

# Valuing the Benefits of Regeneration

**Economics paper 7: Technical report - Environmental quality  
and amenity**





# Valuing the Benefits of Regeneration

**Economics paper 7: Technical report - Environmental quality and amenity**

Cambridge Economic Associates with eftec, and Cambridge Econometrics

December 2010

Department for Communities and Local Government

This research was commissioned by the previous government.

The findings and recommendations in this report are those of the authors and do not necessarily represent the views of the Department for Communities and Local Government.

© Crown Copyright, 2010

You may re-use this information (not including logos) free of charge in any format or medium, under the terms of the Open Government Licence. To view this licence, visit [www.nationalarchives.gov.uk/doc/open-government-licence/](http://www.nationalarchives.gov.uk/doc/open-government-licence/) or write to the Information Policy Team, The National Archives, Kew, London, TW9 4DU, or email: [psi@nationalarchives.gsi.gov.uk](mailto:psi@nationalarchives.gsi.gov.uk)

This publication is also available on our website: [www.communities.gov.uk](http://www.communities.gov.uk)

If you require this publication in an alternative format please email:  
[alternativeformats@communities.gsi.gov.uk](mailto:alternativeformats@communities.gsi.gov.uk)

Any enquiries regarding this publication should be sent to us at:

Department for Communities and Local Government  
Eland House  
Bressenden Place  
London  
SW1E 5DU  
Tel: 030 3444 0000

December 2010

ISBN: 978-1-4098-2681-1

# Contents

<b>1. Introduction .....</b>	<b>4</b>
<b>2. Pilot stated preference study.....</b>	<b>6</b>
<b>3. Pilot hedonic pricing study .....</b>	<b>43</b>
<b>Annex A: Draft pilot questionnaire (pre-CAPI) .....</b>	<b>56</b>
<b>Annex B: Pilot questionnaire showcards .....</b>	<b>87</b>
<b>Annex C: Pilot survey statistical summary .....</b>	<b>98</b>
<b>Annex D: References.....</b>	<b>109</b>

# 1. Introduction

## Background and study objectives

- 1.1 In October 2009 the Department for Communities and Local Government (DCLG) commissioned this study on how the benefits of regeneration might be valued. It is designed to provide an analytical framework that will underpin a programme of research on the value of the benefits from regeneration and how they compare with the relevant costs. The intention is to establish a robust evidence base, identify potential challenges and provide constructive suggestions on how these could be overcome.
- 1.2 The research was defined by four objectives: (i) provide a conceptual framework to estimate the benefits of regeneration; (ii) undertake an assessment of the evidence base; (iii) test out approaches to assign monetary value to regeneration outcomes; and (iv) make recommendations to improve the appraisal and evaluation of regeneration.
- 1.3 The assessment of the evidence base found that there was little direct evidence on the value of regeneration outcomes. Within this a significant challenge is valuing the environmental quality and amenity outcomes from regeneration, which typically are not traded directly in markets and thus no direct market value is assigned.
- 1.4 Two non-market valuation approaches to valuing the outcomes of environmental quality and amenity improvements were tested through the study. The first was a pilot stated preference study and the second was a pilot revealed preference study. In relation to environmental quality and amenity outcomes, objectives (iii) and (iv) of the research are addressed in this technical report through the documentation of these studies.
- 1.5 The use of an stated preference method provides valuation of non-market goods for which individuals have preferences through directly eliciting values from respondents with choice or direct valuation questions via the use of interviews (Bateman et al, 2002). The pilot stated preference study demonstrates an approach for valuing local environmental attributes such as cleanliness of streets, additional public space and additional nature reserves in the former coalfield town of Seaham in East Durham. A stated preference approach is used as it is sufficiently flexible to value multiple environmental attributes simultaneously. Stated preference can also estimate preferences and hence values for the kind of changes that are not yet experienced – unlike revealed preference which can only value changes that have already taken place.

- 1.6 The second pilot study uses hedonic pricing, a revealed preference method, to value the impacts of a brownfield reclamation project in the area of Hebburn in South Tyneside. Hedonic pricing estimates the value of the individual attributes of a good by analysing the relationship between these attributes and the market price of the good. Here the good is property and included amongst its attributes is the benefit derived from the regeneration of brownfield land. The study attempts to find evidence of a positive value for the regeneration of the brownfield land through analysing house prices before and after the land was reclaimed.
- 1.7 The pilot studies are designed to test if the different methodologies are viable and to provide some *indicative* valuations. While the studies can be used to demonstrate the use of the results of these methodologies in the appraisal and evaluation of regeneration, more extensive work is needed to produce results that can be more widely applied. Analysis of the effectiveness of the methodologies used and recommendations on running full-scale studies to generate more robust valuation functions for formal analysis are included in the conclusion section of each study in this report.
- 1.8 The structure of this report is as follows:
- Section 2: Pilot stated preference survey
  - Section 3: Hedonic pricing study
  - Annex A: Draft pilot questionnaire used in the stated preference survey
  - Annex B: Showcards used in the above questionnaire
  - Annex C: Statistical summary of the stated preference pilot survey
  - Annex D: References used in the hedonic pricing study

## 2. Pilot stated preference study

### Introduction

2.1 The approach adopted for the pilot stated preference study combines both choice experiment and contingent valuation methods to give a flexible survey instrument capable of valuing local environmental amenity attributes individually and ‘packages’ of improvements covering multiple attributes. The work is designed as a pilot study that could then lead to a full scale survey to generate valuation evidence for general use in appraisal and evaluation of regeneration schemes. The local environmental amenity attributes that are being examined focus on a specific set of the environmental improvement ‘Activity’ categories as presented in the Objective One Report. They are:<sup>1</sup>

- Open space – provision of new or improvements to existing areas of public open space (e.g. urban parks, country parks).
- Community space – provision of new or improvements to community spaces and facilities (e.g. allotments and gardens).
- Nature reserves – provision of new or improved management and/or access to local nature areas (e.g. woodland, grasslands/meadows, wetland and rivers/lakes).
- Public realm – improvements to areas of public space (e.g. squares, pedestrian areas, promenades, landscaping, public art installations).
- Green routes – provisions of new or improvements to pedestrian paths and cycle paths.
- Street cleanliness – improved street and environmental cleanliness (e.g. levels of litter, detritus, graffiti, fly-posting and fly-tipping).
- Derelict properties – improved aesthetic appearance of derelict properties and land (e.g. reclamation of buildings and land).

2.2 In general there is limited evidence available as to the value of outcomes related to environmental improvements resulting from these types of regeneration activities and it is this shortfall that we are seeking to address.

---

<sup>1</sup> Air quality and water quality are also included with the overall framework for valuing regeneration but are not included within the scope of the pilot survey.

## Methodology

### **Valuing preferences for local environmental amenity**

- 2.3 The various economic methods that are available for estimating the monetary values on non-market goods such as local environmental amenity can be broadly subdivided into two groups: revealed preference and stated preference methods.
- 2.4 Revealed preference methods rely upon assumptions of ‘weak complementarity’ between non-market environmental resources and related market goods and services to infer values from observed behaviour (Champ et al, 2003). For example, hedonic pricing estimates the value of a non-market good by examining the relationship between local environmental amenity (the non-market good) and house prices (the market-priced complementary good). In general, however, revealed preference methods are limited to valuing current existing levels of provision of non-market goods and are less suited to assessing the value of improvements beyond this; i.e. levels or provision that have not been experienced.
- 2.5 Stated preference methods attempt to directly elicit values by asking choice or direct valuation questions to respondents via interviews (Bateman et al, 2002). These can consider any non-market outcome for which individuals have preferences (either positive or negative). Stated preference methods are therefore more flexible – in comparison to revealed preference methods - and partly as a result of this, have for many years now been the more commonly applied methods (Mitchell and Carson, 1989; Bateman and Willis, 1999; Carson, 2007).
- 2.6 There are a variety of stated preference methods, however, by far the most frequently applied are the choice experiment and contingent valuation approaches. This pilot study develops a flexible design incorporating both of these methods, which are briefly reviewed below.

### **Stated choice experiments**

- 2.7 Consumer demand theory assumes that the utility of a good to individuals derives from the characteristics of this good. For example for local environmental amenity, such characteristics would include street cleanliness, the amount of green space, quality and range of community facilities, etc. A stated choice experiment presents individuals with bundles of characteristics of a good, each bundle with different quantities of each characteristic and asks them to choose which bundle they most prefer.
- 2.8 The price of the bundle is included as one of these characteristics. Repeated choices by individuals from sets of alternatives reveal the trade-offs individuals are willing to



make between attributes. Thus, a value can be inferred for each characteristic by observing individuals' choices between different bundles of characteristics.

- 2.9 The cornerstone of any stated preference method is that individuals know their own preferences and, whatever question is encountered, know what is best for themselves. Formally an individual (i) is assumed to choose alternative j over alternative k if the utility derived from the attribute bundle j is greater than the utility derived from attribute bundle k. i.e. if  $U_{ij} > U_{ik}$ , where  $U_{ij}$  is the total utility individual i associates with alternative j and  $U_{ik}$  is the total utility individual i associates with alternative k. The utility function for individual i related to alternative j is specified as:

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

where  $V_{ij}$  is the systematic (non-random) utility function observed by the analyst (e.g. attribute levels etc.) and  $\varepsilon_{ij}$  is a random component, which arises either because of randomness in the preferences of the individual or the fact that the researcher does not have the complete set of information available on the individual.

- 2.10 The starting point for modelling preferences in these terms is the multinomial logit model. This is derived by placing some practical, yet restrictive, assumptions of this random component of utility. Specifically each  $\varepsilon_{ij}$  is assumed to be an independently and identically distributed (IID) Type 1 extreme value (Gumbel) distribution, with the distribution function:

$$\exp(-\exp(-\varepsilon_{ij}))$$

- 2.11 If the assumptions implicit in the multinomial logit model do not hold, then multinomial logit model results might be biased. It is not possible to specify *a priori*, in a survey of individuals, whether the assumptions of the multinomial logit model will hold. For this reason it is useful to conduct a sensitivity analysis by using less restrictive models that relax some of the assumptions of the multinomial logit model. For example: by allowing for variations in tastes by individuals in relation to the observed characteristics; or correlation (non-independence) of unobserved factors in repeated choices by respondents; and/or different variances across alternatives (or bundles of characteristics). These are represented in the analysis by the random parameter logit model; the random parameter logit-correlated model; and the error-component model respectively. Collectively these are known as mixed logit models.

- 2.12 The utility structure for the random parameter logit model is:

$$U_{ij} = x_{ij}'\beta_i + \varepsilon_{ij}$$

where  $x_{ij}$  are observed variables that relate to the individual (i.e. their personal characteristics such as their income and gender) and the alternative (the attributes of the alternative and the levels of those attributes),  $\beta_i$  is a vector of coefficients of these

variables describing the relationship between the former factors and the utility of the alternative (hence representing the individual's tastes), and  $\varepsilon_{ij}$  is a random error term that is IID extreme value. This specification is the same as the multinomial logit model except that  $\beta_i$  varies across individuals instead of being fixed at the same level for all respondents. Thus the random parameter logit model allows coefficients to vary over decision-makers (instead of being fixed as in the multinomial logit model) according to some distribution reflecting the tastes of decision-makers.<sup>2</sup>

### **Contingent valuation**

- 2.13 The contingent valuation method can be seen as a special case of the more general choice experiment approach in which the individual is asked a question regarding a single bundle of characteristics (or set of attribute) levels (i.e. a single good). An intermediary point between the two methods is to supplement an initial contingent valuation question with further questions concerning other attribute level combinations (i.e. other goods), or vice versa. The pilot study adopts such an approach, presenting first a choice experiment and then a contingent valuation question, allowing comparison between the choice experiment and contingent valuation findings.
- 2.14 Although in essence a contingent valuation question is just a single choice experiment choice, the adoption of both approaches is useful for two reasons. First, as discussed subsequently, the number of combinations generated by considering all attributes and all levels (or even some representative fraction of those combinations) is too great to present to an individual in a single question. Consequently choice experiment combinations are allocated to more manageable 'blocks' for sequential presentation to individual respondents (see next section). These blocks have a common attribute in the form of the cost of each option and therefore, in theory the value of different blocks can be added to each other to generate estimates of the value of block combinations. However, in doing so we make implicit assumptions that:
- The manner and extent to which income constraints bind on the valuation of single blocks holds for the valuation of dual or multiple blocks.
  - The attributes in one block are not significant substitutes for the attributes in another block.
- 2.15 To the extent that these implicit assumptions do not hold, there will be a tendency for the value of block combinations to be lower than the simple sum obtained by adding

---

<sup>2</sup> The basic random parameter logit model assumes that random parameters are uncorrelated. It treats two responses by the same individual the same as two responses from different individuals. The random parameter logit-correlated model relaxes this assumption and allows for correlation among parameters (i.e. allowing for the likelihood that responses from the same individual are likely to be correlated). This acknowledges that the data has a panel structure and therefore accounts for any bias arising from correlation in the error term

together the value of two blocks that have been valued individually. Therefore, if there exists two blocks A and B and we denote their value when assessed individually as  $A_s$  and  $B_s$  and their value when assessed as a combination of the two as  $AB_c$ , then if income constraints bind in a non-linear fashion as the number of blocks considered increases and/or one block is a partial substitute for the other then we would expect that:

$$AB_c < A_s + B_s$$

- 2.16 This 'part-whole' difference is a common phenomena which affects market priced as well as non-market goods (Bateman et al, 1997). Clearly, the ability of respondents to make choices across large combinations of simultaneously assessed attributes and levels is a limitation upon the choice experiment method. This can to some extent be addressed by holding attributes at a single level (say for example the highest level of improvement) and then combining across blocks. Although this still represents a considerable number of attributes, the lack of variation in their levels means that there is only a single good to value. The contingent valuation method can then be used to ask individuals questions regarding the value they place on moving from the present current level of environmental quality to that represented by this combined good.
- 2.17 The contingent valuation method therefore provides a method of checking on the extent to which it is possible to combine choice experiment values or what adjustments might need to be made for income and substitution effects. However, the comparison between the methods also allows consideration of other influences on responses.
- 2.18 In effect, it is assumed that whatever the question, individuals know what is best for themselves. A corollary to this assumption is that preferences are not in any manner affected by the content or form of a question (known as 'procedural invariance'). However, some comparative studies suggest that to some extent this may not be the case. Specifically comparisons of choice experiment and contingent valuation methods suggest that the former may produce somewhat higher values than the latter. Reasons for this difference are still a subject of debate but one possibility is suggested by the notion of 'focusing' (Schkade and Kahneman, 1998). Specifically, the choice experiment method dilutes focus across the full range of money and attributes in a block while the contingent valuation method concentrates focus in a straight comparison between a single change in one good (local environmental amenity) and a corresponding cost. The contingent valuation approach therefore heightens focus upon money relative to the prominence that money plays in choice experiment analyses. This may exacerbate the extent to which contingent valuation values lie below choice experiment values however in this respect neither can claim superiority as both differ simply in a matter of focus, not in terms of some objectively

measurable difference.

- 2.19 A comparison of the two methods is useful in that it captures the extent of combined focusing and part-whole differences providing a useful envelope around reasonable value estimates.

## Questionnaire design and testing

### Site selection

- 2.20 Seaham, a coastal town in East Durham in the North East of England, was selected as the location for the stated preference fieldwork (focus groups, cognitive interviews and pilot survey). It is a small-sized town (population approximately 21,000) in a wider spatial area (East Durham) where it is credible to propose local environmental amenity improvements. Seaham is located in a former coalfield area where in the early 1980s there were four collieries (Seaham/Vane Tempest, Murton, Dawdon and Hawthorn) and one coking works (Hawthorn) which provided 65 per cent of all employment in the area (and 82% of male employees). By 1992-93 all collieries and the coking works had closed (Segal Quince Wicksteed Ltd and BBP Property Consultants, 2000). Since then, Seaham and neighbouring Murton have been subject to physical regeneration activity with projects including transport link improvements, new housing, and commercial development on reclaimed coalfield land along with some environmental and public realm improvements particularly on the seafront.<sup>3</sup>

### Focus groups

- 2.21 The fieldwork commenced with two focus groups with residents in Seaham in December 2009. The purpose of the groups was to gauge perceptions of local environmental quality and regeneration needs in the area in general. Discussion topics and exercises included:
- Establishing priorities for regeneration activities in the local area, with respondents ranking actions such as: improving transport links, support to new businesses, support to existing businesses, training and skills for unemployed, providing new premises for business (e.g. business parks and commercial developments), new housing, improving existing housing, support to community organisations (e.g. neighbourhood groups), improving the local environment (e.g. green spaces), reducing crime, improving local services (e.g. health, schools, police).
  - Testing a 'long-list' of local environmental amenity attributes in terms of

---

<sup>3</sup> For a general overview, see Seaham Town Council:  
[www.visionwebsites.co.uk/Contents/Text/Index.asp?SiteId=571&SiteExtra=15511951&TopNavId=602&NavSideld=6450](http://www.visionwebsites.co.uk/Contents/Text/Index.asp?SiteId=571&SiteExtra=15511951&TopNavId=602&NavSideld=6450)

respondent understanding; i.e. how are they perceived, how important are they, and how definitions, quantitative and visual information are understood. The 'long- list' of attributes comprised of: street cleanliness, parks and open space, nature reserves, public areas, derelict land and buildings, air quality, green routes, and community spaces.

- Testing respondents' understanding of an initial valuation question, in terms of willingness to pay for a package of improvements to features of the local environment, and motivations for responses.

### **Cognitive interviews**

2.22 Cognitive interviews were carried out as a pre-test of the draft stated preference questionnaire developed following the focus groups. Respondents were interviewed face-to-face (in-home), starting with the stated preference questionnaire and then a follow-up debriefing questionnaire to provide an account of their reasoning and motivations for the answers that they gave. In particular the debriefing questions were intended to assess:

- comprehension of the draft stated preference questionnaire and showcard material, particularly its intent and wording
- decision processes in relation to the cognitive effort required by valuation questions
- response processes in relation to matching answers to questionnaire options.

2.23 Two sets of five cognitive interviews were undertaken in December 2009 and January 2010 in Seaham. The results of the first set of cognitive interviews were used to revise the draft stated preference questionnaire to provide an 'improved' version to test in the second set of interviews. The results of the second set of interviews subsequently informed amendments for pilot stated preference questionnaire. This was subject to peer review in January 2010.

### **Pilot questionnaire**

2.24 The pilot questionnaire and accompanying showcard material are presented in Annexes A and B of this document. Details of the descriptions of the local environmental amenity attributes and levels are presented in the following section. The pilot questionnaire follows the typical structure for a stated preference survey (see for example Bateman et al, 2002), comprising of the following elements:

- Screening and quota questions: to ensure that respondents are responsible or jointly responsible for paying the household's bills.
- Introductory questions (Section A): an initial set of questions on the respondent's perception of local environmental amenity and priorities for improvement.

- Choice experiments (Section B): the principal component of the survey, where the choice experiment exercise and format is introduced, with a description of attributes of interest. The pilot stated preference questionnaire presents three separate choice experiments to respondents in sequence to accommodate all of the local environmental amenity attributes of interest (see below). In each choice experiment, respondents are presented with four choice tasks. In each choice task, the respondent is required to select their preferred option out of the current situation (the status quo level of attributes) and two alternative options with varying levels of the attributes.
- Contingent valuation (Section C): The contingent valuation question is presented in a similar format to the choice experiments but presents respondents with only one choice task; choosing between the current situation and an alternative 'improved' level where all attributes are at their greatest improved level. A payment ladder elicitation format is used to elicit willingness to pay responses from respondents.
- Follow-up questions (Section B, C and D): these focus on eliciting respondent feedback as to the ease of the choice experiment and contingent valuation questions and motivations for the choices made, including the attention paid to each attribute and the reason for either stating a zero or a positive willingness to pay amount.
- Socio-economic questions (Section E): the final section of the pilot questionnaire includes standard questions on socio-economic characteristics of the respondent and their household.

