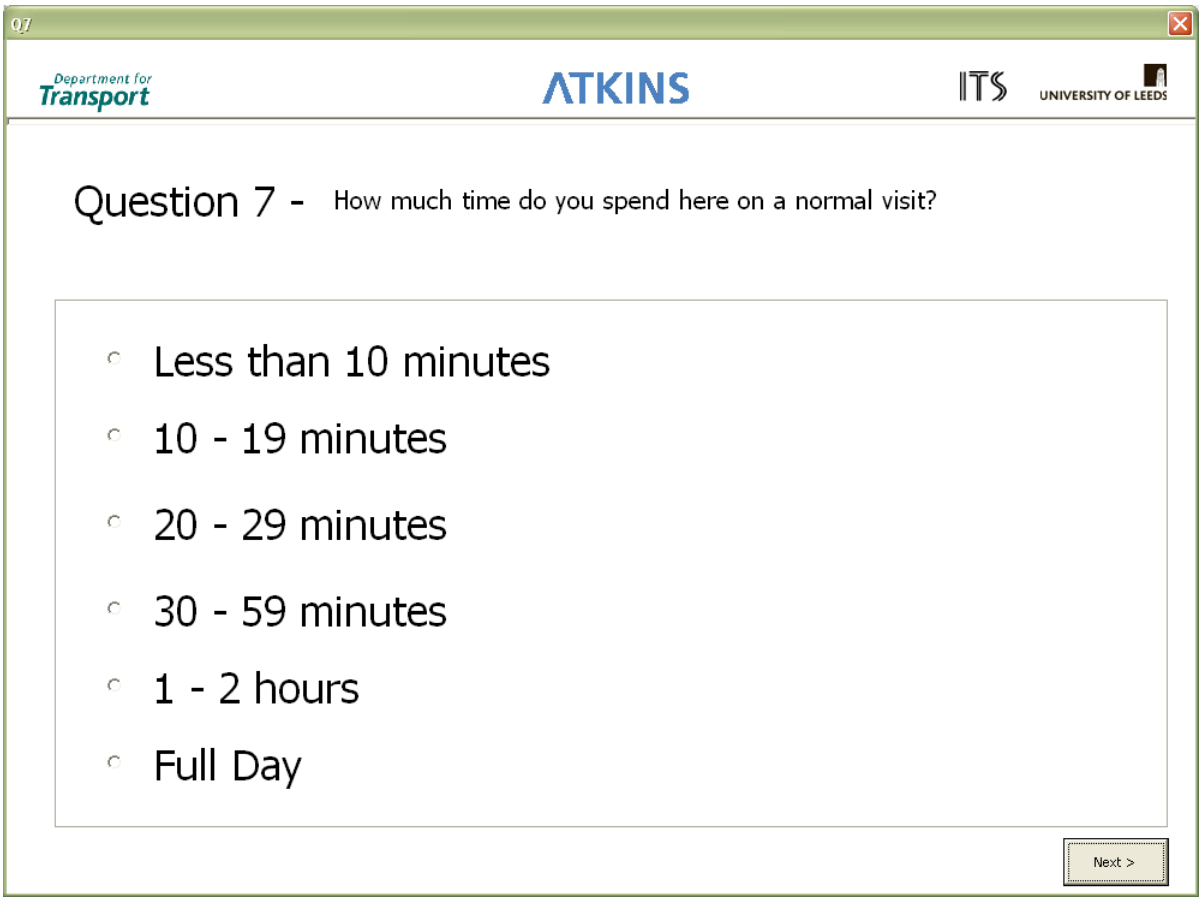
Question 6 - How often do you walk around Horsforth New Road Side?
5 or more days a week
3 to 4 days a week
2 days a week
once a week
less than once a month
Next >


Q7
Department for Transport
ATKINS
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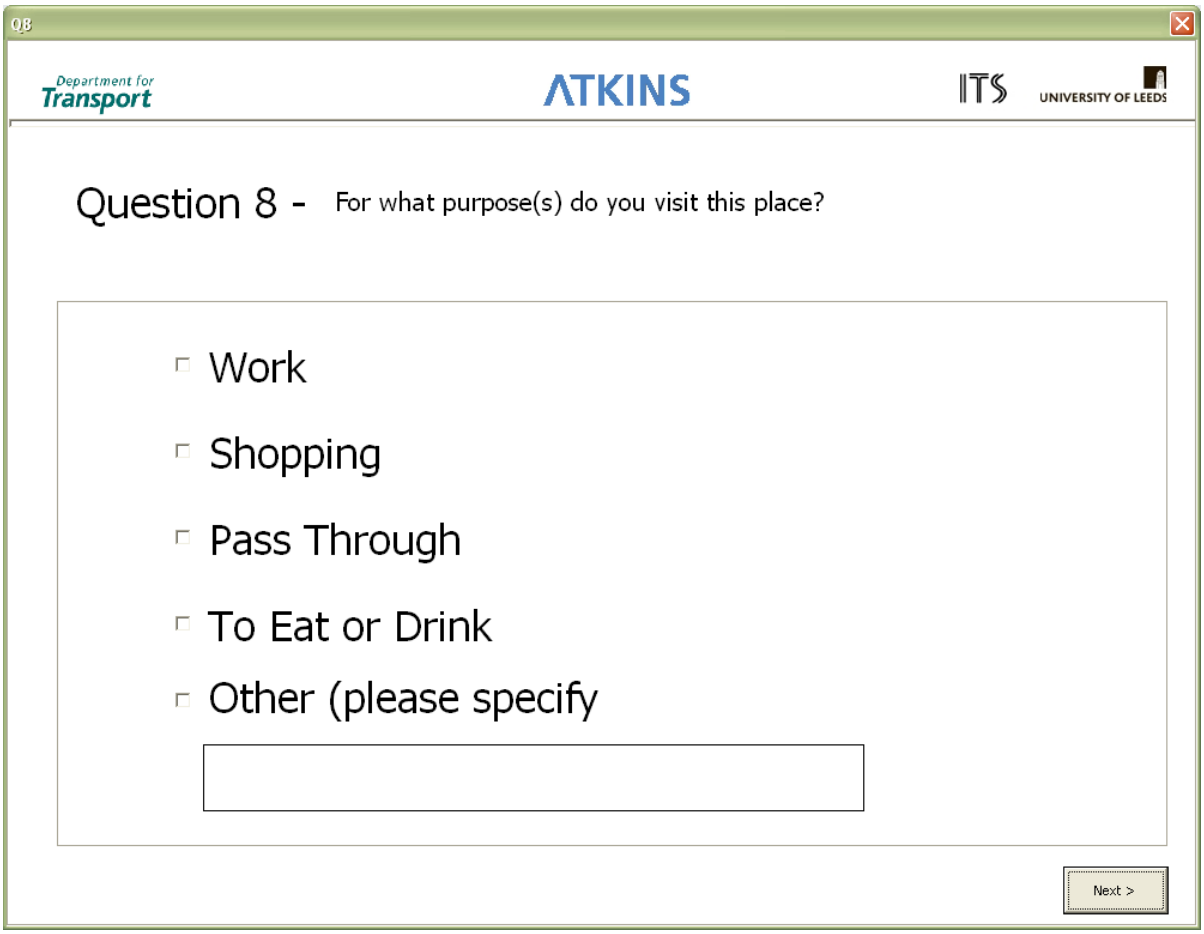
Question 7 - How much time do you spend here on a normal visit?
Less than 10 minutes
10 - 19 minutes
20 - 29 minutes
30 - 59 minutes
1 - 2 hours
Full Day
Next >


Q8
Department for Transport
ATKINS
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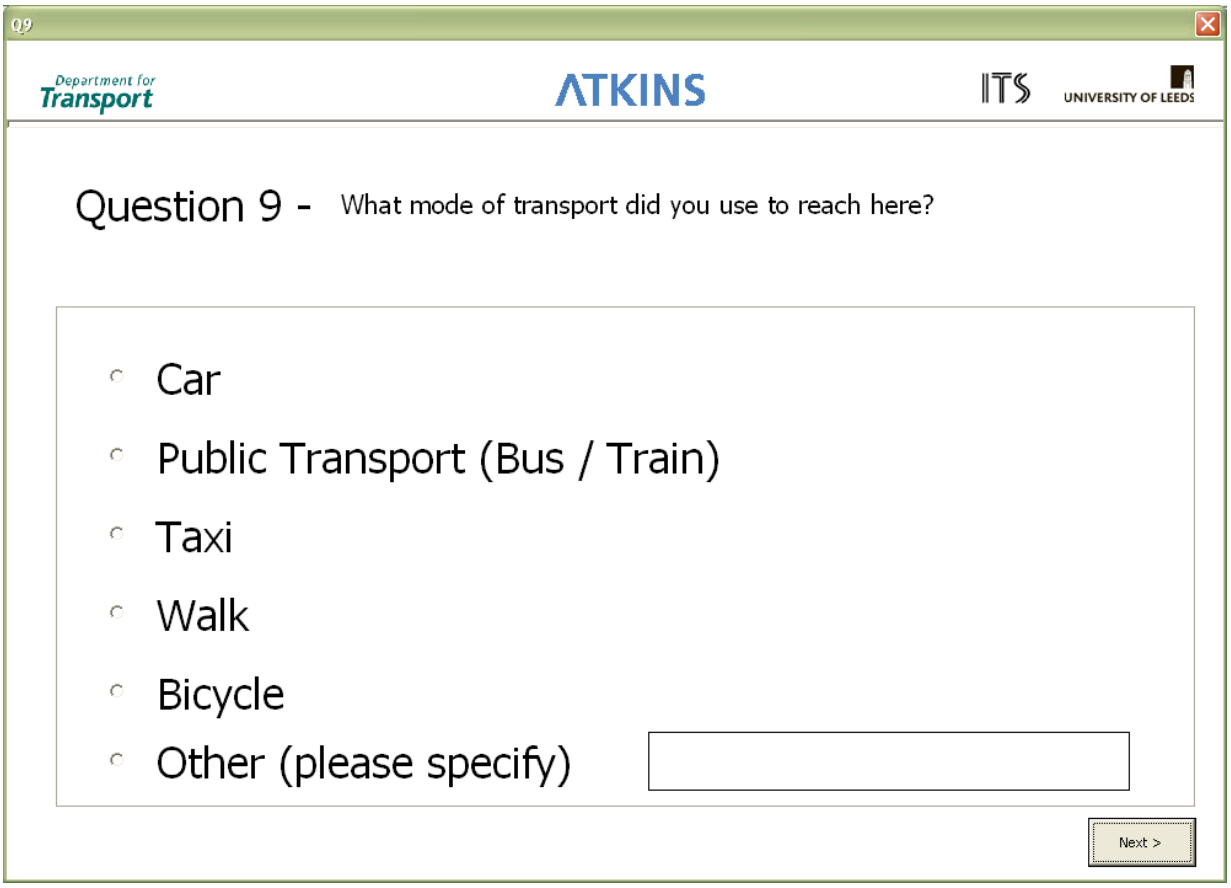
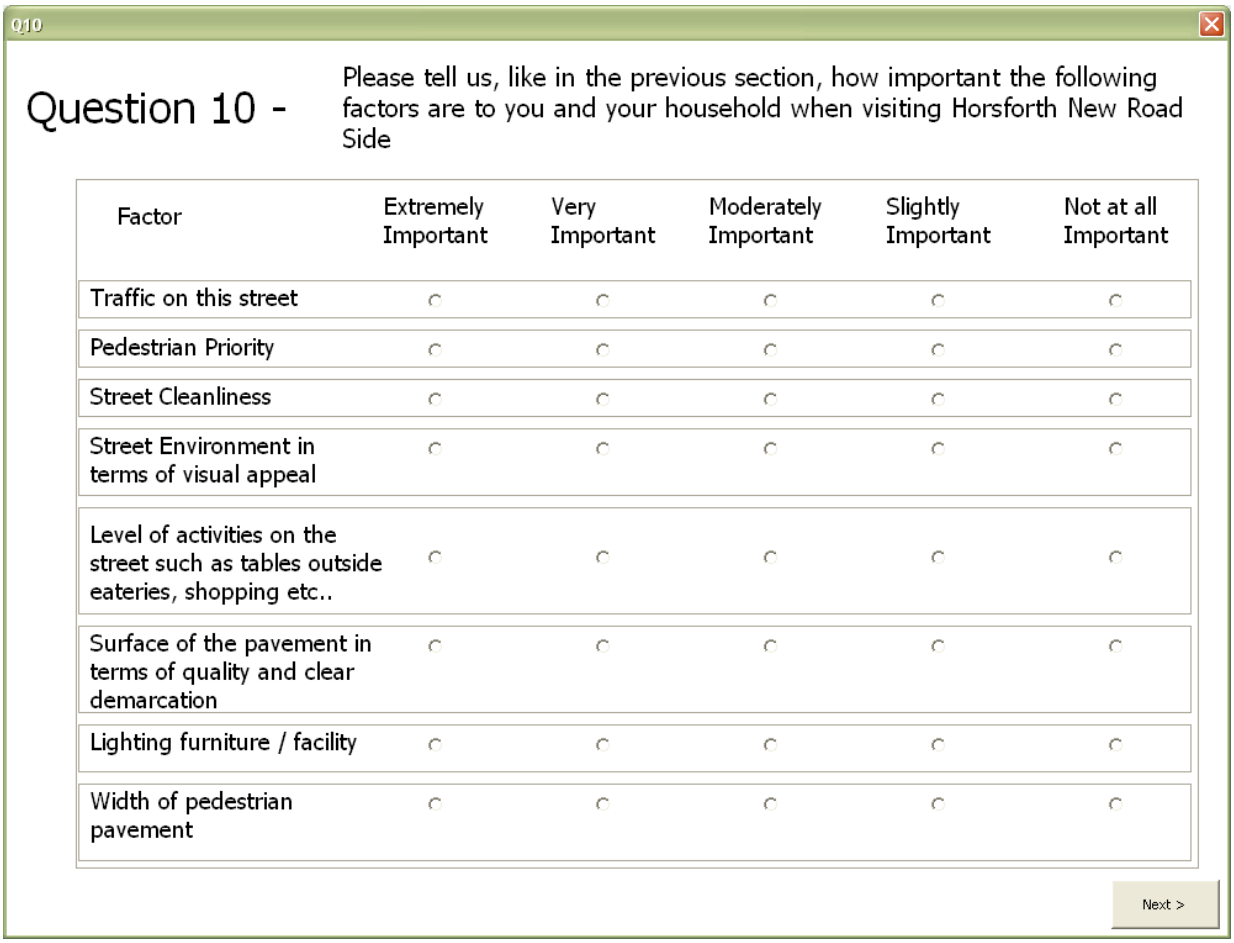
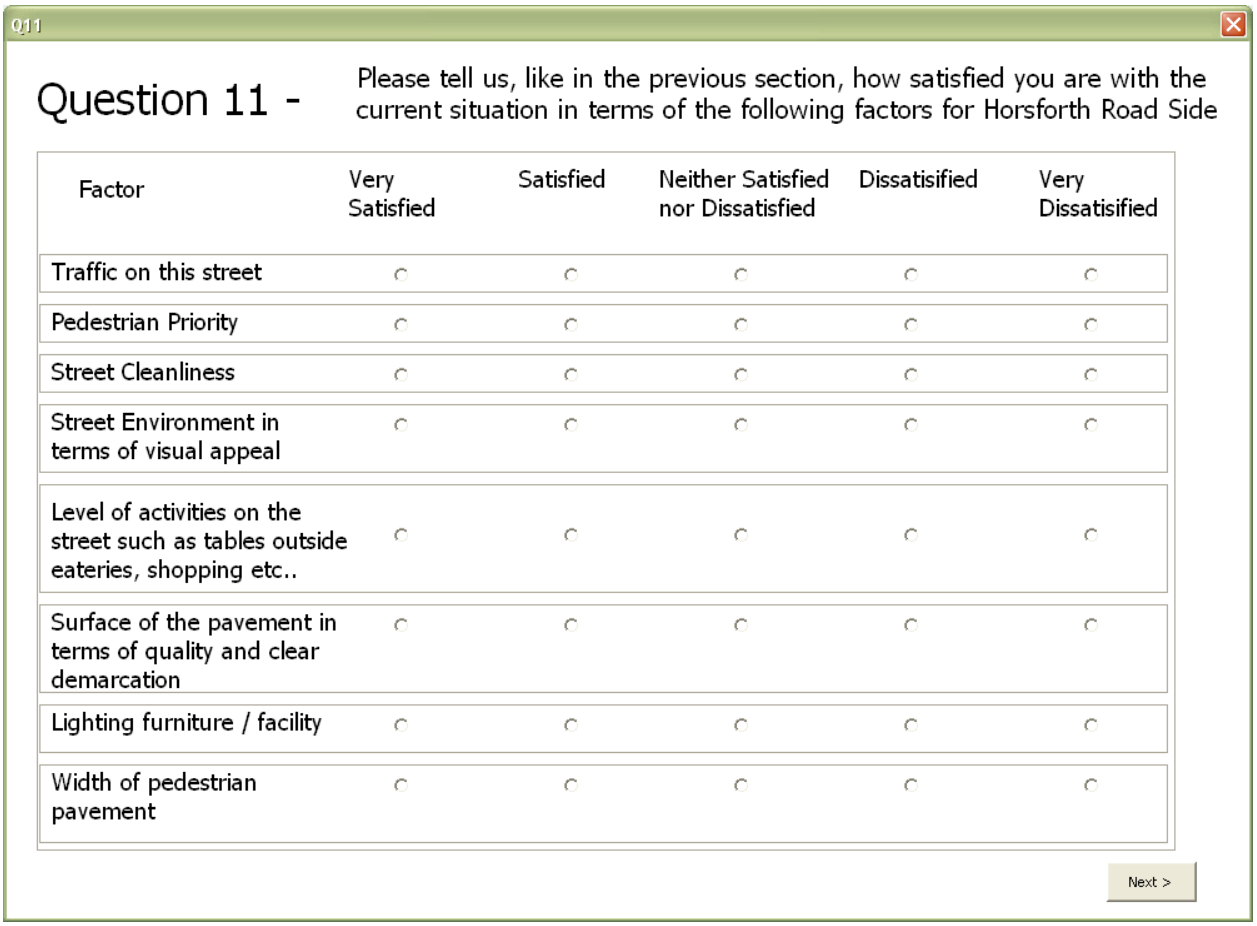
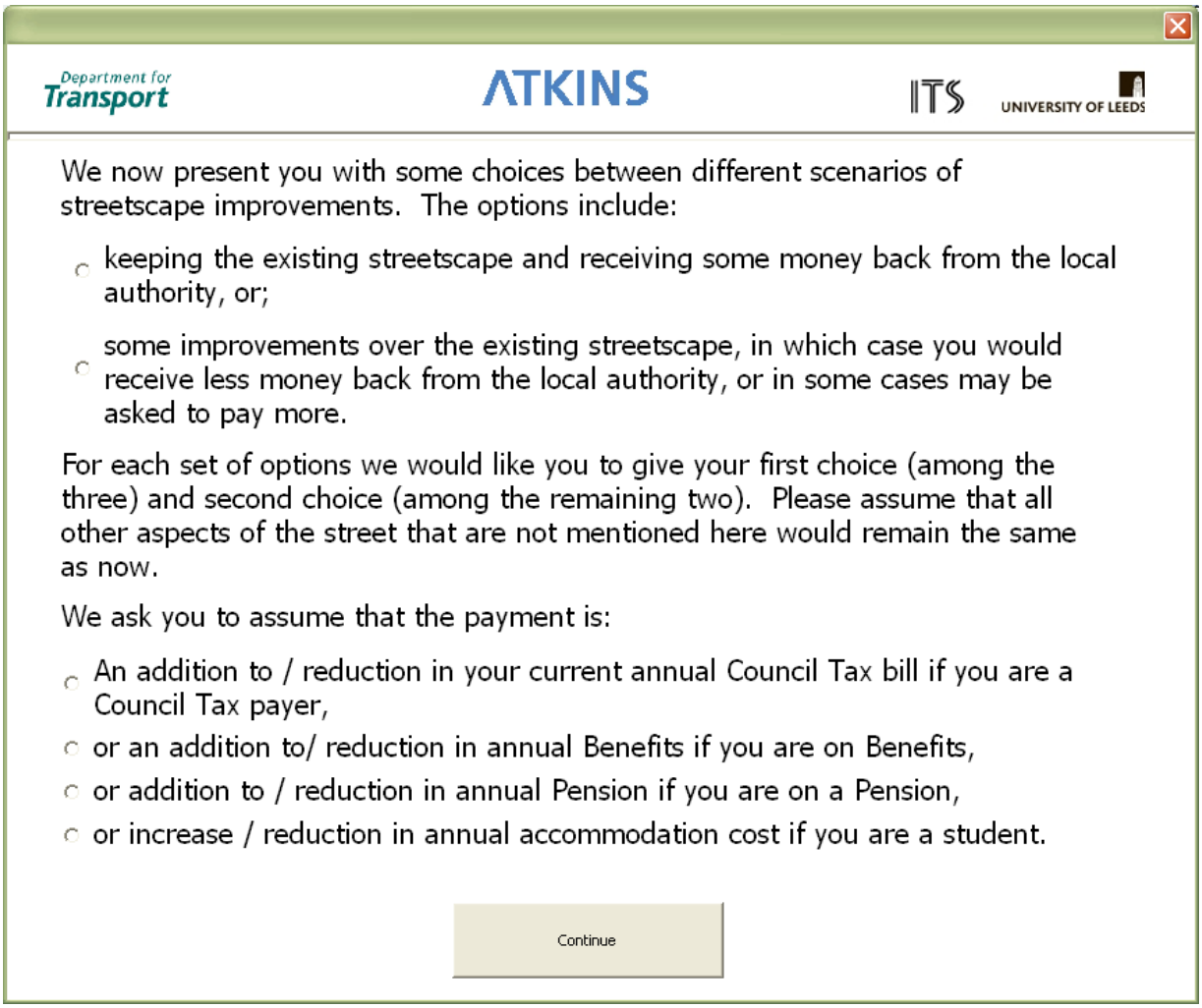
Question 8 - For what purpose(s) do you visit this place?
Work
Shopping
Pass Through
To Eat or Drink
Other (please specify
Next >


Q9
Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
Question 9 - What mode of transport did you use to reach here?
Car
Public Transport (Bus / Train)
Taxi
Walk
Bicycle
Other (please specify)
Next >


Q10
Question 10 - Please tell us, like in the previous section, how important the following factors are to you and your household when visiting Horsforth New Road Side
Factor
Extremely Important
Very Important
Moderately Important
Slightly Important
Not at all Important
Traffic on this street
Pedestrian Priority
Street Cleanliness
Street Environment in terms of visual appeal
Level of activities on the street such as tables outside eateries, shopping etc..
Surface of the pavement in terms of quality and clear demarcation
Lighting furniture / facility
Width of pedestrian pavement
Next >


