



Department
for Environment
Food & Rural Affairs

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Local Environmental Quality: Valuing the neighbourhood in which we live

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Executive summary

1. The environment in which people live has a profound impact on their quality of life and wellbeing. In surveys the public have consistently identified local environmental factors as being one of the most important factors in their wellbeing. A recent survey by Keep Britain Tidy found that the local environment was the public's third biggest concern. This is supported by the level of expenditure maintaining the local environment with English Local Authorities spending over £6 billion on environmental services and the estimated 150,000 complaints in one year about the local environment.¹

2. Local environmental quality is a local issue and responsibility lies with the Local Authorities to implement and enforce the laws in accordance with their needs. Defra strongly support the need to give powers to Local Authorities to manage their areas and decide their priorities. However, we have an important role to play in maintaining and developing powers for them to improve their neighbourhoods and providing guidance to support them in this role.

3. As part of this role Defra commissioned a consortium of the Institute for Transport Studies University of Leeds and the Transport Studies Group Loughborough University to undertake research on the importance and value of different local environmental factors. This research had two central aims:

- To estimate the value the public place on different aspects of the local environment to help inform national decision making where appropriate;
- To support trade-offs between different factors, for example the prioritisation of resources.

4. To deliver against these aims this research undertook a survey of a representative group of 561 members of the public to assess the importance of different attributes of the local environment, the current situation for each of the local environmental factors and the willingness to pay for improvements in each of these factors. The key findings of this research are presented in table E.1.

¹ This excludes complaints relating to noise nuisance which was excluded from this study but is estimated to cause around 314,000 complaints per year (www.cieh.org).

Table E.1: Key results of research

	Current situation (0=worst, 10= best) ₁	Importance rating ²	Willingness to pay for an improvement (per person per month) ³
Litter	3.43	1	£3.95
Fly-tipping	4.28	2	£3.71
Trees	3.21	5	£2.33
Chewing Gum	3.68	7	£2.17
Odour	3.93	6	£2.33
Dog Fouling	3.37	3	£1.89
Quiet Areas	3.49	4	£1.37
Light Pollution	3.88	10	£0.63
Graffiti	3.40	8	£0.56
Light Intrusion	3.84	9	£0.34
Fly-posting	3.77	11	_ ⁴

¹ Different aspects were assessed using different scales. For comparability all the results have been placed on a common scale from 1-5. The illustrations used for each of these scores are provided in Annex B.

² This priority ordering comes directly from participants responses and so does not exactly match the importance ordering from the willingness to pay estimates.

³ These estimate the values that an individual would be willing to pay in additional council tax per person per month in order to improve that factor by one unit on a ten point scale from worst to best.

⁴ No effect from fly-posting was detected in the study therefore it was not possible to estimate the marginal value of changes.

5. Defra welcomes the contribution that this work can potentially make in the management and protection of the local environment. While local bespoke evidence will always provide the best indication of the local situation and values, the results of this research can usefully inform national decisions where such information is not available. However, in any use of these values, it is important that the uncertainties and sensitivities of these results are considered. Some key areas being:

- The survey undertaken for this research was undertaken based on a representative but relatively small number of observations.
- Values derived from this approach only reflect the amenity that the public are aware of. Therefore, wider impacts such as the impact on health of air pollution are

unlikely to be reflected in these values.

- It is unlikely that value changes in a linear manner with the status of the area. The law of diminishing marginal returns suggests that the use of a fixed value would overstate the benefits of significant improvements and underestimate the cost of significant deteriorations².

6. The cost of delivering changes in the different factors was not in the remit of this work and so it is not possible to assess if additional action is justified on the factors³. Prioritisation can however be helped by providing information on the relative importance of the different factors. This analysis has been undertaken based on five different potential prioritisation criteria the results of this analysis are presented in Figure E.1 below.⁴

Figure 1: Prioritisation of the local environment⁵

The five approaches to prioritisation used are:

- I. **Stated preferences** public priorities from a direct question.
 - II. **Marginal values** placed on improvements in factors.
 - III. **Current situation** with the lowest rated aspects having the highest priority
 - IV. **Potential for improvement** prioritise the aspects with the highest potential monetary gain between the current and best situation.
 - V. **Need for protection** prioritising the aspects with the highest current value.
- Chapter 5 explains how the rankings for each approach have been calculated.

LEQ factor	Prioritisation approach					Average (Standard Deviation ¹)
	Stated	Values	Current	Improvement	Protection	
Litter	1	1	4	1	2	1.8 (1.3)
Trees	5	3	1	2	5	3.2 (1.8)
Dog Fouling	3	6	2	3	6	4.0 (1.9)

² The Law of diminishing marginal returns states that at a point as an individual's consumption of a good or service increases the satisfaction they receive for each additional unit falls. For example the last quiet area in a city might have a greater value than adding an additional quiet area to a city with a number of quiet areas.