### **Attributes and levels**

- 2.25 Following the focus groups and cognitive interviews, seven local environmental amenity attributes – based on the environmental improvement 'Activity Categories from Phase Phases 1 and 2 of the overall study) - were specified for the choice experiment and contingent valuation questions in the pilot survey.
- 2.26 To permit for a balanced assignment of attributes to 'blocks' (see below), the nature reserves attribute was dropped from the pilot study.<sup>4</sup> The remaining six environmental amenity attributes were grouped into three blocks. Each block had four attributes in total: two local environmental amenity attributes, the cost of improvements (in terms of the increase in annual council tax payment) and the location of improvement attributes (Figure 2.1).

---

<sup>4</sup> 'Blue routes' were also not subject to investigation in Seaham since the area has very few water courses and not of significant scale for such an activity type.

- 2.27 The principal motivation for dividing the attributes into blocks are cognitive limitations of survey respondents; it would present a significant cognitive load for an individual to have to simultaneously trade-off eight different attributes in one choice task. As a rule of thumb, it is generally taken that about seven attributes represents the limit of what respondents can be expected to cope with in one choice experiment choice task. Here the stated preference questionnaire presents four attributes in each block and respondents were required to choose between three bundles of attributes in each choice task. Correspondingly each block provides the basis for a separate choice experiment within the overall choice experiment and stated preference survey design.
- 2.28 Attribute levels were specified for each attribute (Figure 2.2). All environmental amenity attributes were specified to have three levels (status quo, improved level 1, improved level 2) except for 'improvements to public area', which had two levels (status quo; improved level). Four levels were specified for the location attribute and six for the cost attribute (status quo at zero, and five increased levels).

**Figure 2.1: Pilot survey choice experiment attributes and descriptions**

Attribute	Attribute description
<p>Improvements to open space [Block 1]</p>	<p>Improvements to areas of open space such as parks and greens:</p> <ul style="list-style-type: none"> <li>• These are areas of grass and open space that people can use for activities such as walking, dog-walking, picnics, sunbathing and informal games.</li> <li>• Improvements include repair of paths and fences, etc., and more frequent removal of litter and upkeep of grass and planted areas (e.g. regular cutting).</li> </ul> <p>Open spaces in Seaham include parks in Dawdon, Deneside, Parkside and Seaham Town Park. In total these cover about 15 hectares. There are also other areas such as fields and greens around housing areas.</p>
<p>Derelict properties restored [Block 1]</p>	<p>Improvements to the local environment that restores derelict buildings and land to improve the visual appearance of built up areas:</p> <ul style="list-style-type: none"> <li>• Derelict buildings include houses, business properties and other areas of land that are empty or abandoned and are not being looked after.</li> <li>• Properties will be restored to their previous use, e.g. a house or shop.</li> </ul>
<p>Amount of outdoor community facilities [Block 2]</p>	<p>Improvements to the local environment that increase the amount of outdoor facilities available.</p> <p>These are areas that people use for certain activities, such as:</p> <ul style="list-style-type: none"> <li>• Play areas for children and other facilities for young people such as skateboard parks. In Seaham there are three play areas.</li> <li>• Sports pitches for activities such as football, rugby, etc. In Seaham there are four sites with sport pitches.</li> <li>• Allotments and community gardens for growing vegetables and plants. In Seaham there are nine allotment sites</li> </ul>



**Figure 2.1: Pilot survey choice experiment attributes and descriptions**

Attribute	Attribute description
Street cleanliness [Block 2]	The amount of litter, fly-tipping, chewing gum and fallen leaves on streets, and the amount of graffiti and fly-posting on buildings.  Street cleanliness is graded A to D: <ul style="list-style-type: none"> <li>• Grade A: very little litter etc.</li> <li>• Grade B: mostly clear of litter etc.</li> <li>• Grade C: some litter etc.</li> <li>• Grade D: lots of litter etc.</li> </ul>
Improvements to public areas [Block 3]	Improvements to public areas such as town squares, pedestrian streets and promenades: <ul style="list-style-type: none"> <li>• These are open spaces in built up areas that are for the use of the general public.</li> <li>• Improvements include new paved areas, benches and features such as fountains.</li> <li>• Public areas in Seaham include the town centre and Church Street and the seafront promenade.</li> </ul>
Green routes [Block 3]	Improvements to the local environment that increase the amount of walking or cycling paths that avoid busy roads: <ul style="list-style-type: none"> <li>• Green routes provide access to other areas along paths that are bordered by trees and other plants (and are not alongside roads).</li> </ul> There are approximately 2.5km (1.5 miles) of green routes in Seaham.

**Figure 2.1: Pilot survey choice experiment attributes and descriptions**

Attribute	Attribute description
Location of improvements [All blocks]	Improvements to the local environment may be made in: <ul style="list-style-type: none"> <li>• Seaham only: all improvements will be in Seaham.</li> <li>• Seaham and the wider local area: improvements will be spread across the local area including places such as Murton and Easington.</li> <li>• East Durham area: improvements will be spread across the entire East Durham area, including places such as Peterlee and Hartlepool.</li> </ul>
Cost (£ per year) [All blocks]	Improvements to the local environment will be paid for by council tax. Payments will ensure that the improvements are maintained and continue to be provided each year.  Payments are additional – i.e. on top of – current council tax payments.

**Figure 2.2: Choice experiment attribute levels**

<b>Attribute</b>	<b>Level 0 (Current situation)</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>	<b>Level 4</b>	<b>Level 5</b>
Improved areas of open space	No change (No improvements to open space)	Improvements to 5 hectares of open space	Improvements to 15 hectares of open space	-	-	-
Derelict properties restored	No change (No properties restored)	5 properties restored	10 properties restored	-	-	-
Amount of outdoor community facilities	No change (No additional facilities)	1 extra facility	2 extra facilities	-	-	-
Street cleanliness	Grade C: some litter etc.	Grade B: mostly clear of litter etc.	Grade A: very little litter etc.	-	-	-

**Figure 2.2: Choice experiment attribute levels**

<b>Attribute</b>	<b>Level 0 (Current situation)</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>	<b>Level 4</b>	<b>Level 5</b>
Improved public areas	No change (No improvements to public areas)	Improved: new paving, benches, etc. maintained in good condition	-	-	-	-
Green routes	No change (2.5km or 1.5 miles of green routes in Seaham)	2km (1.2 miles) extra of green routes	4km (2.4 miles) extra of green routes	-	-	-
Location of improvements	No improvements anywhere	Improvements spread across all of East Durham area	Improvements spread across Seaham and the wider local area	All improvements in Seaham	-	-
Cost (£ per year)	£0 per year	£5 per year	£10 per year	£20 per year	£30 per year	£50 per year

## Experimental design

- 2.29 The purpose of the experimental design is to specify the combinations of attribute levels that respondents will be presented in a given choice task, which is represented by a single choice card (See Annex A for the choice card format for each attribute block). In the pilot survey, the choice task/card consisted of three alternative options for respondents to choose between; a status quo option and two alternative options with varying levels of the attributes.
- 2.30 To derive the experimental design, the aim was to specify combinations of attributes that provide the maximum amount of information about the respondents' preferences for improved local environmental amenity. Since these preferences are to be statistically estimated from choices observed in the choice experiments the specific objective is to ensure that the choice cards will permit 'precise' estimates at the intended sample size. This corresponds to specifying alternatives that minimize the expected variance of the parameters in the subsequently estimated multinomial logit and mixed logit models (see paragraphs 2.10-2.11). In practice, the procedure involves an optimisation algorithm that searches, among all possible combinations of levels, for a set of alternative and attribute levels that will maximise the trade-offs that respondents will face.<sup>5</sup>
- 2.31 In developing the experimental design for the pilot survey, a number of key considerations were addressed:
- The 'location of improvements' attribute is treated as an interaction variable; that is, it is only expected to have an impact on respondents' choices solely in conjunction with the local environmental amenity attributes. Therefore the design needs to facilitate the estimation of the monetary value of benefits from improved local environmental amenity as a function of location.<sup>6</sup> This is achieved by optimising the design to estimate interactions between location and the local environmental amenity attributes. In addition, since the interpretation of both the location and cost attributes require an improvement in local environmental amenity to take place, the design does not allow for the two local environmental amenity attributes to be simultaneously set to their status quo level in any alternative option specified in a choice task.
  - Specifying three blocks of attributes implies three separate choice experiments (as noted above). Since blocks 1 and 2 have an identical structure (two local environmental amenity attributes with 3 levels plus location and cost), the same experimental design is used for these blocks. A

---

<sup>5</sup> Formally, the algorithm minimises a measure of the variance-covariance matrix of the estimates using D-efficiency criteria (see Scarpa and Rose, 2008). The pilot experimental design was derived with the software SAS 9.2.

<sup>6</sup> i.e. the levels of the location attributes: all improvements in Seaham; improvements spread across Seaham and the wider local area; and improvements spread across all of East Durham area.

further experimental design was specified for Block 3 where the 'improved public areas' attribute has only two levels.

- Administering three choice experiments to respondents raises issues as to cognitive burden. In order to minimise potential 'fatigue effects' the overall number of choice tasks per respondent was limited to 12, with four choice tasks per choice experiment/attribute block. For each block a total of 36 choice cards were specified, giving nine sets of four choice cards.<sup>7</sup>

2.32 Allocation of choice cards to respondents during the pilot survey interviews was randomised. The procedure first determined the order in which respondents were presented with the choice experiments/attribute blocks and then the set of four choice cards that would be seen. The order of the choice cards within the set of four was also randomised. Overall the random allocation procedure across choice experiments/attribute blocks and choice cards ensures that the order in which information is presented to respondents has no systematic effect (e.g. bias) on results.

## Pilot survey results

### Administration

2.33 The pilot survey took place in January 2010. A total of 106 interviews were completed (the target sample size was 100). The pilot stated preference questionnaire was administered via face-to-face (in-home) computer aided interviews (CAPI). The pilot fieldwork was undertaken by Accent, a market-research company.

### Sample characteristics and representativeness

- 2.34 A full statistical account of responses to the pilot stated preference questionnaire is provided in Annex C. The following provides a summary of the pilot sample representativeness.
- 2.35 Within the survey sample (106 respondents), 56 per cent of respondents were male while 44 per cent were female. This compares to a 52 per cent female/48 per cent male population split for the North East of England<sup>8</sup> from census data.
- 2.36 As detailed in Figure 2.3, the pilot survey sample approximates fairly closely for the older and younger age ranges to the profile for the North East Government Office Region. There is however a greater proportion of the 25 to 44 age group and lower proportion of the 45 to 59 age group compared to the North-East as a whole.

---

<sup>7</sup> Note that groups of choice cards were generated to ensure that each respondent would see each attribute level approximately the same number of times to maximise potential tradeoffs *within* the sub-groups.

Figure 2.3: Sample age profile			
Age group (years)	Pilot survey sample		North-East Region (%)
	n	%	
18 to 24	11	10.4%	12.0%*
25 to 44	39	36.8%	31.9%
45 to 59	22	20.8%	25.1%
60 and over	34	32.1%	31%

\* The 18-24 age group was estimated from the ONS statistics by dividing the 16 to 19 age group by 2 and adding this to the 20-24 age group.

2.37 Respondents were asked the number of people in different age bands in their household. Based on their responses, 25 per cent of the respondents lived in retired households (where all occupants are 61 or over), 45 per cent lived in households where all members were of working age (aged between 16 to 60 only), and the remaining households (30%) lived in working age households with dependents (where there was a mix of working age members and retirees or younger household members; any 16-60 with other age groups). Of these, 13 per cent lived in households with very young children (under 5 years old).

2.38 Figure 2.4 reports the MRS social grade of respondents. ABC1 groups comprise 49 per cent of respondents; C2DE groups comprise 51 per cent of the sample.

---

<sup>8</sup> This may be considered a relatively significance difference between the sample and regional population. However there are no strong expectations that gender should have a major influence on willingness to pay for environmental improvements.

<b>Figure 2.4: Socio-economic groups</b>		
	Pilot survey sample	
	n	%
<b>A:</b> professionals such as doctors, solicitors or dentists; chartered people like architects; fully qualified people with a large degree of responsibility such as senior editors, senior civil servants, town clerks, senior business executives and managers.	0	0
<b>B:</b> people with very responsible jobs such as university lecturers, heads of local government departments, middle management in business, qualified scientists, bank managers, police inspectors, and upper grades of the Services.	13	12.3
<b>C1:</b> all others doing non-manual jobs; nurses, technicians, pharmacists, salesmen, publicans, people in clerical positions, police sergeants/constables, and middle ranks of the Services.	36	34
<b>C2:</b> skilled manual workers/craftsmen who have served apprenticeships; foremen, manual workers with special qualifications such as long distance lorry drivers, security officers, and lower grades of Services	18	17
<b>D:</b> semi-skilled and unskilled manual workers, including labourers and mates of occupations in the C2 grade and people serving apprenticeships; machine minders, farm labourers, bus and railway conductors, laboratory assistants, postmen, door-to-door and van salesmen.	18	17
<b>E:</b> those on lowest levels of subsistence including pensioners, casual workers, and others with minimum levels of income.	21	19.8

2.39 Over 80 per cent of respondents have lived in Seaham for more than 20 years (Figure 2.5). Of the 5 per cent of respondents who lived in Seaham for 10-20 years, 60 per cent were in the age range of 18-24, implying that they may have lived in Seaham all of their life.

<b>Figure 2.5: Length of time respondent has lived in Seaham and/or surrounding area</b>		
	n	%
Less than 1 year	2	1.9
1 – 2 years	3	2.8
2 – 5 years	6	5.7
5 – 10 years	4	3.8
10 – 20 years	6	5.7
20- 30 years	24	22.6
More than 30 years	61	57.5

2.40 Forty-five per cent of respondents were the chief income earner in the household, 38.7 per cent were not; while in 16 per cent of interviews, the households had no income earner. Forty-one per cent of respondents described themselves as the person most responsible for paying council tax and utilities bills, and 59 per cent



described themselves as jointly responsible. Those who answered 'don't know' or that they were not responsible were not asked to continue with the survey.

2.41 Figure 2.6 shows the self-reported amount that the respondent's household pays in council tax per year. These amounts compare reasonably well with Seaham council tax bands for 2009-10 (Figure 2.7). Using the middle of the pilot survey bands as a proxy amount, the average tax paid by the pilot survey respondent was £986 or £1,089 if those who do not pay council tax are removed.<sup>9</sup> Households in the North East Government Office region pays an average of £1,036 per dwelling (DCLG, 2009).

<b>Figure 2.6: Amount that the household pays in council tax</b>		
	n	%
Do not pay council tax	10	9.4
Less than £1000 per year	11	10.4
£1,000 – 1,250 per year	24	22.6
£1,250 – 1,500 per year	33	31.1
£1,500 – 1,750 per year	5	4.7
£1,750 – 2,000 per year	4	3.8
£2,000 – 2,500 per year	4	3.8
More than £2,500 per year	1	0.9
Don't know	14	13.2

<b>Figure 2.7: Council tax for each property band in Seaham</b>							
A	B	C	D	E	F	G	H
£1,123	£1,310	£1,498	£1,685	£2,059	£2,434	£2,808	£3,370

2.42 Respondent's self-reported<sup>10</sup> annual household income is detailed in Figure 2.8. Respondents were mainly from lower income households, with 46 per cent of respondents reporting a household income lower than £15,500 per year including a quarter of respondents reporting a household income lower than £9,500 per year. Nineteen per cent of households reported a household income of £40,000 per year or over.

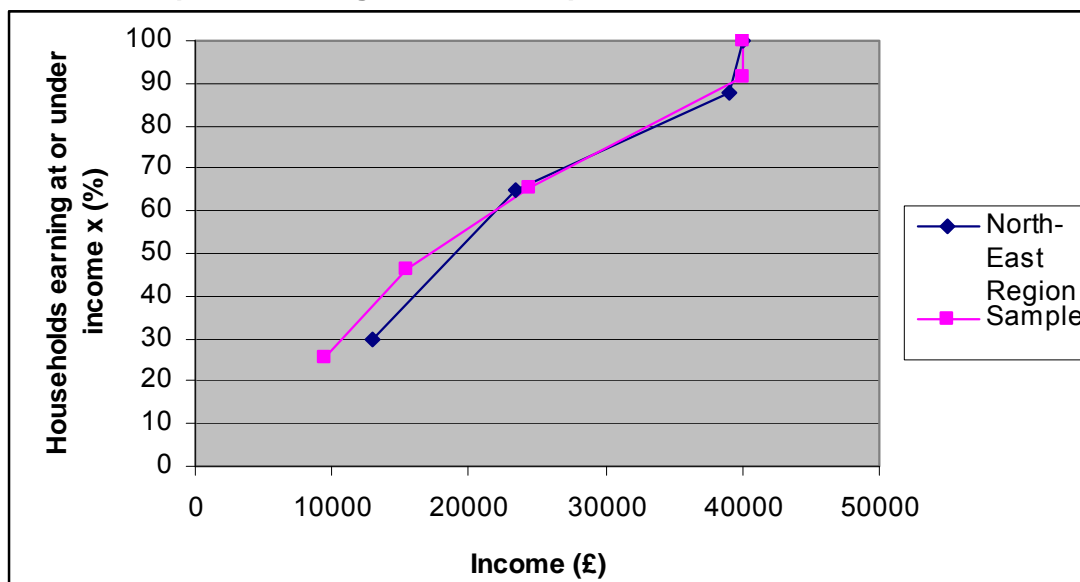
<sup>9</sup> In addition council tax bands for Seaham are roughly £100 more per band than other parishes in County Durham (Durham County Council, 2009).

<sup>10</sup> In any survey that asks for self-reported household income there is potential for inaccuracy in responses, for example due to a tendency to base income on earned income and omit unearned income, as well as uncertainty by the respondent about the amount that other members of the household earn.

Figure 2.8: Total annual income before tax		
Annual household income (£ per year)	Pilot survey sample (%)	North-East Region (%)
Up to 9,500	25.5	
9,500 to 13,000		30
13,000-15,499	20.8	
15,500-23,400		35
23,400-24,499	18.9	
25,000-39,000		23
39,000-40,000	26.4	
40,000+	8.5	26

2.43 A comparison of the sample and regional household income is plotted in Figure 2.9 (based on Figure 2.8). The sample is relatively representative of the Office for National Statistics North-East Region data but tends to over-represent lower income households.

**Figure 2.9: Comparison of regional and sample annual household income**



2.44 Compared to the North East Government Office region the sample is relatively unrepresentative in terms of educational qualification, with a bias towards individuals with lower levels of educational attainment/qualifications. Twenty-six per cent of the sample reported that they had no educational qualifications compared with 13 per cent of the North-East region, and just 9 per cent reporting that they had gained a first degree or higher, compared with 22 per cent of the region. In terms of GCSE equivalents, A-Level equivalents and other qualifications, the sample was representative. However, level of education statistics for the entire North-East region do not necessarily reflect the profile of Seaham, but a source for statistics for the education attainment at this geographical level was not available.