Q11
Question 11 -
Please tell us, like in the previous section, how satisfied you are with the current situation in terms of the following factors for Horsforth Road Side
Factor
Very Satisfied
Satisfied
Neither Satisfied nor Dissatisfied
Dissatisfied
Very Dissatisfied
Traffic on this street
Pedestrian Priority
Street Cleanliness
Street Environment in terms of visual appeal
Level of activities on the street such as tables outside eateries, shopping etc..
Surface of the pavement in terms of quality and clear demarcation
Lighting furniture / facility
Width of pedestrian pavement
Next >


Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
We now present you with some choices between different scenarios of streetscape improvements. The options include:
keeping the existing streetscape and receiving some money back from the local authority, or;
some improvements over the existing streetscape, in which case you would receive less money back from the local authority, or in some cases may be asked to pay more.
For each set of options we would like you to give your first choice (among the three) and second choice (among the remaining two). Please assume that all other aspects of the street that are not mentioned here would remain the same as now.
We ask you to assume that the payment is:
An addition to / reduction in your current annual Council Tax bill if you are a Council Tax payer,
or an addition to/ reduction in annual Benefits if you are on Benefits,
or addition to / reduction in annual Pension if you are on a Pension,
or increase / reduction in annual accommodation cost if you are a student.
Continue

Q12

	Option 1	Option 2	Option 3
Pedestrian Priority	Pedestrians, cyclists and limited motor vehicle access	Full Pedestrianisation	
Level of Activities	High	Low	
Kerbs	Raised	Near Level	
Surfacing	Good quality material, Colour contrast	Low quality material, no colour contrast	
Lighting Furniture	Basic or Normal	Basic or Normal	
Amount to be paid / returned per annum	- £5	£0	- £25
I would Choose	○	○	○
Then I would Choose (from remaining two)			

Next >

Q13

	Option 1	Option 2	Option 3
Pedestrian Priority	Pedestrians, cyclists and limited motor vehicle access	Mixed Traffic	
Level of Activities	High	Low	
Kerbs	Near Level	Raised	
Surfacing	Good quality material, No colour contrast	Good quality material, no colour contrast	
Lighting Furniture	Heritage	Heritage	
Amount to be paid / returned per annum	- £10	£10	- £25
I would Choose	○	○	○
Then I would Choose (from remaining two)			

Next >

Q14

	Option 1	Option 2	Option 3
Pedestrian Priority	Shared Space	Pedestrians, cyclists and limited motor vehicle access	
Level of Activities	High	Low	
Kerbs	Near Level	Near Level	
Surfacing	Good quality material, Colour contrast	Low quality material, Colour contrast	
Lighting Furniture	Heritage	Basic or Normal	
Amount to be paid / returned per annum	£0	£5	- £15
I would Choose	○	○	○
Then I would Choose (from remaining two)			

Next >

Q15

	Option 1	Option 2	Option 3
Pedestrian Priority	Pedestrians, cyclists and limited motor vehicle access	Mixed Traffic	
Level of Activities	Low	Low	
Kerbs	Near Level	Raised	
Surfacing	Low quality material, Colour contrast	Low quality material, no colour contrast	
Lighting Furniture	Basic or Normal	Heritage	
Amount to be paid / returned per annum	- £10	£5	- £30
I would Choose	○	○	○
Then I would Choose (from remaining two)			

Next >

Q16

	Option 1	Option 2	Option 3
Pedestrian Priority	Pedestrians, cyclists and limited motor vehicle access	Full Pedestrianisation	
Level of Activities	Low	High	
Kerbs	Raised	Near Level	
Surfacing	Low quality material, Colour contrast	Good quality material, colour contrast	
Lighting Furniture	Heritage	Basic or Normal	
Amount to be paid / returned per annum	- £5	£10	- £20
I would Choose	○	○	○
Then I would Choose (from remaining two)			

Next >

Q17

	Option 1	Option 2	Option 3
Pedestrian Priority	Shared Space	Pedestrians, cyclists and limited motor vehicle access	
Level of Activities	Low	High	
Kerbs	Near Level	Raised	
Surfacing	Low quality material, Colour contrast	Good quality material, Colour contrast	
Lighting Furniture	Basic or Normal	Basic or Normal	
Amount to be paid / returned per annum	- £10	-£5	- £30
I would Choose	○	○	○
Then I would Choose (from remaining two)			

Next >

Q18

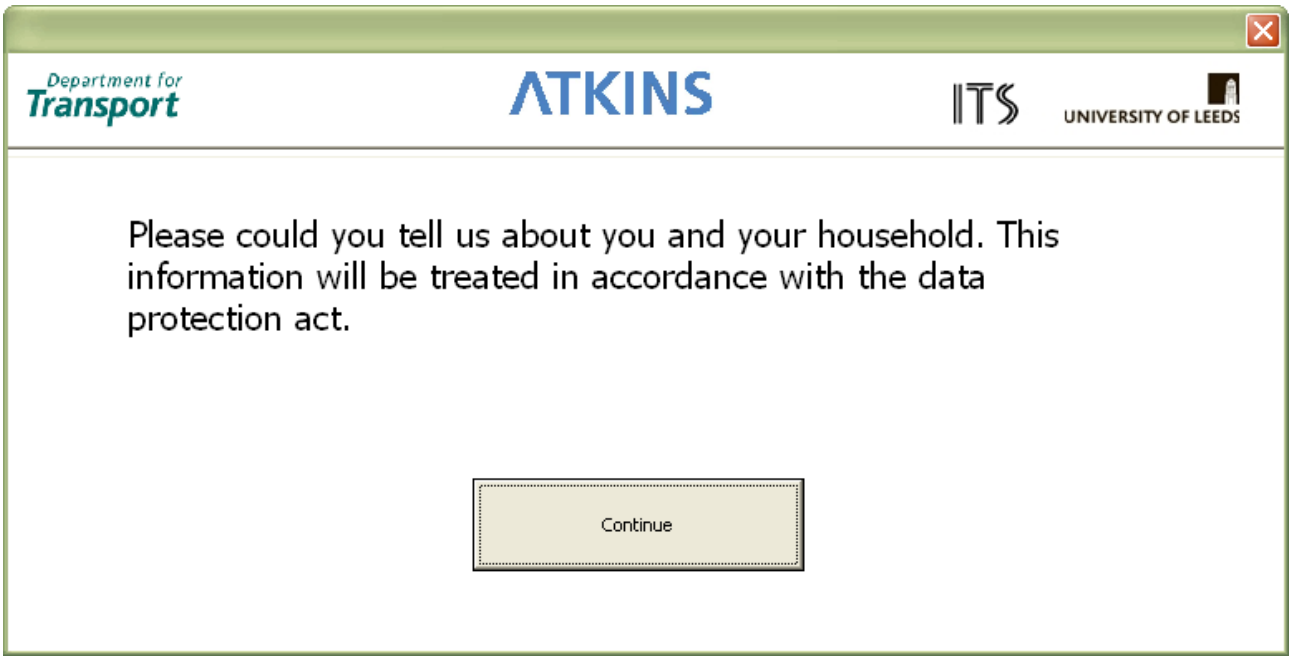
	Option 1	Option 2	Option 3
Pedestrian Priority	Full Pedestrianisation	Pedestrians, cyclists and limited motor vehicle access	
Level of Activities	High	Low	
Kerbs	Near Level	Near Level	
Surfacing	Low quality material, no colour contrast	Good quality material, no colour contrast	
Lighting Furniture	Heritage	Heritage	
Amount to be paid / returned per annum	- £10	-£5	- £25
I would Choose	○	○	○
Then I would Choose (from remaining two)			

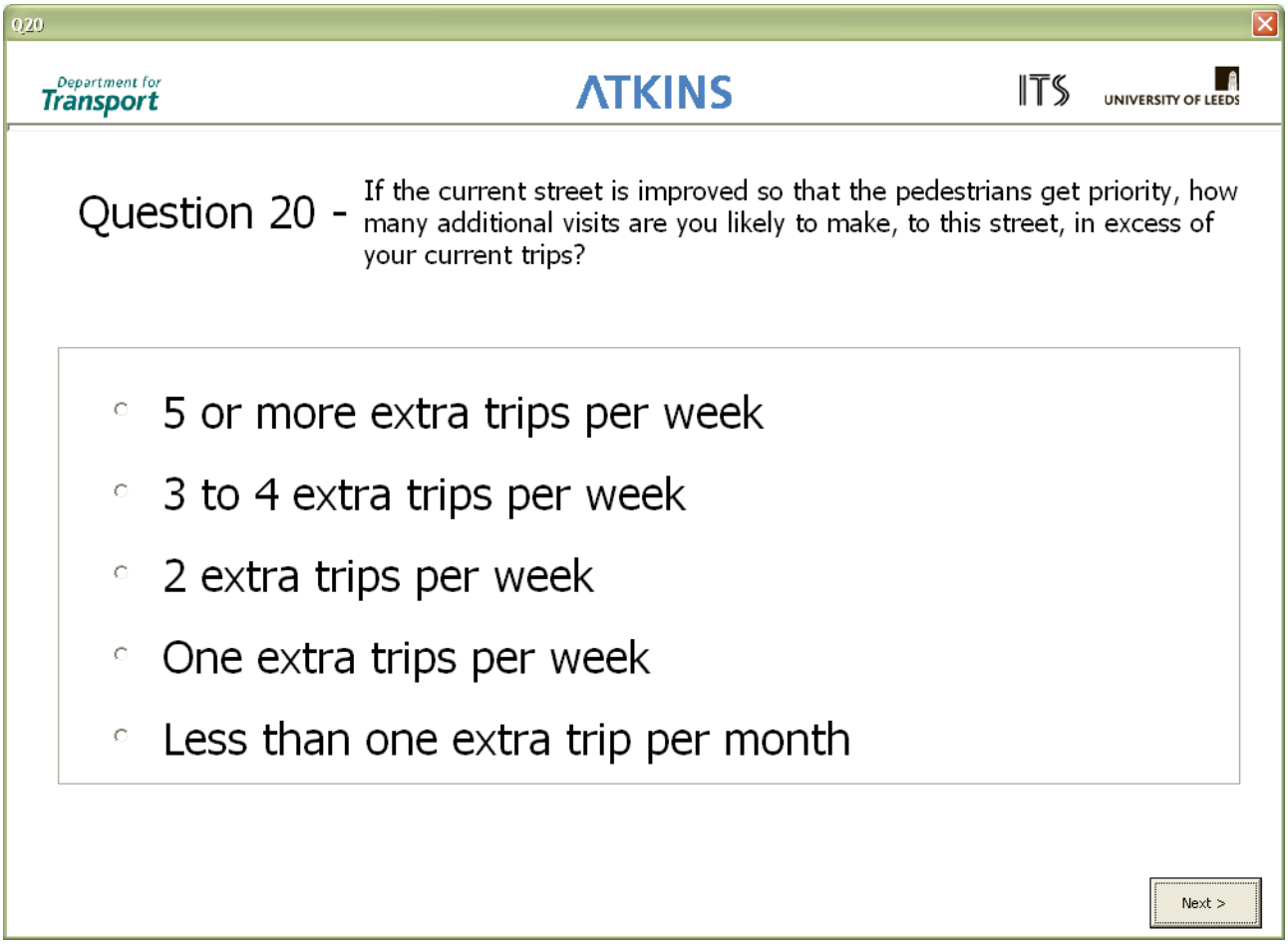
Next >

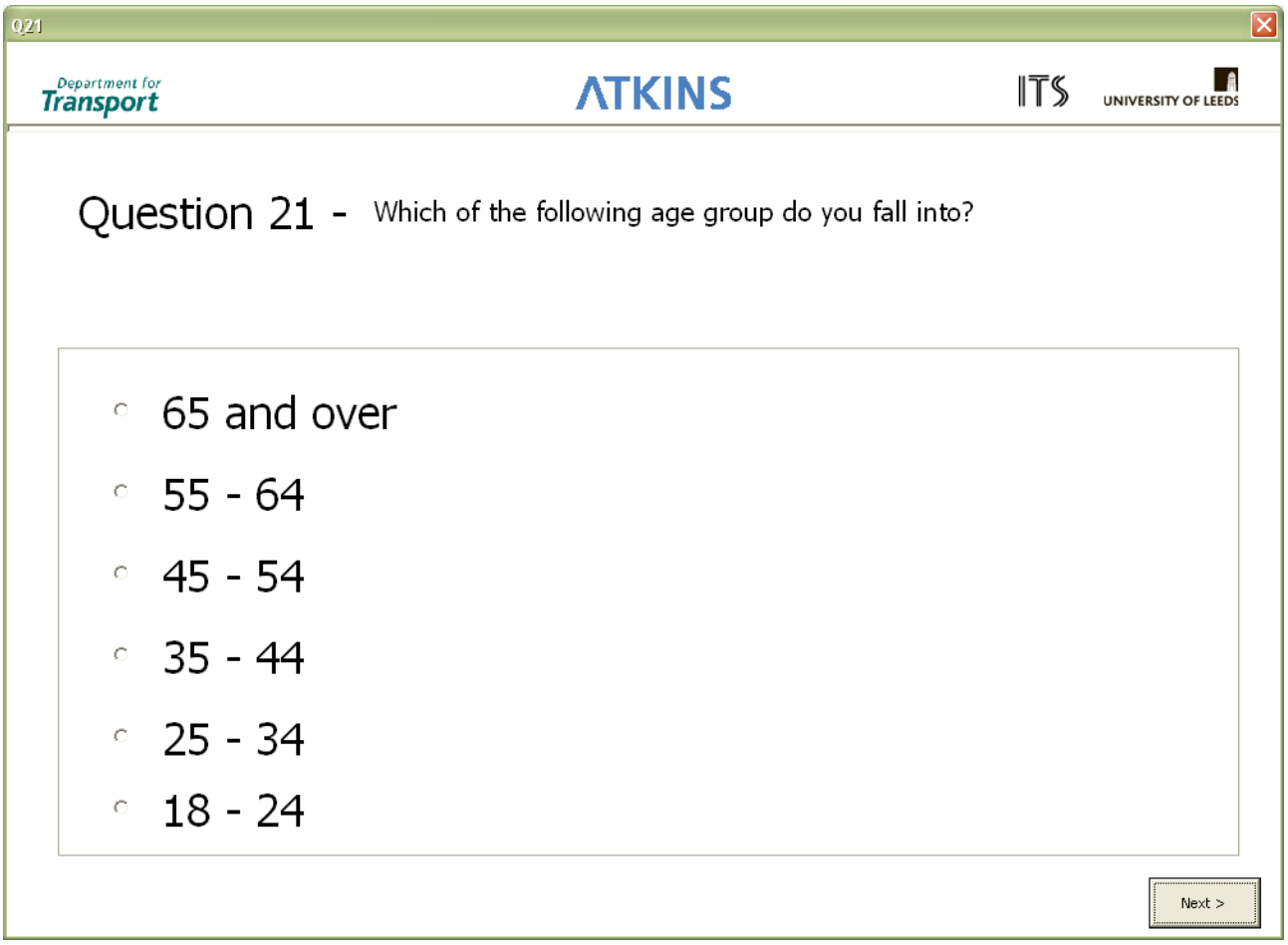
Q19

	Option 1	Option 2	Option 3
Pedestrian Priority	Mixed Traffic	Full Pedestrianisation	
Level of Activities	Low	Low	
Kerbs	Raised	Near Level	
Surfacing	Low quality material, no Colour contrast	Low quality material, Colour contrast	
Lighting Furniture	Basic or Normal	Heritage	
Amount to be paid / returned per annum	£5	£0	- £20
I would Choose	○	○	○
Then I would Choose (from remaining two)			

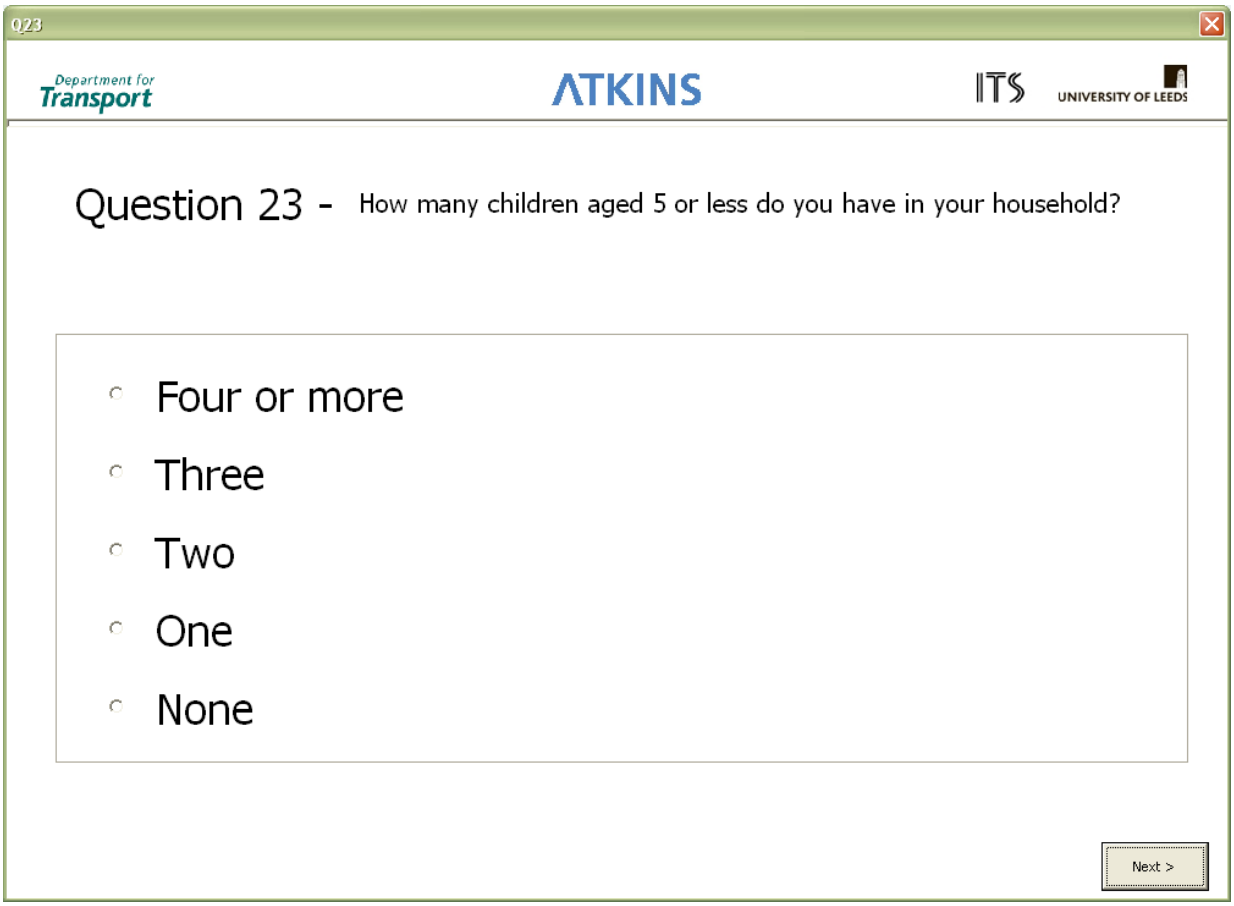
Next >

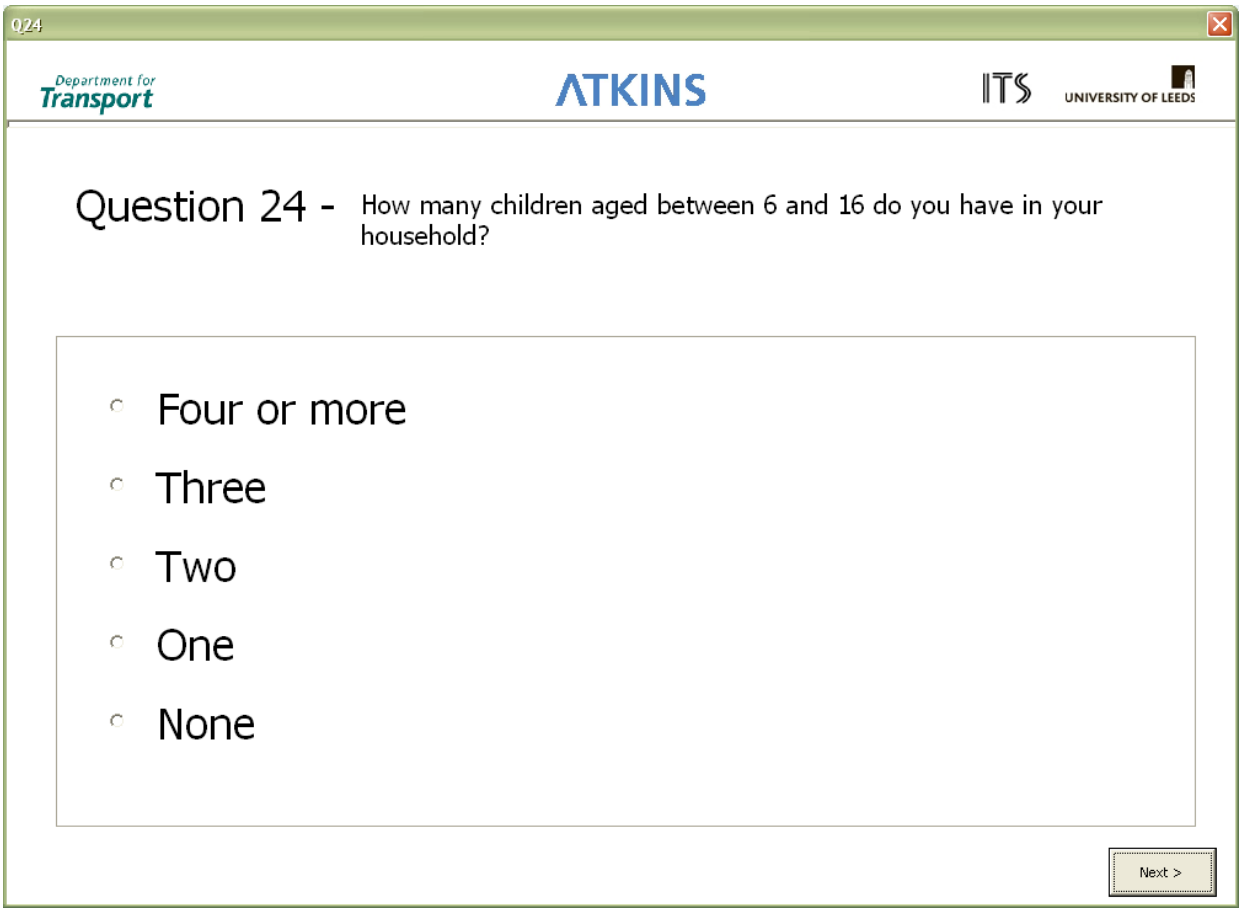

Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
Please could you tell us about you and your household. This information will be treated in accordance with the data protection act.
Continue