³ To identify the optimal allocation of resources it is necessary to know both the benefits accruing from each potential use of resources and their associated costs. As this research only assessed the benefits it is not possible to use this process to prioritise the different aspects of the local environment.

⁴ None of these approaches are in themselves consistently better than another and so the selection between the different approaches depends upon the purpose for which the prioritisation is being undertaken.

⁵ Fly-posting has been removed from this list as it is only possible to include it in two of these approaches to prioritisation. This omission does not however impact on the average prioritisation.

Fly-tipping	2	2	10	5	1	4.0 (3.7)
Chewing Gum	7	4	6	4	3	4.8 (1.6)
Quiet Areas	4	7	5	6	7	5.8 (1.3)
Odour	6	5	9	7	4	6.2 (1.9)
Graffiti	8	9	3	8	9	7.4 (2.5)
Light Pollution	10	8	8	9	8	8.6 (0.9)
Light Intrusion	9	10	7	10	10	9.2 (1.3)
¹ Standard deviation is presented as a indication of the level of variation in the rankings						

7. Some interesting results from this analysis are:

- while there is much consistency in the results it is clear that the reason for taking action can have a notable impact on the priority rating;
- litter and trees are consistently highlighted as high priority areas for those surveyed, while light pollution and intrusion are seen to be lower priority, in comparison; and
- Fly tipping and graffiti both show particularly high levels of variability depending on the chosen approach to prioritisation.

8. It must however be noted that this prioritisation only reflects the respondents' personal understanding of the impacts of changes in these factors. Therefore it will exclude a range of other important factors in government decision making including both wider social impacts and impacts on the individual that they are not be fully aware of. For example, management of artificial light and light pollution may not be judged by the individuals as the most important area but there are notable wider social benefits including reduced energy consumption and avoided carbon emission. Similarly the public may not be able to fully assess and understand the health benefits of changes in aspects of the local environment, such as for air pollution.

1. Introduction

Issue

9. Local environmental quality is a local issue and responsibility lies with the Local Authorities in line with local needs. However, Defra has an important role to play in creating the powers for Local Authorities and providing guidance to support them in this role. As part of performing this role Defra commissioned research to value a range of different local environmental factors. This research had two central aims:

- To estimate marginal economic values for a range of local environmental factors to help inform national decision making where appropriate; and
- To support considerations around relative prioritisation of local environmental factors.

10. The valuation of the different aspects of the local environment is primarily intended for use in informing national decisions. All programmes, policies and projects require a detailed assessment using a social cost benefit analysis with a comprehensive monetary assessment, as far as is proportionate. Producing such marginal values therefore reduce the resource implications of valuing changes in the local environment and so should enable them to be incorporated more widely in decision making.

11. A unique feature of this work is that it has been designed to assess a broad range of local environmental factors in a single survey. Therefore it is justifiable both to consider the results of the impacts both individually and relatively. This ability to consider the relative importance of different areas therefore allows this research to be used to inform prioritisation between different aspects of the local environment.

Background

12. The environment in which people live has a profound impact on their quality of life and wellbeing. In surveys the public have consistently identified local environmental factors as being one of the most important to their wellbeing. Intuitively the high importance of the local environment seems reasonable as it impacts upon the day to day lives of everyone living and working in England.

13. The Word on Our Street 2011⁶, a survey by Keep Britain Tidy, found that 70% of the people surveyed feeling quite or very concerned about the appearance of the local area. This places the local environment as the third biggest concern ahead of the level of service of the National Health Service, global warming and other traffic congestion. This is made more important as the two more significant concerns, on the credit crunch and the price of fuel, both relate to major recent shocks to the economy. Therefore they may not be expected to be long term concerns, while the number of people expressing concern over the local environment has increased around 13% since the last survey of this type.

⁶ www.keeppbritaintidy.org/Expertise/Research/ResearchReports/word_on_our_street.aspx

14. The importance of the local environment is also highlighted in the substantial amount of resources currently dedicated to its protection and management. In 2010-2011 English Local Authorities reported spending over £6 billion on 'environmental services'⁷⁸. This equates to around 5% of the local council expenditure or 1% of total public expenditure. The definition of 'environmental services includes a number of areas which do not relate to the areas covered in this research however street cleaning alone is seen to cost over £800 million per annum, around 1% of local council expenditure.

15. These costs however are likely to substantially underestimate the real cost of these activities as they only include the costs to LAs. In addition to these costs expense is incurred by a wide range of other parties such as Network Rail, Business Improvement Districts, businesses, Highways Agency and the voluntary sector. For example a recent review of the local environment found that in 2011 Royal Parks spent 20 per cent of their annual budget was spent on cleaning the parks, more than the flower budget.

16. Despite this major expenditure there is evidence to suggest that the quality of the local environment does not meet the expectations of the public. Based on data from the Local Authority Statutory Nuisance Survey it is estimated that in 2011 there were over 150,000 complaints about the local environment.⁹

17. Given the relevance to the public and the level of resources dedicated to protecting the local environment it is important that they are managed in an efficient and effective manner. Both national and local decisions will impact on the local environment and so it is fundamental that these impacts are factored into decision making. At a national level, decisions on programmes, projects and policies can have notable impacts and significant influence. For example the landfill tax has been shown to have had a major influence on consumers' treatment of waste.