<b>Figure 2.10: Level of education</b>			
	Pilot Survey Sample		North-East Region (%)
	n	%	
O levels/CSEs/GCSEs	27**	25.5**	25.4*
A levels/AS level/higher school certificate	15	14.2	
NVQ (Level 1 and 2). Foundation/Intermediate/Advanced GNVQ/HNC/HND	14	13.2	26.4
Other qualifications (e.g. City and Guilds, RSA/OCR, BTEC/Edexcel))	13	12.3	12.8
First degree (e.g. BA, BSC)	6	5.7	14.5
Higher degree (e.g. MA, Phd, PGCE, post graduate certificates and diplomas)	2	1.9	
Professional qualifications (teacher, doctor, dentist, architect, engineer, lawyer, etc.)	1	0.9	7.3
No qualifications	28	26.4	12.6
* The North-East region statistics reported only those who had received A*-C grades in O levels/CSEs/GCSEs			
** The pilot survey question asked respondents for any grades from O levels/CSEs/GCSEs.			

2.45 Approximately 90 per cent of respondents were not members of any environmental organisation. Organisations represented within the other 10 per cent of the sample included the National Trust, the Royal Society for the Protection of Birds, an angling club, and the Woodland Trust.

### **Perception of local environmental quality**

2.46 Figure 2.11 reports respondents' perceptions of the features of the local environment that need or do not need improving. Of the eight features listed, six were stated to need improvement by more than 50 per cent of the sample. 'The cleanliness of streets and amount of litter and graffiti' and 'the amount and quality of facilities for children and teenagers' were stated as needing improvement by over 75 per cent of the sample.

2.47 The 'amount and quality of local nature reserves' and 'the amount of pedestrian and cycle paths away from roads' were stated to need improvement by only 43 per cent and 49 per cent of survey respondents respectively. While these proportions are lower compared to the other features, they are still relatively high, implying that there is the general perception that improvements are desirable for all aspect of the local environment in Seaham.

**Figure 2.11: Perception of local environment – needs for improvement in Seaham**

	Does not need improvement		Needs improvement		Don't know	
	n	%	n	%	N	%
The cleanliness of streets and the amount of litter and graffiti	26	24.5	80	75.5	0	0
The amount and quality of open space such as parks and greens	38	35.8	60	56.6	8	7.5
The amount and quality of facilities for children and teenagers, such as play areas and skateboard parks	9	8.5	84	79.2	13	12.3
The quality of public areas such as the town centre and pedestrian streets	34	32.1	67	63.2	5	4.7
The amount of derelict land and buildings	31	29.2	66	62.3	9	8.5
The amount and quality of outdoor community facilities that are provided such as sports pitches and allotments	27	25.5	65	61.3	14	13.2
The amount and quality of nature areas such as local nature reserves	41	38.7	46	43.4	19	17.9
The amount of pedestrian paths and cycle paths away from roads	48	45.3	52	49.1	6	5.7

2.48 Respondents' perception as to the greatest priority for improvement is reported in Figure 2.12. Corresponding to Figure 2.12 'the amount and quality of facilities for children and teenagers' and 'the cleanliness of streets' were both identified as the highest priority by over 30 per cent of respondents. The 'amount of pedestrian paths and cycle paths away from roads' is the lowest priority overall (only one respondent rated this as the highest priority for improvement).

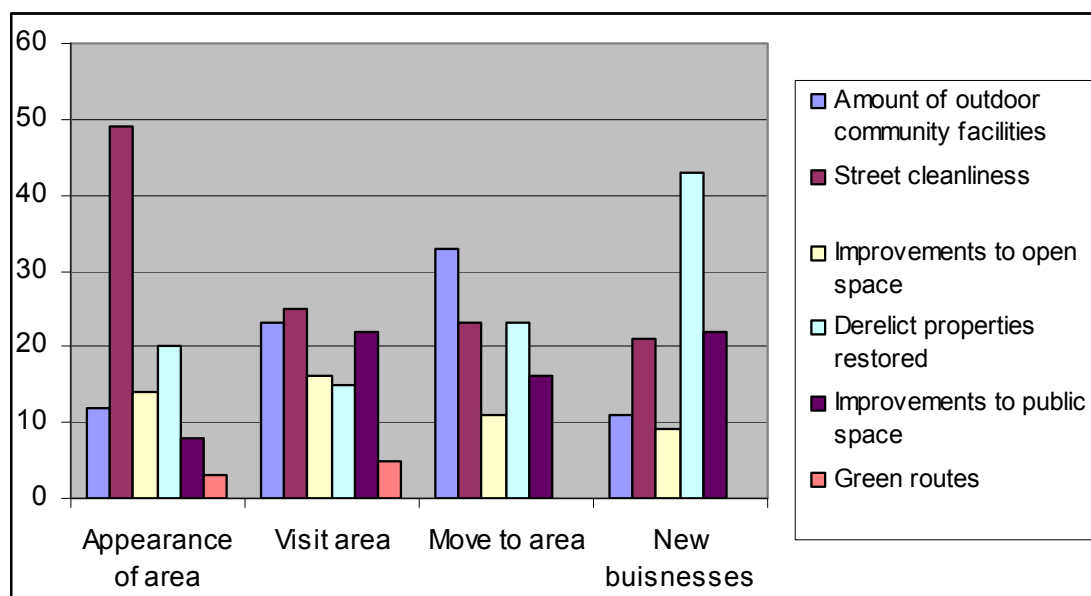
<b>Figure 2.12: Of the features of the environment in the local area that you said need improving, which is the highest priority for improvement?</b>		
	n	%
The cleanliness of streets and the amount of litter and graffiti	34	32.1
The amount and quality of open space such as parks and greens	8	7.5
The amount and quality of facilities for children and teenagers, such as play areas and skateboard parks	36	34.0
The quality of public areas such as the town centre and pedestrian streets	10	9.4
The amount of derelict land and buildings	7	6.6
The amount and quality of outdoor community facilities that are provided such as sports pitches and allotments	4	3.8
The amount and quality of nature areas such as local nature reserves	4	3.8
The amount of pedestrian paths and cycle paths away from roads	1	0.9
Not applicable	2	1.9

2.49 In a follow-up question to the choice experiments, respondents were also asked to state their view as to local environmental amenity attributes and which of these would be the most effective to:

- improve the visual appearance of the local area
- encourage people to visit the local area
- encourage people to move to the local area to live
- attract new businesses to Seaham.

2.50 Figure 2.13 sets out a comparison of responses. Generally, respondents did not believe that 'green routes' and 'improvements to open space' would have much effect on the stated outcomes. 'Street cleanliness' was stated to have the highest effect on the visual appearance and also a relatively high impact on the other three outcomes too. 'Restoration of derelict properties' was rated as having the greatest effect in encouraging new businesses to move to Seaham. Likewise, 'the amount of outdoor community facilities' was seen as the most effective action for encouraging people to move to the local area. With respect to encouraging visitors to the local area, responses are more mixed, likely reflecting a perception that a combination of improvements is needed.

**Figure 2.13: Significance of attributes to improving aspects of the local area (no. of respondents)**



### Choice experiment results – econometric models and WTP

2.51 Analysis of the choice experiment data estimates econometric models for each of the three attribute blocks. Following from the methodology section, two model specifications were estimated: (i) a multinomial logit model and (ii) a mixed logit model. To recap, the mixed logit model allows for more flexibility, for example in terms of variations in preferences of individuals. In contrast the multinomial logit model is based on a more restrictive set of assumptions.<sup>11</sup> Overall, the question as to which model type is the best fit to the data is an empirical question. There is however no single criterion by which a model can be identified as the ‘correct’ or ‘best’ model. Criteria include:

- goodness-of-fit of the model statistically: across various goodness-of-fit criteria including log-likelihood and R2
- conformity to *a priori* expectations as to the signs (i.e. positive or negative) on the estimated model coefficients
- statistical significance of the coefficients
- reasonableness of WTP estimates.

2.52 A positive coefficient is expected for the six local environmental amenity attributes; i.e. as the level of improvement for an attribute increases so does the utility (the

<sup>11</sup> Arising from the premise that the error term ( $e_{ij}$ ) is independently and identically distributed (IID) extreme value. If the error term of utilities is not related over alternatives and respondents then the multinomial logit model will provide a good specification of representative utility. However, it is not possible *a priori* to know if the error term is indeed IID.

'benefit') derived from it. Since the local environmental amenity attributes are interacted with the 'location of improvements' attribute, estimated models will report three coefficients for local environmental amenity, corresponding to: improvements spread across all of East Durham area (L1); improvements spread across Seaham and the wider local area (L2); and all improvements in Seaham (L3). A negative coefficient is expected for the 'cost' attribute, with increases in council tax reducing respondent's utility.

- 2.53 Estimated models for each of the choice experiment blocks are reported in Figure 2.14. The goodness of fit measures – both in terms of higher values for the log likelihood and pseudo  $R^2$  statistics - indicate that the mixed logit models for each block should be preferred over the multinomial logit models. In general the pseudo  $R^2$  values for the mixed logit models indicate a good fit to the data despite the relatively small sample size of the pilot survey.
- 2.54 Reviewing the mixed logit models, the (mean) coefficients for all local environmental amenity attributes have the expected positive sign. Moreover all coefficients are significant at the 5% or 1% level for the 'all improvements in Seaham' interaction with location (denoted by 'L3'). That is, improvements in each of the local environmental amenity attributes in Seaham results in increases in utility. Welfare gains are also evident for improvements in the local environmental amenity attributes over the wider spatial areas of interest (as denoted by positive and statistically significant coefficients for the 'improvements spread across Seaham and the wider local area' (L2) and the 'improvements spread across all of East Durham area' (L3) interactions), except for 'improved areas of open space (only statistically significant 'in Seaham') and the 'amount of outdoor community facilities' and 'green routes' (not statistically significant 'across East Durham').

**Figure 2.14: Estimated multinomial logit and mixed logit models for choice experiment attribute blocks (n = 106)**

Attribute (and location of improvements)		Block 1			Block 2			Block 3		
		MNL	MXL		MNL	MXL		MNL	MXL	
			Mean	St-dev.		Mean	St-dev.		Mean	St-dev.
Improved areas of open space	L1	0.01 (0.02)	0.01 (0.04)	0.01 (0.06)	n/a	n/a	n/a	n/a	n/a	n/a
	L2	0.04** (0.02)	0.04 (0.06)	0.24** (0.11)						
	L3	0.06*** (0.02)	0.14** (0.06)	0.16 (0.11)						
Derelict properties restored	L1	0.09*** (0.03)	0.22** (0.10)	0.42** (0.20)	n/a	n/a	n/a	n/a	n/a	n/a
	L2	0.13*** (0.03)	0.40*** (0.12)	0.01 (0.11)						
	L3	0.09*** (0.03)	0.27*** (0.09)	0.01 (0.17)						
Amount of outdoor community facilities	L1	n/a	n/a	n/a	0.17 (0.13)	0.56 (0.36)	0.91 (0.86)	n/a	n/a	n/a
	L2				0.51*** (0.13)	1.09** (0.44)	1.51* (0.83)			
	L3				0.44*** (0.13)	1.22*** (0.39)	-0.09 (0.89)			
Street cleanliness	L1	n/a	n/a	n/a	0.27* (0.14)	0.46 (0.39)	-1.38* (0.73)	n/a	n/a	n/a
	L2				0.34** (0.14)	1.52*** (0.53)	0.00 (0.59)			
	L3				0.45*** (0.13)	1.34*** (0.44)	1.46 (0.93)			
Improved public areas	L1	n/a	n/a	n/a	n/a	n/a	n/a	0.51** (0.23)	0.71 (0.43)	1.64** (0.79)
	L2							0.69*** (0.22)	1.44*** (0.45)	0.27 (1.32)
	L3							0.89*** (0.24)	1.83*** (0.54)	-1.63* (0.86)
Green routes	L1	n/a	n/a	n/a	n/a	n/a	n/a	0.06 (0.07)	0.15 (0.13)	0.33 (0.24)
	L2							0.13* (0.07)	0.26** (0.13)	0.33 (0.25)
	L3							0.12 (0.08)	0.31** (0.14)	-0.05 (0.48)
Cost (£ per year)		-0.03***(0.01)	-0.16***(0.05)	0.16*** (0.05)	-0.03***(0.01)	-0.15***(0.05)	0.16*** (0.05)	-0.05***(0.01)	-0.13***(0.03)	0.11*** (0.03)
SQ		0.12 (0.22)	-3.44** (1.49)	8.97*** (2.56)	-0.10 (0.23)	-4.44** (1.85)	10.04***(3.18)	-0.42* (0.23)	-2.42***(0.70)	4.09*** (0.92)
Log likelihood		-432.0	-296.6		-420.6	-291.8		-414.5	-326.9	
Pseudo R <sup>2</sup>		0.09	0.36		0.10	0.37		0.11	0.30	

Notes: Standard error in parenthesis. Statistical significance: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1. n/a denotes attribute note included in block.



- 2.55 In general, the mixed logit models reveal a large degree of homogeneity in preferences for improved local environmental amenity, as indicated by the significance of the standard deviation parameter (St.-dev.) This is certainly the case for improvements in Seaham only (the L3 interaction). Greater heterogeneity is evident for improvements over the wider spatial scale of interest, particularly for 'derelict properties restored' and 'improved public areas' across 'East Durham', where coefficients are statistically significant at the 5% level.
- 2.56 Coefficients for the cost attribute in all blocks have the expected signs for the mixed logit and the multinomial logit models and are all statistically significant at the 1% level. Hence increases in council tax – as expected – decrease utility.
- 2.57 The models reported in Figure 2.14 also include a status quo parameter. This controls for the potential tendency for respondents to select the current situation (status quo) option in choice experiments of this nature.<sup>12</sup> In the mixed logit models coefficients for the status quo across the three attribute blocks are negative and significant at either the 5% or 1% level. This indicates that, all else equal, there is an overall preference for improved levels of environmental amenity in Seaham and the surrounding area. In other words, respondents prefer improvement of the current situation to its maintenance.<sup>13</sup>
- 2.58 The models reported in Figure 2.15 provide the basis of estimating willingness to pay for improvements in the local environmental amenity attributes. For the basic multinomial logit model, willingness to pay is estimated as ratio of the marginal utility of an attribute (denoted by the estimated coefficient for the attribute) to the marginal utility of money (denoted by coefficient for the cost attribute).<sup>14</sup> Therefore, for individual *i* for attribute *k*:

$$WTP_{ik} = - \frac{\beta_k}{\beta_{cost}}$$

- 2.59 Note that since the marginal utility parameters are assumed to be equal for all respondents, WTP is the same for all respondents. Estimation of willingness to pay from mixed logit model (the preferred model from Figure 2.14) follows the same logic as for the multinomial logit model. However, since the mixed logit estimates a distribution of marginal utilities, mean willingness to pay is the expected value of a ratio of average marginal utility parameters. An approximation of the willingness to

<sup>12</sup> For example some respondents may not being willing to engage in the cognitive effort required to evaluate the proposed alternatives different from the current situation and hence will systematically choose the status quo regardless of the improvements on offer.

<sup>13</sup> In contrast the MNL models report positive but not statistically significant coefficients for the SQ. This result interpreted with standard deviation parameters for the SQ coefficients in the MXL models indicates a degree of heterogeneity in preferences. That is the majority of respondents prefer improvements but there is also a small proportion that prefer the SQ.

<sup>14</sup> Interpretation of MNL coefficients as marginal utility estimates is a standard result: see for example McFadden (1984).

pay can be written as:<sup>15</sup>

$$WTP \cong -E \left[ \frac{\beta}{\gamma} \right] = -\frac{E[\beta]}{E[\gamma]} \left( 1 + \frac{V[\gamma]}{E[\gamma]^2} \right)$$

where  $E[\cdot]$  and  $V[\cdot]$  are the expected mean and variance of the tastes' distributions respectively.

2.60 Estimates of willingness to pay for improvements in the local environmental amenity attributes are reported in Figure 2.15. The results show that (statistically significant) positive willingness to pay is evident for improvements in local environmental amenity attributes in Seaham (the final column of Figure 2.15). Estimated marginal willingness to pay varies from £1.80 per hectare per household per year from improved areas of open space to £24.15 per improvement per household per year for improved in public areas (public realm) (note though that the units are not directly comparable so it is difficult to infer relative comparisons of value).

**Figure 2.15: Estimated marginal willingness to pay for improvements in local environmental amenity (£/unit/household/year)**

Attribute	Unit	Location		
		Improvements spread across all of East Durham area	Improvements spread across Seaham and the wider local area	All improvements in Seaham
Improved areas of open space	£/ha	0.05 (-0.96 – 1.06)	0.46 (-0.93 – 1.85)	1.80 (0.40 – 3.21)
Derelict properties restored	£/property	2.74 (0.25 – 5.22)	4.97 (1.96 – 7.97)	3.39 (1.27 – 5.53)
Amount of outdoor community facilities	£/additional facility	7.87 (-2.85 – 18.59)	15.38 (2.27 – 28.49)	17.13 (4.32 – 29.95)
Street cleanliness	£/grade	6.45 (-4.50 – 17.39)	21.36 (6.20 – 36.52)	18.80 (5.03 – 32.56)
Improved public areas	£/improvement	9.40 (-2.19 – 20.99)	19.07 (6.63 – 31.51)	24.15 (9.23 – 39.07)
Green routes	£/km	2.03 (-1.24 – 5.30)	3.49 (0.13 – 6.84)	4.11 (0.39 – 7.84)

2.61 Positive willingness to pay is also evident for improvements that are not solely located in Seaham but incorporate the wider local area; i.e. a lower intensity of improvements in Seaham. Only willingness to pay for 'improved areas of open space' is not significantly different from zero (as evidenced by the 95% confidence interval that spans positive and negative values). In the case where improvements are spread across all of the East Durham area, all estimates of willingness to pay are found not to be significantly different from zero.

2.62 Overall the estimated willingness to pay values in Figure 2.15 are subject to relatively large 95% confidence intervals; generally around  $\pm 50\%$ . This is to be expected given the relatively small sample size; with a larger sample the expectation is that the

<sup>15</sup> See: Heijmans (1999).

precision of willingness to pay estimates would improve in terms of narrower confidence intervals. The relatively large confidence intervals result in willingness to pay estimates for environmental amenity improvements in ‘Seaham only’ and ‘Seaham and the wider local area’ are not significantly different from each other (the confidence intervals overlap for all attributes). Therefore, the mean marginal values display an expected pattern of results, i.e. for each attribute:

$$\begin{array}{l} \textit{Willingness to pay for} \\ \textit{improvements in} \\ \textit{Seaham only} \end{array} > \begin{array}{l} \textit{Willingness to pay for} \\ \textit{improvements spread} \\ \textit{across Seaham and the} \\ \textit{wider local area} \end{array} > \begin{array}{l} \textit{Willingness to pay for} \\ \textit{improvements spread} \\ \textit{across Durham} \end{array}$$

- 2.63 That is willingness to pay increases for an improvement in a given attribute as the spatial area over which the improvements may be made gets smaller. However accounting for the distributions of willingness to pay implies that it is not possible to distinguish between willingness to pay for improvements in Seaham only and willingness to pay for the wider local area (e.g. including Murton and Easington).

### **Contingent valuation results – econometric model and willingness to pay**

- 2.64 The contingent valuation question presented respondents with two alternatives specified over all local environmental amenity attributes. The two alternatives were: (i) the current situation (status quo) with no improvements; and (ii) an improved option with all local environmental amenity attributes at their highest level (as detailed in Figure 2.2). In option (ii) all improvements were stated to be in Seaham only. Hence option (ii) presents a package (i.e. a ‘bundled’ good) that represents the maximum improvement available to sample of respondents (who are all Seaham residents).
- 2.65 An initial ‘payment principle’ question required respondents to state whether, in principle, they would be willing to pay some additional amount in council tax per year for option (ii) or whether they would prefer the status quo option (i) and not pay any additional amount. As shown in Figure 2.16, 70 per cent of the sample were willing to pay some positive amount. Zero willingness to pay was stated by 20 per cent of respondents with a further 10 per cent of the sample stating they were unsure.