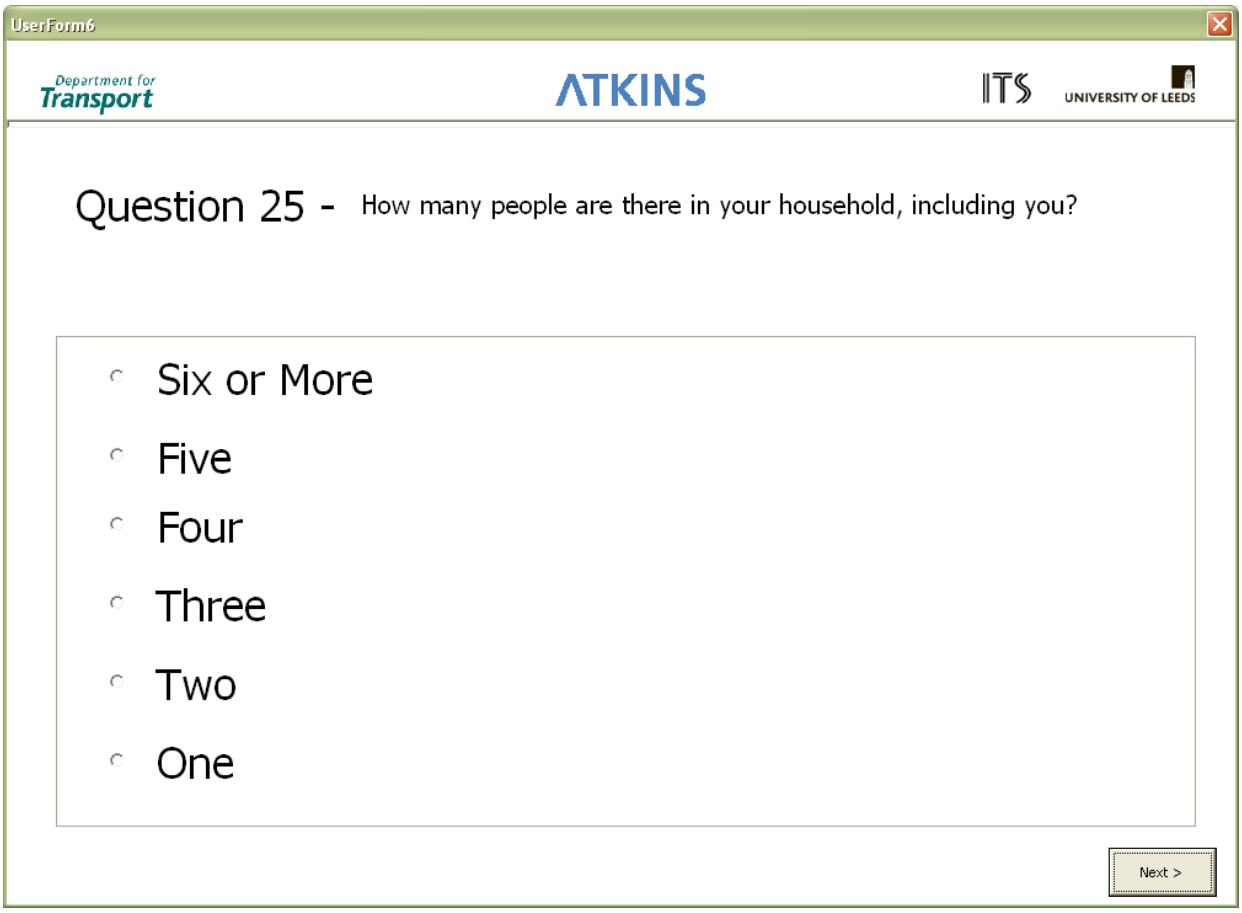

Q20
Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
Question 20 - If the current street is improved so that the pedestrians get priority, how many additional visits are you likely to make, to this street, in excess of your current trips?
5 or more extra trips per week
3 to 4 extra trips per week
2 extra trips per week
One extra trips per week
Less than one extra trip per month
Next >

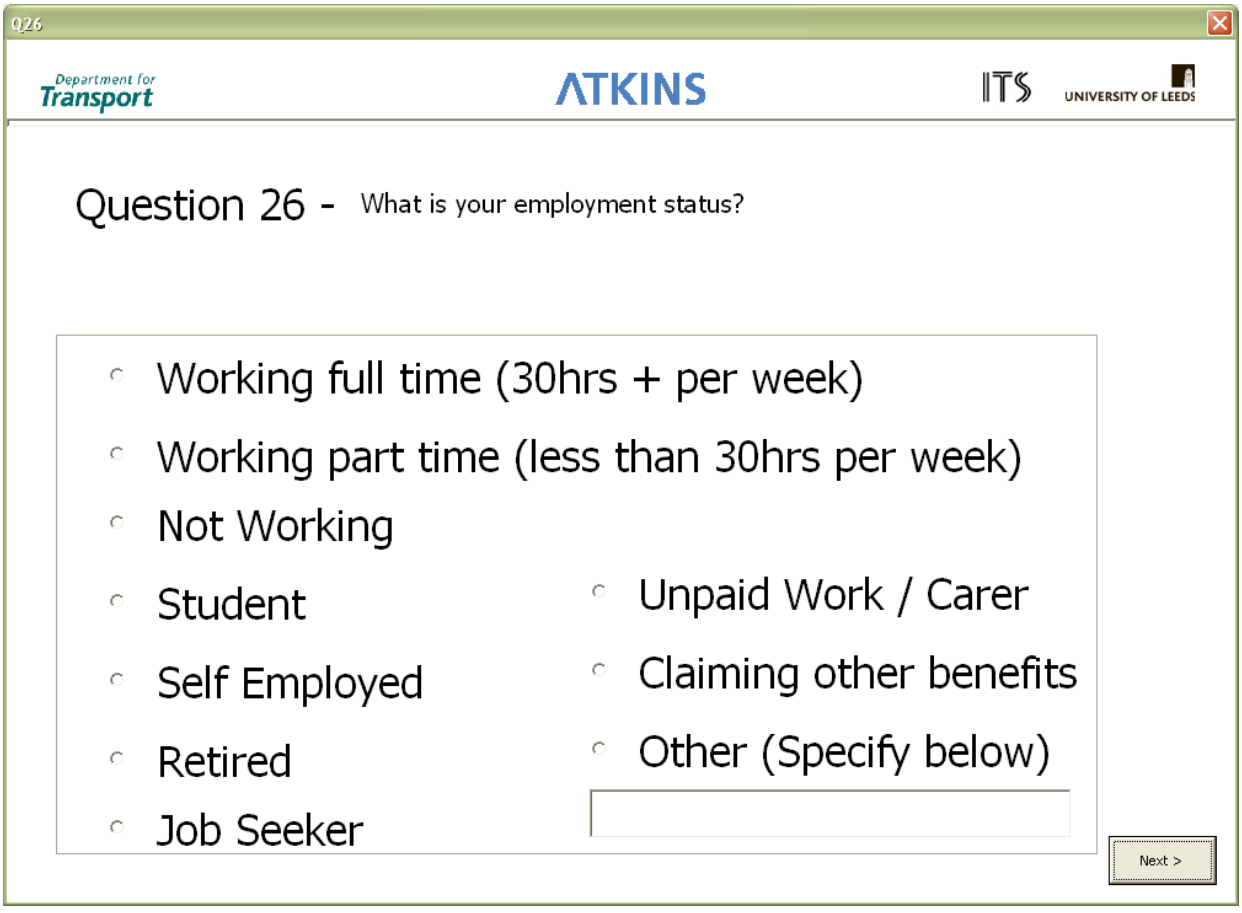

Q21
Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
Question 21 - Which of the following age group do you fall into?
65 and over
55 - 64
45 - 54
35 - 44
25 - 34
18 - 24
Next >

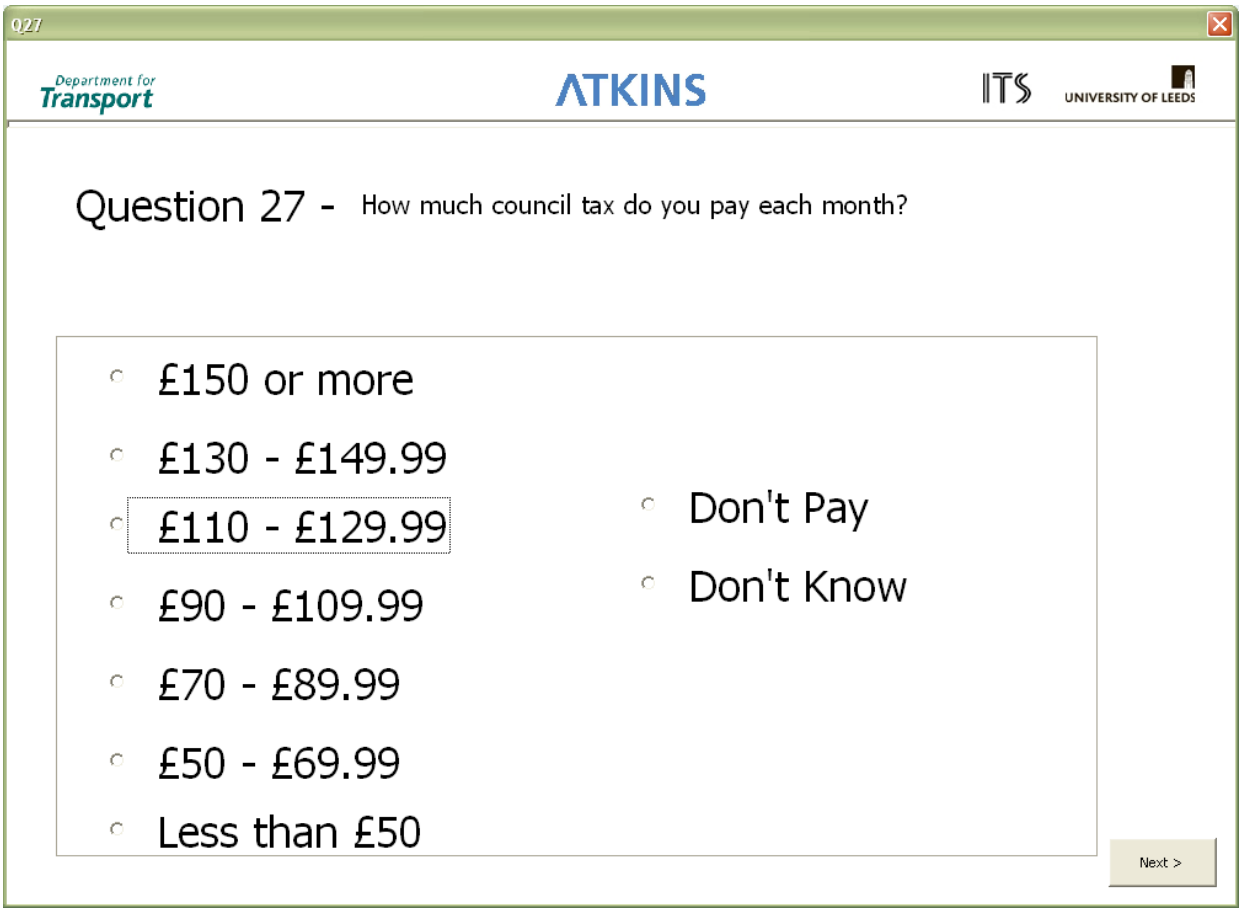

Q22
Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
Question 22 - Gender
Male
Female
Next >

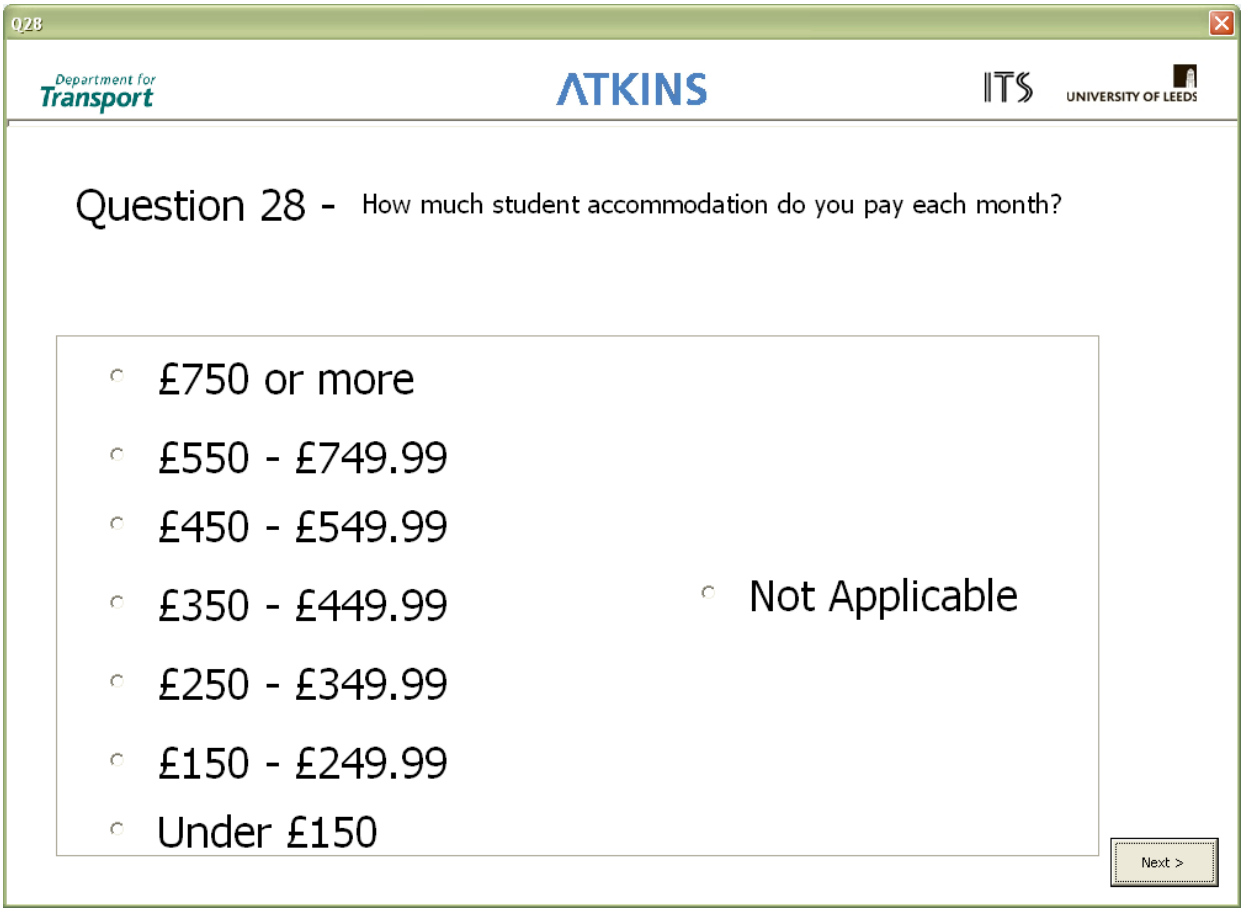

Q23
Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
Question 23 - How many children aged 5 or less do you have in your household?
Four or more
Three
Two
One
None
Next >

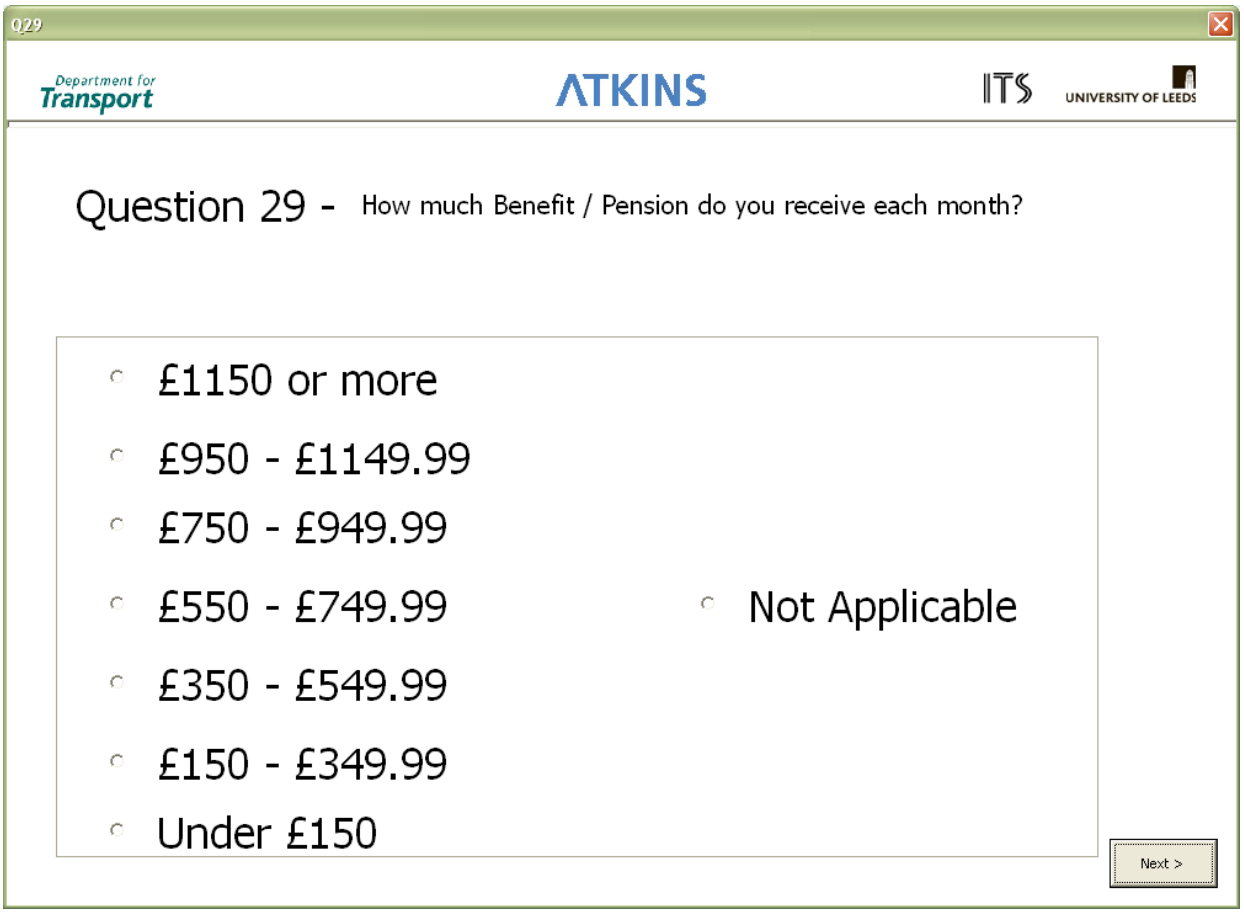

Q24
Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
Question 24 - How many children aged between 6 and 16 do you have in your household?
Four or more
Three
Two
One
None
Next >

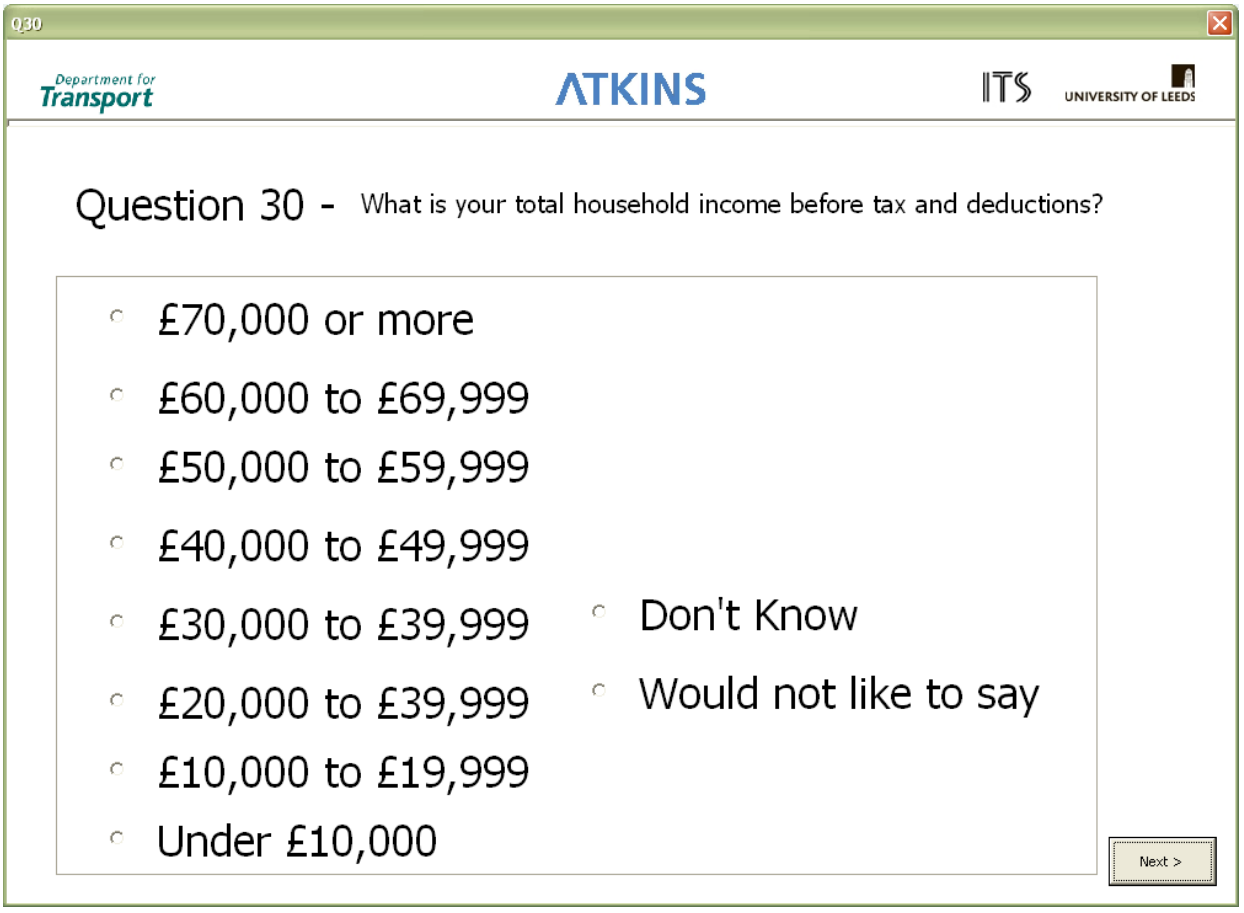

UserForm6
Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
Question 25 - How many people are there in your household, including you?
Six or More
Five
Four
Three
Two
One
Next >