18. At a local level it is fundamentally correct that resources are allocated in response to residents needs. A key role for provision is both judging the demand for local services and then balancing the competing demands. Providing information on the indicative ranking of priorities at a national level however can support this by better enabling local resources to focus on the local issues.

19. Despite the importance of these decisions there are currently no central monetary values available to inform national decision making and support local decision makers. To address this gap Defra commissioned a consortium of the Institute for Transport Studies, University of Leeds and Transport Studies Group, Loughborough University to undertake research on the importance and value of different local environmental factors.

⁷ www.communities.gov.uk/publications/corporate/statistics/revenue201011finaloutturn

⁸ Definitional issue mean that this may not accurately reflect expenditure on the local environment. For example it excludes planning policy environmental initiatives and recreational open spaces. Including these services alone would increase expenditure by a further £1.3 billion.

⁹ This figure has been estimated by scaling up the results of this survey. In the survey 56,334 complaints were identified from a sample that covered 37% of the English population. The full report is available from <http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=17599&FromSearch=Y&Publisher=1&SearchText=local%20environment&GridPage=5&SortString=ProjectCode&SortOrder=Asc&Paging=10>

Current situation

20. Keep Britain Tidy (KBT) have been monitoring the quality of the local environment through the Local Environment Quality Survey for England (LEQSE) since 2001. Over this time there have been many changes. In working together to improve the places where we live KBT have summarised how the local environment has changed over this time.

21. This work suggested that over this period the number of sites attaining an acceptable standard for litter has increase by 3 percentage points from 82% to 85%. However, this progress has not occurred steadily over the period with the best outcome being recorded in 2004/05 with 88% of areas being acceptable. This was rapidly followed by the worst measure on record in 2006/07 where only 80% of sites were acceptable.

22. Since the LEQSE was launched the make-up of litter has changed notably. The most dramatic change has been the increase in fast food packaging which has increased from being present in just 4% of sites at the start of the decade to 24% now, a six fold increase. Increases in confectionary litter have also risen from 47% in 2001/02 to 69% in 2010/11. Smoking related litter have consistently appeared as the most littered item but over the period the proportion of areas has increased notably to the decade high in 2010/11 in 83% of sites. This change has been related to the introduction of the indoor smoking ban.

23. There have also been improvements in some areas. Over the decade dog fouling has reduced and is now only at an unacceptable level at 7% of sites, down from 10% in 2001/02. Carrier bags experienced a similar progress improving from being seen in 7% of areas down to 3%.

24. These results suggest the state of the local environment is sensitive to national and local decision making. It was further highlighted that the importance of this area has been reflected in recent events across the UK, most notably in response to the damage caused by the 2011 riots.

Structure of Report

25. The structure of this report is as follows:

- **Chapter 2** explains the; aims, method, and findings of this research.
- **Chapter 3** provides the general reaction to the research and its findings..
- **Chapter 4** recommends how the results of this research can be used to inform decision making.
- **Chapter 5** uses the findings of the research to prioritise between different aspects of the local environment.
- **Chapter 6** summarises the conclusions of this report and sets out the identified gaps for further work to develop tools in this area.

2. Research study

Objective

26. Defra commissioned a consortium of the Institute for Transport Studies, University of Leeds and Transport Studies Group, Loughborough University to undertake research on the importance and value of different local environmental factors. The stated objectives of this research was:

To estimate marginal monetary amenity values across local environmental factors, which will feed into the building of a comprehensive evidence base. These estimates can then be used to:

- *Inform appraisal and evaluation of national government policies in relation to each of the factors;*
- *Inform the consideration of local environmental factors for national prioritisation and forward planning; and*
- *Provide Local Authorities with an additional resource that could be used in local decision making.*

27. The project aimed to establish marginal values for eleven diverse local environmental quality factors. These are: urban quiet areas; fly-tipping; litter; detritus; fly-posting; graffiti; dog-fouling; chewing gum; trees; light pollution; and odour.

Methodology

28. Values of the local environment were estimated using a stated preference (SP) methodology. The SP method used looked to estimate valuation based on respondents' choices between different hypothetical scenarios. In this case those being surveyed were presented with options of differing levels of local environmental quality and asked to select between the different potential improvements and a financial incentive. For example there might be a choice between reducing the amount of litter or a reduction in council tax.

29. A two stage SP approach was employed for this study:

- Stage one: contained a broad range of factors that might influence quality of life. This stage intended to reduce strategic bias in respondents and was used to sense check the final valuations.
- Stage two: focused on the eleven local environmental factors of specific interest to this study. The evidence from this experiment enabled the estimation of monetary values for changes in the local environment.