<b>Figure 2.16: Willingness to pay additional amount in council tax per year for improved local environmental amenity</b>		
	n	%
Yes	74	69.8
No	21	19.8
Don't know	11	10.4

- 2.66 Motivations for zero-willingness to pay and ‘don’t know’ responses were reviewed to identify protest responses.<sup>16</sup> Respondents stating reasons for zero-willingness to pay of ‘I object to paying higher council tax’, the ‘local council should pay for this’, ‘the local council is not trustworthy’, ‘the Government should pay for this’ and ‘I do not believe the improvements would happen’, were classified as protesters. On this basis 62.5 per cent of zero-willingness to pay and ‘don’t know’ responses (20 respondents in total) were identified as protests. A further three responses were added to this on the basis of stating zero-willingness to pay due to ‘wanting more information before making a decision’. All other zero-willingness to pay responses are treated as genuine zero amounts, with motivations such as ‘I cannot afford to pay’, ‘the improvements are not important to me’, and ‘the environmental quality is good enough already’.
- 2.67 Respondents answering ‘yes’ to the payment principle question were then asked to state their maximum willingness to pay via a payment card (see Annex A). Here, respondents indicate the minimum and maximum amount per year (in terms of additional council tax) they would be willing to pay for option (ii).
- 2.68 The payment ladder provides information on the lowest amount that respondent would be willing to pay and the maximum amount that they would not be willing to pay. This means that an exact willingness to pay amount is not observed. A basic approach would be to use the mid-points of the intervals of minimum and maximum stated amounts as an approximation of ‘true’ willingness to pay. However, the true willingness to pay may not be the mid-point of each reported interval, and such an approach could yield biased results. A better econometric model to analyse these responses is the interval data model.<sup>17</sup> In this model, the dependent variable is the true unobserved (or ‘latent’)  $WTP_i^*$ , which is known to be between the observed lower bound  $\underline{WTP}_i$  and upper bound  $\overline{WTP}_i$ .
- 2.69 Formally, willingness to pay can be modelled as a function of L individual characteristics plus an error term:

$$WTP_i^* = \sum_{L=0}^L \alpha_L \cdot Z_{iL} + u_i, \quad u_i \sim \text{Normal}(0, \sigma)$$

where the  $\alpha$  measures the marginal effect of a characteristic Z on willingness to pay. Since only the bounds of true willingness to pay are observed, it is not possible to directly estimate  $\alpha$ , with a linear regression. A maximum likelihood estimator can be

<sup>16</sup> Protest responses refer to instances when a respondent rejects the proposed valuation scenario for reasons that do not reflect a genuine zero-willingness to pay; i.e. it is not that the respondent perceives no benefit from improvements to local environmental amenity, rather it is that they object to some aspect of the institutional set-up of the valuation scenario, such as a lack of faith in the local council or opposing increases in council tax regardless of benefits provided.

<sup>17</sup> See Cameron and Huppert (1989).

derived by modelling the probability of willingness to pay being above or below the observed bounds:

$$\begin{aligned} \text{Prob}(WTP_i^* \in [WTP_i, \overline{WTP}_i]) &= \text{Prob}\left(\frac{WTP_i - \sum_{k=1}^K \alpha_k Z_{ik}}{\sigma} < z_i < \frac{\overline{WTP}_i - \sum_{k=1}^K \alpha_k Z_{ik}}{\sigma}\right) \\ &= \text{Prob}(z_i < z_i < \bar{z}_i) = \varphi(\bar{z}_i) - \varphi(z_i) \end{aligned}$$

where  $\varphi$  is the cumulative normal density function. The last expression can be used to formulate the likelihood as a function of  $\alpha$ , so that the maximum likelihood is equivalent to a model where the latent variable is specified as a linear function of individual characteristics. In other words, the estimated parameters can be interpreted as marginal effect of each characteristic on willingness to pay.

2.70 Figure 2.17 reports the estimated interval models for willingness to pay from the contingent valuation question for improved local environmental amenity. Two models are presented, one for the full sample, and one excluding protest responses, which estimate willingness to pay as a function of variety of socio-economic characteristics. Subject to their statistical significance, explanatory variables with positive coefficients are found to increase willingness to pay for environmental amenity improvements, variables with negative coefficients vice versa.

**Figure 2.17: Interval model for willingness to pay for improved local environmental amenity**

Explanatory variable	Excluding protests		Full sample	
Gender (male=1)	6.24	(6.05)	-1.50	(6.19)
Chief income earner (=1)	0.95	(6.44)	3.15	(6.81)
Age (in years)	-0.29	(0.20)	-0.20	(0.20)
Household income	0.93***	(0.15)	0.61***	(0.14)
Resident 1y-2y	116.77***	(41.05)	62.96**	(29.74)
Resident 2y-5y	67.99**	(29.19)	41.76	(26.41)
Resident 5y-10y	88.04***	(32.59)	50.08*	(28.41)
Resident 10y-20y	90.31***	(30.29)	33.93	(25.37)
Resident 20y-30y	51.43**	(25.87)	33.08	(22.88)
Resident 30y+	66.19**	(26.95)	39.60*	(23.84)
Higher education (degree or higher = 1)	1.57	(8.45)	-7.57	(8.23)
Member of environmental association	5.94	(11.29)	-4.6	(10.44)
Constant	-37.66	(27.98)	-12.52	(24.34)
R <sup>2</sup>	0.49		0.26	
N	83		106	
Predicted mean WTP (£/hh/yr)	42.42		30.80	

Note: Standard error in parenthesis. Statistical significance: \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

2.71 From Figure 2.17, the model excluding protest responses is found to have the higher explanatory power as is evident from the notably higher R<sup>2</sup> statistic. In both models,

the coefficient for household income is found to be positive and statistically significant at the 1% level, conforming to the prior expectation based on economic theory that all else being equal, higher income results in higher willingness to pay. Statistically significant relationships are also found between willingness to pay and dummy variables for the amount of time residency in Seaham, particularly in the model excluding protest responses. Here the base case is residents who have lived in Seaham less than one year; hence all residents who have lived in Seaham longer than one year are found to have higher willingness to pay than those who have not. In addition, the magnitude of coefficients indicates that residents who have lived in Seaham 1-2 years have the highest willingness to pay. There is also some evidence of diminishing willingness to pay with length of residency, with those having lived in Seaham for over 20 years having lower willingness to pay compared to those with 1-20 years residency.

- 2.72 Both models in Figure 2.17 also indicate that there is no statistically significant relationship between willingness to pay for improved local environmental amenity and respondent gender, age and education attainment. These variables are included in the models as a check on the sample representativeness; non-significant results indicate that the slight biases in the pilot sample do not bias estimates of willingness to pay. The final variable contained in the models is a dummy for whether the respondent is a member of an environmental organisation. The coefficient for this variable is not statistically significant in either model.
- 2.73 Also reported in Figure 2.17 is mean willingness to pay for improved local environmental amenity from the contingent valuation question for both the full sample and the sample excluding protests. This is estimated from the mean values for the explanatory variables included in the estimated model. Excluding protest responses, mean willingness to pay for improved local environmental amenity is £42.42 per household per year. For the full sample which does not account for 'protest' zero-willingness to pay responses, mean willingness to pay is £30.80 per household per year.

### **Comparing choice experiment and contingent valuation results**

- 2.74 As discussed in the methodology section above, the contingent valuation questions provide a method of checking the extent to which it is possible to combine choice experiment values or what adjustments might need to be made for income and substitution effects particularly with respect to potential part-whole differences. Results from the choice experiment and contingent valuation questions are compared in Figure 2.18 where the choice experiment willingness to pay values are summed to estimate the value of the package presented to respondents in the contingent valuation question. For example, for the 'improved areas of open space' attribute, the willingness to pay is estimated by multiplying the marginal willingness to

pay (choice experiment) with the change in provision in contingent valuation package.

**Figure 2.18: Comparison of choice experiment and contingent valuation willingness to pay estimates for improved local environmental amenity**

Local environmental amenity attribute	Change in provision in contingent valuation package	Marginal willingness to pay (choice experiment)	Willingness to pay (choice experiment)
Improved areas of open space	15 ha	£1.80/ha	£27.00
Derelict properties restored	10 properties	£3.39/property	£33.90
Amount of outdoor community facilities	2 additional facilities	£17.13/facility	£34.26
Street cleanliness	Grade A	£18.79/grade	£37.58
Improved public areas	Improved	£24.14/improvement	£24.14
Green routes	4 km	£4.11/km	£16.44
<b>Total willingness to pay for package from choice experiment (£/hh/yr)</b>			<b>£173.32</b>
<b>Total willingness to pay for package from contingent valuation (excluding protests) (£/hh/yr)</b>			<b>£44.42</b>

2.75 Overall the comparison of contingent valuation willingness to pay and choice experiment willingness to pay accords to prior expectations, with the value from choice experiment for the package of maximum improvements in each attribute being more than the value for the same package from contingent valuation. The contingent valuation value for the package is approximately 24 per cent of the combined willingness to pay estimate from the choice experiment. This indicates strongly that significant substitution effects are likely to arise when multiple improvements are made to local environmental amenity across a number of different attributes.

### Validity testing

2.76 Validity of the pilot survey can be assessed in terms of:

- i). Construct validity: how the survey results accord with expectations, based on expectations from economic theory and empirical results from similar studies.
- ii). Content validity: whether the stated preference questionnaire is clearly understood by respondents, such that results can be attributed as preferences for improved local environmental amenity.

2.77 In relation to construct validity, little can be inferred from comparing the pilot results to similar studies since there is paucity of comparators. Findings with respect to expectations-based validity are positive. In particular: (i) consistency between non-

valuation (priorities for improvement) and valuation (willingness to pay) results; (ii) the significance of price and location in determining willingness to pay for improved local environmental amenity in the choice experiment models; and (iii) the result that income constrains willingness to pay (positive and significant coefficient for household income variable) in the contingent valuation model. Moreover evidence of substitution effects between attributes is strong and presents a key aspect to be addressed in further research via implementation of a full survey.

2.78 With respect to content validity, key issues for a pilot stated preference survey include understanding of the choice experiment and contingent valuation questions. The separate Report provides evidence to assess these points:

- Questions 4, 6, 8 and 10: Motivations for responses to the choice experiment questions indicate they are consistent with respondents trading-off improvements in attributes with cost and location.
- Question 9: Over 75% of respondents indicated that it was 'easy' or 'fairly easy' to choose their preferred options in the choice experiments. 13% indicated that it was 'fairly difficult'.
- Question 26: Few respondents indicated that the questionnaire was difficult to understand (4%) and/or not credible (7%).
- Questions Y and Z: As indicated by interviewer feedback less than 6% of respondents understood very little and/or did not give serious consideration to responses.

2.79 In common with stated preference studies that employ this payment vehicle, some issues are to be expected as to the 'credibility' of council tax payments. Eleven percent of respondents stated that it was 'somewhat unlikely' that if council tax bills increased the environmental improvements would be delivered. A further 28 per cent stated that it was 'very unlikely'. In the main this can be attributed to a distrust of the local council, as also evidenced in motivations for protest zero-willingness to pay amounts for the contingent valuation question. Notwithstanding this result, overall, the assessment supports the content validity of pilot and stated preference questionnaire.

## Conclusion on pilot stated preference study

### Summary

2.80 The objective of the stated preference piloting work has been the development of a stated preference questionnaire to estimate the value of environmental improvements in regeneration schemes. This is based on initial qualitative testing via a small number of focus groups and cognitive interviews that have been followed by a pilot survey to test the questionnaire 'in the field'. The approach adopted combines



both a choice experiment and contingent valuation methods to give a flexible survey instrument capable of valuing local environmental amenity attributes individually and 'packages' of improvements covering multiple attributes.

### **Key findings**

- 2.81 The outcomes from the pilot survey are positive and very encouraging. Analysis of the choice experiment and contingent valuation data generates results that accord well with prior expectations and estimated models are statistically robust and perform well even though the pilot survey sample is relatively small. The main expectation for a full scale survey would be to increase the precision of estimates – in terms of smaller confidence intervals for willingness to pay estimates – as a result of more data observations. The analysis also finds that willingness to pay for improved local environmental amenity is dependent upon familiar factors; income, the scale of the improvement, cost (in terms of the council tax payment vehicle) and location. Results also suggest strongly that there are significant substitution effects between the local environmental amenity attributes; this provides good justification for the approach taken to include both choice experiment and contingent valuation exercises in the stated preference questionnaire to test for potential 'part-whole' effects.

### **Recommendations**

- 2.82 Recommendations from pilot stated preference work focus on 'next steps' that would generate estimates of the value of environmental improvements that could be more widely applied in the appraisal and evaluation of regeneration schemes. These are based on a full scale survey at multiple locations to generate a broad base of valuation evidence.
- Site selection: results from stated preference studies are context-specific and transfer of values to new appraisal (or evaluation) contexts requires a sufficiency of evidence to justify that such a transfer is valid. The pilot survey results estimate the value of improved local environmental amenity in Seaham, a small-sized coastal town. Applying willingness to pay estimates from a context such as this to a different regeneration scheme context requires consideration of factors such as the current environmental amenity baseline (i.e. the status quo conditions), the scale of the improvement(s), socio-economic characteristics of the affected population and the availability of substitutes. For example Seaham may be typical of former coalfield towns in the North East but is likely to be atypical of other types of regeneration area (e.g. industrial and inner city sites in major urban areas). Therefore further work should identify a typology of regeneration areas and typical environmental improvement activities. This would provide a basis for site selection for a full scale survey to be carried out at multiple locations to

ensure that a sufficiently broad base of valuation evidence is generated for use in the appraisal and evaluation of schemes.

- Refining influence of location and distance: a full scale survey permits fuller investigation of spatial variance in willingness to pay for improved local environmental amenity. The pilot results establish that location is a critical factor in explaining willingness to pay and this is observed to diminish in relation to the 'intensity' of improvement at a spatial scale (i.e. WTP for improvements in Seaham > willingness to pay for improvements spread across East Durham). It would be desirable to specify a stratified sampling strategy to determine how willingness to pay declines from the site of improvements. This would permit investigation of a 'distance-decay' function that would establish the economic jurisdiction for the benefits of regeneration activities that improve local environmental quality and amenity.
- 'New' attributes: further survey work has potential to add further local environmental amenity attributes to the analysis. For example, as reported in Section 3, 'nature reserves' was dropped from the pilot to allow for a balanced assignment of attributes to choice experiment blocks. Further choice experiment blocks could be specified to allow the valuation of more attributes which may be relevant in some regeneration areas but not Seaham (e.g. 'blue routes'). Adding further attributes and blocks does however raise questions as to the cognitive demands of the stated preference questionnaire. This would likely mean that respondents would not see all blocks and attributes (e.g. they would be presented with three blocks out of four or five) which consequently adds a complication in testing for part-whole effects and requires larger samples.
- Sample size: requirements to administer a full scale survey at multiple sites, control for potential distance decay and potentially accommodate further attributes and choice experiment blocks can entail a significant sample size. The initial step of further work would be to establish the sampling requirements in conjunction with the suggested typology of regeneration areas and typical environmental improvement activities. Each survey location would require sufficient sample size to ensure estimation of robust models and willingness to pay results. If controlling for distance-decay at one site it would also be necessary to have sub-samples within the stratified sampling bands for which robust willingness to pay results could be estimated.
- Non-linearity: with larger sample sizes it is possible to estimate models that test for non-linearity in willingness to pay for improved environmental amenity in aggregating the marginal willingness to pay estimates from choice experiment. Of interest is potential diminishing marginal willingness to pay, where unit willingness to pay declines as the scale of the improvement increases. This is a fundamental principle of economic theory and not

accounting for it in estimating willingness to pay from choice experiment models can lead to significant over-statement of benefit values (see Lanz et al, 2010). Testing for non-linear willingness to pay would add further explanatory insight to testing for part-whole effects.

## 3. Pilot hedonic pricing study

### Introduction

- 3.1 This section attempts to estimate the impact of the regeneration of the former Monkton Coke Works site using a hedonic analysis of house prices. It begins with a discussion of the hedonic method, followed by a description of the regeneration site. This chapter then moves on to describe the preparation of the data before closing by examining the pilot analysis and making some high level conclusions.

### Hedonic house price analysis

- 3.2 The hedonic valuation method, when applied to house prices, seeks to estimate the value of particular characteristics of housing (e.g. type of property, type of neighbourhood, distance from amenities such as schools or distance from disamenities such as land fill sites). The method is widely used to construct house price indices and also to estimate the amenity/disamenity impacts of environmental factors such as air quality or land fill sites. Details of literature with detailed discussions of the hedonic method and examples of the use of the method are given in the References section in Annex D of this report.
- 3.3 This study has sought to measure the impact of the regeneration of the former Monkton Coke Works site (see below) on nearby house prices, using house price data from the Land Registry, and in so doing to assess how the impact has varied according to proximity to the site and over time (before, during and after regeneration).

### Monkton Business Park: Great North Forest

- 3.4 Monkton Coke Works was a large, derelict and contaminated site within South Tyneside. Operations at the site ceased in 1990 and the derelict site became part of English Partnerships' National Coalfield Programme in 1997. The site was remediated by the regional development agency, One NorthEast, with funds from the National Coalfield Programme at a total cost of £5.95m.
- 3.5 The site's ownership transferred from One NorthEast to the Land Restoration Trust in April 2004. The 30 hectare site is split into two. On the southern side of the site a business park housing both office and industrial accommodation has been created. The northern section has been transformed into a wooded leisure area which forms part of the Great North Forest.

## Preparing the data

### House prices and housing characteristics

- 3.6 The hedonic methodology requires data on house prices together with characteristics of those houses (e.g. housing characteristics such as house type, size of house, number of bedrooms; socio-economic characteristics such as neighbourhood type; and amenity characteristics such as proximity of schools or other amenities/disamenities that will have an impact on house prices).
- 3.7 To take account of general house price inflation over the sample period, we also need the date on which the property was sold.

### Land Registry house price data

- 3.8 The house price data used in the analysis came from the UK Land Registry's 'Price Paid' database. This shows the price the property was sold for, the date it was sold, the postcode, the type of property (detached, semi-detached, terraced, flat), whether the property is leasehold or freehold, and whether the property was new build or not.
- 3.9 The data covered the period from 1995 to 2009 (although, due to time lags, the 2009 data did not contain information for all transactions in the year), and included all transactions in those postcode sectors (the first half of the postcode) where at least part of the postcode sector is within 8km of the regeneration site. The postcode for the regeneration site (i.e. the point from which the distance was measured) was taken as that of the new business park (NE31 2JZ), although this is actually in the southern part of the overall site.

### Office for National Statistics area classification

- 3.10 The Office for National Statistics' Area Classification<sup>18</sup> of Super Output Areas (lower level) was used to take account of socio-economic characteristics in the analysis. This analysis, based on data from the 2001 Census of Population, groups together geographic areas according to key characteristics common to the population in that grouping. Each area is allocated to one of seven 'Super Groups' (see Figure 3.1 below) which describe the socio-economic characteristics of the area.