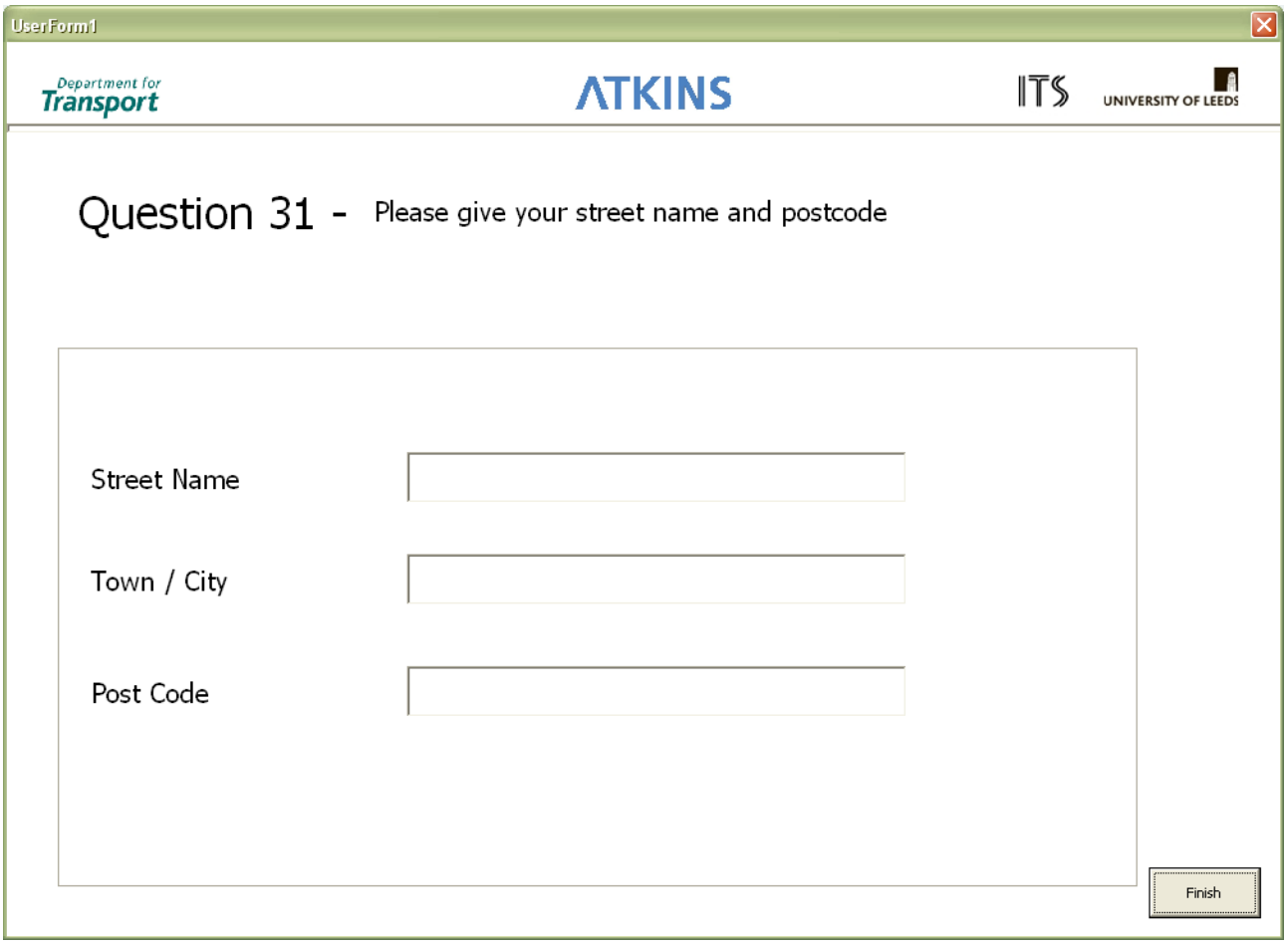

Q26
Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
Question 26 - What is your employment status?
Working full time (30hrs + per week)
Working part time (less than 30hrs per week)
Not Working
Student
Self Employed
Retired
Job Seeker
Unpaid Work / Carer
Claiming other benefits
Other (Specify below)
Next >

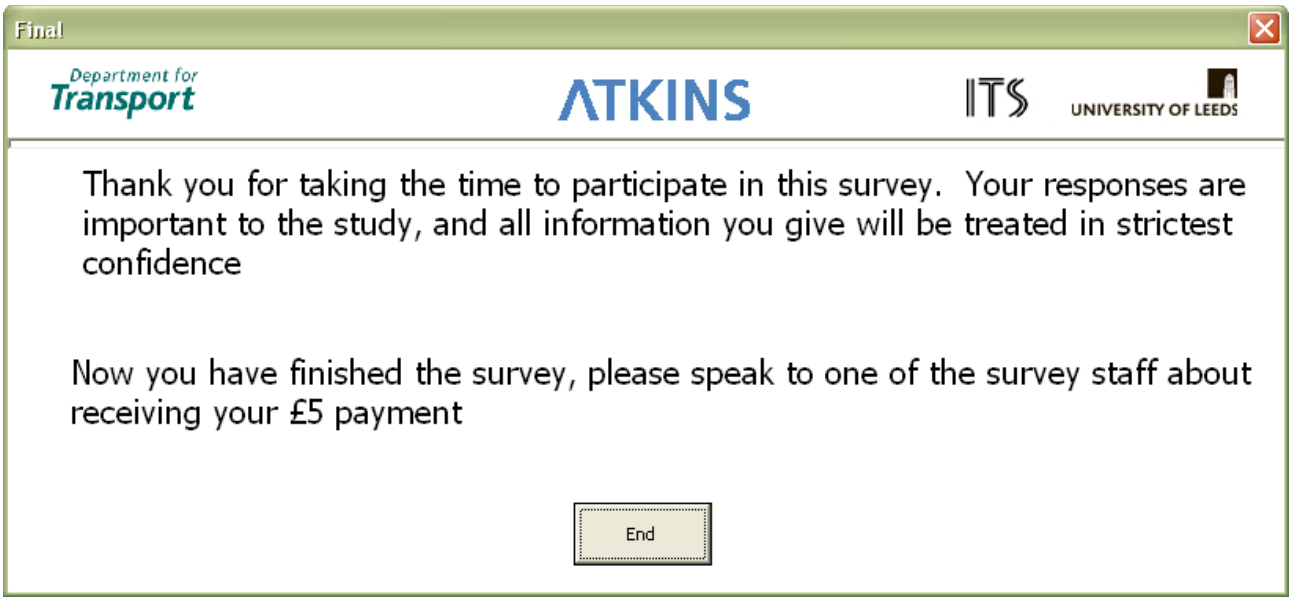

Q27
Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
Question 27 - How much council tax do you pay each month?
£150 or more
£130 - £149.99
£110 - £129.99
£90 - £109.99
£70 - £89.99
£50 - £69.99
Less than £50
Don't Pay
Don't Know
Next >


Q28
Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
Question 28 - How much student accommodation do you pay each month?
£750 or more
£550 - £749.99
£450 - £549.99
£350 - £449.99
£250 - £349.99
£150 - £249.99
Under £150
Not Applicable
Next >

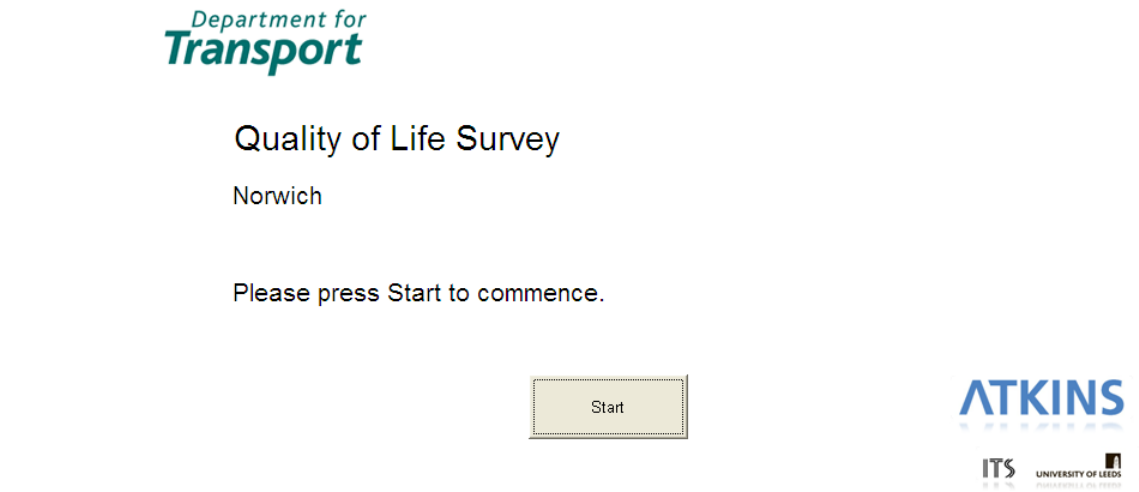

Q29
Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
Question 29 - How much Benefit / Pension do you receive each month?
£1150 or more
£950 - £1149.99
£750 - £949.99
£550 - £749.99
£350 - £549.99
£150 - £349.99
Under £150
Not Applicable
Next >

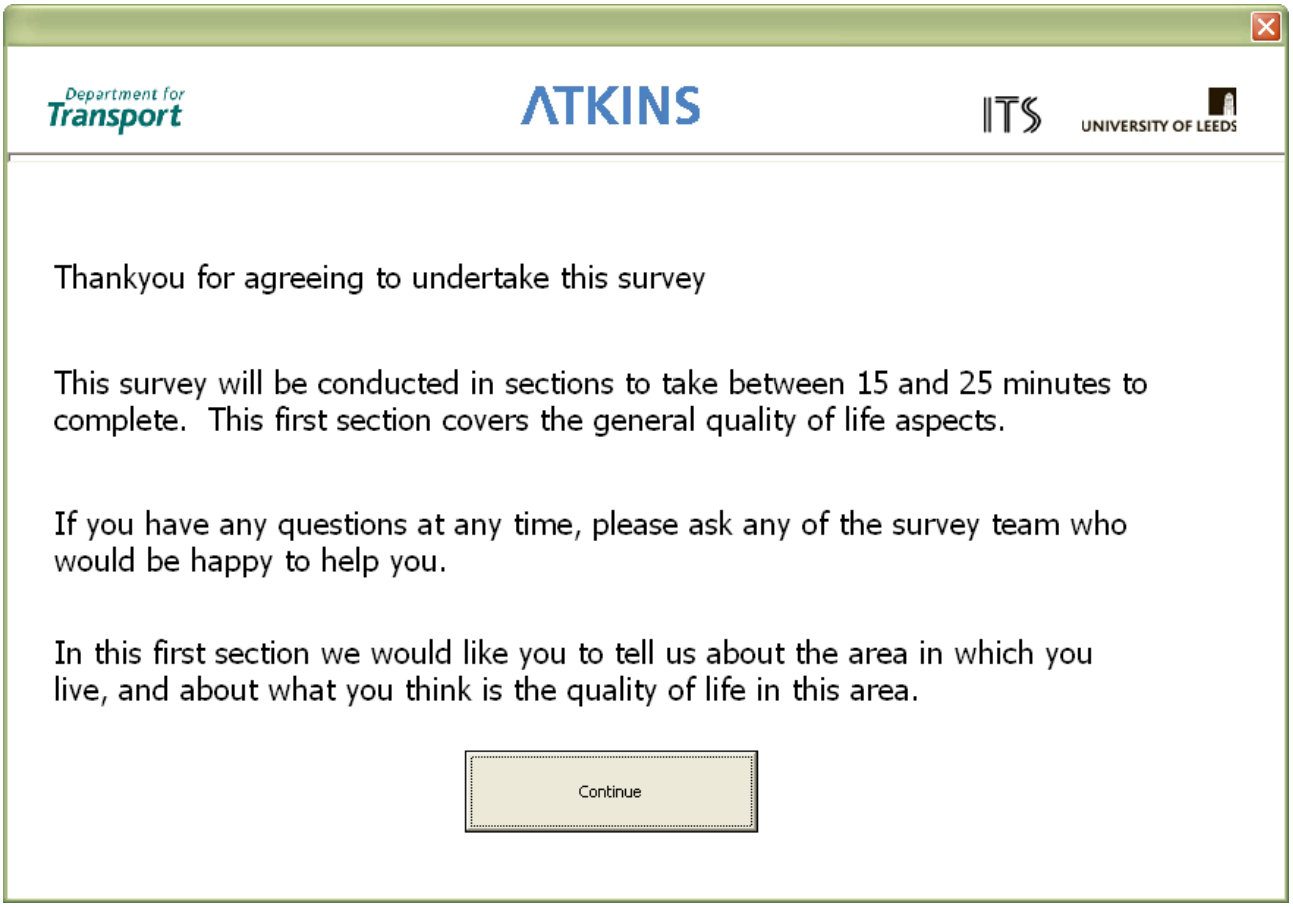

Q30
Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
Question 30 - What is your total household income before tax and deductions?
£70,000 or more
£60,000 to £69,999
£50,000 to £59,999
£40,000 to £49,999
£30,000 to £39,999
£20,000 to £39,999
£10,000 to £19,999
Under £10,000
Don't Know
Would not like to say
Next >

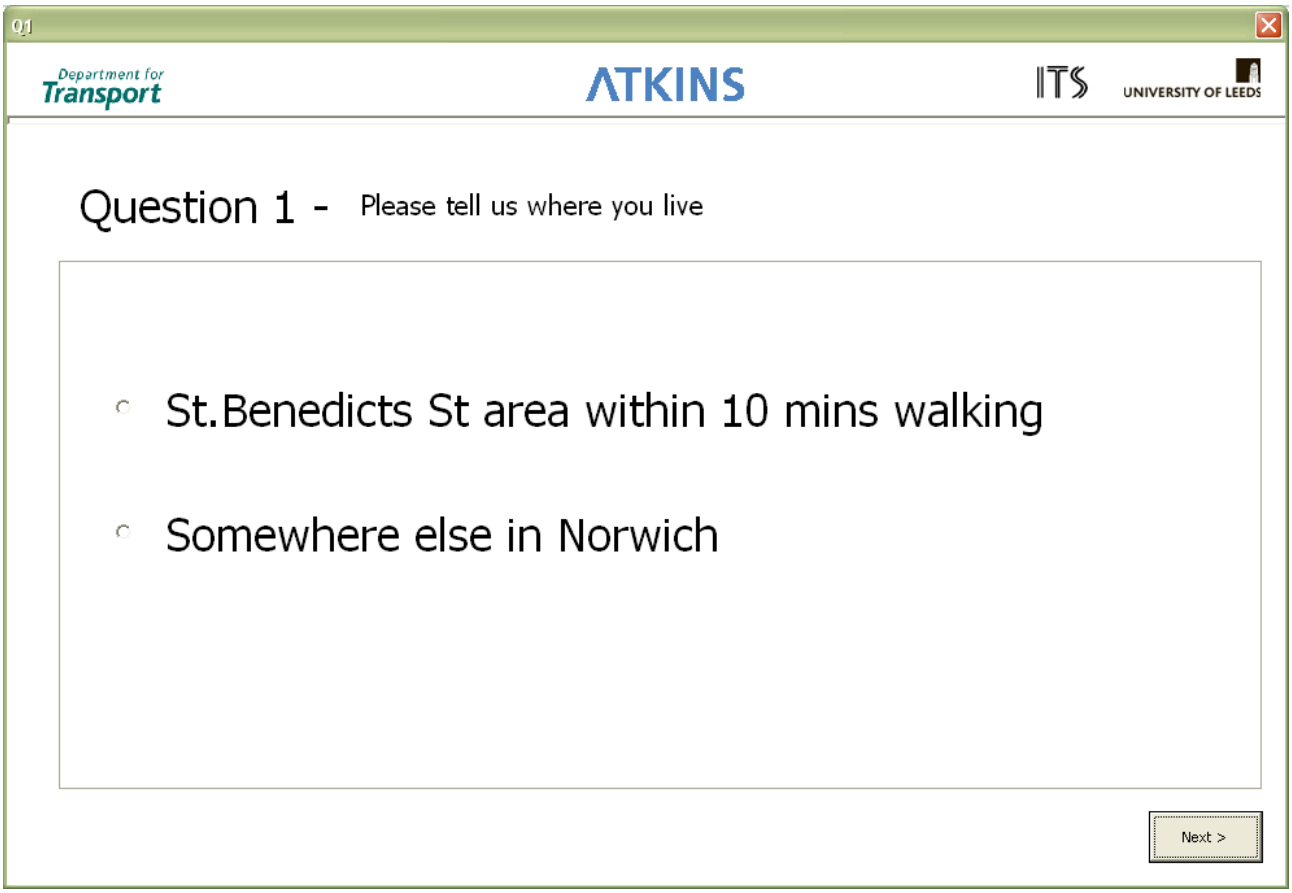

UserForm1
Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
Question 31 - Please give your street name and postcode
Street Name
Town / City
Post Code
Finish

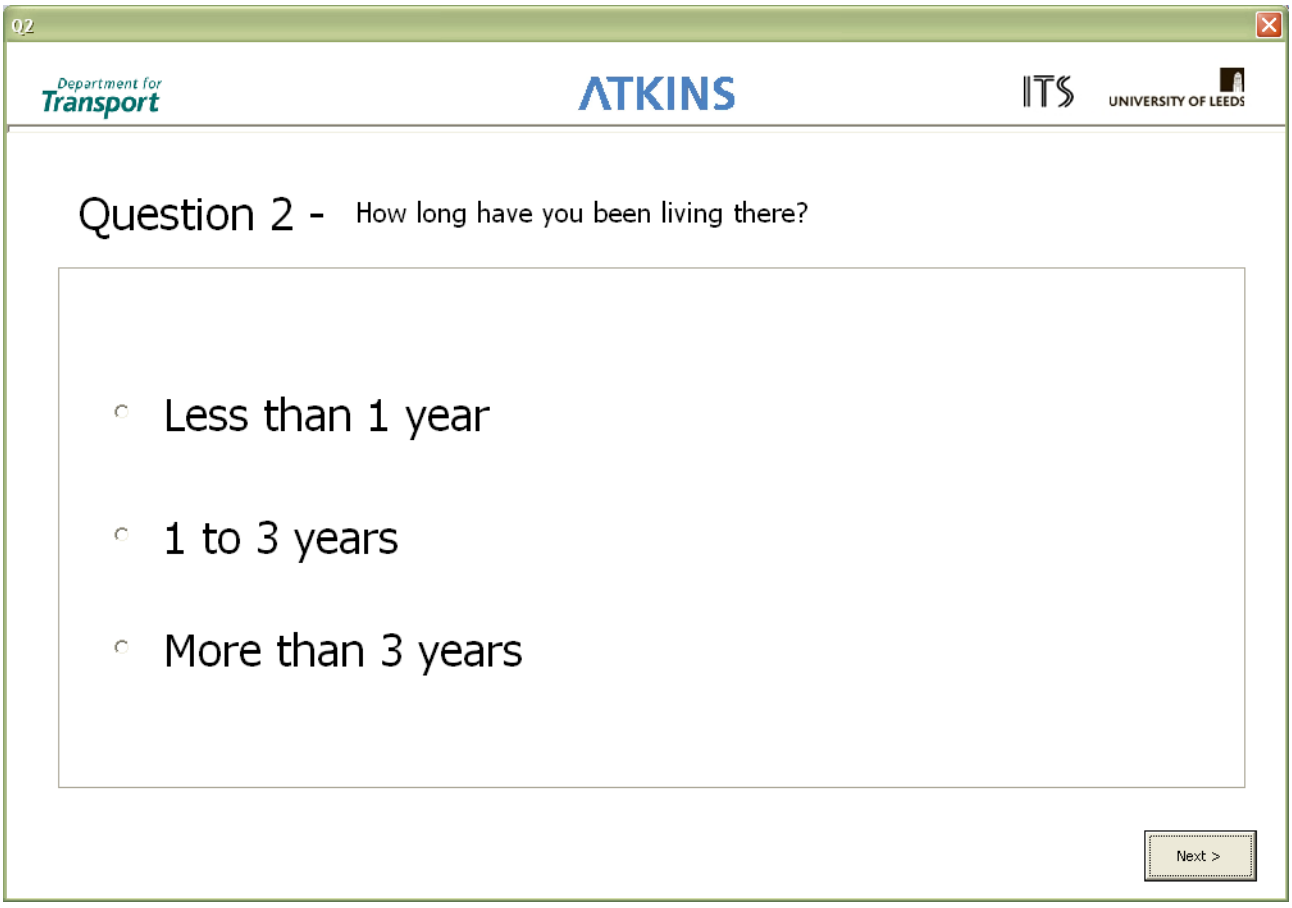

Final
Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
Thank you for taking the time to participate in this survey. Your responses are important to the study, and all information you give will be treated in strictest confidence
Now you have finished the survey, please speak to one of the survey staff about receiving your £5 payment
End

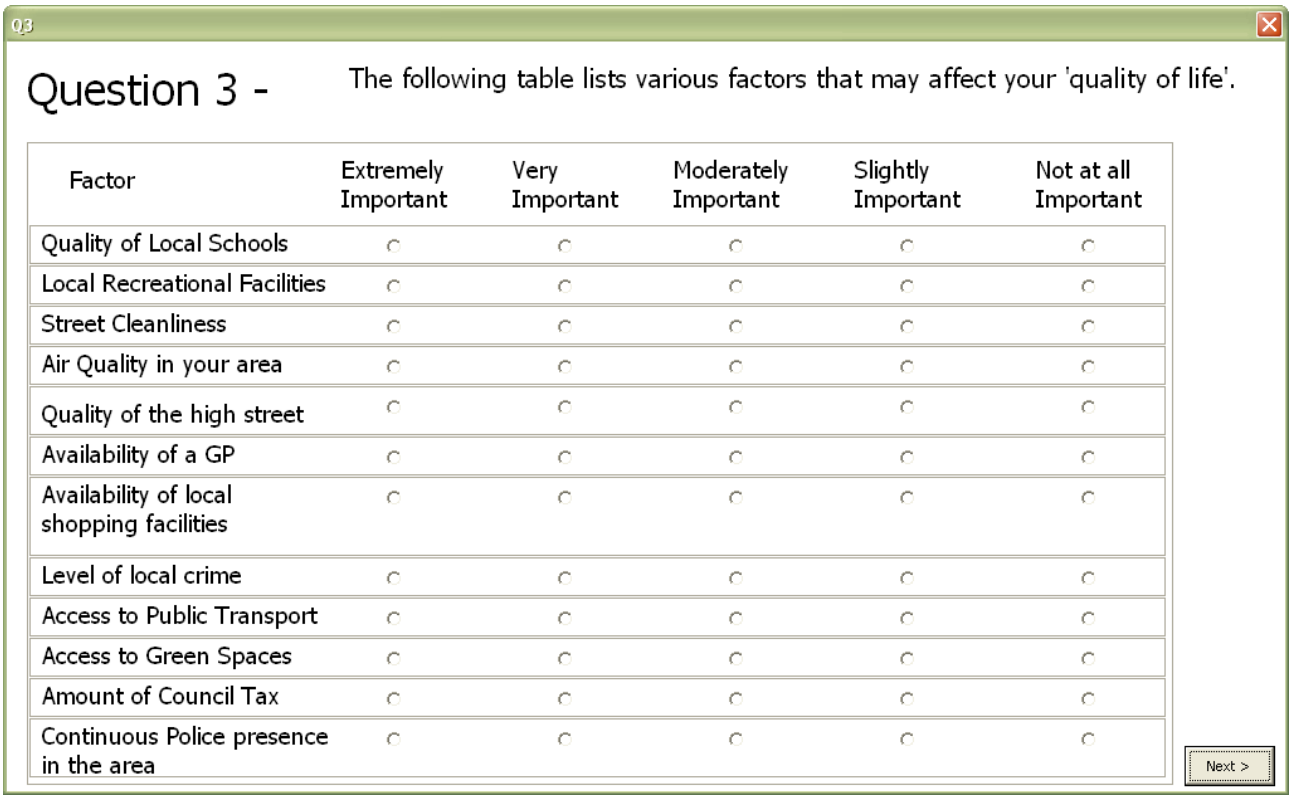
Appendix D - Re-survey Hall Test Questionnaire