30. In addition to the two central SP surveys a range of background and attitudinal questions were asked of the participants. The information collected from this survey was intended for use in disaggregating the results. For example this data enabled the estimation of different values for respondents living in inner-city, suburban and rural areas.

31. A key challenge in this study was developing an effective way to communicate the different levels of the different aspects of the local environment. In order to ensure clarity a range of approaches were employed to explain the different levels including objective measures; categorical scales; verbal descriptions and visual representations. The approaches to representing these aspects were tested in two focus groups and amended before surveying was undertaken.

32. The surveys were undertaken as Group Hall Tests with up to 25 people at a time being invited to a venue where the questionnaire was administered under expert supervision. All the surveys were conducted in late January and early February in Manchester, Coventry and London. Within each city, surveys were conducted in three locations covering inner-city, suburban and rural/semi-rural areas. The survey was asked of a representative group of 561 members of the public.

33. The approach to estimating values has been undertaken based on the choices made by respondents between different scenarios. This approach primarily relies on the comparison between two options where one includes an environmental factor and the other a financial value. In this case the financial consequence was presented as a change in the participants' council tax. This presentation was selected on the basis of what would be the most easily communicated and understood by the participants.

34. To illustrate this approach consider a situation where a choice must be made between two options. The only difference between the two options relate to the level of council tax paid and access to quiet areas. Under option 1 the person has access to a quiet area within 5 minutes of their home and their council tax remains as it is now. Under option 2 the person has to travel 10 minutes to access a quiet area but their council tax is reduced by £5 a month. Faced with this choice if a person were to select option 1 it indicates that the improvement in access to quiet areas was valued more than £5 a month. However, were option 2 to be selected it indicates the value is less than £5 a month. By repeating this approach with a range of people, factors and changes in council tax it is possible to estimate values for a range of aspects of the local environment.

35. Finally once the data had been collected and analysed a number of checks were undertaken to test the plausibility of the results. These tests included using the results of the first stated preference exercise, and testing the correlation between the stated priorities and the valuations.

36. More information on the design and methodology is provided in the full report of this research available from

http://randd.defra.gov.uk/Document.aspx?Document=9854_LEQFinal.pdf

Findings

37. This section provides a summary of the key results of this research and the conclusions reached by the authors. For clarity this section has been split into two parts covering: **Status** – assessing the current state and importance of the local environment; and **Valuation** – estimating the marginal values of different aspects.

Status

38. In assessing the status of the local environment it is useful to place it in the context of other factors influencing public welfare. The first stated preference exercise did this by assessing the relative importance of local environmental factors against a range of other factors. Table 2.1 provides the key results of this exercise.

Table 2.1: Importance of factors to quality of life

	Importance to Quality of Life (1= Extremely important, 5= Not at all important)	
	Average	Std Dev
Level of local crime	1.45	1.38 – 1.52
Conditions of roads and pavements	1.88	1.80 – 1.96
Amount of council tax	1.92	1.84 – 2.00
Level of dog fouling	1.98	1.90 – 2.06
Quality of local schools	1.98	1.87 - 2.09
Amount of road traffic	2.00	1.92 – 2.08
Access to Quiet Areas	2.00	1.92 – 2.08
Neighbourhood Air quality	2.05	1.97 – 2.13
Road traffic noise at home	2.26	2.16 – 2.36

39. Based on these results the authors concluded:

Crime is clearly the most important quality of life factor, but dog-fouling is, amongst the general population, fourth equal in importance and on a par with the quality of local schools. Access to quiet areas, our other local environmental factor incorporated within this broader quality of life scenario, is only slightly less important and is deemed to be more of an issue than road traffic noise and local air quality which are both of significant concern to policy makers.

40. As part of the second stated preference exercise participants were asked to assess their current experience of the local environment. It must be noted that as different scales were used for different aspects the absolute scores between aspects may not be directly comparable. The results of this exercise are presented in table 2.2.

Table 2.2: Current status of local environment by area type (1 = worst 10 = best)¹⁰

	Inner	Suburban	Rural	Average
Light Pollution	7.33	7.43	9.07	7.77
Chewing Gum	6.50	7.33	8.80	7.37
Litter	5.78	7.15	7.95	6.85
Light Intrusion	7.55	7.53	8.13	7.68
Trees	5.73	6.35	7.65	6.43
Fly Tipping	7.90	8.85	8.98	8.55
Quiet Areas	5.84	7.06	8.64	6.98
Graffiti	5.52	7.06	8.28	6.8
Odour	7.52	8.34	7.52	7.86
Fly-posting	6.84	7.72	8.32	7.54
Dog Fouling	5.56	7.2	7.72	6.74

¹⁰ Rankings presenting in this table have been transformed into a consistent ten point scale.