---

<sup>18</sup> See: [www.statistics.gov.uk/about/methodology\\_by\\_theme/area\\_classification/default.asp](http://www.statistics.gov.uk/about/methodology_by_theme/area_classification/default.asp)

<b>Figure 3.1: Office for National Statistics Area Classification Super Groups</b>	
<b>Super group</b>	<b>Super group name</b>
1	Countryside
2	Professional City Life
3	Urban Fringe
4	White Collar Urban
5	Multicultural City Life
6	Disadvantaged Urban Communities
7	Miscellaneous Built Up Areas
Source: Office for National Statistics Area Classification	

- 3.11 Mapping software was used to append the Office for National Statistics super group code to each house price record, by determining which lower super output area it is in, based on the postcode and lower super output area boundary maps.

#### **Distance from regeneration site**

- 3.12 Mapping software was also used to calculate the distance (in kms) of each property from the regeneration site (using the postcode for the site listed above).

#### **Variables to be used in the analysis**

- 3.13 Further processing of the data was undertaken, to create variables in the specific form required to estimate the hedonic house price function. The variables are described in Figure 3.2 below while various descriptive statistics are presented in Figures 3.3-3.5

Figure 3.2: The Variables Used in the Hedonic House Price Equation		
Variable	Description	Values
LnPricePaid	The natural log of the price paid (£) for the property	The natural log of the price paid
YEAR_????	Dummy variable for the year (1995-2009) in which the property was sold.	1=TRUE, 0=FALSE If the house was sold in 1998 then the value of YEAR_1998 will be 1 for that house and the value of all other YEAR_???? variables for that house will be zero.
DETACHED	Is the house detached?	1=TRUE, 0=FALSE
SEMI	Is the house semi-detached?	1=TRUE, 0=FALSE
TERRACED	Is the house terraced?	1=TRUE, 0=FALSE
FREEHOLD	Is the house freehold	1=TRUE, 0=FALSE
NEWLYBUILT	Is the house a new build?	1=TRUE, 0=FALSE
SUPERGROUP?	Office for National Statistics area classification 'supergroup' (1-7, see below) for the Lower Super Output Area in which the house is located.	1=TRUE, 0=FALSE If the house was in a Lower Super Output Area of type Supergroup 1, then the value of SUPERGROUP1 will be 1 for that house and the value of all other SUPERGROUP? variables for that house will be zero.
Distance_Result	Shows the distance of the house from the regeneration area postcode (NE31 2JZ)	Distance, in kilometres.
Dist_0to1km	Is the house within 1km of NE31 2JZ?	1=TRUE, 0=FALSE
Dist_1to2km	Is the house 1-2km from NE31 2JZ?	1=TRUE, 0=FALSE
Dist_2to3km	Is the house 2-3km from NE31 2JZ?	1=TRUE, 0=FALSE
Dist_3kmPlus	Is the house more than 3km from NE31 2JZ?	1=TRUE, 0=FALSE

Figure 3.3: Sample size by property type		
	Sample	Per cent
Detached	16474	9.5
Semi-Detached	46369	26.7
Terraced	57200	32.9
Flat	53688	30.9
<b>Total</b>	<b>173731</b>	<b>100.0</b>

Source: Land Registry

Figure 3.4: Sample size by new build		
	Sample	Per cent
New build	18471	10.6
Not new build	155260	89.4
<b>Total</b>	<b>173731</b>	<b>100.0</b>

Source: Land Registry

- 3.14 Figure 3.5 shows that the sample sizes for the 0-1km distance band, when broken down by year, are very small. This will have implications for the hedonic analysis, in terms of whether any variation in prices for similar properties in different distance bands can be distinguished. In other words, the estimation of coefficients will be less robust due to the small sample sizes.

**Figure 3.5: Sample size by distance and year**

	<b>Total</b>	<b>0-1km</b>	<b>1-2km</b>	<b>2-3km</b>	<b>3km+</b>	<b>0-0.5km</b>	<b>0.5-1km</b>
1995	7882	27	312	367	7176	4	23
1996	9173	26	300	438	8409	2	24
1997	10032	28	279	402	9323	4	24
1998	10371	30	348	470	9523	3	27
1999	11193	26	327	462	10378	2	24
2000	11810	28	323	520	10939	0	28
2001	12460	32	353	497	11578	4	28
2002	13958	59	512	663	12724	2	57
2003	15279	45	456	753	14025	3	42
2004	15297	61	437	669	14130	2	59
2005	13382	59	418	527	12378	1	58
2006	15210	65	495	661	13989	6	59
2007	15392	64	436	725	14167	1	63
2008	7303	27	182	382	6712	4	23
2009	4989	25	124	238	4602	0	25
<b>Total</b>	<b>173731</b>	<b>602</b>	<b>5302</b>	<b>7774</b>	<b>160053</b>	<b>38</b>	<b>564</b>

Source: Land Registry

## The analysis

### The hedonic house price function

- 3.15 The hedonic house price function takes the naturally logged house price as the dependent (left hand side) variable, with the 'characteristic' variables (including 'year' dummies to take account of general house price inflation), described above, as the explanatory (right hand side) variables.
- 3.16 Ideally we would include as many characteristic variables as possible that are likely to have an impact on house prices. For example, the number of bedrooms, size of property (e.g. in m<sup>2</sup>), number of reception rooms, number of bathrooms, distance from amenities such as schools etc are all likely to have an impact on the price of the property. Including variables such as these would add to the robustness of the analysis. However, the only house characteristic data available from the Land Registry database is that described above, and adding information about proximity to other amenity/disamenity sites in the locality was outside the scope of this project. Nonetheless, it was felt that enough characteristic variables were included to make it worthwhile undertaking the analysis.



- 3.17 The general form of the hedonic equation estimated is:
- $$\text{LnPricePaid} = f(\text{property type, freehold, newbuild, supergroup, distance, time})$$
- 3.18 The hedonic equation was estimated in several different forms, and over various different time periods, and the most informative of these are described below.
- Basic hedonic regression with no allowance for variation in distance parameter over time***
- 3.19 This function was estimated over the whole time period (1995-2009), and included the simple 'as the crow flies' 'distance from regeneration site' variable (i.e. distance in kms) as opposed to the banded distance variables (0-1km, 1-2km, etc).
- 3.20 The aim was simply to see if distance from the regeneration site appeared to have any impact on house prices in the locality, but from this equation alone it would not be possible to determine whether the regeneration of the site itself had had any impact on house prices in the areas closer to the site.
- 3.21 The results of this regression are shown in Figure 3.6. Apart from the coefficient on the dummy variable for 1996, all the coefficients have high t-statistics, which show that they are significantly different from zero.
- 3.22 The structure of the regression is such that the coefficient on the constant term represents the price (logged) of a non-new build leasehold flat, sold in 1995, in a super group 2 area (none of the cases in the sample are in a super group 1 area). The rest of the coefficients represent the variation in price (in percentage terms, because the dependent variable has been logged) from that, due to the particular characteristic in question. For example, the coefficient of 0.982 on YEAR\_2004 implies that, on average, prices of properties sold in 2004 were 98.2 per cent higher than in 1995. Similarly, the coefficient of 0.848 on DETACHED implies that on average, detached houses sold for prices 84.8 per cent higher than flats.

**Figure 3.6: Results of basic hedonic regression**

Dependent Variable: LnPricePaid					
	Unstandardised Coefficients		Standardised Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	10.584	.006			
YEAR_1996	.007	.006	.002	1.031	.303
YEAR_1997	.054	.006	.018	8.553	.000
YEAR_1998	.109	.006	.037	17.580	.000
YEAR_1999	.153	.006	.053	24.969	.000
YEAR_2000	.199	.006	.071	32.937	.000
YEAR_2001	.293	.006	.108	48.959	.000
YEAR_2002	.481	.006	.186	82.063	.000
YEAR_2003	.746	.006	.301	129.207	.000
YEAR_2004	.982	.006	.397	170.067	.000
YEAR_2005	1.081	.006	.411	182.626	.000
YEAR_2006	1.164	.006	.469	201.371	.000
YEAR_2007	1.239	.006	.502	214.383	.000
YEAR_2008	1.176	.007	.336	173.892	.000
YEAR_2009	1.092	.008	.260	145.040	.000
DETACHED	.848	.005	.354	182.931	.000
SEMI	.449	.004	.283	124.765	.000
TERRACED	.271	.003	.181	80.059	.000
FREEHOLD	.025	.003	.017	8.742	.000
NEWLYBUILT	.367	.003	.161	109.859	.000
SUPERGROUP3	-.158	.005	-.058	-31.970	.000
SUPERGROUP4	-.469	.004	-.258	-118.538	.000
SUPERGROUP5	-.779	.008	-.141	-93.778	.000
SUPERGROUP6	-.770	.003	-.525	-222.301	.000
SUPERGROUP7	-.546	.003	-.334	-157.693	.000

The coefficient of 0.026 on Distance\_Result implies that for each km the property is away from NE31 2JZ, the value is increased by

### Hedonic regression with banded distance variables and estimated over four separate periods

- 3.23 In order to test the hypothesis that the regeneration of the Monkton Coke Works site has had a positive impact on house prices in the area, the simple distance variable was replaced with the dummy variables representing concentric bands around the regeneration zone (0-1km, 1-2km, 2-3km and 3km+), and the regression was estimated over four separate time periods (1995-1997, 1998-2000, 2001-2006, 2007-2009).
- 3.24 The distance bands were used to test the hypothesis that houses closer to the regeneration site tend to have lower house prices, while the regression was estimated over the four periods to see if the impact on prices closest to the regeneration site has changed over time (i.e. improved since the regeneration). The

periods were chosen to represent the periods before, during and after regeneration, and the final period (2007-2009) was estimated separately because a new school was built in the area in 2007 and it was thought that this might confuse the analysis over this period.

- 3.25 Similar to the above, the structure of the regression equation means that the coefficient on the constant term represents the price (logged) of a non-new build leasehold flat, more than 3kms away from the regeneration zone, sold in the first year of the relevant estimation period, in a super group 2 area. The rest of the coefficients represent the variation in price from that 'baseline property' due to the characteristic in question.
- 3.26 The results of this estimation are shown in Figures 3.7-3.10. Figure 3.7 shows that during 1995-1997 the average impact on the price of a house of being within 1km of the regeneration site, rather than being more than 3kms away from the site, is a 4.7 per cent reduction. This finding is in line with the expectation that proximity to the site was associated with a lower average price, other things being held constant. However, the t-statistics on the distance band variables in this estimation are such that these coefficients are not statistically different from zero even at the 90% level (i.e. they are not very robust).
- 3.27 During the period when the site was being regenerated (1998-2000), prices of houses within 1km of the regeneration site, on average, appeared to be about the same as similar properties more than 3kms away from the site – i.e. the differential impact on prices appears to have reduced during this period.
- 3.28 In the period 2001-2006 after the regeneration has taken place the expectation might be that the prices of the properties nearest to the site should improve relative to those further away since the relative historic blighting effect of the environmental disamenity had been removed. In fact the relative price change is in the opposite direction and the relative differential increases by some 10 per cent. The t-statistics for coefficients estimated are such that these estimates are much more robust (perhaps because of the larger sample size due to the longer time period).

**Figure 3.7: Results of hedonic regression – 1995-1997**

Dependent Variable: LnPricePaid					
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	10.678	.008		1387.115	.000
DETACHED	.912	.011	.540	85.274	.000
SEMI	.531	.008	.466	63.175	.000
TERRACED	.333	.008	.300	41.470	.000
FREEHOLD	.007	.006	.006	1.032	.302
NEWLYBUILT	.186	.007	.118	25.563	.000
SUPERGROUP3	-.149	.011	-.084	-13.984	.000
SUPERGROUP4	-.428	.009	-.341	-47.970	.000
SUPERGROUP5	-.735	.020	-.176	-37.643	.000
SUPERGROUP6	-.693	.008	-.602	-85.588	.000
SUPERGROUP7	-.453	.008	-.370	-56.974	.000
Dist_0to1km	-.047	.042	-.005	-1.102	.270
Dist_1to2km	.010	.013	.003	.742	.458
Dist_2to3km	-.027	.011	-.011	-2.389	.017
YEAR_1996	.005	.006	.004	.777	.437
YEAR_1997	.055	.006	.051	9.593	.000

**Figure 3.8: Results of hedonic regression – 1998-2000**

Dependent Variable: LnPricePaid					
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	10.866	.007		1474.726	.000
DETACHED	.922	.010	.497	88.247	.000
SEMI	.530	.008	.412	64.384	.000
TERRACED	.331	.008	.264	42.431	.000
FREEHOLD	.020	.006	.017	3.172	.002
NEWLYBUILT	.364	.008	.198	48.350	.000
SUPERGROUP3	-.197	.011	-.094	-18.350	.000
SUPERGROUP4	-.531	.009	-.369	-60.529	.000
SUPERGROUP5	-.927	.020	-.186	-45.445	.000
SUPERGROUP6	-.869	.008	-.675	-109.259	.000
SUPERGROUP7	-.574	.008	-.428	-74.564	.000
Dist_0to1km	.001	.046	.000	.027	.978
Dist_1to2km	-.023	.014	-.007	-1.702	.089
Dist_2to3km	-.024	.011	-.008	-2.090	.037
YEAR_1999	.044	.006	.036	7.773	.000
YEAR_2000	.093	.006	.076	16.463	.000

**Figure 3.9: Results of hedonic regression – 2001-2006**

Dependent Variable: LnPricePaid					
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	11.079	.006		1920.320	.000
DETACHED	.858	.007	.369	120.920	.000
SEMI	.458	.005	.298	83.357	.000
TERRACED	.274	.005	.195	53.782	.000
FREEHOLD	.024	.004	.018	5.458	.000
NEWLYBUILT	.453	.005	.209	88.060	.000
SUPERGROUP3	-.135	.008	-.050	-17.462	.000
SUPERGROUP4	-.500	.006	-.281	-81.735	.000
SUPERGROUP5	-.777	.012	-.156	-64.195	.000
SUPERGROUP6	-.845	.005	-.619	-164.446	.000
SUPERGROUP7	-.598	.005	-.388	-113.028	.000
Dist_0to1km	-.101	.025	-.009	-4.094	.000
Dist_1to2km	-.038	.009	-.010	-4.283	.000
Dist_2to3km	-.074	.007	-.023	-9.949	.000
YEAR_2002	.188	.005	.105	34.458	.000
YEAR_2003	.451	.005	.261	84.389	.000
YEAR_2004	.689	.005	.399	128.813	.000
YEAR_2005	.786	.006	.431	141.997	.000
YEAR_2006	.870	.005	.502	162.425	.000

**Figure 3.10: Results of hedonic regression – 2007-2009**

Dependent Variable: LnPricePaid					
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	11.940	.007		1699.960	.000
DETACHED	.802	.010	.460	78.456	.000
SEMI	.375	.008	.349	47.831	.000
TERRACED	.252	.007	.252	34.403	.000
FREEHOLD	.021	.006	.022	3.279	.001
NEWLYBUILT	.295	.008	.174	36.711	.000
SUPERGROUP3	-.106	.011	-.055	-9.395	.000
SUPERGROUP4	-.415	.009	-.321	-46.020	.000
SUPERGROUP5	-.558	.019	-.145	-29.816	.000
SUPERGROUP6	-.654	.008	-.682	-85.944	.000
SUPERGROUP7	-.463	.008	-.412	-58.356	.000
Dist_0to1km	-.111	.034	-.015	-3.309	.001
Dist_1to2km	-.035	.014	-.012	-2.566	.010
Dist_2to3km	-.055	.010	-.025	-5.419	.000
YEAR_2008	-.055	.005	-.052	-10.752	.000
YEAR_2009	-.127	.006	-.103	-21.462	.000

- 3.29 Even if we think the differential impact that we should be comparing is between houses less than 1km from the regeneration site, and those 1-2km from the site, the evidence (the difference between the coefficients on the 0-1km dummy variable and the 1-2km dummy variable) does not support the hypothesis that the relative price of the houses closest to the site improved as the regeneration was undertaken and completed.

## Conclusions on pilot hedonic pricing study

- 3.30 The results of the analysis discussed above, and results of other estimations that were undertaken (e.g. using alternative distance bands) but are not described above, did not reveal any robust evidence that the regeneration of the Monkton Coke Works site led to a relative improvement in house prices for those houses closest to the site.
- 3.31 This does not mean that there was no impact, or that the method is not suitable for this kind of analysis. There are a number of reasons why the analysis undertaken in this pilot study may not have picked up any impacts.
- 3.32 Firstly, in the area where the impact is likely to be strongest (i.e. closest to the regeneration site) the sample sizes are small, especially when the sample period is reduced to test the main hypothesis. For example, the number of observations less than 1km from the regeneration site over 1995-1997 is only 79, and over 1998-2000 is only 84. Over the longer period of 2001-2006 the sample size rises to 321, but this still compares with a sample of well over 2,500 observations for houses 1-2km from the regeneration site. Part of the reason for the smaller sample sizes in earlier years could be because not all transactions that took place in those years have been put onto the Land Registry database, rather than being due to a smaller number of transactions in those years. This would need to be investigated. Even so, the sample sizes in the more recent years are still not very large for the 0-1km distance band.
- 3.33 A related factor could be that the mix of housing types in the closest distance band is quite different to the other bands. For example, if all the housing in the inner most band was terraced, and there was little terraced housing elsewhere, the analysis may not be able to pick up so well the regeneration effect over distance. One way around this (sample sizes allowing), would be to restrict the estimation to just one type of property.
- 3.34 It is also possible that the use of concentric distance bands does not reflect well the pattern of the impact of the regeneration on house prices. Although distance from the regeneration site is likely to be a factor in determining the impact on prices, there could be reasons why some areas within 1km of the site do not see any impact from the regeneration – for example if they were already shielded from the site in some way.

- 3.35 Another important factor that could have affected the results is missing variables in the analysis. For example, although broad property types are distinguished in the analysis, a detached house in one area, for example, can be quite different to a detached house in another area. Characteristics such as the size of the property, number of bedrooms, bathrooms and reception rooms can have a big impact on the relative prices of properties, and if these factors are not taken into account the coefficients that are estimated could be misleading. Other characteristics that are not included in the analysis, such as factors characterising each area or factors such as proximity to important amenities (e.g. schools) could also impact on the results.
- 3.36 Over the period studied it is also likely that there were many events, other than the regeneration of the Monkton Coke Works site, that also had an impact on house prices, and which could have affected prices more in one distance band than another and so distorted the analysis.
- 3.37 The time period over which the analysis has been conducted (1995-2009, the period for which data is available from the Land Registry) could also mean that the main impact of the site on house prices, which probably took place when the Coke Works was decommissioned in 1990, has been missed. The derelict site would have had a negative impact on prices, but not as far reaching as when the Coke Works was operating.
- 3.38 It is also possible that the impact of the regeneration could have been felt more in terms of the number of transactions rather than prices (i.e. more people were willing to move to the area, rather than necessarily paying more for housing). However, presumably the increase in demand would be expected to have had at least some impact on prices.

## Refining the approach – recommendations

- 3.39 The work described above has been a useful first step in determining whether, in principle, the hedonic method could be used to measure the impact of regeneration. Although the study has not revealed such an impact for this particular regeneration site, it has shown that a process exists by which the method can be undertaken, and that the method itself does have the potential to reveal such impacts. The issues described in the section above suggest that the following further refinements could be made to the analysis which may yield more informative results:
- Sample sizes – One of the key issues that appears to have limited the findings of this study is the number of observations for those properties that are most likely to have seen an impact on house prices from the regeneration – i.e. those closest to the site. This suggests that sites chosen for analysis

need to have a large amount of residential property nearby, both before and after regeneration.