Department for Transport
Quality of Life Survey
Norwich
Please press Start to commence.
Start
ATKINS
ITS
UNIVERSITY OF LEEDS


Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
Thankyou for agreeing to undertake this survey
This survey will be conducted in sections to take between 15 and 25 minutes to complete. This first section covers the general quality of life aspects.
If you have any questions at any time, please ask any of the survey team who would be happy to help you.
In this first section we would like you to tell us about the area in which you live, and about what you think is the quality of life in this area.
Continue


Q1
Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
Question 1 - Please tell us where you live
St.Benedicts St area within 10 mins walking
Somewhere else in Norwich
Next >


Q2
Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
Question 2 - How long have you been living there?
Less than 1 year
1 to 3 years
More than 3 years
Next >

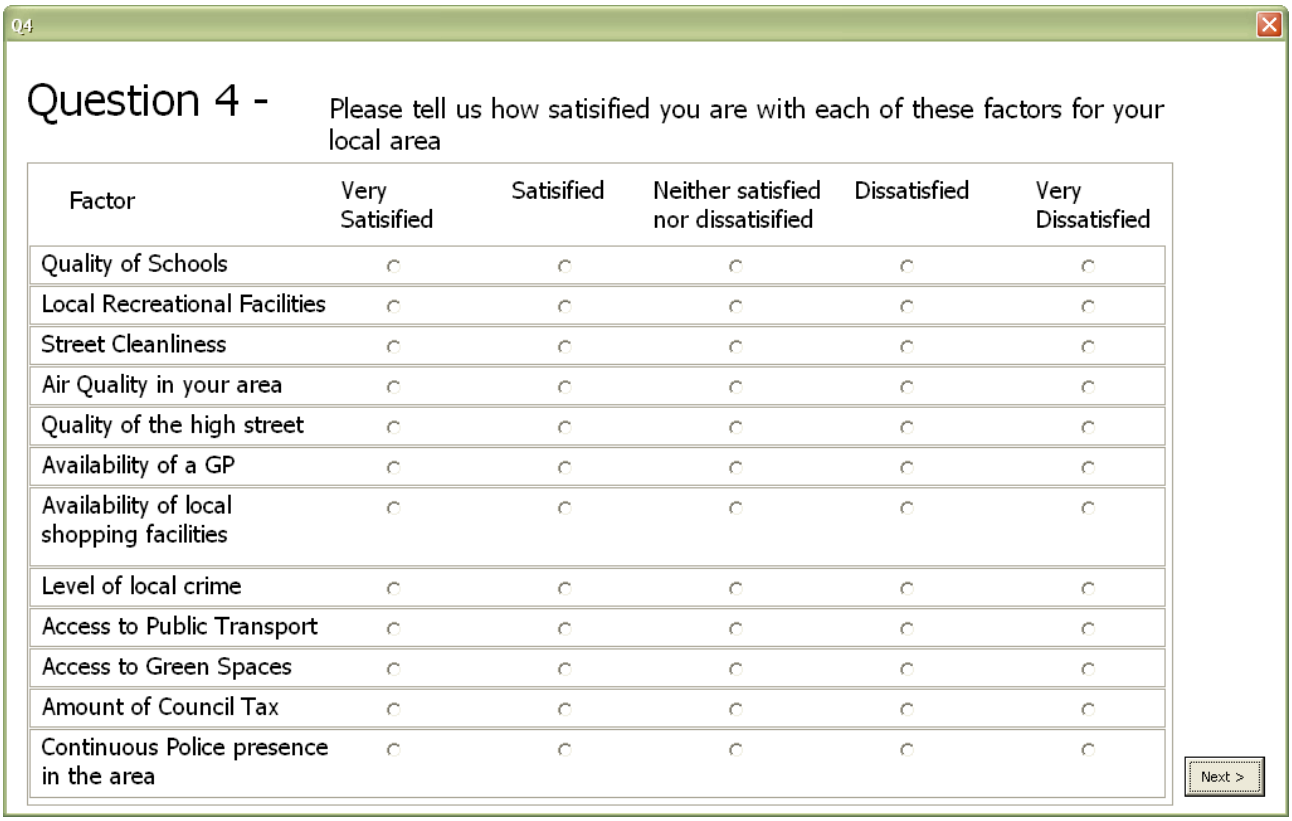


Q3

Question 3 - The following table lists various factors that may affect your 'quality of life'.

Factor	Extremely Important	Very Important	Moderately Important	Slightly Important	Not at all Important
Quality of Local Schools	○	○	○	○	○
Local Recreational Facilities	○	○	○	○	○
Street Cleanliness	○	○	○	○	○
Air Quality in your area	○	○	○	○	○
Quality of the high street	○	○	○	○	○
Availability of a GP	○	○	○	○	○
Availability of local shopping facilities	○	○	○	○	○
Level of local crime	○	○	○	○	○
Access to Public Transport	○	○	○	○	○
Access to Green Spaces	○	○	○	○	○
Amount of Council Tax	○	○	○	○	○
Continuous Police presence in the area	○	○	○	○	○

Next >

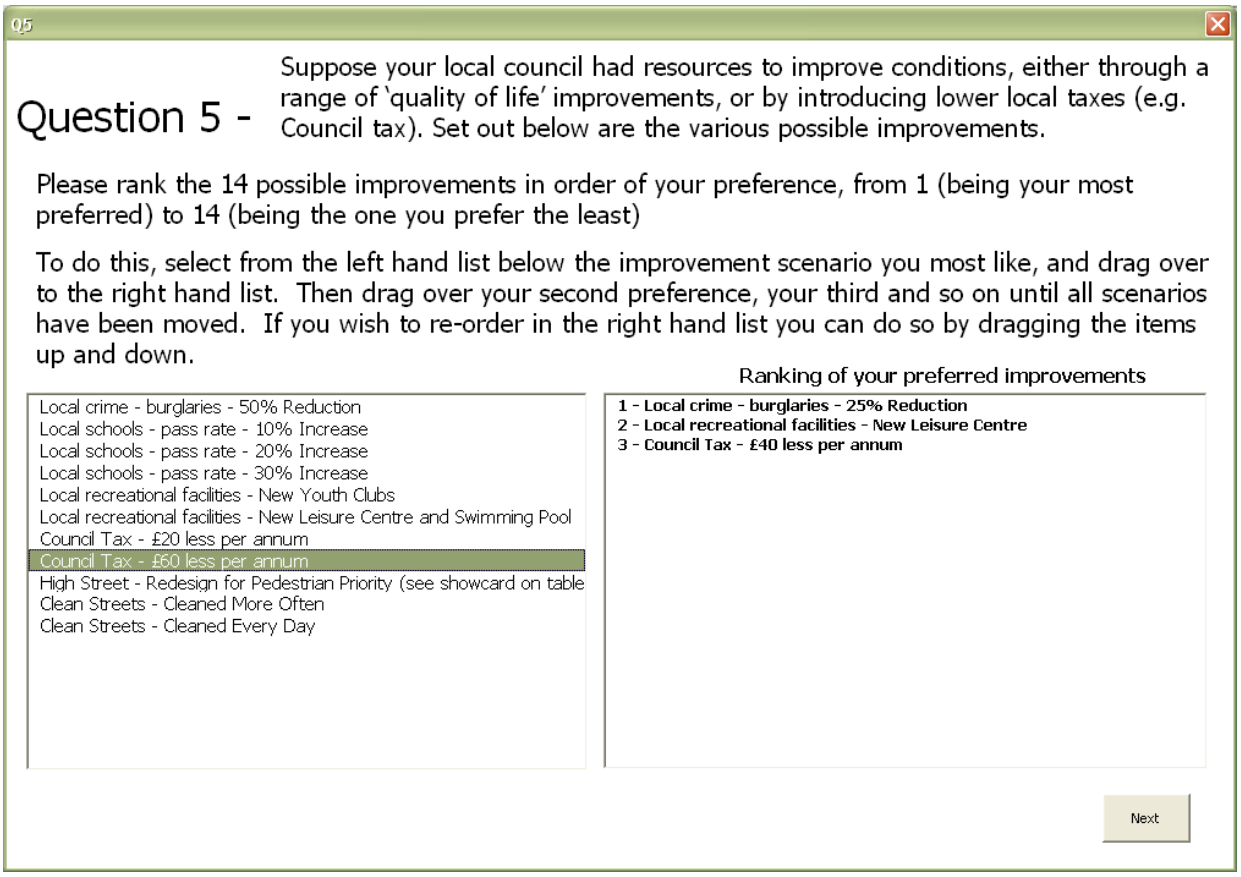


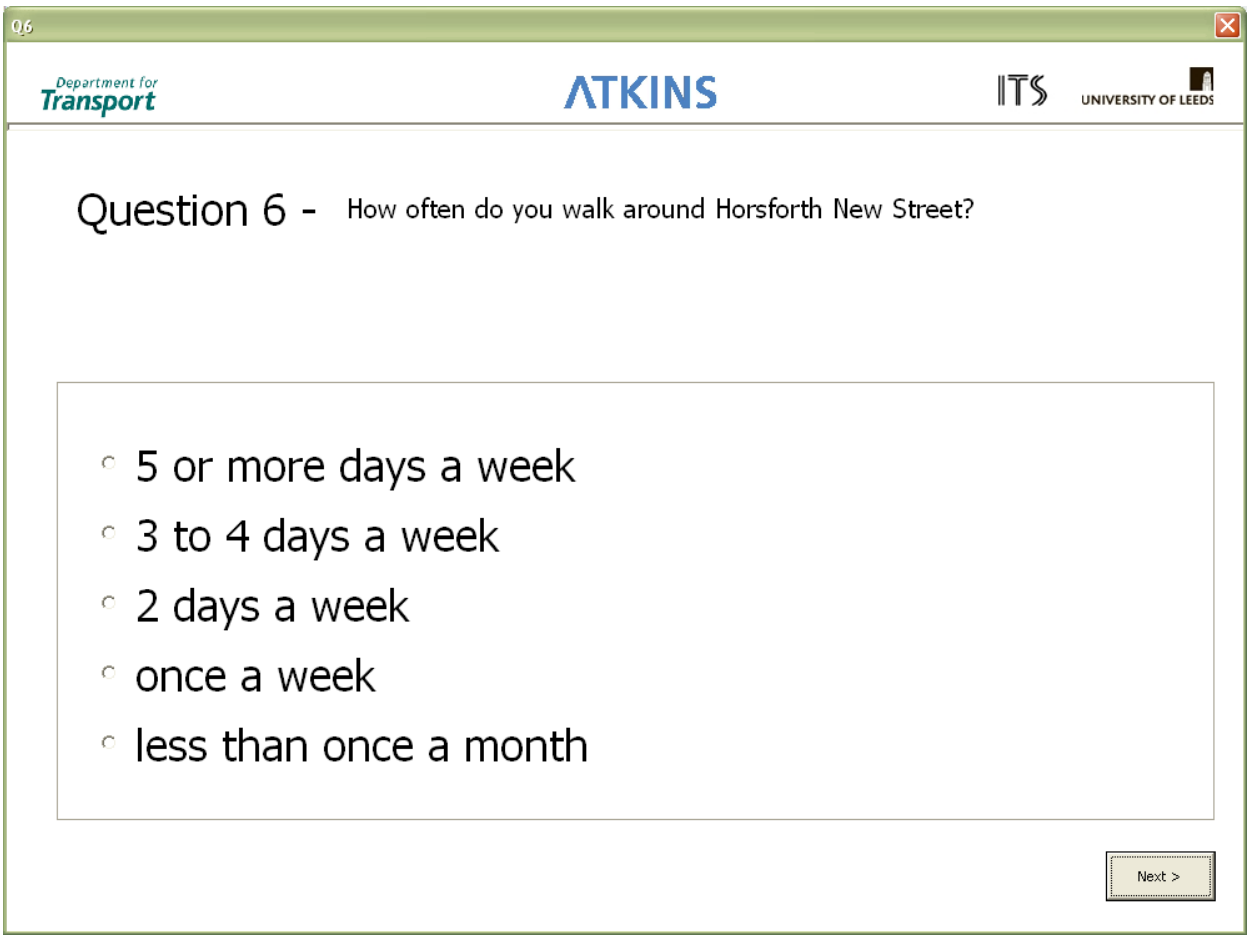
Q4

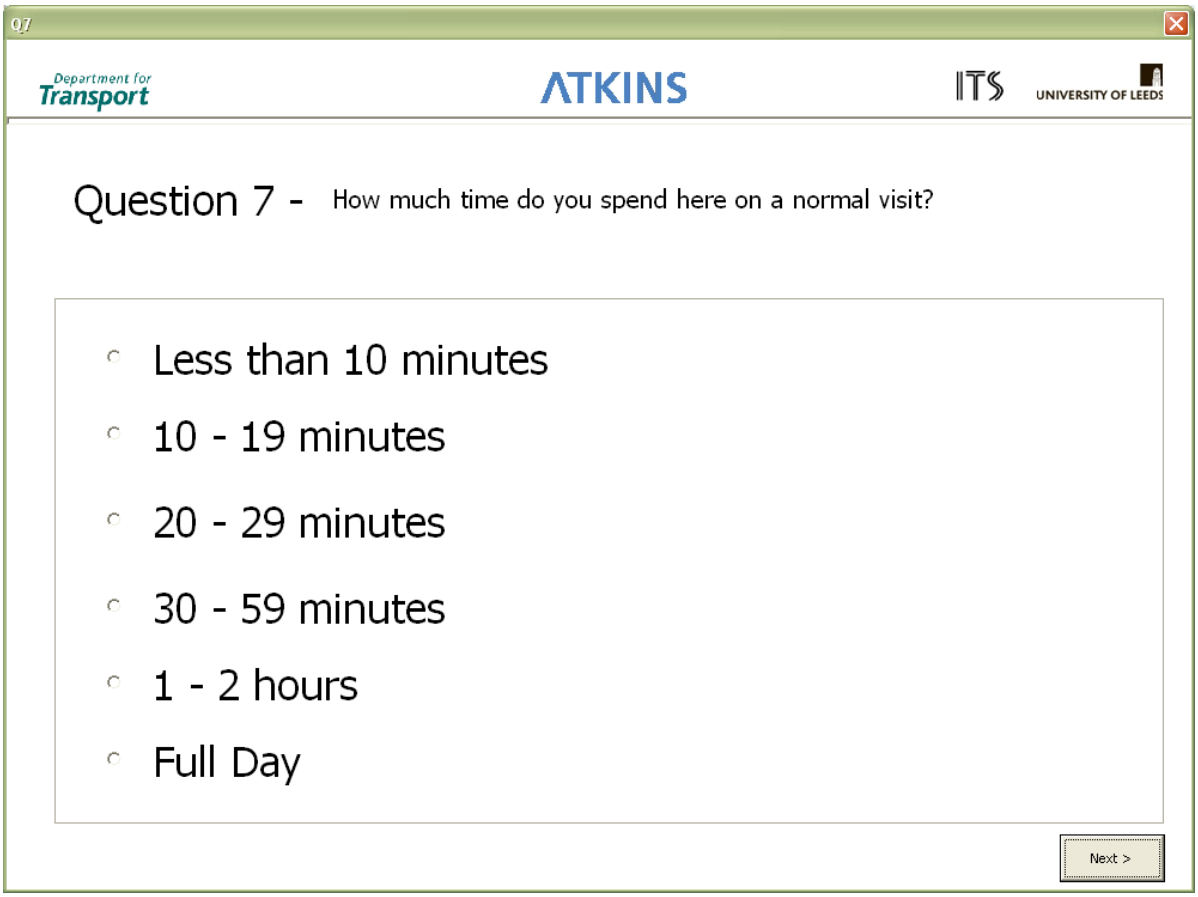
Question 4 - Please tell us how satisified you are with each of these factors for your local area

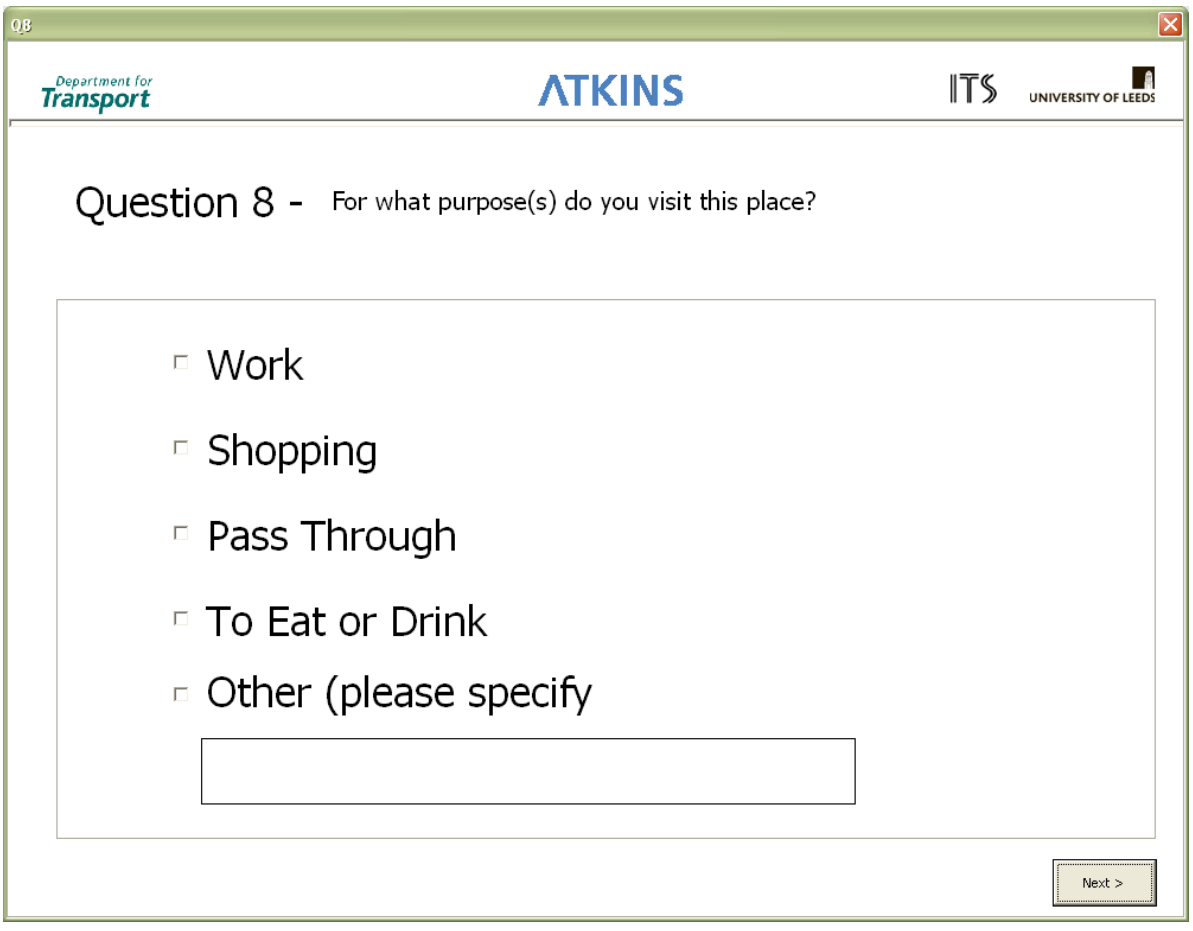
Factor	Very Satisified	Satisified	Neither satisfied nor dissatisified	Dissatisfied	Very Dissatisfied
Quality of Schools	○	○	○	○	○
Local Recreational Facilities	○	○	○	○	○
Street Cleanliness	○	○	○	○	○
Air Quality in your area	○	○	○	○	○
Quality of the high street	○	○	○	○	○
Availability of a GP	○	○	○	○	○
Availability of local shopping facilities	○	○	○	○	○
Level of local crime	○	○	○	○	○
Access to Public Transport	○	○	○	○	○
Access to Green Spaces	○	○	○	○	○
Amount of Council Tax	○	○	○	○	○
Continuous Police presence in the area	○	○	○	○	○