41. From these results it was concluded that:

As might be expected, rural residents almost always rate their conditions as superior to the ratings of suburban residents who in turn almost always rate their conditions more highly than inner-city residents. The extent to which the rural conditions exceed the suburban conditions is similar, on average, to the extent that the suburban conditions exceed the inner-city conditions. We can discern some entirely expected patterns, such as rural areas performing very well in terms of access to quiet areas, light intrusion and pollution differing little between inner-city and suburban areas, and litter and chewing gum being particularly prevalent in inner-city areas.

Valuation

42. The second part of the work was then to estimate monetary values for the different aspects of the local environment. Table 2.3 below provides the results of this assessment

Table 2.3: Valuation (£ per person per month) and importance ranking ¹

	Value of unit change	Valuation rank ¹	Stated preference rank ²
Litter	£1.98	1	1
Fly Tipping	£1.86	2	2
Trees	£1.17	3	5
Chewing Gum	£1.09	4	7
Odour	£0.96	5	6
Dog Fouling	£0.95	6	3
Quiet	£0.69	7	4
Light Pollution	£0.32	8	10
Graffiti	£0.28	9	8
Light Intrusion	£0.17	10	9
Fly Posting ³	-	-	11

¹ Rank based on the estimated value of a change

² Stated preference rank based on direct questioning.

³ No observable values were identified for fly-posting

43. Based on these results the authors concluded:

There are some clear priorities here; the valuations exhibit considerable variation across attributes and it would have been disconcerting to have obtained similar values.

The largest valuations are quite clearly for litter and fly-tipping. Then there are a series of attributes with similar "medium" valuations. These are trees, odour, chewing gum, dog fouling and quiet areas. Light pollution, graffiti and light intrusion have relatively minor valuations. This pattern of valuations seems plausible.

We have not been able to detect any plausible effect from fly-posting, although we note that this was returned as the least important factor of all those considered. The negative value for light pollution, and some other low values for light pollution and intrusion, may be due to confounding effects with security and safe navigation.

We were able to detect a number of variations in the valuations of local environmental factors according to socio-economic, attitudinal and location factors. We have used the results to demonstrate how willingness to pay valuations (in £s per person per month) vary across circumstances.

It can be seen that the ranking of the local environment factors according to the Stated Preference valuations corresponds well with the ordering obtained from the importance ratings, with a Spearman rank correlation coefficient of 0.77. This is an encouraging finding.

The results above seem plausible. However, they will depend upon the particular improvements under consideration and the situations from which the improvements are made, as well as the background socio-economic and location characteristics. These imply much greater variation in values across the sample than if we simply rely on different ratings of environmental factors across the sample.

The valuation models here reported can be used to provide willingness to pay measures of the economic benefits of a wide range of improvements to local environmental factors. These environmental improvements are often very context specific. By conducting a simple survey of residents, and asking them to rate on a 0-10 scale existing situations and proposed ones, the models reported here can be used to provide estimated monetary valuations of the benefits in those circumstances

3. Defra review

44. Defra welcomes this research as making a useful contribution to the available evidence base to inform programmes, policies and projects which impact on the local environment. Assessing the current situation, the desire for change and the public priorities can help support the delivery of improvements in the local environment which could improve social wellbeing.

45. The methodology applied in this study, combined with the testing of the results, provide confidence in the results provided. As an additional check this work was also independently peer reviewed to check the methodology. This peer review was content with the methodology applied and concluded that:

The utility weights, ratings and ranking data in this report can be used to prioritise local environmental factors.

46. On this basis Defra have used the evidence collected in this study to undertake analysis to support the prioritisation of different aspects of the local environment. Owing to the rich data collected, prioritisation has been undertaken in a range of ways to enable consideration across a range of different uses and purposes. This analysis is presented in Chapter 5 of this paper.

47. The peer review however raised highlighted the magnitude of the willingness to pay values noting that when taken together they are relatively large. Taking an extreme example a household moving from the lowest to the highest level on all the different aspects implies an annual 'willingness to pay' of £2,260. This roughly equates to a price difference of £45,200 between the two properties or almost a quarter (22.3%) of the average house price.

48. Defra welcomes this view and agrees that the appropriate use of these figures requires both an awareness of their uncertainties and sensitivities. In this particular example using the willingness to pay values to monetise such a major shift introduces notable uncertainties. Used appropriately however these results can still play a useful role in assessing marginal changes and producing indicative values of such major changes. This conclusion was reached on the basis of the following considerations:

- The stated example highlighted does suggest that the local environment could have a very large impact on house prices. However, this is an extreme example and other comparisons do not appear to be so striking. For example moving a house from the average level of local environmental quality to the top available level would only equate to 5% of the average house price¹¹.
- It is useful to reflect on the level of changes that are implied in a shift from the bottom to the top of all the different aspects of the local environment. Annex A illustrates the level of shift that would be implied from a property moving from the

¹¹ Increasing from current average level to the maximum equates to an annual cost of £611 or a lifetime value of £10,184 (at 6% discounting). This is just 4.96% of the average house price of £205,269 in December 2011 (<http://www.communities.gov.uk/publications/corporate/statistics/hpi122011>).

worst to the best local environmental quality. Given the scale of these changes it is debatable if the implied changes in house price is credible or not.