- Refining the areas of impact – The use of distance bands is probably a good first approximation of the likely range of impact of regeneration, but more refined definitions of the areas to be compared (i.e. impact and no impact) could improve the results. This would require local knowledge of each site.
- Time period – It is important that the regeneration of the site took place over such a period as to allow large enough samples of data to be created for the before, during and after periods. The Land Registry data are only available from 1995 onwards, although other sources (e.g. Nationwide or Halifax house price indices) may be able to provide longer time series (although the Land Registry data does have the advantage of including all property transactions, whereas data from Nationwide, say, would only provide information for houses on which Nationwide provided a mortgage).
- Housing characteristics – The Land Registry data do not include much information on housing characteristics. Increasing the number of housing characteristic variables would improve the analysis, because leaving them out of the hedonic function means that variations in price due to these characteristics could be incorrectly attributed to one of the other variables in the function. If it is possible to obtain house price data from Nationwide or Halifax, say, then their data are likely to include such information.
- Taking into account local amenities – The scope of this pilot study did not allow any analysis of whether there were any particular local amenities, or other developments that took place during the period of study, that might also have an impact on prices (and so distort the results). Including such analysis could improve the results.

3.40 Our suggested next step would therefore be to repeat the analysis, on a larger number of sites, and try to address the issues described above to refine the analysis.



# Annex A: Draft pilot questionnaire (pre-CAPI)

---

**SURVEY QUESTIONNAIRE: CONFIDENTIAL**

---

Name/Initial/Title: Mr/Mrs/Ms/Miss

Address:

Full  
Postcode

--	--	--	--	--	--	--	--

Sample Point Number:

--	--	--	--	--

Telephone in home:

- |                              |   |
|------------------------------|---|
| Yes                          | 1 |
| No                           | 2 |
| Refused/Ex-directory         | 3 |
| Full tel. no (inc STD code): | 4 |

Sample point name:

WRITE IN:

Mobile no.

WRITE IN:

Interviewer Number:

--	--	--	--	--	--	--	--	--	--

Day of Interview

1 2 3 4 5 6 7  
(Mon (Thur (Sun)

Date of Interview:

--	--	--	--	--	--	--	--

Length of Interview:

--	--	--	--

(minutes)

INTERVIEWER RECORD START TIME

Hours		Mins	

INTERVIEWER RECORD END TIME

Hours		Mins	

<b>RECRUITMENT</b>
--------------------

You have agreed to take part in an interview to help us test out a survey that we will be carrying out later this year. The entire interview will take about 30 minutes.

Any answer you give will be treated in confidence in accordance with the Code of Conduct of the Market Research Society. I would like to assure you that all the information we collect will be used for research purposes only. It will not be possible to identify any particular individual or address in the results.

<b>SCREENING &amp; QUOTA QUESTIONS</b>
--

QA. Are you the person most responsible for paying council tax and utilities bills (such as water, electricity, and gas) in your household, or are you jointly responsible with someone else? SINGLE CODE

Person most responsible	1	ASK QB
Jointly responsible	2	ASK QB
Not responsible	3	ASK TO TALK TO PERSON MOST RESPONSIBLE
Don't know	4	CLOSE

QB. PLEASE RECORD RESPONDENT'S GENDER:

Female	0
Male	1

QC. Are you the chief income earner in the household?

No	0
Yes	1
No income earners	2

QE. **Regarding the occupation of the chief income earner:**

Position/rank/grade .....

Full job title .....

Industry/type of company.....

Quals/degree/apprenticeship.....

Number of staff responsible for.....

REMEMBER TO PROBE FULLY FOR PENSION AND CODE FROM ABOVE

A	1
B	2
C1	3
C2	4
D	5
E	6

QF. SHOWSCREEN **Please can you indicate your age from this card?**

SHOWSCREEN

	AGE IN YEARS
1	18-24
2	25-29
3	30-34
4	35-39
5	40-44
6	45-49
7	50-54
8	55-59
9	60-64
10	65-69
11	70+

**SECTION A - INTRODUCTORY QUESTIONS**

Q1. This questionnaire is about the local environment in Seaham and the surrounding area. By local environment I mean features such as parks and open space and other public areas.

To start I would like you to think about the local area as shown on this map.

INDICATE SEAHAM AND SURROUNDING AREA ON SHOWCARD 1.

SHOWSCREEN. I am going to read out a list of different features of the environment in the local area and I would like you to tell me whether:

- You think the feature needs improving in the local area; or
- You are happy as it is – it does not need improving in the local area.

INTERVIEWER CHECK THAT RESPONDENT UNDERSTANDS INSTRUCTIONS

CAPI Rotate start		A. Doesn't need improvement	B. Needs improvement	C. Don't know
[a]	The cleanliness of streets and the amount of litter and graffiti	1	2	3
[b]	The amount and quality of open space such as parks and greens	1	2	3
[c]	The amount and quality of facilities for children and teenagers, such as play areas and skateboard parks	1	2	3
[d]	The quality of public areas such as the town centre and pedestrian streets	1	2	3
[e]	The amount of derelict land and buildings	1	2	3
[f]	The amount and quality of outdoor community facilities that are provided such as sports pitches and allotments	1	2	3
[g]	The amount and quality of nature areas such as local nature reserves	1	2	3
[h]	The amount of pedestrian paths and cycle paths away from roads	1	2	3

CAPI ROTATE START AND RECORD FIRST FEATURE FOR DATASET.

**Q2. Of the features of the environment in the local area that you said need improving, which is the highest priority for improvement?**

CAPI – GREY OUT OR ONLY DISPLAY FEATURES FROM Q1 THAT RESPONDENT STATED “NEEDS IMPROVEMENT”

	<b>Circle highest priority</b>
The cleanliness of streets and the amount of litter and graffiti	1
The amount and quality of open space such as parks and greens	2
The amount and quality of facilities for children and teenagers, such as play areas and skateboard parks	3
The quality of public areas such as the town centre and pedestrian streets	4
The amount of derelict land and buildings	5
The amount and quality of outdoor community facilities that are provided such as sports pitches and allotments	6
The amount and quality of nature areas such as local nature reserves	7
The amount of pedestrian paths and cycle paths away from roads	8

## SECTION B - CHOICE QUESTIONS

**Q3. In the next set of questions, I would like you to continue to think about the local environment.**

**I am going to present to you a series of choices concerning improvements to features of the local environment that I have just asked you about and I would like in each case for you to choose the option that you prefer.**

**These improvements may be made in Seaham only, or spread across the wider local area or the entire East Durham area.**

**In total I am going to ask you to make choices about 3 different sets of local environment features. In each set you will be asked to make 4 choices in total, so overall there are 12 choice questions for you to answer. Don't worry if this sounds complicated at the moment, I will talk you through the details of the choices.**

**This card is an example of the choices you will be presented with.**

**CAPIT TO SHOW 1<sup>ST</sup> CHOICE CARD FROM FIRST BLOCK TO BE SEEN BY THE RESPONDENT.**

SHOWSCREEN: EXAMPLE OF CHOICE CARD FORMAT

BLOCK 1	No improvement Current Situation	Improvement Option 1	Improvement Option 2
<b>Improved areas of open space</b>  <i>Parks and greens</i>  (1 hectare is the size of 2 football pitches)	No change  (No improvements to open space)	Improvements to XX hectares of open space	Improvements to YY hectares of open space
<b>Derelict properties restored</b>  <i>Abandoned buildings and land restored</i>	No change  (No properties restored)	XX properties restored	YY properties restored
<b>Location of improvements</b>	No improvements anywhere	Improvements in XX	Improvements in YY
<b>Cost £ per year</b>	£ 0 per year	£XX per year	£YY per year
Your choice			

BLOCK 2	No improvement Current Situation	Improvement Option 1	Improvement Option 2
<b>Amount of outdoor community facilities</b>  <i>Play parks, sports pitches and community gardens and allotments</i>	No change  (No additional facilities)	XX extra facilities	YY extra facilities
<b>Street cleanliness</b>  <i>Litter, fly-tipping, gum, fallen leaves, graffiti and fly-posting</i>	Grade C: some litter etc.	Grade X: Description	Grade Y: Description
<b>Location of improvements</b>	No improvements anywhere	Improvements in XX	Improvements in YY
<b>Cost £ per year</b>	£ 0 per year	£XX per year	£YY per year
Your choice			



BLOCK 3	No improvement Current Situation	Improvement Option 1	Improvement Option 2
<b>Improved public areas</b> <i>Town square, pedestrian streets</i>	No change  (No improvements to public areas)	Improved: new paving, benches, etc. maintained in good condition	No change  (No improvements to public areas)
<b>Green routes</b> <i>Paths for walking or cycling</i>  (1 mile is just over 1½ km)	No change  (2.5 km or 1.5 miles of green routes in Seaham)	XX km  (XX miles) extra of green routes	YY km  (YY miles) extra of green routes
<b>Location of improvements</b>	No improvements anywhere	Improvements in XX	Improvements in YY
<b>Cost £ per year</b>	£ 0 per year	£XX per year	£YY per year
Your choice			

Q3. EXPLAIN FORMAT OF THE CHOICE CARD TO THE RESPONDENT -  
SHOWSCREEN TO REMAIN VISIBLE TO RESPONDENT

**To help you make your choices, I am going to explain the information on the card to you.**

**The first column lists the features of the local environment that you will be considering in your choices (POINT TO FIRST COLUMN).**

**The first feature is the 'ATTRIBUTE 1' (POINT TO THIS).**

**The second is 'ATTRIBUTE 2' (POINT TO THIS)**

**The third tells you the 'Location of the improvements', which is where they will be made (POINT TO THIS).**

**And the last, the fourth, is the 'Cost' of the improvements, which will be paid for by council tax.**

**SHOWCARD (BLOCK 1, BLOCK 2 OR BLOCK 3) I will now provide a little more detail on each of these features for you. Please look at this card which describes what is meant by each of them.**

**HAND SHOWCARD TO THE RESPONDENT. READ ATTRIBUTE DESCRIPTIONS WITH THE RESPONDENT**

**So here is the description for the 'ATTRIBUTE 1'. This means...**

**READ DESCRIPTION SHOWCARD TO THE RESPONDENT.**

**REPEAT FOR OTHER DESCRIPTIONS ON THE SHOWCARD.**

SHOWCARD – BLOCK 1

**Attribute 1**

**Attribute 2**

**Location of improvements**

Improvements to the local environment may be made in:

- Seaham only: all improvements will be in Seaham (POINT TO MAP ON SHOWCARD)
- Seaham and the wider local area: improvements will be spread across the local area including places such as Murton and Easington (POINT TO MAP ON SHOWCARD)
- East Durham: improvements will be in spread across the entire East Durham area, including places such as Peterlee (POINT TO MAP ON SHOWCARD)

**Cost (£ per year)**

Improvements to the local environment will be paid for by council tax. Payments will ensure that the improvements are made, maintained and continued to be provided each year.

Payments are additional – i.e. on top of – current council tax payments.

SHOWCARD – BLOCK 2

<b>Attribute 1</b>
<b>Attribute 2</b>
<b>Location of improvements</b>  Improvements to the local environment may be made in: <ul style="list-style-type: none"><li>• Seaham only: all improvements will be in Seaham (POINT TO MAP ON SHOWCARD)</li><li>• Seaham and the wider local area: improvements will be spread across the local area including places such as Murton and Easington (POINT TO MAP ON SHOWCARD)</li><li>• East Durham: improvements will be in spread across the entire East Durham area, including places such as Peterlee (POINT TO MAP ON SHOWCARD)</li></ul>
<b>Cost (£ per year)</b>  Improvements to the local environment will be paid for by council tax. Payments will ensure that the improvements are made, maintained and continued to be provided each year.  Payments are additional – i.e. on top of – current council tax payments.

SHOWCARD – BLOCK 3

<b>Attribute 1</b>
<b>Attribute 2</b>
<b>Location of improvements</b>  Improvements to the local environment may be made in: <ul style="list-style-type: none"><li>• Seaham only: all improvements will be in Seaham (POINT TO MAP ON SHOWCARD)</li><li>• Seaham and the wider local area: improvements will be spread across the local area including places such as Murton and Easington (POINT TO MAP ON SHOWCARD)</li><li>• East Durham: improvements will be in spread across the entire East Durham area, including places such as Peterlee (POINT TO MAP ON SHOWCARD)</li></ul>
<b>Cost (£ per year)</b>  Improvements to the local environment will be paid for by council tax. Payments will ensure that the improvements are made, maintained and continued to be provided each year.  Payments are additional – i.e. on top of – current council tax payments.

**Now that you know about the features of the local environment that we are interested in first, please look at the choice options I would like you to consider.**

RETURN TO SHOWSCREEN (EXAMPLE OF CHOICE CARD FORMAT)

**I am going to ask you to choose one out of three options presented on the card. The three options to choose between are the:**

- **Current Situation** (POINT TO SECOND COLUMN), or
- **Improvement Option 1** (POINT TO THIRD COLUMN) or
- **Improvement Option 2** (POINT TO FORTH COLUMN).

**The Current Situation option means that there will be no improvement in any of the environmental features in Seaham and the overall East Durham area, and no increase in council tax.**

**In Improvement Option 1 you are being offered improvements in the two local environment features:**

- READ OUT IMPROVEMENT IN ATTRIBUTE 1 (POINT).
- READ OUT IMPROVEMENT IN ATTRIBUTE 2 (POINT).
- READ OUT WHERE IMPROVEMENTS WILL BE MADE; E.G. IN SEAHAM, SEAHAM AND THE WIDER LOCAL AREA OR ACROSS EAST DURHAM (POINT).

**In Improvement Option 2 you are being offered:**

- READ OUT IMPROVEMENT IN ATTRIBUTE 1 (POINT).
- READ OUT IMPROVEMENT IN ATTRIBUTE 2 (POINT).
- READ OUT WHERE IMPROVEMENTS WILL BE MADE; E.G. IN SEAHAM, SEAHAM AND THE WIDER LOCAL AREA OR ACROSS EAST DURHAM (POINT).

**Both Option 1 and 2 have a cost to you and your household (POINT TO COST AMOUNTS). This is the price to be paid for 'buying' the environmental improvements and ensuring that they are continued to be provided each year.**

**Remember that this payment would be additional to your current council tax payments.**

**So for Option 1, the cost of £XX per year (POINT) is on top of the amount you currently pay in council tax. For Option 2, the additional amount is £YY per year (POINT). For a household that pays £1,000 per year for council tax, £XX per year is an increase of X%.**

CONFIRM THAT RESPONDENT UNDERSTANDS THE FORMAT OF THE CHOICE CARDS AND OPTIONS.

**Before you start choosing please consider [SHOWCARD 3]:**

SHOWCARD 3

- **Whether or not these improvements are important to you;**
- **Any money you would pay towards the improvements here will not be available for you to spend on other things;**
- **Other household bills may go up or down affecting the amount of money you have to spend in general; and**
- **That there may be other aspects of local services that also require improvements which may increase bills.**

**Let's start off then by considering the choice we looked at and find out which of the three options you would prefer.**

RE-PRESENT CHOICE CARD FOR FIRST BLOCK SEEN

**Of the three options on this card, the Current Situation, Option 1 or Option 2 which do you prefer?**

RECORD ANSWER

PRESENT 3 FURTHER CHOICE CARDS FOR FIRST BLOCK SEEN

RECORD ANSWERS.

Choice		Current Situation	Option 1	Option 2
3A	1 <sup>st</sup> Choice card	1	2	3
3B	2 <sup>nd</sup> Choice card	1	2	3
3C	3 <sup>rd</sup> Choice card	1	2	3
3D	4 <sup>th</sup> Choice card	1	2	3

- Q4. SHOWSCREEN In making your choices, what degree of consideration did you give to the different aspects of the environmental improvements?

SHOWSCREEN

	Always ignored	Mostly ignored	Mostly considered	Always considered
Attribute 1	1	2	3	4
Attribute 2	1	2	3	4
Location of improvements	1	2	3	4
Cost	1	2	3	4

- Q5. That was the first set of improvements. I would now like you to consider a second set of improvements to some other features of the local environment

These are described on this card...

PRESENT (BLOCK 1, BLOCK 2 OR BLOCK 3) AND READ OUT THE DETAILED DESCRIPTIONS

THERE IS NO NEED TO READ OUT THE LOCATION AND COST ATTRIBUTE DESCRIPTIONS AGAIN – JUST TELL THE RESPONDENT THAT THESE ARE THE SAME AS BEFORE.

Again I am going to present you with choices between the Current Situation, or Improvement Option 1 or Improvement Option 2, and I would like you to choose the one that you prefer.

PRESENT CHOICE CARD FOR SECOND BLOCK SEEN

PRESENT 3 FURTHER CHOICE CARDS FOR SECOND BLOCK SEEN

Choice		Current Situation	Option 1	Option 2
5A	1 <sup>st</sup> Choice card	1	2	3
5B	2 <sup>nd</sup> Choice card	1	2	3
5C	3 <sup>rd</sup> Choice card	1	2	3
5D	4 <sup>th</sup> Choice card	1	2	3



Q6. SHOWSCREEN In making your choices, what degree of consideration did you give to the different aspects of the environmental improvements?

SHOWSCREEN

	Always ignored	Mostly ignored	Mostly considered	Always considered
Attribute 3	1	2	3	4
Attribute 4	1	2	3	4
Location of improvements	1	2	3	4
Cost	1	2	3	4

Q7. This is the third set of improvements I would like you to consider.

These are described on this card...

PRESENT (BLOCK 1, BLOCK 2 OR BLOCK 3) AND READ OUT THE DETAILED DESCRIPTIONS

THERE IS NO NEED TO READ OUT THE LOCATION AND COST ATTRIBUTE DESCRIPTIONS AGAIN – JUST TELL THE RESPONDENT THAT THESE ARE THE SAME AS BEFORE.

Again I am going to present you with choices between the Current Situation, or Improvement Option 1 or Improvement Option 2, and I would like you to choose the one that you prefer.

PRESENT CHOICE CARD FOR SECOND BLOCK SEEN

PRESENT 3 FURTHER CHOICE CARDS FOR SECOND BLOCK SEEN

Choice		Current Situation	Option 1	Option 2
7A	1 <sup>st</sup> Choice card	1	2	3
7B	2 <sup>nd</sup> Choice card	1	2	3
7C	3 <sup>rd</sup> Choice card	1	2	3
7D	4 <sup>th</sup> Choice card	1	2	3

- Q8. SHOWSCREEN In making your choices, what degree of consideration did you give to the different aspects of the environmental improvements?

SHOWSCREEN

	Always ignored	Mostly ignored	Mostly considered	Always considered
Attribute 5	1	2	3	4
Attribute 6	1	2	3	4
Location of improvements	1	2	3	4
Cost	1	2	3	4

- Q9. SHOWSCREEN. Overall, across the three sets of choices you were asked to make, how easy or difficult did you find it to make your decisions about which options to choose?

Very easy	1
Fairly easy	2
Neither easy nor difficult	3
Fairly difficult	4
Very difficult	5
Don't know	6

NOTE: 'SETS OF CHOICES' REFERS TO QUESTIONS 3, 5 AND 7.

Q10. SHOWSCREEN. Please look at the statements on this card. These describe possible ways in which you may have made your choices for the sets of environmental improvements you have just seen. I would like you to identify the two most relevant statements which apply to you.

Which are those statements?

SHOWSCREEN

CAPI Rotate start		Most relevant	Second most relevant
[a]	I chose the options with least cost to my household	1	1
[b]	I chose the options which offered most improvement relative to cost	2	2
[c]	I was interested in improvements irrespective of cost	3	3
[d]	I chose options that affected my household directly	4	4
[e]	I chose options that benefited Seaham only		
[f]	I chose options that I thought would benefit the whole community	5	5
[g]	I chose options that I feel other people should experience, regardless of what they think is best	6	6
[h]	I did not understand the choice cards	7	7
[i]	Other/None of these – SPECIFY – ..... ...	8	8

CAPI ROTATE START AND RECORD FIRST STATEMENT FOR DATASET.