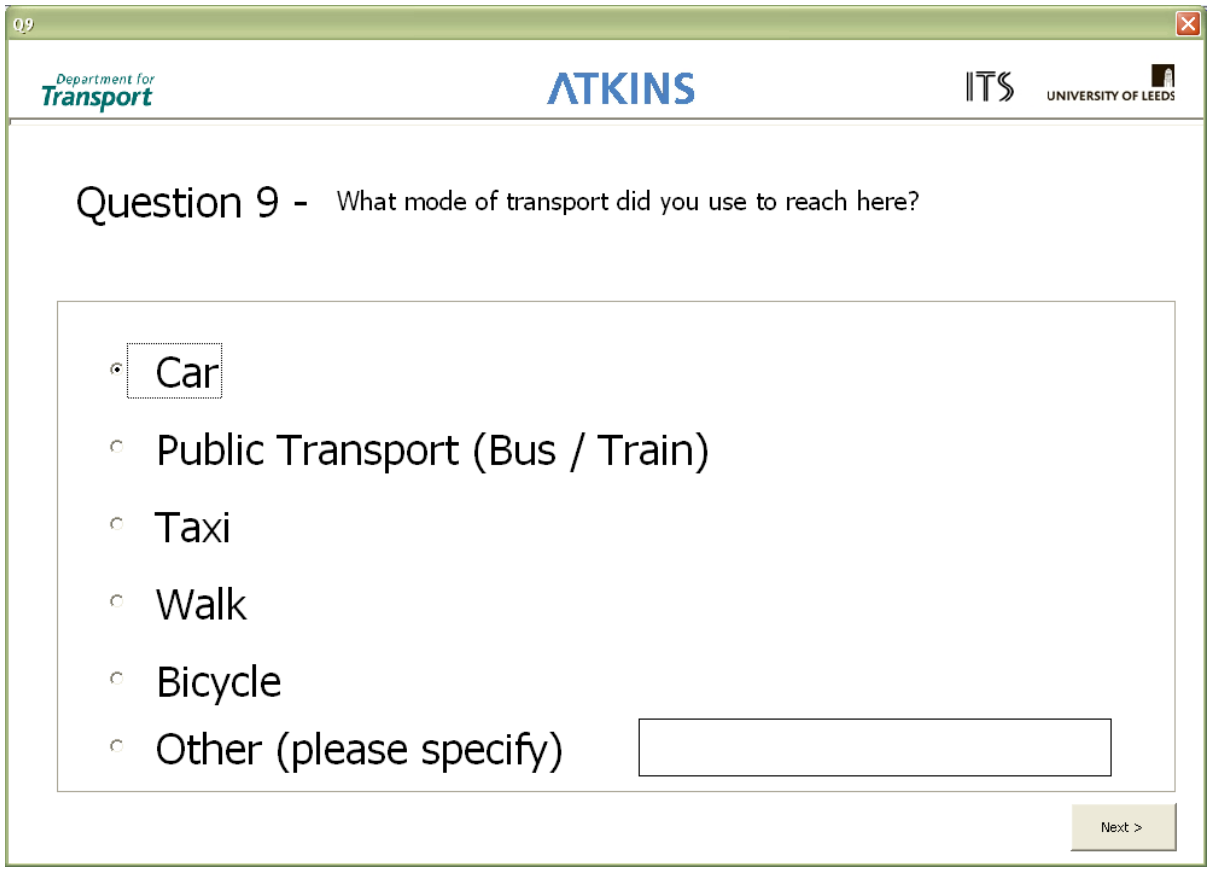
Next >

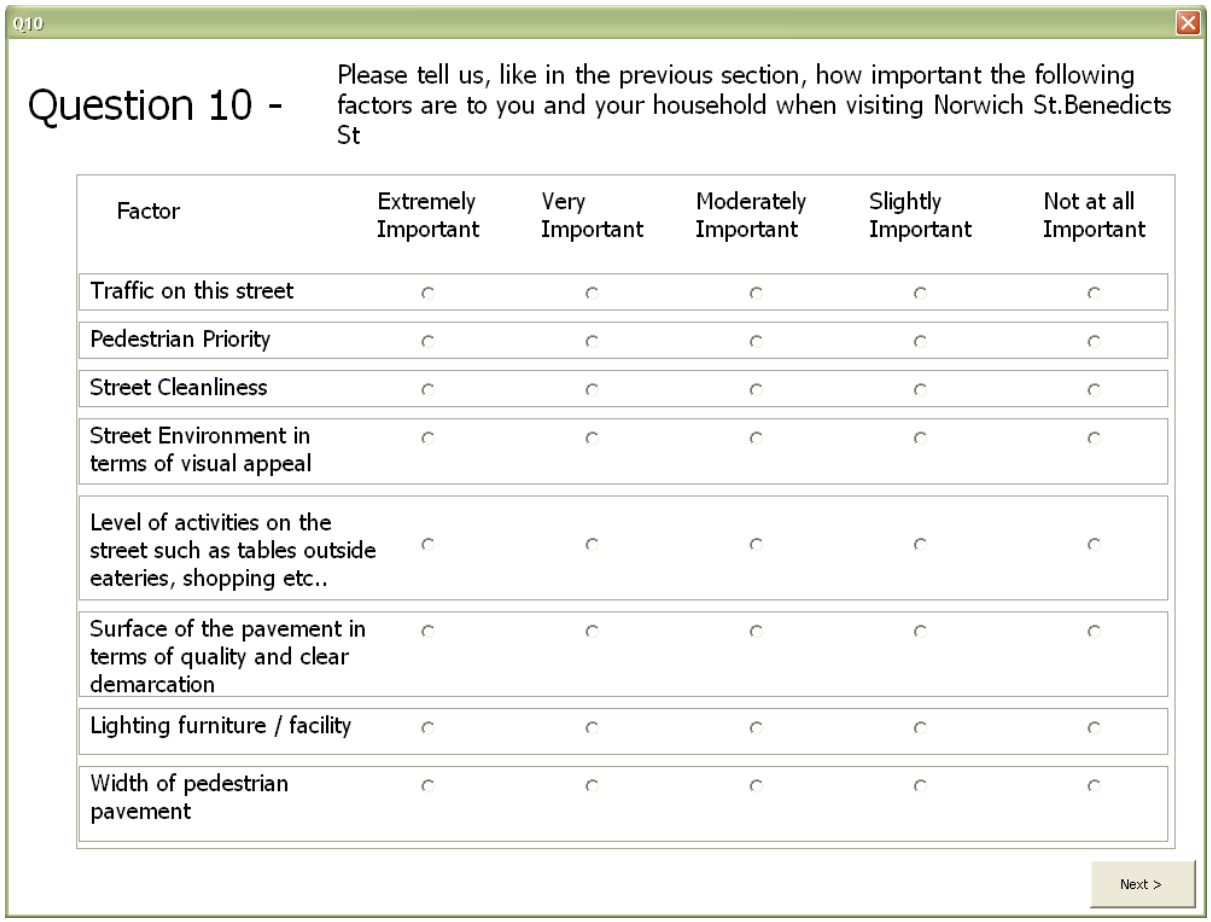

Q5
Question 5 -
Suppose your local council had resources to improve conditions, either through a range of 'quality of life' improvements, or by introducing lower local taxes (e.g. Council tax). Set out below are the various possible improvements.
Please rank the 14 possible improvements in order of your preference, from 1 (being your most preferred) to 14 (being the one you prefer the least)
To do this, select from the left hand list below the improvement scenario you most like, and drag over to the right hand list. Then drag over your second preference, your third and so on until all scenarios have been moved. If you wish to re-order in the right hand list you can do so by dragging the items up and down.
Ranking of your preferred improvements
Local crime - burglaries - 50% Reduction
Local schools - pass rate - 10% Increase
Local schools - pass rate - 20% Increase
Local schools - pass rate - 30% Increase
Local recreational facilities - New Youth Clubs
Local recreational facilities - New Leisure Centre and Swimming Pool
Council Tax - £20 less per annum
Council Tax - £60 less per annum
High Street - Redesign for Pedestrian Priority (see showcard on table
Clean Streets - Cleaned More Often
Clean Streets - Cleaned Every Day
1 - Local crime - burglaries - 25% Reduction
2 - Local recreational facilities - New Leisure Centre
3 - Council Tax - £40 less per annum
Next

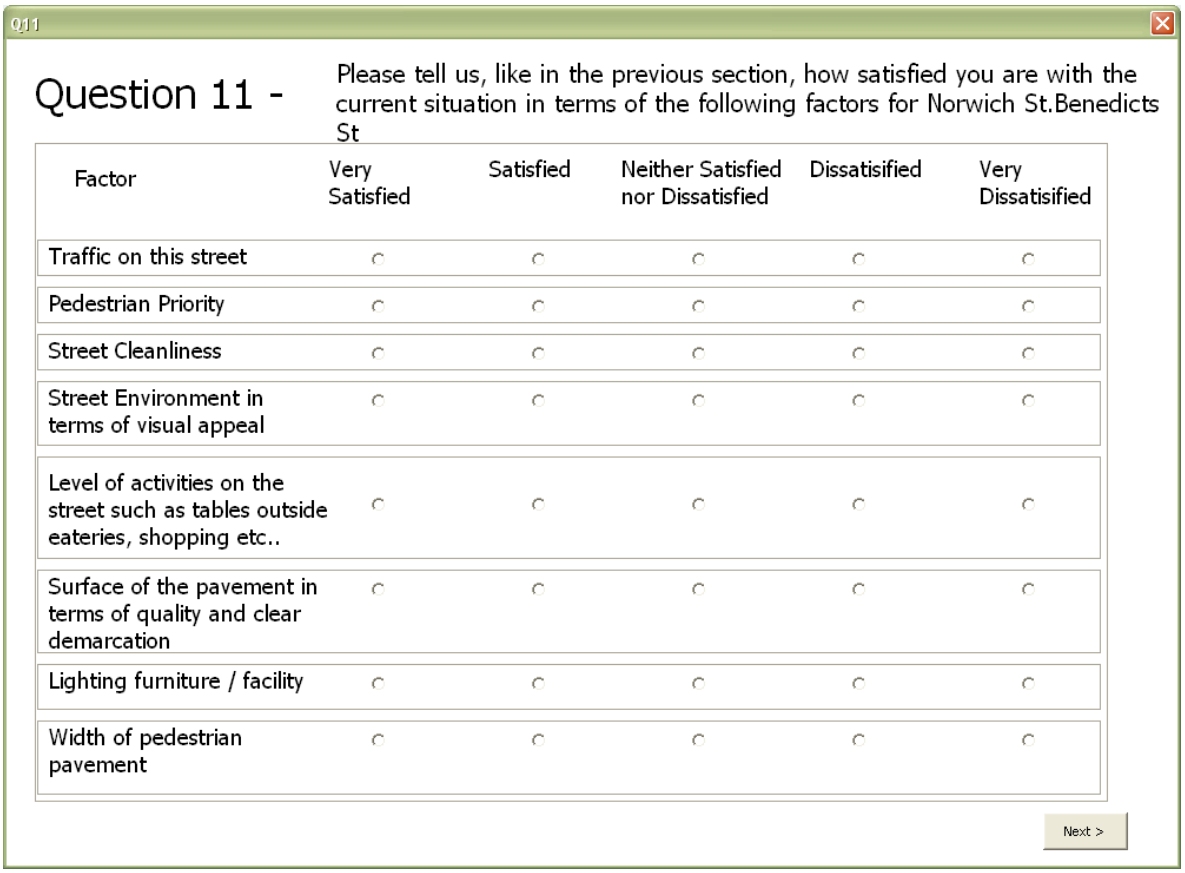

Q6
Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
Question 6 - How often do you walk around Horsforth New Street?
5 or more days a week
3 to 4 days a week
2 days a week
once a week
less than once a month
Next >

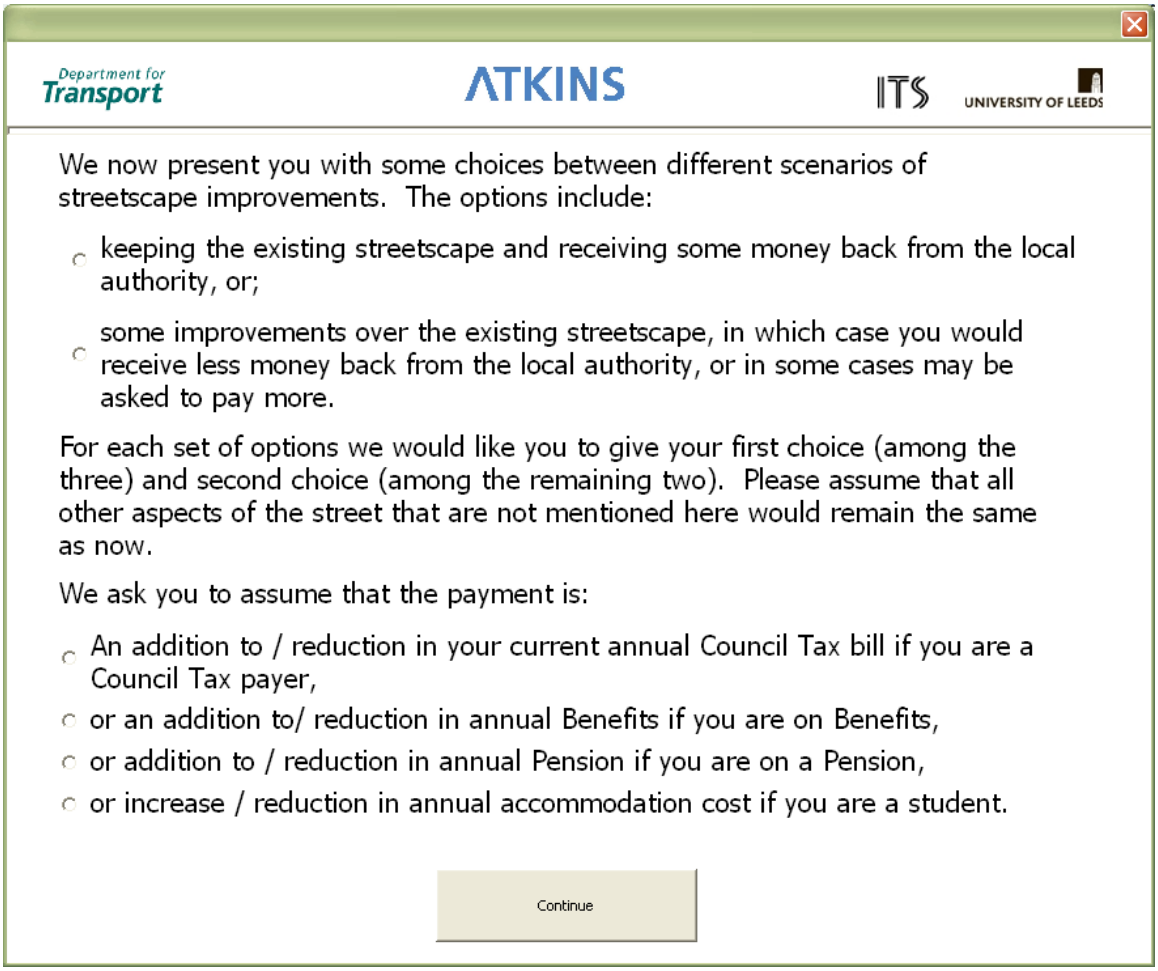

Q7
Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
Question 7 - How much time do you spend here on a normal visit?
Less than 10 minutes
10 - 19 minutes
20 - 29 minutes
30 - 59 minutes
1 - 2 hours
Full Day
Next >


Q8
Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
Question 8 - For what purpose(s) do you visit this place?
Work
Shopping
Pass Through
To Eat or Drink
Other (please specify
Next >


Q9
Department for Transport
ATKINS
ITS
UNIVERSITY OF LEEDS
Question 9 - What mode of transport did you use to reach here?
Car
Public Transport (Bus / Train)
Taxi
Walk
Bicycle
Other (please specify)
Next >


Q10
Question 10 - Please tell us, like in the previous section, how important the following factors are to you and your household when visiting Norwich St.Benedicts St
Factor
Extremely Important
Very Important
Moderately Important
Slightly Important
Not at all Important
Traffic on this street
Pedestrian Priority
Street Cleanliness
Street Environment in terms of visual appeal
Level of activities on the street such as tables outside eateries, shopping etc..
Surface of the pavement in terms of quality and clear demarcation
Lighting furniture / facility
Width of pedestrian pavement
Next >


Q11
Question 11 -
Please tell us, like in the previous section, how satisfied you are with the current situation in terms of the following factors for Norwich St.Benedicts St
Factor
Very Satisfied
Satisfied
Neither Satisfied nor Dissatisfied
Dissatisified
Very Dissatisified
Traffic on this street
Pedestrian Priority
Street Cleanliness
Street Environment in terms of visual appeal
Level of activities on the street such as tables outside eateries, shopping etc..
Surface of the pavement in terms of quality and clear demarcation
Lighting furniture / facility
Width of pedestrian pavement
Next >


Department for Transport
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We now present you with some choices between different scenarios of streetscape improvements. The options include:
keeping the existing streetscape and receiving some money back from the local authority, or;
some improvements over the existing streetscape, in which case you would receive less money back from the local authority, or in some cases may be asked to pay more.
For each set of options we would like you to give your first choice (among the three) and second choice (among the remaining two). Please assume that all other aspects of the street that are not mentioned here would remain the same as now.
We ask you to assume that the payment is:
An addition to / reduction in your current annual Council Tax bill if you are a Council Tax payer,
or an addition to/ reduction in annual Benefits if you are on Benefits,
or addition to / reduction in annual Pension if you are on a Pension,
or increase / reduction in annual accommodation cost if you are a student.
Continue

Q12

	Option 1	Option 2	Option 3
Pedestrian Priority	Full Pedestrianisation	Full Pedestrianisation	
Level of Activities	High	High	
Kerbs	Near Level	Near Level	
Surfacing	Good quality material, no colour contrast	Low quality material, no colour contrast	
Lighting Furniture	Heritage	Heritage	
Amount extra you would pay to the council, per annum OR Amount of money you would get back from the council, per annum	pay £10	pay £5	£20 money back
I would Choose	○	○	○
Then I would Choose (from remaining two)			

Next >

Q13

	Option 1	Option 2	Option 3
Pedestrian Priority	Shared Space	Pedestrians, cyclists and limited motor vehicle access	
Level of Activities	Low	High	
Kerbs	Near Level	Raised	
Surfacing	Good quality material, no colour contrast	Good quality material, no colour contrast	
Lighting Furniture	Basic or Normal	Heritage	
Amount extra you would pay to the council, per annum OR Amount of money you would get back from the council, per annum	pay £10	£10 money back	£15 money back
I would Choose	○	○	○
Then I would Choose (from remaining two)			

Next >

Q14

	Option 1	Option 2	Option 3
Pedestrian Priority	Pedestrians, cyclists and limited motor vehicle access	Shared Space	
Level of Activities	Low	Low	
Kerbs	Raised	Near Level	
Surfacing	Good quality material, no colour contrast	Good quality material, no colour contrast	
Lighting Furniture	Basic or Normal	Heritage	
Amount extra you would pay to the council, per annum OR Amount of money you would get back from the council, per annum	pay £5	£5 money back	£30 money back
I would Choose	○	○	○
Then I would Choose (from remaining two)			

Next >

Q15

	Option 1	Option 2	Option 3
Pedestrian Priority	Pedestrians, cyclists and limited motor vehicle access	Shared Space	
Level of Activities	High	High	
Kerbs	Raised	Near Level	
Surfacing	Low quality material, Colour contrast	Low quality material, Colour contrast	
Lighting Furniture	Basic or Normal	Heritage	
Amount extra you would pay to the council, per annum OR Amount of money you would get back from the council, per annum	£0 (zero)	£10 money back	£25 money back
I would Choose	○	○	○
Then I would Choose (from remaining two)			

Next >

Q16

	Option 1	Option 2	Option 3
Pedestrian Priority	Full Pedestrianisation	Pedestrians, cyclists and limited motor vehicle access	
Level of Activities	Low	Low	
Kerbs	Near Level	Raised	
Surfacing	Low quality material, no colour contrast	Good quality material, colour contrast	
Lighting Furniture	Basic or Normal	Basic or Normal	
Amount extra you would pay to the council, per annum OR Amount of money you would get back from the council, per annum	£5 money back	£10 money back	£15 money back
I would Choose	○	○	○
Then I would Choose (from remaining two)			

Next >

Q17

	Option 1	Option 2	Option 3
Pedestrian Priority	Shared Space	Shared Space	
Level of Activities	High	Low	
Kerbs	Near Level	Near Level	
Surfacing	Low quality material, Colour contrast	Low quality material, Colour contrast	
Lighting Furniture	Heritage	Basic or Normal	
Amount extra you would pay to the council, per annum OR Amount of money you would get back from the council, per annum	pay £5	£0 (zero)	£15 money back
I would Choose	○	○	○
Then I would Choose (from remaining two)			

Next >

Q18

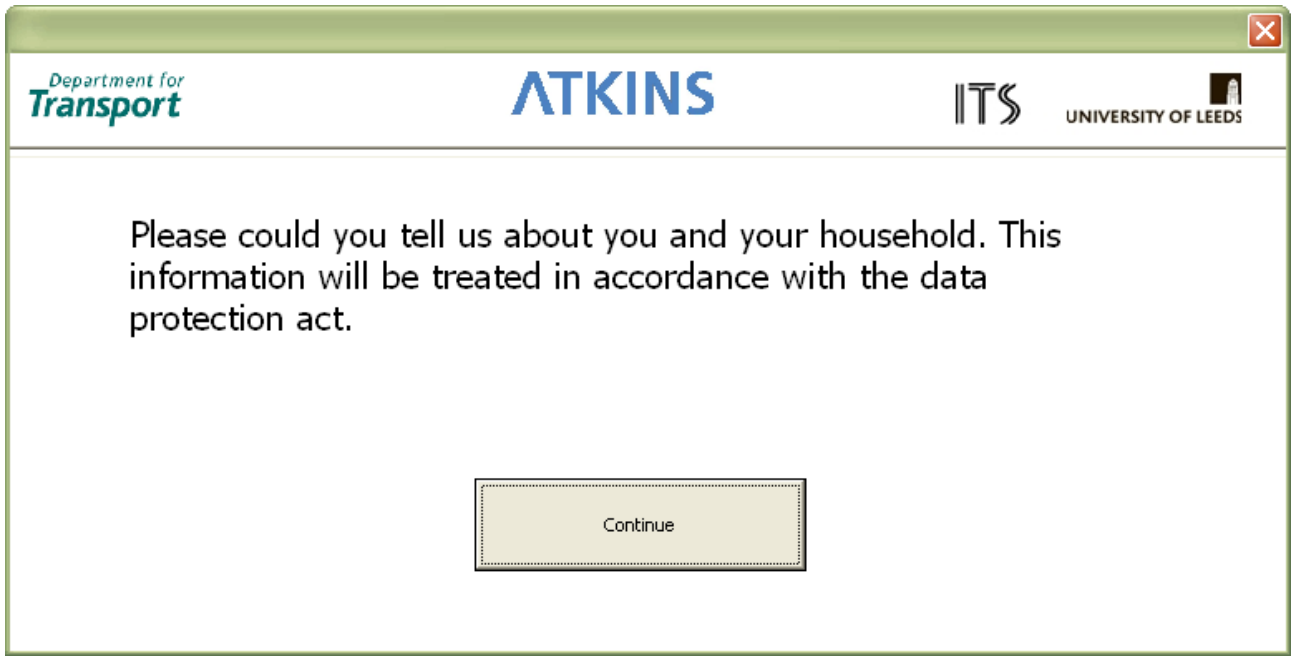
	Option 1	Option 2	Option 3
Pedestrian Priority	Pedestrians, cyclists and limited motor vehicle access	Shared Space	
Level of Activities	Low	Low	
Kerbs	Raised	Near Level	
Surfacing	Low quality material, no colour contrast	Good quality material, colour contrast	
Lighting Furniture	Heritage	Basic or Normal	
Amount extra you would pay to the council, per annum OR Amount of money you would get back from the council, per annum	pay £5	£10 money back	£30 money back
I would Choose	○	○	○
Then I would Choose (from remaining two)			