- The valuation part of this research was primarily aimed at producing marginal values and hence they are most appropriate for that use. While aggregating small changes may not accurately reflect a single large change this does not reduce their applicability to small changes.
- While the values are subject to uncertainties their usefulness also depends upon the other available evidence. Where other evidence is available this evidence can usefully be used as a sense check on that evidence and where no other information is available it may be preferable to not reflecting these impacts.

49. To test the results of this research Defra also discussed them with a select group of relevant Local Authorities. Through this series of discussions the general findings were that the relative priority of the different aspects looked broadly consistent with their experience and with wider evidence such as the Place Survey.¹² It was, however, recognised that the priorities were likely to vary between different locations. In relation to the marginal values that were estimated, there was a positive reaction that the range seemed reasonable. A note of caution was however raised about whether the public would, in practice, be willing to pay some of the values at the top of the range.

50. To support the appropriate use of the marginal values Defra has provided a framework for their application. It should, however, be stressed that the use of this evidence should be informed by the analyst undertaking the assessment in the context of the decision and available information. It is not intended as a 'one size fits all' valuation for all the different aspects of the local environment. This guidance is provided in Chapter 4 of this paper.

51. However, with any use of these values it is important that the uncertainties and wider context around these results are considered. Some key considerations are:

- Values and any prioritisation derived from this research only reflect the amenity that the respondents are consciously aware of. Therefore it is likely to exclude a range of wider impacts which may be socially important. For example, it is unlikely to include the health effects of air pollution or the productivity cost of sleep disturbance from noise. Therefore such wider considerations will need to be reflected alongside these results to provide a fully rounded view.
- These values are intended to supplement the available information for decision making and not to replace it. Local needs and desires are demonstrated to vary significantly in different locations and therefore local judgement retains a central role in the allocation of local resources but these figures may help support such decision making.

¹² <http://www.communities.gov.uk/publications/localgovernment/placesurvey2008update>

- The survey undertaken for this research was undertaken based on a representative but relatively small number of observations. This was necessary given the intensive data collection process for each participant and the resource constraints for this work. While the results appear reasonably stable it is noted that there is still variation between different circumstances.
- It is unlikely that value changes in a linear manner with the status of the area. The law of diminishing marginal returns suggests that the use of a fixed value would overstate the benefits of significant improvements and underestimate the dis-benefits of significant deteriorations¹³.
- Decisions using this information should also reflect stated national priorities. As noted above this partial analysis may not reflect wider considerations that have identified national priority areas.

¹³ The Law of diminishing marginal returns states that at a point as an individual's consumption of a good or service increases the satisfaction they receive for each additional unit falls. This is intended to reflect he

4. Valuing the local environment

52. The profound effect the local environment has on quality of life and wellbeing means that it is important that these effects are reflected in relevant decisions at a national and local level. This chapter provides guidance on the use of the monetary values identified from this research to support their application to inform policies, programmes and projects. Guidance within this chapter is not intended to set a prescriptive approach to evaluation but is rather intended to support use by setting a broad framework for usage.

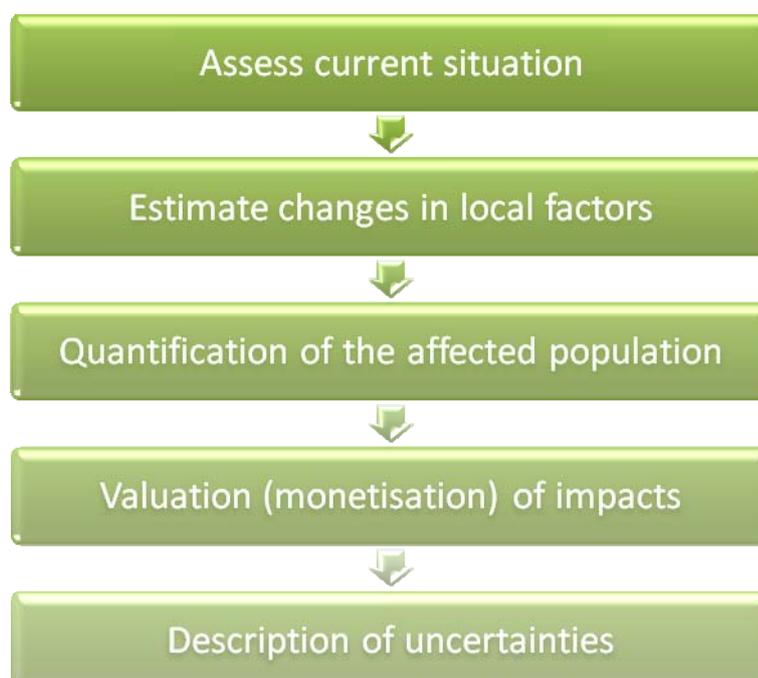
Valuation framework

53. The general approach to valuing changes in the local environment is based on the impact pathway approach applied to other aspects of the local environment. This approach follows the logical progression from the incident to the final outcomes which can be valued. Monetary values can be estimated using the following equation:

$$\text{Value of change} = \text{Change in local quality} \times \text{Population exposed} \times \text{Marginal value}$$

54. Diagram 4.1 illustrates the main stages used to apply the impact pathway approach.

Diagram 4.1: Appraisal of changes in LEQ



55. The first stage in the evaluation process is to assess the current situation in areas which are expected to be affected. Such an exercise is intended to establish the baseline for any potential changes that may occur as a result of the programme, policy or project. This assessment should focus on all the different aspects of the local environment that are expected to be affected by the decision. It should also as far as possible consider the potential changes over time.