Q11. SHOWSCREEN. **Going back to the environmental improvements you were making choices about, please can you tell me, which you think would have the greatest effect on:**

REFER BACK TO SHOWCARDS 3B AND 5A IF NEEDED TO REMIND RESPONDENT

**10A. Improving the visual appearance of the local area?**

**10B. Encouraging people to visit the local area?**

**10C. Encouraging people to move to the local area to live?**

**10D. Attracting new businesses to Seaham?**

SHOWSCREEN

	10A Appearance	10B Visits	10C Move	10D Businesses
Attribute 1	1	1	1	1
Attribute 2	2	2	2	2
Attribute 3	3	3	3	3
Attribute 4	4	4	4	4
Attribute 5	5	5	5	5
Attribute 6	6	6	6	6

**SECTION C - CV QUESTION**

Q12. SHOWSCREEN I have one final choice question for you.

I now want you to consider a choice involving changes to all of the environmental features you have considered previously:

- In this column (POINT TO FIRST COLUMN) you can see the range of features from the previous choice questions.
- Here (POINT TO SECOND COLUMN) you can see the Current Situation regarding these services.
- Finally here (POINT TO LAST COLUMN) you can see one alternative Improved Option in which all of these services are improved from the current situation.

SHOWSCREEN: CV FORMAT

	No improvement Current Situation	Improved Option
Attribute 1		
Attribute 2		
Attribute 3		
Attribute 4		
Attribute 5		
Attribute 6		
Location of improvements		

ALLOW RESPONDENT TIME TO READ THE CHOICE CARD

SHOWCARD 12

Would you, in principle, be willing to pay some amount of money per year, in terms of an increase in your council tax bill to ensure that all of the environmental improvements in the Improved Option were made?

Yes	1	GO TO QUESTION 13
No	2	GO TO QUESTION 14
Don't know	3	GO TO QUESTION 14

Q13. SHOWSCREEN: CV QUESTION TO REMAIN VISIBLE

SHOWCARD 13A. Starting at the top of the list ask yourself: 'Would my household and I be prepared to pay £5 more each year, on top of my current council tax payment, to ensure that environmental improvements are made? Or would I prefer for improvements not be made not pay £5 more a year? Would I pay £10? £15? and so on.

As before, please consider [SHOWCARD 13B]:

SHOWCARD 13B

- **Whether or not these improvements are important to you;**
- **Any money you would pay towards the improvements here will not be available for you to spend on other things;**
- **Other household bills may go up or down affecting the amount of money you have to spend in general; and**
- **That there may be other aspects of local services that also require improvements which may increase bills.**

SHOWCARD 13A. **Proceeding down the list of amounts on the card, please indicate the amounts you are almost certain you would pay for the environmental improvements. When you reach an amount that you are not sure please indicate that. When you reach an amount that you are almost certain you would not pay, place indicate that and STOP.**

CAPI TO RECORD THE HIGHEST AMOUNT THE RESPONDENT IS CERTAIN OF BEING WILLING TO PAY

AND THE FIRST AMOUNT THE RESPONDENT IS CERTAIN THEY WOULD NOT BE WILLING TO PAY

GO TO QUESTION 16

SHOWCARD 13A

<b>Cost (£ per year)</b> <i>Additional council tax payment per year</i>	(a) HIGHEST AMOUNT RESPONDENT IS WILLING TO PAY	(b) FIRST AMOUNT RESPONDENT IS CERTAIN OF NOT BEING WILLING TO PAY
£0	1	1
£5	2	2
£10	3	3
£15	4	4
£20	5	5
£25	6	6
£30	7	7
£40	8	8
£50	9	9
£60	10	10
£75	11	11
£100	12	12
£150	13	13
Higher amount	RECORD	RECORD

Q15.	<p><b>What is the <u>main</u> reason why [you are <u>not</u> prepared to pay / unsure if you would pay] for the environmental improvements?</b></p> <p>RECORD MAIN REASON (AND CODE BELOW):</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
------	---

SINGLE CODE ONLY BUT DO NOT SHOW LIST TO RESPONDENT

	Main reason
I object to the proposed improvements	1
I object to paying higher council tax	2
The local council should pay for this	3
The local council is not trustworthy	4
The government should pay for this	5
I do not believe these improvements would actually happen	6
I'd like to have more information before making a decision	7
I cannot afford to pay	8
The environmental improvements are not important to me	9
I think the quality of the local environment is already good enough	10

GO TO QUESTION 17

Q16.	<p><b>What was your <u>main</u> reason for <u>choosing to pay</u> for the environmental improvements?</b></p> <p>RECORD MAIN REASON (AND CODE BELOW):</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
------	---

SINGLE CODE ONLY BUT DO NOT SHOW LIST TO RESPONDENT

To improve the local environment	1
To improve the quality of parks and green/open spaces	2
To reduce the number of derelict properties	3
To provide new outdoor community facilities	4
To improve public areas / the town centre	5
To increase the amount of green routes / paths	6
It is a good thing for Seaham	7
To benefit the local community	8
To benefit my children / future generations	9
It is a good cause	10
Other	11

GO TO QUESTION 17



**SECTION D - CHOICE AND VALUATION FOLLOW-UPS**

Q17. SHOWSCREEN. I am going to read out a list of statements. Please tell me, from this card, the extent you agree or disagree with each. Firstly . . .

READ OUT

SHOWSCREEN

CAPI Rotate start	SHOWSCREEN	Strongly agree	Tend to agree	Neither	Tend to disagree	Strongly disagree	Don't know
[a]	Improvements to the local environment should be paid for by local residents	1	2	3	4	5	6
[b]	Improvements to the local environment should be paid for by the council or government	1	2	3	4	5	6
[c]	Improvements to the local environment should be paid for by local businesses	1	2	3	4	5	6

CAPI ROTATE START AND RECORD FIRST STATEMENT FOR DATASET.

Q18. SHOWSCREEN. If your council tax bill increased, how likely do you think it is that the environmental improvements described would actually happen?

SHOWSCREEN

Very likely	1
Somewhat likely	2
Neutral	3
Somewhat unlikely	4
Very unlikely	5
Don't know	6

**SECTION E - SOCIO-ECONOMIC QUESTIONS**

In this final section of the questionnaire, I have some questions about you and your household. These are only be used to ensure we interview a fair range of people and please remember that all of these answers are completely confidential.

Q19. **Approximately how long have you lived in Seaham and/or surrounding area?**

Less than 1 year	1
1 – 2 years	2
2 – 5 years	3
5 – 10 years	4
10 – 20 years	5
20- 30 years	6
More than 30 years	7

Q20. **SHOWSCREEN. Which of these statements best describes your current employment status?** (circle all that apply)

SHOWSCREEN

Self-employed	1
Employed full-time (30+ hrs)	2
Employed part-time (up to 30 hrs)	3
Student	4
Unemployed – seeking work	5
Unemployed – other	6
Looking after the home/children full-time	7
Retired	8
Unable to work due to sickness or disability	9
Other (please specify)	10
.....	

**Q21. At what level did you complete your education? If still studying, which level best describes the highest level of education you have obtained until now?**

O levels / CSEs / GCSEs (any grades)	1
A levels / AS level / higher school certificate	2
NVQ (Level 1 and 2). Foundation / Intermediate / Advanced GNVQ / HNC / HND	3
Other qualifications (e.g. City and Guilds, RSA/OCR, BTEC/Edexcel)	4
First degree (e.g. BA, BSC)	5
Higher degree (e.g. MA, Phd, PGCE, post graduate certificates and diplomas)	6
Professional qualifications (teacher, doctor, dentist, architect, engineer, lawyer, etc.)	7
No qualifications	8

**Q22. And thinking about all the people in your household, including yourself, could you tell me how many people fall into each age group?**

**How many people are there...**

Age	Number of people (circle number)					
	0	1	2	3	4	5+
Up to 5 years	0	1	2	3	4	5+
6 to 15 years	0	1	2	3	4	5+
16 to 60 years	0	1	2	3	4	5+
61+	0	1	2	3	4	5+

Q23. SHOWSCREEN. Looking at this card could you tell me which letter best approximates your total household income before tax?

SINGLE CODE

DO REASSURE THE RESPONDENT THAT ALL INFORMATION IS COMPLETELY CONFIDENTIAL AND THIS IS THE BEST INDICATOR OF WHETHER WE HAVE INTERVIEWED A REPRESENTATIVE RANGE OF PEOPLE AND PRESS FOR AN ANSWER AS MUCH AS POSSIBLE

SHOWSCREEN

	PER WEEK	PER YEAR	(circle one)
A	Up to £125	Up to £6,499	1
B	£126-£182	£6,500 - £9,499	2
C	£183-£298	£9,500-£15,499	3
D	£299-£480	£15,500 - £24,499	4
E	£481-£769	£25,000 - £39,999	5
F	£770-£1,153	£40,000 - £59,999	6
G	£1,154-£1,730	£60,000 - £89,999	7
H	£1,731 plus	£90,000 and over	8
	Don't know		99
	Refused		9999

Q24. And please can you tell me approximately how much your household currently pays in council tax?

Do not pay council tax		1
Less than £80 per month	Less than £1000 per year	2
£80 – 105 per month	£1,000 – 1,250 per year	3
£105 – 125 per month	£1,250 – 1,500 per year	4
£125 – 145 per month	£1,500 – 1,750 per year	5
£145 – 165 per month	£1,750 – 2,000 per year	6
£165 – 210 per month	£2,000 – 2,500 per year	7
More than £210 per month	More than £2500 per year	8
Don't know	Don't know	9

Q25. SHOWSCREEN. **Are you a member of any of these organisations?**

SHOWSCREEN

		No	Yes
A	Local community or volunteer group– SPECIFY-	0	1
B	RSPB (Royal Society for Protection of Birds)		
C	Surfers Against Sewage/Marine Protection Society	0	1
D	Canoeing/Boating/ Windsurfing Club or similar	0	1
E	Angling Club	0	1
F	Ramblers Association	0	1
G	Friends of the Earth/Greenpeace	0	1
H	National Trust	0	1
I	Local Wildlife Trust or Environmental Organisation	0	1
J	Other national or international environmental organisation – SPECIFY-	0	1
K	Other – SPECIFY –	0	1
L	Not a member of any similar organisations	0	1

Q26. SHOWSCREEN. **Finally, looking at this list, what did you think of this questionnaire?**

SHOWSCREEN

Interesting	1
Too long	2
Difficult to understand	3
Educational	4
Unrealistic/not credible	5

Other (specify):

.....

**CLOSING**

That was the last of my questions on this part of the interview.

Our survey and research is continuing into the New Year. There is a possibility that my supervisor might have some follow up questions about which he/she would like to call you. Could you please give me a telephone number where you can be contacted and your first name. This will be kept strictly confidential and will not be given to anyone else.

Telephone number

( 

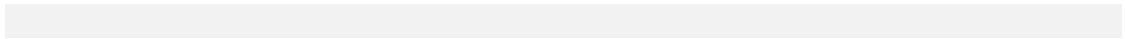
--	--	--	--	--

 ) 

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

First name

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--



**INTERVIEWER'S STATEMENT AND EVALUATION**

**Interview Declaration**

I confirm that I have carried out this Interview face-to-face with the above named person and that I asked all the relevant questions fully and recorded the answers in conformance with the survey specification and within the MRS Code of Conduct.

Signature: .....

Interviewer Name (CAPS): .....

NOT TO BE READ OUT TO RESPONDENT – TO BE COMPLETED AFTER INTERVIEW

QY. How well did the respondent understand what he or she was asked to do in Section B (Choice questions)? [CIRCLE ONE ONLY]

Understood completely	1
Understood a great deal	2
Understood somewhat	3
Understood a little	4
Did not understand very much	5
Did not understand at all	6

**Other**

**(specify)** \_\_\_\_\_

QZ. How serious was the consideration given by the respondent to the choice questions in Section B? [CIRCLE ONE ONLY]

Extremely serious	1
Very serious	2
Somewhat serious	3
Slightly serious	4
Not at all serious	5

Please add any other comments you feel would help us regarding this interview

.....  
 .....

# Annex B: Pilot questionnaire showcards

## SHOWCARD - BLOCK 1

<b>Improvements to open space</b>	<b>Derelict properties restored</b>
<p>Improvements to areas of open space such as parks and greens:</p> <ul style="list-style-type: none"><li>• These are areas of grass and open space that people can use for activities such as walking, dog-walking, picnics, sunbathing and informal games.</li><li>• Improvements include repair of paths and fences, etc., and more frequent removal of litter and upkeep of grass and planted areas (e.g. regular cutting).</li><li>• Open spaces in Seaham include parks in Dawdon, Deneside, Parkside and Seaham Town Park. In total these cover about 15 hectares. There are also other areas such as fields and greens around housing areas.</li></ul>	<p>Improvements to the local environment that restores derelict buildings and land to improve the visual appearance of built up areas:</p> <ul style="list-style-type: none"><li>• Derelict buildings include houses, business properties and other areas of land that are empty or abandoned and are not being looked after.</li><li>• Properties will be restored to their previous use, e.g. a house or shop.</li></ul>



## SHOWCARD BLOCKS 1, 2 & 3

### **Location of improvements**

Improvements to the local environment may be made in:

- **Seaham only:** all improvements will be in Seaham.
- **Seaham and the wider local area:** improvements will be spread across the local area including places such as Murton and Easington.
- **East Durham area:** improvements will be spread across the entire East Durham area, including places such as Peterlee and Hartlepool.

### **Cost (£ per year)**

Improvements to the local environment will be paid for by council tax. Payments will ensure that the improvements are maintained and continued to be provided each year.

Payments are additional – i.e. on top of – current council tax payments.

## SHOWCARD - BLOCK 2

<b>Amount of outdoor community facilities</b>	<b>Street cleanliness</b>
<p>Improvements to the local environment that increase the amount of outdoor facilities available.</p> <p>These are areas that people use for certain activities, such as:</p> <ul style="list-style-type: none"> <li>• Play areas for children and other facilities for young people such as skateboard parks. In Seaham there are 3 play areas.</li> <li>• Sports pitches for activities such as football, rugby, etc. In Seaham there are 4 sites with sport pitches.</li> <li>• Allotments and community gardens for growing vegetables and plants. In Seaham there are 9 allotment sites</li> </ul>	<p>The amount of litter, fly-tipping, chewing gum and fallen leaves on streets, and the amount of graffiti and fly-posting on buildings.</p> <p>Street cleanliness is graded A to D:</p> <ul style="list-style-type: none"> <li>• Grade A: very little litter etc.</li> <li>• Grade B: mostly clear of litter etc.</li> <li>• Grade C: some litter etc.</li> <li>• Grade D: lots of litter etc.</li> </ul>

## SHOWCARD BLOCKS 1, 2 & 3

### Location of improvements

Improvements to the local environment may be made in:

- **Seaham only:** all improvements will be in Seaham.
- **Seaham and the wider local area:** improvements will be spread across the local area including places such as Murton and Easington.
- **East Durham area:** improvements will be spread across the entire East Durham area, including places such as Peterlee and Hartlepool.

### Cost (£ per year)

Improvements to the local environment will be paid for by council tax. Payments will ensure that the improvements are maintained and continued to be provided each year.

Payments are additional – i.e. on top of – current council tax payments.

## SHOWCARD - BLOCK 3

<b>Improvements to open space</b>	<b>Green routes</b>
<p>Improvements to public areas such as town squares, pedestrian streets and promenades:</p> <ul style="list-style-type: none"><li>• These are open spaces in built up areas that are for the use of the general public.</li><li>• Improvements include new paved areas, benches and features such as fountains.</li><li>• Public areas in Seaham include the town centre and Church Street and the seafront promenade.</li></ul>	<p>Improvements to the local environment that increase the amount of walking or cycling paths that avoid busy roads:</p> <ul style="list-style-type: none"><li>• Green routes provide access to other areas along paths that are bordered by trees and other plants (and are not alongside roads).</li><li>• There are approximately 2.5 km (1.5 miles) of green routes in Seaham.</li></ul>

## SHOWCARD BLOCKS 1, 2 & 3

### **Location of improvements**

Improvements to the local environment may be made in:

- **Seaham only:** all improvements will be in Seaham.
- **Seaham and the wider local area:** improvements will be spread across the local area including places such as Murton and Easington.
- **East Durham area:** improvements will be spread across the entire East Durham area, including places such as Peterlee and Hartlepool.

### **Cost (£ per year)**

Improvements to the local environment will be paid for by council tax. Payments will ensure that the improvements are maintained and continued to be provided each year.

Payments are additional – i.e. on top of – current council tax payments.

## SHOWCARD 3

**Please consider:**

- **Whether or not these improvements are important to you;**
- **Any money you would pay towards the improvements here will not be available for you to spend on other things;**
- **Other household bills may go up or down affecting the amount of money you have to spend in general; and**
- **That there may be other aspects of local services that also require improvements which may increase bills.**

SHOWCARD 8

<p><b>I chose the options with least cost to my household</b></p>
<p><b>I chose the options which offered most improvement relative to cost</b></p>
<p><b>I was interested in improvements irrespective of cost</b></p>
<p><b>I chose options that affected my household directly</b></p>
<p><b>I chose options that benefited Seaham only</b></p>
<p><b>I chose options that I thought would benefit the whole community</b></p>
<p><b>I chose improvements that I feel other people should experience, irrespective of what they think is best</b></p>
<p><b>I did not understand the choice cards</b></p>
<p><b>Other/None of these</b></p>

## SHOWSCREEN 12 – CV QUESTION

	<b>No improvement Current Situation</b>	<b>Improvement Option 1</b>
<b>Improved areas of open space</b>  <i>Parks and greens</i>  (1 hectare is the size of 2 football pitches)	No change  (No improvements to open space)	Improvements to 15 hectares of open space
<b>Derelict properties restored</b>  <i>Abandoned buildings and land restored</i>	No change  (No properties restored)	10 properties restored
<b>Amount of outdoor community facilities</b>  <i>Play parks, sports pitches and community gardens and allotments</i>	No change  (No further facilities)	2 extra facilities
<b>Street cleanliness</b>  <i>Litter, fly-tipping, gum, fallen leaves, graffiti and fly-posting</i>	Grade C: some litter etc.	Grade A: very little litter etc.
<b>Improved public areas</b>  <i>Town square, pedestrian streets</i>	No change  (No improvements to public areas)	Improved: new paving, benches, etc. maintained in good condition
<b>Green routes</b>  <i>Paths for walking or cycling</i>  (1 mile is just over 1½ km)	No change  (2.5 km or 1.5 miles of green routes in Seaham)	4 km (2.4 miles) extra of green routes
<b>Location of improvements</b>	No improvements anywhere	All improvements in Seaham



SHOWCARD 13A

<b>Cost (£ per year)</b> <i>Additional council tax payment per year</i>
£0
£5
£10
£15
£20
£25
£30
£40
£50
£60
£75
£100
£150
A higher amount – please state

**Please indicate:**

- **The highest amount you would be willing to pay for the environmental improvements**
- **The first amount you are certain you would not be willing to pay for the environmental improvements**

SHOWCARD 13B

**Please consider:**

- **Whether or not these improvements are important to you;**
- **Any money you would pay towards the improvements here will not be available for you to spend on other things;**
- **Other household bills may go up or down affecting the amount of money you have to spend in general; and**
- **That there may be other aspects of local services that also require improvements which may increase bills.**