Next >

Q19

	Option 1	Option 2	Option 3
Pedestrian Priority	Full Pedestrianisation	Shared Space	
Level of Activities	Low	Low	
Kerbs	Near Level	Near Level	
Surfacing	Good quality material, Colour contrast	Low quality material, No Colour contrast	
Lighting Furniture	Heritage	Basic or Normal	
Amount extra you would pay to the council, per annum OR Amount of money you would get back from the council, per annum	pay £10	pay £10	£20 money back
I would Choose	○	○	○
Then I would Choose (from remaining two)			

Next >


Department for Transport
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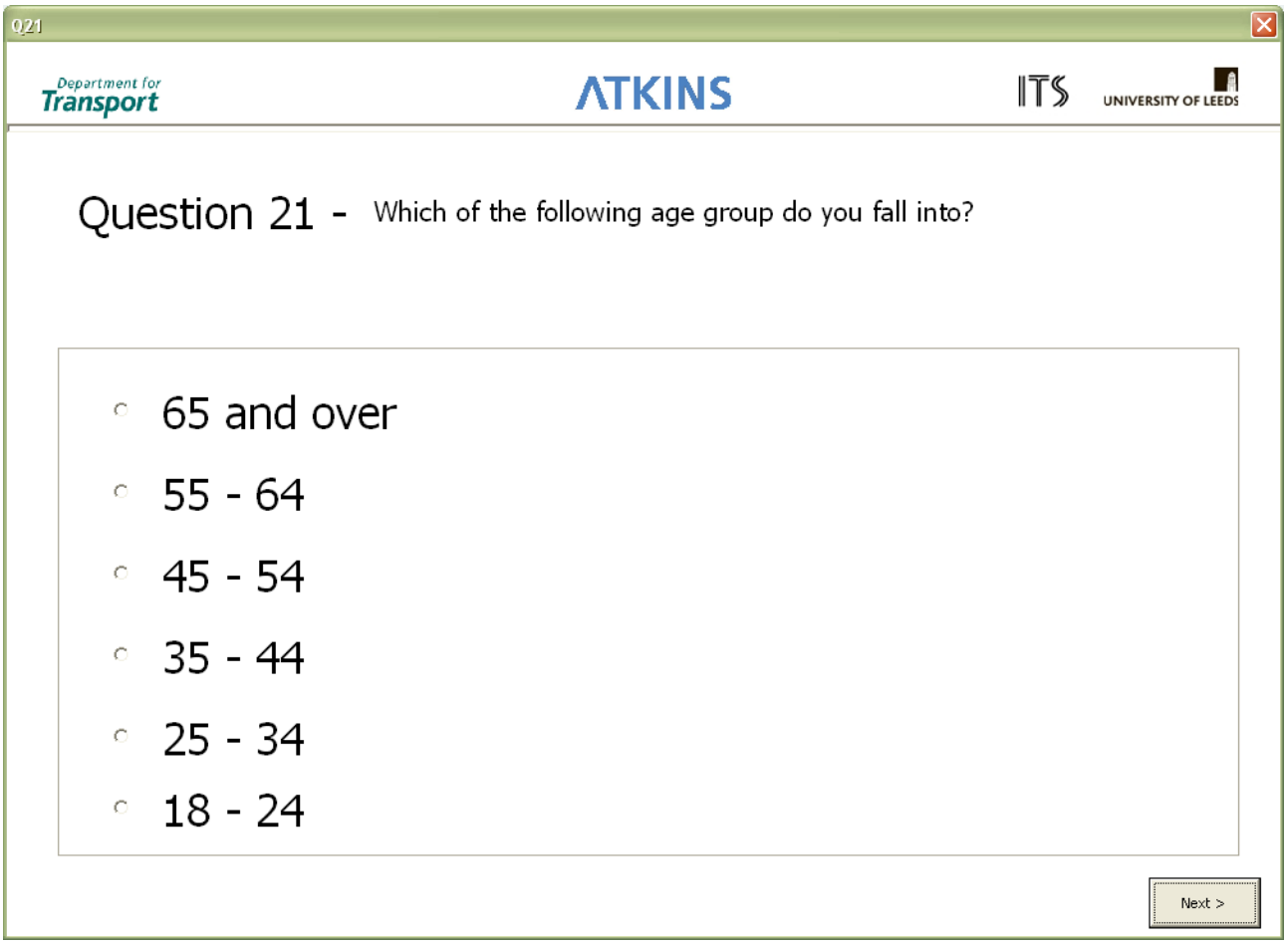
Please could you tell us about you and your household. This information will be treated in accordance with the data protection act.
Continue


Q21
Department for Transport
ATKINS
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Question 21 - Which of the following age group do you fall into?
65 and over
55 - 64
45 - 54
35 - 44
25 - 34
18 - 24
Next >


Q22
Department for Transport
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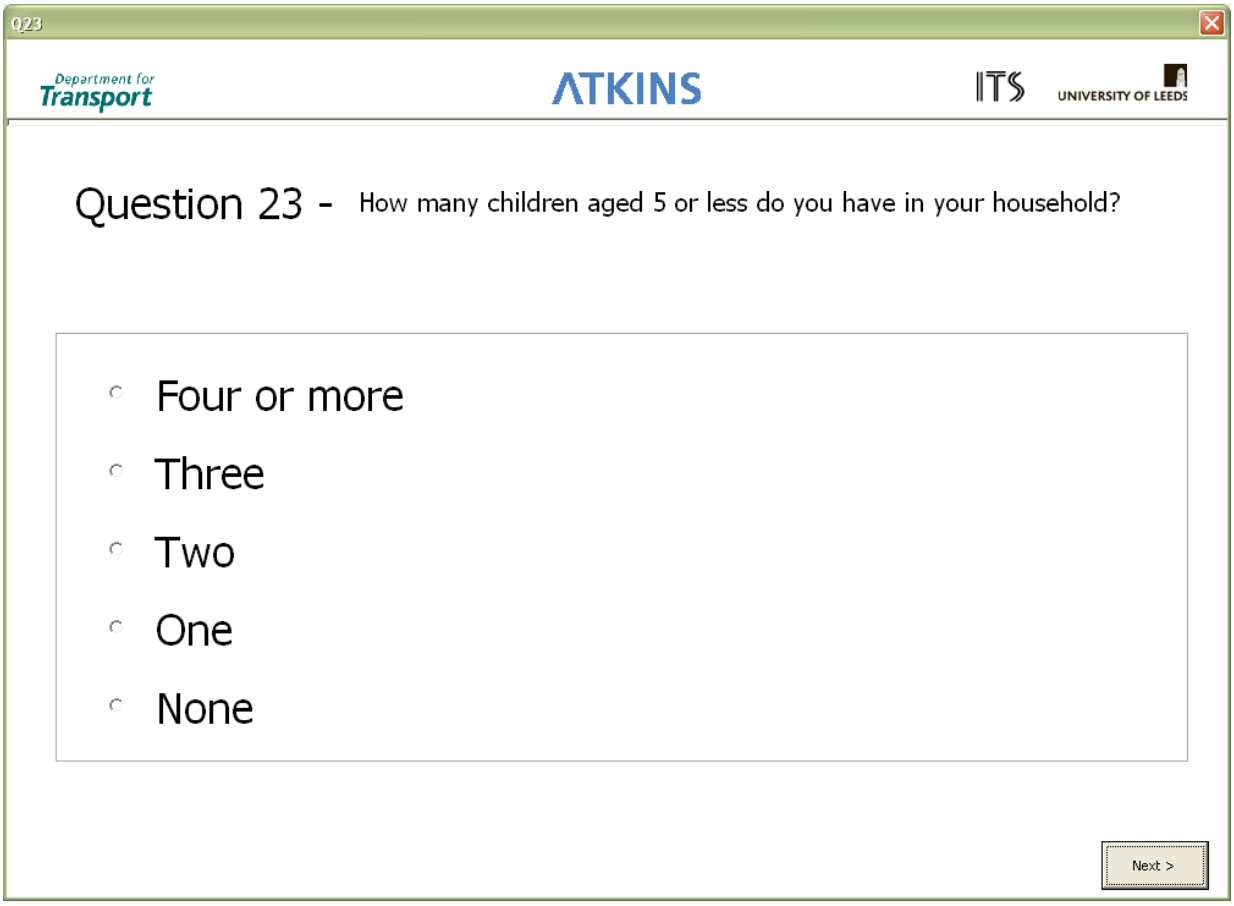
Question 22 - Gender
Male
Female
Next >


Q23
Department for Transport
ATKINS
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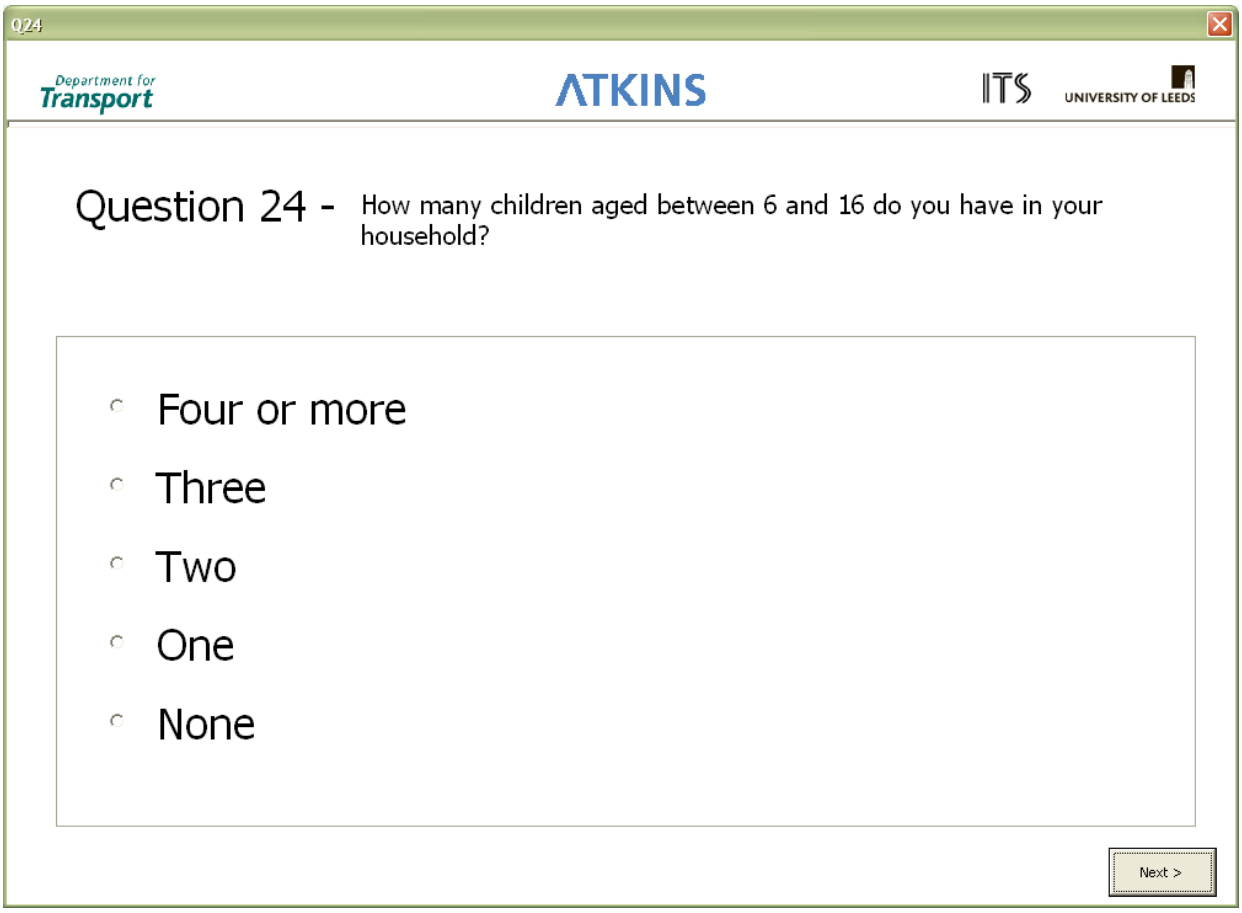
Question 23 - How many children aged 5 or less do you have in your household?
Four or more
Three
Two
One
None
Next >


Q24
Department for Transport
ATKINS
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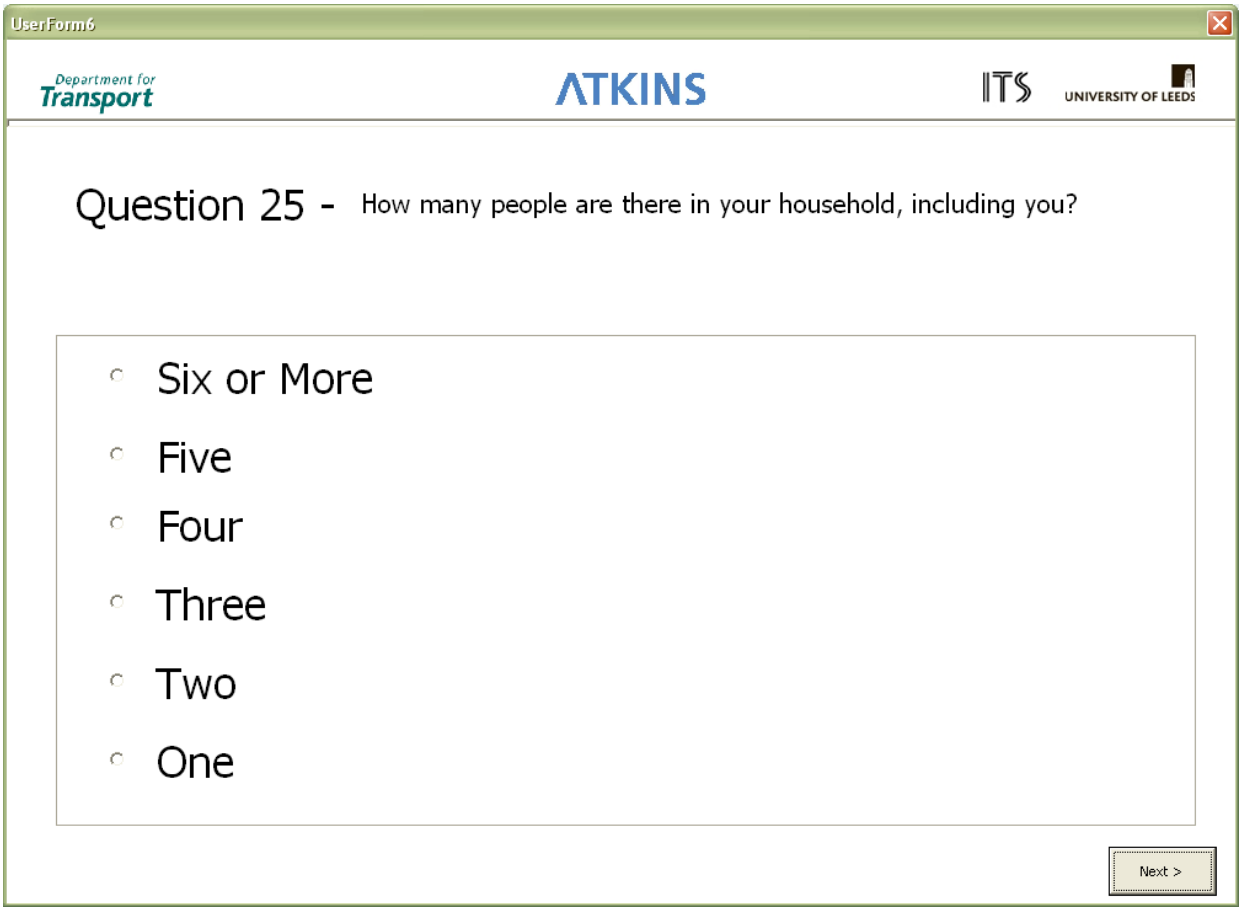
UNIVERSITY OF LEEDS
Question 24 - How many children aged between 6 and 16 do you have in your household?
Four or more
Three
Two
One
None
Next >


UserForm6
Department for Transport
ATKINS
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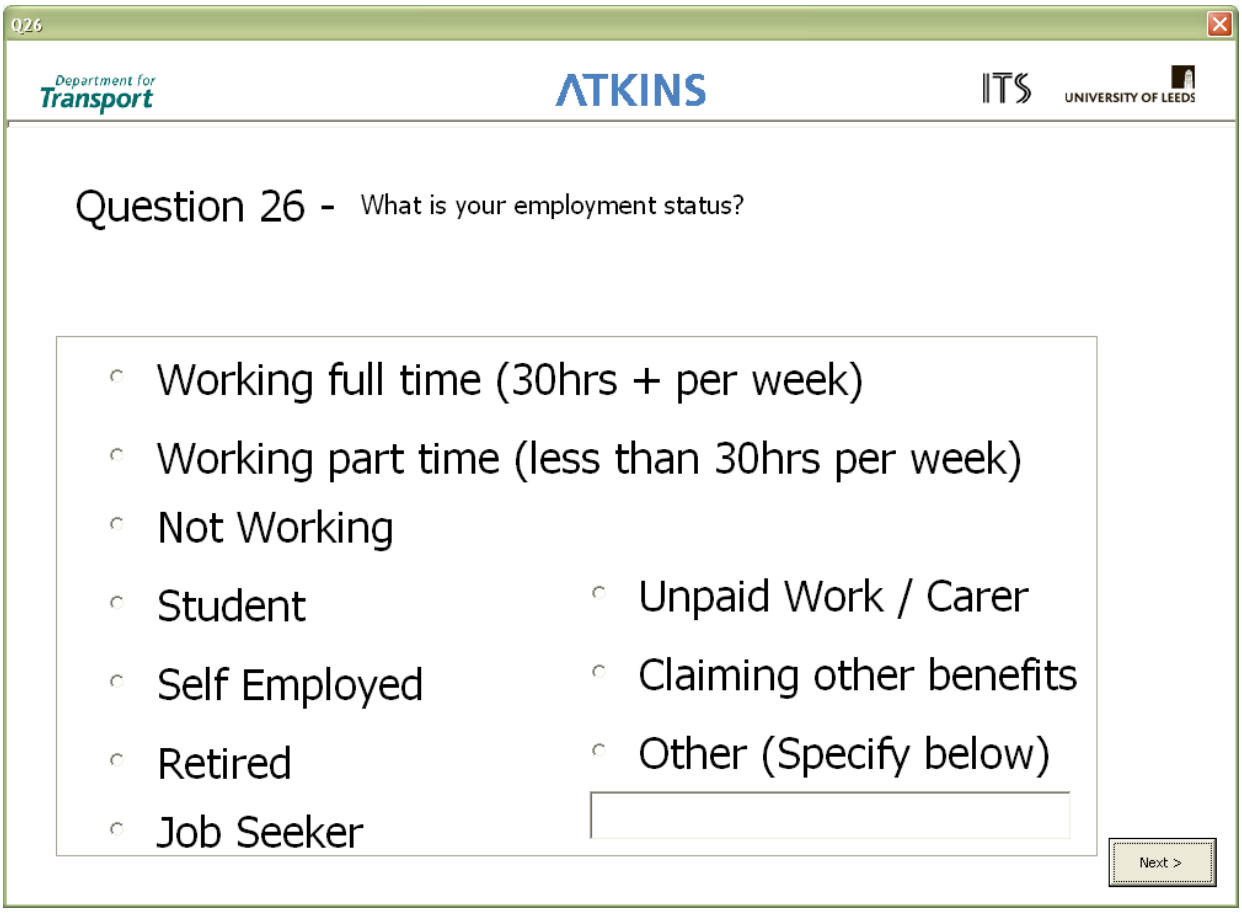
UNIVERSITY OF LEEDS
Question 25 - How many people are there in your household, including you?
Six or More
Five
Four
Three
Two
One
Next >


Q26
Department for Transport
ATKINS
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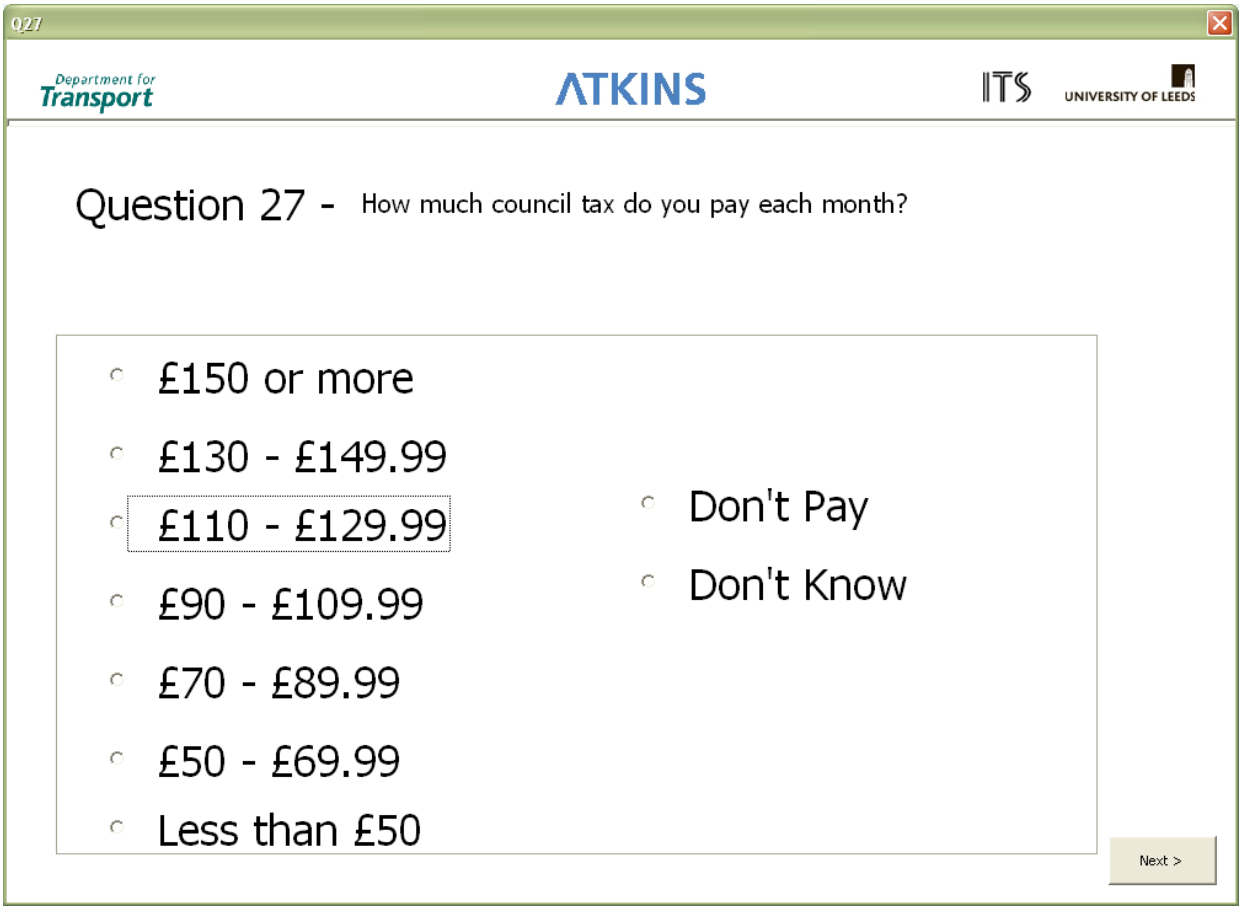
Question 26 - What is your employment status?
Working full time (30hrs + per week)
Working part time (less than 30hrs per week)
Not Working
Student
Self Employed
Retired
Job Seeker
Unpaid Work / Carer
Claiming other benefits
Other (Specify below)
Next >