56. If possible the assessment of the local environment should be undertaken on a consistent basis with the levels used in the research. Annex B provides the illustrations of the different levels of all the different aspects of the local environment.

57. Where this is not possible, for example if there is existing information on the local environment, then a matching exercise may be used between the different scales to reach a consistent basis. The full list of levels and descriptions of the different factors are provided in the Appendix B of the research report.

58. Having assessed the current situation, the impact of the options on the different aspects of the local environment should be estimated. Estimating these impacts will be informed by the wider considerations of the programme, policy or project. For each of the aspects the estimate should look to provide the scale of the change and its duration. Assessment of both these factors should be informed by the best available evidence and supported by expert judgement.

59. Willingness to pay can only be used to value changes where they are experienced by the public. It is therefore necessary to assess the population affected by the changes in local environmental quality. Again in assessing the likely population it is useful to consider both the current population and any expected changes over time.

60. To support the use of these tools the values are presented in two ways based on marginal changes around the original scale used in the research (ranging from a 3 to 5 point scale) and on a consistent scale (using 10 points). Tables 4.1 and 4.2 below provides the marginal values and sensitivity ranges that can be applied to the estimated changes and population.

Table 4.1: Marginal values of local environmental quality (original scale)

	Scale	Willingness to pay for an improvement (per person per month) ¹		
		Central	Low	High
Litter	1 – 4	£11.85	£10.77	£12.93
Trees	1 – 4	£6.99	£6.21	£7.77
Dog Fouling	1 – 4	£5.67	£5.07	£6.27
Chewing Gum	1 – 3	£9.77	£8.78	£10.67
Fly-tipping	1 – 5	£8.35	£7.63	£9.07
Quiet Areas	1 – 5	£3.08	£2.68	£3.44
Odour	1 – 5	£4.30	£3.85	£4.70
Graffiti	1 – 3	£2.52	£1.89	£3.24

Light Pollution	1 – 5	£1.42	£0.68	£2.16
Light Intrusion	1 – 4	£1.02	£0.06	£1.98
¹ No effect from fly-posting was detected in the study therefore it was not possible to estimate the marginal value of an improvement.				

Table 4.3: Marginal values of local environmental quality (ten point scale)

	Willingness to pay for an improvement (per person per month) ¹			
	Central	Low	High	
Litter	£3.95	£3.59	£4.31	
Trees	£2.33	£2.07	£2.59	
Dog Fouling	£1.89	£1.69	£2.09	
Chewing Gum	£2.17	£1.95	£2.37	
Fly-tipping	£3.71	£3.39	£4.03	
Quiet Areas	£1.37	£1.19	£1.53	
Odour	£1.91	£1.71	£2.09	
Graffiti	£0.56	£0.42	£0.72	
Light Pollution	£0.63	£0.30	£0.96	
Light Intrusion	£0.34	£0.02	£0.66	
¹ No effect from fly-posting was detected in the study therefore it was not possible to estimate the marginal value of an improvement.				

61. Bringing together the change in the perception of the local environment, the population affected and the marginal values set out in table 4.1 above it is possible to estimate and value the change in these aspects of local environmental quality.

Sensitivities and uncertainties

62. While this valuation exercise can usefully provide monetary values to help inform decision making it is vital that the uncertainties around such uses be reported and reflected in the analysis. As all policy options will have different specific uncertainties and sensitivities this guidance focuses on the general uncertainties surrounding the valuation estimates. These uncertainties should be considered in addition to the general considerations set out in this document.

63. Values placed on changes in the local environment vary between different individuals. The central estimate looks to provide an average value and therefore it is useful to reflect the level of variation around this point. Table 4.1, above, provides both high and low estimates based on the variation observed within the research. This table demonstrates that the level of variation changes significantly between the different values. For example the value of fly tipping is shown to be the most certain with the high and low estimates within 20% of the central value and light intrusion the least certain with the low estimate almost reaching zero.

64. The current situation including the current level of provision the local population's preferences and so on are likely also have a significant impact on the values placed on changes in local environmental quality. To reflect the difference placed by the public from different areas the analysis estimated different values for people living in inner-urban, suburban and rural locations. Table 4.3 below provides the range of values placed by residents of these different locations. These values can provide a useful sensitivity to illustrate the impact when the effects are not distributed evenly.