# Annex C: Pilot survey statistical summary

## Quota controls

**Table QA: Is the respondent the person most responsible for paying council tax and utilities bills in their household or jointly responsible with someone else?**

	n	%
Person most responsible	44	41.5
Jointly responsible	62	58.5

**Table QB: Gender of respondent**

	n	%
Female	47	44.3
Male	59	55.7

**Table QC: Is the respondent the chief income earner in the household?**

	n	%
No	41	38.7
Yes	48	45.3
No income earners	17	16

**Table QE: Socio-economic class of respondent**

	n	%
B	13	12.3
C1	36	34
C2	18	17
D	18	17
E	21	19.8

**Table QF: Age of respondent**

	n	%
18-24	11	10.4
25-29	11	10.4
30-34	10	9.4
35-39	9	8.5
40-44	9	8.5
45-49	8	7.5
50-54	7	6.6
55-59	7	6.6
60-64	9	8.5
65-69	7	6.6
70+	18	17

## Perception of environmental quality

**Table Q1: In Seaham and the surrounding area, out of the list provided, which features of the environment do you think: needs improving; or you are happy as it is and does not need improving**

	Doesn't need improvement		Needs improvement		Don't know	
	n	%	n	%	n	%
The cleanliness of streets and the amount of litter and graffiti	26	24.5	80	75.5	0	0
The amount and quality of open space such as parks and greens	38	35.8	60	56.6	8	7.5
The amount and quality of facilities for children and teenagers, such as play areas and skateboard parks	9	8.5	84	79.2	13	12.3
The quality of public areas such as the town centre and pedestrian streets	34	32.1	67	63.2	5	4.7
The amount of derelict land and buildings	31	29.2	66	62.3	9	8.5
The amount and quality of outdoor community facilities that are provided such as sports pitches and allotments	27	25.5	65	61.3	14	13.2
The amount and quality of nature areas such as local nature reserves	41	38.7	46	43.4	19	17.9
The amount of pedestrian paths and cycle paths away from roads	48	45.3	52	49.1	6	5.7

**Table Q2: Of the features of the environment in the local area that you said need improving, which is the highest priority for improvement?**

	n	%
The cleanliness of streets and the amount of litter and graffiti	34	32.1
The amount and quality of open space such as parks and greens	8	7.5
The amount and quality of facilities for children and teenagers, such as play areas and skateboard parks	36	34.0
The quality of public areas such as the town centre and pedestrian streets	10	9.4
The amount of derelict land and buildings	7	6.6
The amount and quality of outdoor community facilities that are provided such as sports pitches and allotments	4	3.8
The amount and quality of nature areas such as local nature reserves	4	3.8
The amount of pedestrian paths and cycle paths away from roads	1	0.9
Not applicable	2	1.9

## Importance of attributes in answering choice experiments

**Table Q4: Consideration to different aspects of environmental improvements [Block 1]**

	Always ignored		Mostly ignored		Mostly considered		Always considered	
	n	%	n	%	n	%	n	%
Improved areas of open space	2	1.9	20	18.9	61	57.5	23	21.7
Derelict properties restored	5	4.7	23	21.7	51	48.1	27	25.5
Location of improvements	3	2.8	15	14.2	40	37.7	48	45.3
Cost	4	3.8	11	10.4	45	42.5	46	43.4

**Table Q6: Consideration to different aspects of environmental improvements [Block 2]**

	Always ignored		Mostly ignored		Mostly considered		Always considered	
	n	%	n	%	n	%	n	%
Amount of outdoor community facilities	5	4.7	14	13.2	59	55.7	28	26.4
Street Cleanliness	3	2.8	8	7.5	47	44.3	48	45.3
Location of improvements	2	1.9	15	14.2	45	42.5	44	41.5
Cost	5	4.7	12	11.3	40	37.7	49	46.2

**Table Q8: Consideration to different aspects of environmental improvements [Block 3]**

	Always ignored		Mostly ignored		Mostly considered		Always considered	
	n	%	n	%	n	%	n	%
Improved public areas	5	4.7	11	10.4	56	52.8	34	32.1
Green routes	4	3.8	13	12.3	58	54.7	31	29.2
Location of improvements	4	3.8	10	9.4	44	41.5	48	45.3
Cost	4	3.8	11	10.4	39	36.8	52	49.1

## Ease of answering choice experiments

**Table Q9: Overall, across the three sets of choices you were asked to make,, how easy or difficult did you find it to make your decisions about which options to choose?**

	n	%
Very easy	22	20.8
Fairly easy	54	50.9
Neither easy nor difficult	15	14.2
Fairly difficult	14	13.2
Don't know	1	0.9

## Motivation for choice experiment responses

**Table Q10: These statements describe possible ways in which you may have made your choices for the sets of environmental improvements you have just seen. Please identify the two most relevant statements which apply to you.**

	Most relevant		Second most relevant	
	n	%	n	%
I chose the options with least cost to my household	28	26.4	22	20.8
I chose the options which offered most improvement relative to cost	26	24.5	20	18.9
I was interested in improvements irrespective of cost	8	7.5	11	10.4
I chose options that affected my household directly	5	4.7	13	12.3
I chose options that benefited Seaham only	23	21.7	24	22.6
I chose options that I thought would benefit the whole community	12	11.3	11	10.4
I chose options that I feel other people should experience, regardless of what they think is best	0	0	5	4.7
I did not understand the choice cards	1	0.9	1	0.9
Other	2	1.9	3	2.8

## Significance of attributes to improving aspects of the local area

**Table Q11: Which environmental improvement do you think has the greatest effect on: visual appearance of the local area; encouraging people to visit the local area; encouraging people to move to the local area to live; and attracting new businesses to Seaham?**

	Amount of outdoor community facilities		Street cleanliness		Improvements to open space		Derelict properties restored		Improvements to public space		Green routes	
	n	%	n	%	n	%	n	%	n	%	n	%
Visual appearance of the local area	12	11.3	49	46.2	14	13.2	20	18.9	8	7.5	3	2.8
Encouraging people to visit the local area	23	21.7	25	23.6	16	15.1	15	14.2	22	20.8	5	4.7
Encouraging people to move to the local area to live	33	31.1	23	21.7	11	10.4	23	21.7	16	15.1	0	0
Attracting new businesses to Seaham	11	10.4	21	19.8	9	8.5	43	40.6	22	20.8	0	0

## Contingent valuation question

**Table Q12: Considering a choice involving changes to all of the environmental features you have considered, would you in principle be willing to pay some amount of money per year, in terms of an increase in your council tax bill, to ensure that all of the environmental improvements were made?**

	n	%
Yes	74	69.8
No	21	19.8
Don't know	11	10.4

**Table Q13: The highest amount you are certain of willing to pay and the first amount you are certain you would not be willing to pay for environmental improvements**

	Highest amount		First amount certain of not being willing to pay	
	n	%	n	%
£0	0	0	0	0
£5	7	6.6	0	0
£10	11	10.4	7	6.6
£15	4	3.8	5	4.7
£20	12	11.3	6	5.7
£25	3	2.8	7	6.6
£30	8	7.5	7	6.6
£40	6	5.7	1	0.9
£50	15	14.2	9	8.5
£60	1	0.9	5	4.7
£75	1	0.9	5	4.7
£100	5	4.7	4	3.8
£150	1	0.9	16	15.1
£155 (Higher amount)	0	0	1	0.9
£200 (Higher amount)	0	0	1	0.9
N/A	32	30.2	32	30.2



**Table Q15: What is the main reason why you are not prepared to pay / unsure if you would pay for the environmental improvements?**

	n	%
I object to the proposed improvements	1	0.9
I object to paying higher council tax	14	13.2
The local council should pay for this	1	0.9
The local council is not trustworthy	2	1.9
The government should pay for this	1	0.9
I do not believe these improvements would actually happen	1	0.9
I'd like to have more information before making a decision	3	2.8
I cannot afford to pay	7	6.6
The environmental improvements are not important to me	1	0.9
I think the quality of the local environment is already good enough	1	0.9
Not applicable	74	69.8

**Table Q16: The main reason for choosing to pay for environmental improvements**

	n	%
To improve the local environment	19	17.9
To improve the quality of parks and green/open spaces	2	1.9
To reduce the number of derelict properties	4	3.8
To provide new outdoor community facilities	3	2.8
To improve public areas / the town centre	4	3.8
To increase the amount of green routes / paths	1	0.9
It is a good thing for Seaham	13	12.3
To benefit the local community	10	9.4
To benefit my children / future generations	12	11.3
It is a good cause	1	0.9
Other	5	4.7
Not applicable	32	30.2

**Table Q17: Improvements to the local environment should be paid for by:**

	Strongly agree		Tend to agree		Neither		Tend to disagree		Strongly disagree		Don't know	
	n	%	n	%	n	%	n	%	n	%	n	%
Local residents	6	5.7	47	44.3	11	10.4	20	18.9	20	18.9	2	1.9
Council or government	46	43.4	50	47.2	6	5.7	0	0	0	0	4	3.8
Local businesses	9	8.5	43	40.6	20	18.9	18	17	10	9.4	6	5.7

<b>Table Q18: If your council tax bill increased, how likely do you think it is that the environmental improvements described would actually happen?</b>		
	n	%
Very likely	4	3.8
Somewhat likely	36	34
Neutral	18	17
Somewhat unlikely	12	11.3
Very unlikely	30	28.3
Don't know	6	5.7

### Socio-economics and sample profile

<b>Table Q19: Length of time respondent has lived in Seaham and/or surrounding area</b>		
	n	%
Less than 1 year	2	1.9
1 – 2 years	3	2.8
2 – 5 years	6	5.7
5 – 10 years	4	3.8
10 – 20 years	6	5.7
20- 30 years	24	22.6
More than 30 years	61	57.5

<b>Table Q20: Employment status</b>		
	n	%
Self-employed	5	4.7
Employed full-time (30+ hrs)	39	36.8
Employed part-time (up to 30 hrs)	11	10.4
Student	1	0.9
Unemployed – seeking work	8	7.5
Unemployed – other	4	3.8
Looking after the home/children full-time	4	3.8
Retired	33	31.1
Unable to work due to sickness or disability	2	1.9
Other	0	0

**Table Q21: Level of education**

	n	%
O levels / CSEs / GCSEs (any grades)	27	25.5
A levels / AS level / higher school certificate	15	14.2
NVQ (Level 1 and 2). Foundation / Intermediate / Advanced GNVQ / HNC / HND	14	13.2
Other qualifications (e.g. City and Guilds, RSA/OCR, BTEC/Edexcel)	13	12.3
First degree (e.g. BA, BSC)	6	5.7
Higher degree (e.g. MA, Phd, PGCE, post graduate certificates and diplomas)	2	1.9
Professional qualifications (teacher, doctor, dentist, architect, engineer, lawyer, etc.)	1	0.9
No qualifications	28	26.4

**Table Q22: Age of people in household**

	0		1		2		3		4		5+		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
<5	92	86.8	11	10.4	2	1.9	1	0.9	0	0	0	0	14	13.2
6-15	93	87.7	10	9.4	2	1.9	1	0.9	0	0	0	0	13	12.3
16-60	26	24.5	18	17	44	41.5	9	8.5	9	8.5	0	0	80	75.5
61+	72	67.9	21	19.8	13	12.3	0	0	0	0	0	0	34	32.1

26 retired households (all occupants are 61+)

48 working age households without dependents (16-60 only)

32 working age households with dependents (16-60 with other age groups)

**Table Q23: Total household income before tax**

	n	%
Up to £6,499	14	13.2
£6,500 - £9,499	13	12.3
£9,500-£15,499	22	20.8
£15,500 - £24,499	20	18.9
£25,000 - £39,999	17	16.0
£40,000 - £59,999	11	10.4
£60,000 - £89,999	3	2.8
£90,000 and over	6	5.7

<b>Table Q24: Amount that household pays in council tax</b>		
	n	%
Do not pay council tax	10	9.4
Less than £1000 per year	11	10.4
£1,000 – 1,250 per year	24	22.6
£1,250 – 1,500 per year	33	31.1
£1,500 – 1,750 per year	5	4.7
£1,750 – 2,000 per year	4	3.8
£2,000 – 2,500 per year	4	3.8
More than £2,500 per year	1	0.9
Don't know	14	13.2

<b>Table Q25: Are you a member of any of these organisations?</b>		
	n	%
Local community or volunteer group	0	0
RSPB (Royal Society for Protection of Birds)	4	3.8
Surfers Against Sewage/Marine Protection Society	0	0
Canoeing/Boating/Windsurfing Club or similar	0	0
Angling Club	3	2.8
Ramblers Association	1	0.9
Friends of the Earth/Greenpeace	0	0
National Trust	5	4.7
Local Wildlife Trust or Environmental Organisation	0	0
Other national or international environmental organisation (Woodland Trust)	1	0.9
Other – SPECIFY – 3 (Crime and misuse forum, local writer's group, English Heritage)		2.8
Not a member of any similar organisations	93	87.7

## Respondent feedback

<b>Table Q26: What the respondent thought of the questionnaire</b>		
	n	%
Interesting	75	70.8
Too long	1	0.9
Difficult to understand	4	3.8
Educational	8	7.5
Unrealistic/not credible	7	6.6
Other	17	16

## Interviewer feedback

<b>Table QY: The respondent's understanding of the choice questions</b>		
	n	%
Understood completely	43	40.6
Understood a great deal	32	30.2
Understood somewhat	25	23.6
Understood a little	4	3.8
Did not understand very much	2	1.9
Did not understand at all	0	0

<b>Table QZ: The consideration given by the respondent to the choice questions</b>		
	n	%
Extremely serious	26	24.5
Very serious	57	53.8
Somewhat serious	18	17
Slightly serious	5	4.7
Not at all serious	0	0

## Annex D: References

- Bartik, T.J. (1988) Measuring the Benefits of Amenity Improvements. *Land Economics*, 64(2), pp.172-183.
- Bateman, I.J. et al. (2002) *Economic Valuation With Stated Preference Techniques: A Manual*. Cheltenham: Edward Elgar Publishing.
- Bateman, I.J. et al. (1997) Does part-whole bias exist? An experimental investigation. *Economic Journal*, 107(441), pp.322-32.
- Bateman, I.J. and Willis, K.G. (1999) *Valuing Environmental Preferences: Theory and Practice of the Contingent Valuation method in the US, EU, and Developing Countries*. Oxford: Oxford University Press
- Cameron T.A. and Huppert, D.D. (1989) OLS versus ML Estimation of Non-market Resource Values with Payment Card Interval Data. *Journal of Environmental Economics and Management*, 17, pp.230-246.
- Cambridge Econometrics, EFTEC and WRc (2001). *A Study to Estimate the Disamenity Costs of Landfill in Great Britain – Final Report*. London: Department for Environment, Food and Rural Affairs.
- Carson, R. T. (2007) *Contingent Valuation: A Comprehensive Bibliography and History*. Northampton, MA: Edward Elgar Publishing.
- Champ, P.A., Boyle, K.J. and Brown, T.C. (2003) *A Primer on Nonmarket Valuation*. Kluwer Academic Press.
- Cheshire, P. and Sheppard, S. (1998). Estimating the demand for housing, land and neighbourhood characteristics. *Oxford Bulletin of Economics and Statistics*, 60(3), pp.357-382.
- DCLG. (2009) *Updated Council Tax Levels set by Local Authorities in England: 2009-10*. London: Department for Communities and Local Government.
- Court A.T. (1939) Hedonic Price Indexes with Automotive Examples. In: American Statistical Association (Ed), *The Dynamics of Automobile Demand* (pp.99-117). New York: General Motors Corporation.
- Des Rosiers, F. and Theriault, M. (1996) Rental amenities and the stability of hedonic prices: a comparative analysis of five market segments. *Journal of Real Estate Research*, 12(1), pp.17-36.

- Dolan, P. and Metcalfe, R. (2008) *Valuing non-market goods: A comparison of preference-based and experience-based approaches*.
- Durham County Council. (2009) Durham County Council Overall Council Tax Charges 2009/2010 – Annex 5: Overall Council Tax for each property Band 2009/10.
- Earnhart, D. (2001) Combining Revealed and Stated Preference Methods to Value Environmental Amenities at Residential Locations. *Land Economics*, 77(1), pp.12-29.
- Epple D. (1987) Hedonic prices and implicit prices: estimating demand and supply functions for differentiated products. *Journal of Political Economy*, 95, pp.59-80.
- Feitelson, E. et al. (1996) The impact of airport noise on willingness to pay for residences. *Transportation Research D: Transport and Environment*, 1, pp.1-14.
- GLA Economics (2003) *Valuing Greenness – Green spaces, house prices and Londoners' priorities*. London: Greater London Authority.
- Heijmans, R. (1999) When does the expectation of a ratio equal the ratio of expectations? *Statistical Papers*, 40, pp.107-115.
- Lanz, B., Provins, A., Bateman, I.J., Scarpa, R., Willis, K.G. and Ozdemiroglu, E. (2010) Investigating willingness to pay - willingness to accept asymmetry in choice experiments. In: S. Hess and A. Daly (eds.) *Choice modelling: the state-of-the-art and the state-of-practice: proceedings from the inaugural International Choice Modelling Conference*. Emerald Publishers.
- Malpezzi, S. (2002) Hedonic Pricing Models: A Selective and Applied Review. In: T. O'Sullivan and K. Gibb (eds.) *Housing Economics and Public Policy*. Oxford: Blackwell Science Ltd.
- McFadden, D.L. (1984) Econometric analysis of qualitative response models. In: Z. Griliches and M.D. Intriligator (eds.) *Handbook of Econometrics* (Volume II, Chapter 24). Elsevier Science Publishers.
- Michael, H.J., Boyle, K.J. and Bouchard, R. (2000) Public Perceptions of Environmental Quality and Measuring Environmental Quality in Hedonic Models. *Land Economics*, 76(1), pp.283-298.
- Michaels, R.G. and Smith, V.K. (1990) Market Segmentation and Valuing Amenities with Hedonic Models: The Case of Hazardous Waste Sites. *Journal of Urban Economics*, 28, pp.223-242.
- Mitchell, R. C. and Carson, R.T. (1989) *Using Surveys to Value Public Goods: The Contingent Valuation Method*. Washington D.C.: Resources for the Future.

Murray, M. P. (1983) Mythical demands and supplies for proper estimation of Rosen's hedonic price model. *Journal of Urban Economics*, 14, pp.327-337.

Palmquist, R. B. and Isangkura, A. (1999) Valuing air quality with hedonic and discrete choice models. *American Journal of Agricultural Economics*, 81(5), pp.1128-33.

Scarpa R. and Rose, J.M. (2008) Design efficiency for non-market valuation with choice modelling: how to measure it, what to report and why. *Australian Journal of Agricultural and Resource Economics*, 52, pp.253-282.

Segal Quince Wicksteed Ltd. and BBP Property Consultants. (2000) *Regeneration of former coalfield areas - interim evaluation: Seaham and Murton case study*.

Schkade, D. A. and Kahneman, D. (1989) Does living in California make people happy? A focusing illusion in judgments of life satisfaction. *Psychological Science*, 9(5), pp.340-46.



## **DCLG Economics Paper Series**

**[www.communities.gov.uk/corporate/researchandstatistics/research1/economicpapers](http://www.communities.gov.uk/corporate/researchandstatistics/research1/economicpapers)**

**Economics Paper 1:** A framework for intervention

**Economics Paper 2:** Why place matters and implications for the role of central, regional and local government

**Economics Paper 3:** Projections of migration inflows under alternative scenarios for the UK and world economics

**Economics Paper 4:** Regional economic performance: A migration perspective

**Economics Paper 5:** Housing and regional economic disparities

**Economics Paper 6 - Volume 1:** Housing wealth inequality

**Economics Paper 6 - Volume 2:** Measuring change in housing wealth inequality