Q27
Department for Transport
ATKINS
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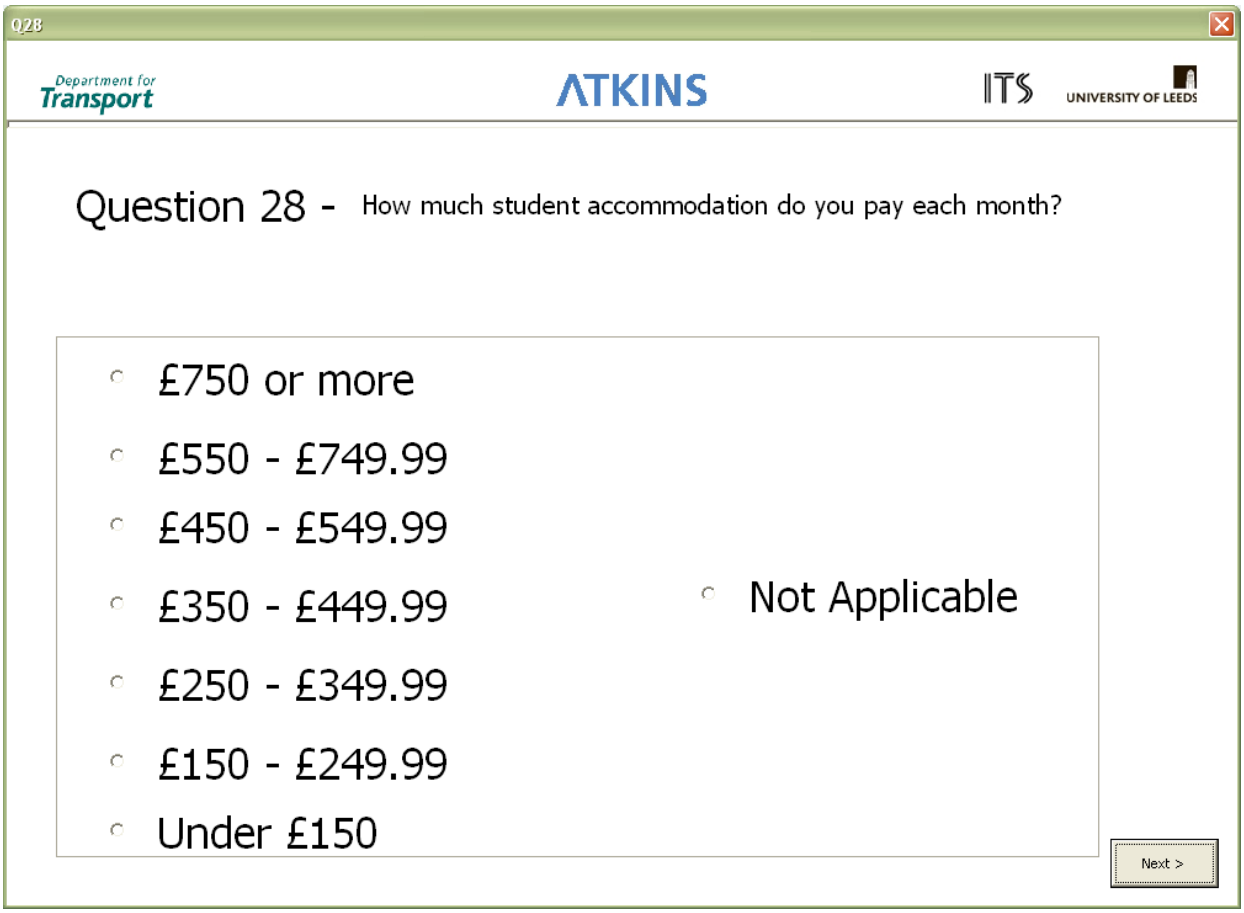
UNIVERSITY OF LEEDS
Question 27 - How much council tax do you pay each month?
£150 or more
£130 - £149.99
£110 - £129.99
£90 - £109.99
£70 - £89.99
£50 - £69.99
Less than £50
Don't Pay
Don't Know
Next >


Q28
Department for Transport
ATKINS
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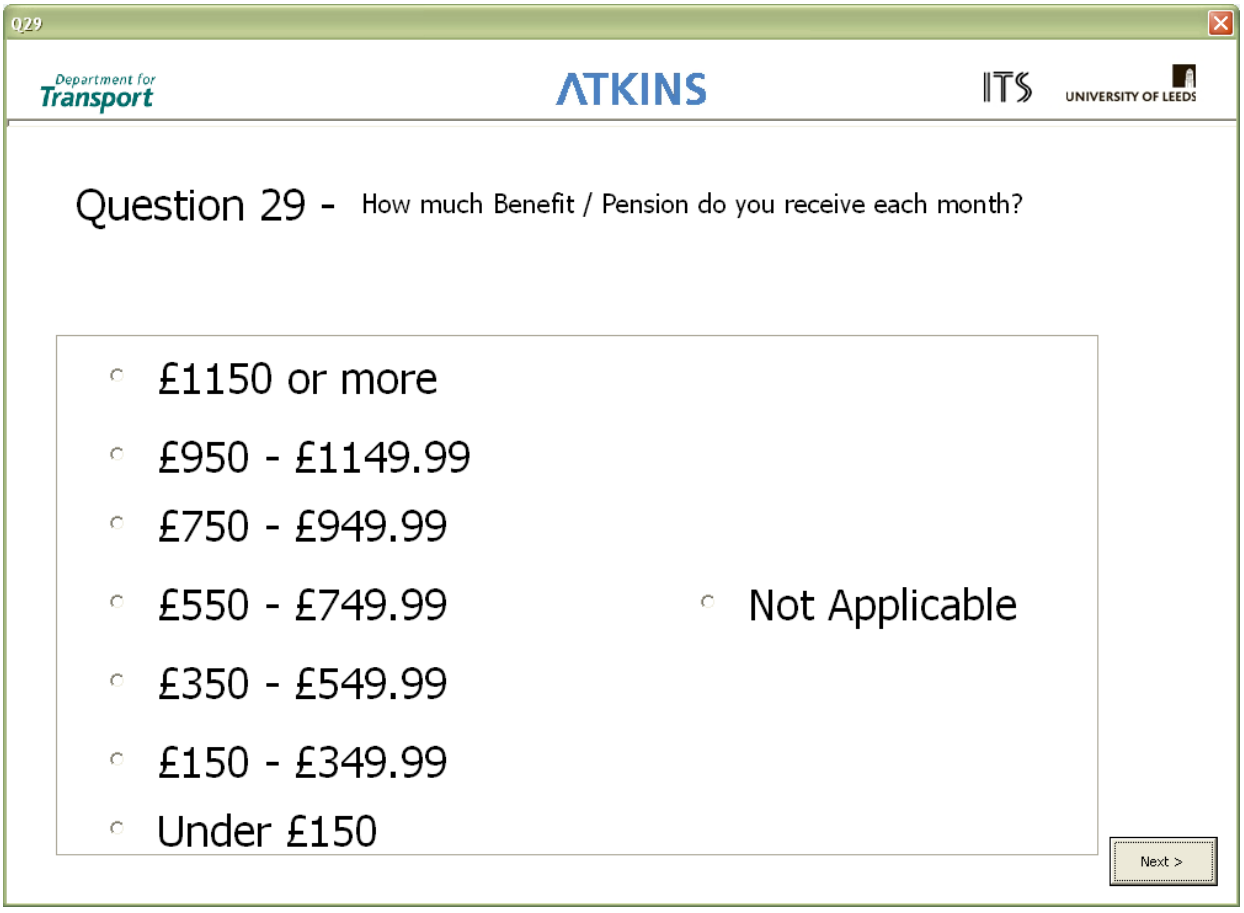
Question 28 - How much student accommodation do you pay each month?
£750 or more
£550 - £749.99
£450 - £549.99
£350 - £449.99
£250 - £349.99
£150 - £249.99
Under £150
Not Applicable
Next >


Q29
Department for Transport
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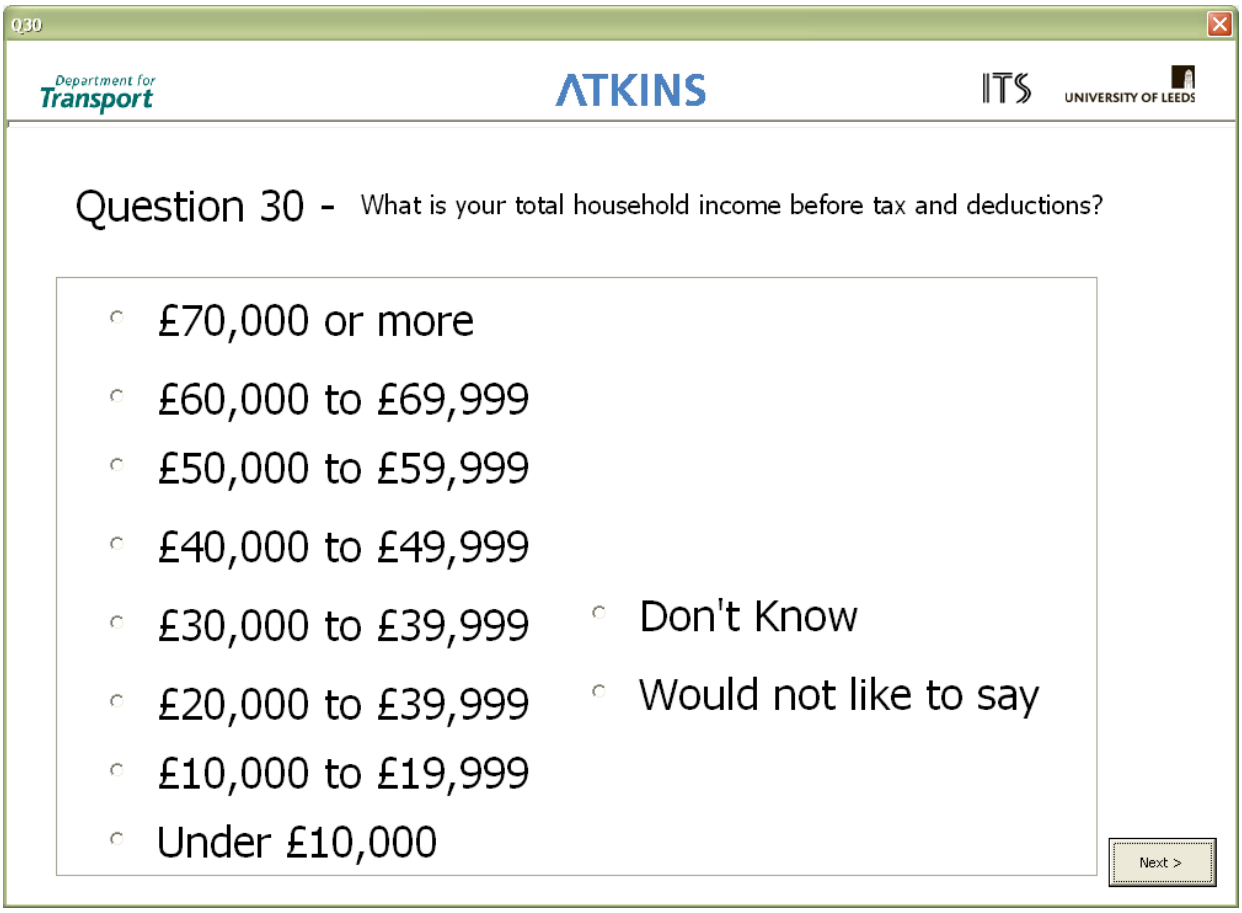
UNIVERSITY OF LEEDS
Question 29 - How much Benefit / Pension do you receive each month?
£1150 or more
£950 - £1149.99
£750 - £949.99
£550 - £749.99
£350 - £549.99
£150 - £349.99
Under £150
Not Applicable
Next >


Q30
Department for Transport
ATKINS
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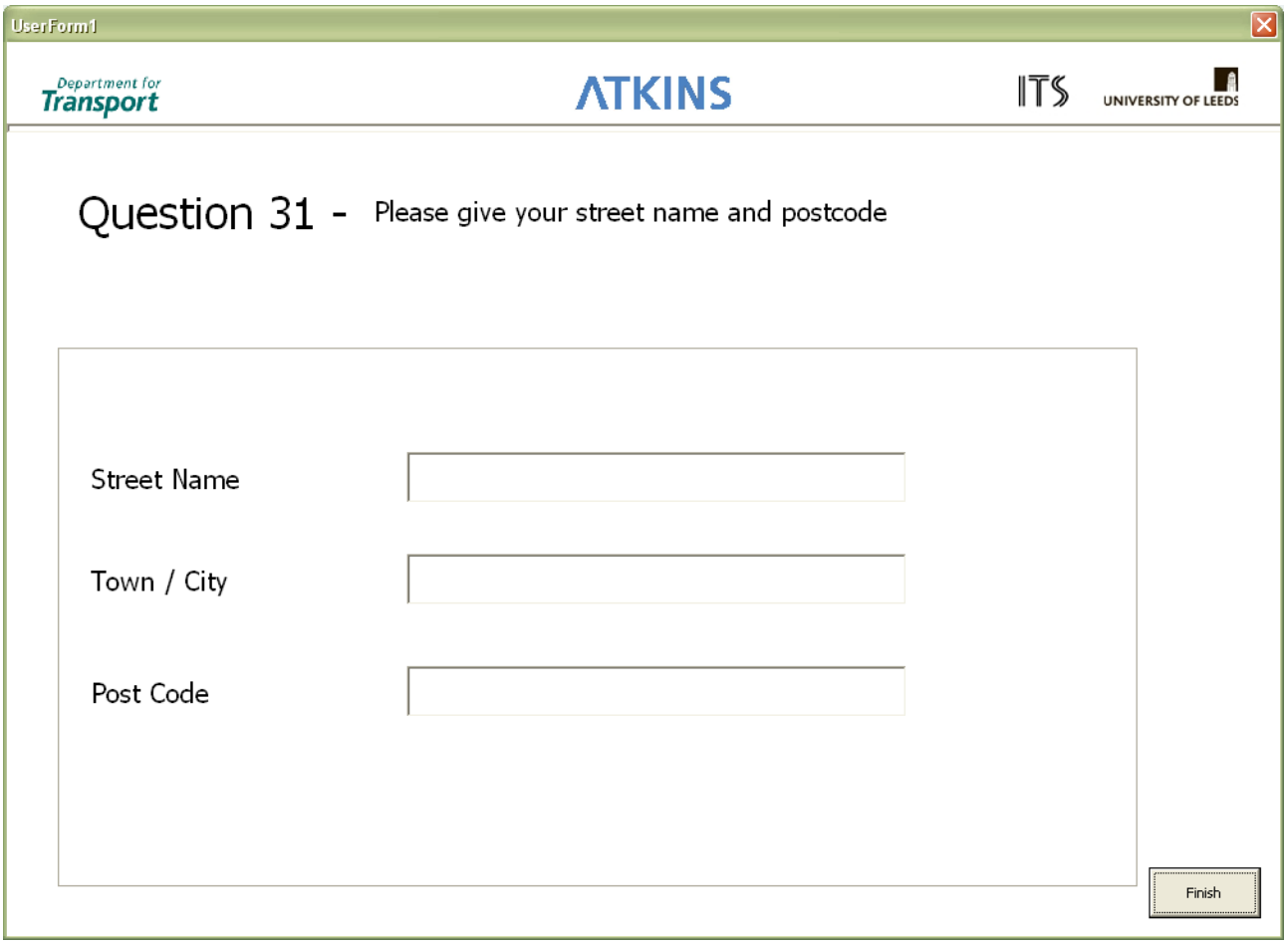
UNIVERSITY OF LEEDS
Question 30 - What is your total household income before tax and deductions?
£70,000 or more
£60,000 to £69,999
£50,000 to £59,999
£40,000 to £49,999
£30,000 to £39,999
£20,000 to £39,999
£10,000 to £19,999
Under £10,000
Don't Know
Would not like to say
Next >


UserForm1
Department for Transport
ATKINS
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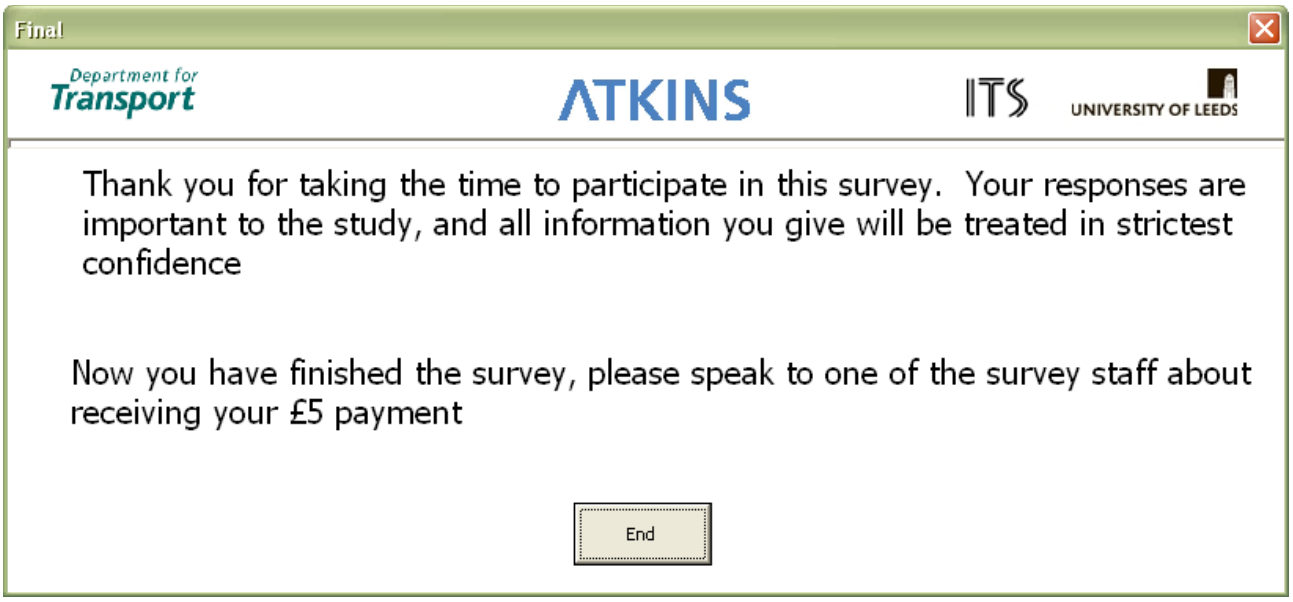
UNIVERSITY OF LEEDS
Question 31 - Please give your street name and postcode
Street Name
Town / City
Post Code
Finish


Final
Department for Transport
ATKINS
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Thank you for taking the time to participate in this survey. Your responses are important to the study, and all information you give will be treated in strictest confidence
Now you have finished the survey, please speak to one of the survey staff about receiving your £5 payment
End

Appendix E – Study Brief

RESEARCH PROJECT:

VALUATION OF TOWNSCAPES AND PEDESTRIANISATION

Background

The Department for Transport's New Approach to Transport Appraisal (NATA) attempts to value all the impacts of transport schemes. Currently a number of impacts have been monetised, and to improve NATA appraisal the Department is looking to monetise as many other impacts as possible. One such impact is that of changes to the townscape, which this research aims to address.

WebTAG guidance currently has no guidelines for monetising the benefits of pedestrainisation and/or townscape improvements. Townscape is appraised on a 7 point scale taking into account the characteristic features of the area, their importance and their relationship to the overall townscape. Given the goal of monetising as many impacts as possible so a comprehensive value for money assessment can be carried out, and given the limited guidance available to scheme promoters, it is essential that further research in this area is carried out.

Objectives

The key objective to this research is to better understand and evaluate the valuation of townscape and pedestrianisation. To do this we require:

- A short review of existing literature including a description of strengths and weaknesses of the studies.
- An investigation into possible approaches to the valuation of improved townscape and pedestrianisiation and the willingness to pay (WTP) of local residents.
- A justification for any chosen methodology.

Given the lack of information in this area, we envisage this research may need to take an innovative approach in determining an appropriate methodology. However, we envisage this to be robust and which can be used in future departmental guidance for scheme appraisal.

Ideally the research will provide a numerical valuation of improved townscape and pedestrianisation. However, if it seems unlikely a numerical valuation can be found, it is important that this is communicated to us as early as possible. We would welcome early consultation with regard to the scope of the research and valuation.

Deliverables

The main output of the report will be a written report with an executive summary, written report and annex. This should include a detailed explanation and justification for the chosen methodology and include a numerical

valuation of townscape improvements that can be used in the Department's appraisal guidance.

Timetable

The final report of the project should be submitted by the end of [March 2010]. We would expect to see a draft of the report (excluding annexes) two weeks before the end of the project.

An inception meeting will be held within a week of the start of the contract.

Proposal

The project will be let via the Department's Lot 5 research framework. Terms and conditions of this contract will therefore be applied. We are looking for a fairly succinct proposal that is focused on the requirements set out above amounting to 10 pages or less. This should include the relevant skills and experience of the proposed project team, and should be submitted electronically to the project manager (details below) no later than [15 December 2009].

Proposals will be assessed using the following criteria (weightings shown in brackets):

- Expertise and knowledge of pedestrainisation and townscape policies (50%)
- Relevant experience of the project team (10%)
- Delivery (20%)
- Price (20%)

Proposals must include a detailed work programme setting out key milestones and costs. Payment will be linked to the delivery of key milestones according to a schedule to be agreed prior to the commencement of the project. Bidders are welcome to propose a payment schedule as part of their proposal.

Management

The project manager, who has overall responsibility for the project, and is in charge of its day to day management of the project will be Rebecca Clark (contact details below). There will also be a steering group for the project comprising of DfT economists and policy leads.

Contact Details

Rebecca Clark,
Department for Transport,
3/13 Great Minster House,
76 Marsham Street,
London,
SW1P 4DR.