Table 4.3: Variation in valuation (Percentage change)

	Low	High
Litter	-14%	13%
Trees	-28%	45%
Dog Fouling	-71%	23%
Chewing Gum	-90%	140%
Fly-tipping	-14%	44%
Quiet Areas	-49%	94%
Odour	-61%	9%
Graffiti	-75%	35%
Light Pollution	-429%	3286%
Light Intrusion	-96%	187%

65. The link between change in local environmental quality and the perception of change has notable uncertainties. Therefore to reflect this it is recommended a switching analysis be undertaken to assess the level of change necessary to alter the economic case. If the economic analysis supports the proposal this should estimate the necessary level of change which would make public indifferent. Similarly where the economic evidence does not support the policy option the level of change necessary to support the case should be estimated

Hypothetical example

66. This section provides a hypothetical application of the results of this study to a policy to protect urban trees. In this scenario it is assumed that a change is considered to encourage local communities caring for urban trees by raising awareness of their benefits. For simplicity it is assumed that such an awareness raising campaign can only be done nationally with an associated cost of £50million

67. Step 1: Assess the current situation - As part of the research an assessment was undertaken of the current situation in relation to trees. Table 2.2 above shows that the current level is rated as 6.43 out of 10, with 10 being the best possible situation

68. Step 2: Estimate changes in outcomes - In this case it is assumed that the impact is a 2 per cent improvement in the current level of trees. This improvement is assumed to result in an improvement in the current quality. In this case it has been assumed that the rating increases by 2% to 6.56 for a single year.

69. Step 3: Quantification of effected population - A national awareness raising campaign may have wide ranging impacts on public behaviour. For simplicity it is assumed that the reduction in the loss of trees occurs evenly across England and so impacts on the entire population.

70. Step 4: Estimation of monetary values – Table 4.1 above provides the estimated marginal value of the presence of trees as £2.33 per person per month for an increase of 1 point on the 10 point scale. At this value the public value of the improvement in the urban trees is around £188million. This benefit can then be compared to the associated cost of the option in this case assumed at £50 million.

71. Step 5: Uncertainties and sensitivities - Finally it is important to reflect the uncertainties and sensitive's around this analysis. The specific uncertainties around any proposal should be considered but in this hypothetical case only the valuation based sensitivities have been undertaken. The application of these suggest that:

- Using the high and low values around the central estimate create a range of the value from £167 - £209 million. Given the assumed cost of £50 million these sensitivities are unlikely to change the economic case for this proposal.
- The central analysis assumes that the change in litter is evenly distributed across the UK. However, if the reduction were focused on different areas this would change the estimated value. Based on table 4.3 result the benefits could be reduced by 28% or increased by 45% to between £135 – £272 million.

- The link between litter and the assessment is challenging and a very small change has been assumed of 2 per cent. If the value were reduced to below a 0.53 per cent the costs would outweigh the benefits.

5. Prioritisation

72. A central aim of this research was to provide evidence which could help support the prioritisation between the different aspects of the local environment. With around £6 billion spent each year by Local Authorities on environmental services alone it suggests that any improvements in the allocation could have notable benefits.¹⁴

73. Economics can help prioritise different options by converting the costs and benefits of different options into a common metric, money. Prioritisation is then undertaken on the basis of the level of benefit associated with each pound of spending, presented as the cost benefit ratio. For example an option with a cost benefit ratio of 10:1 would imply a return of £10 for each £1 spent. This would then be preferred to an option with a cost benefit ratio of below 10:1.¹⁵

74. While this evidence provides a useful tool to support prioritisation, it is important to recognise its limitations. An economic prioritisation of actions to change the local environment requires both the value of changes in the local environment and the costs of making such changes. As this analysis only looked to estimate the impacts on the local environment such analysis would also require data on the cost and effectiveness of any actions to deliver such changes.

75. In the absence of information on the cost of measures to change the local environment five different approaches have been applied to support any prioritisation. The approaches applied are:

- I. **Stated preferences** public priorities from direct questioning.
- II. **Marginal values** placed on improvements in factors.
- III. **Current situation** with the lowest rated aspects having the highest priority
- IV. **Potential for improvement** prioritise the aspects with the highest potential monetary gain between the current and best situation.
- V. **Need for protection** prioritising the aspects with the highest current value.

76. Each of these approaches provides a different perspective on the importance of these different factors. The remainder of this chapter provides background on the way in which they have been applied, their strengths and weaknesses and ultimately their results. The end of this chapter looks to bring together the results of the different prioritisation approaches to draw out some general conclusions.

Stated preference

77. As part of the survey participants were directly asked to rank the importance to them

¹⁴ www.communities.gov.uk/publications/corporate/statistics/revenue201011finaloutturn

¹⁵ It must be noted that economic assessment is only one means of prioritisation. It does not for example reflect equity considerations and so even if there is a robust economic case it does not mean the option is optimal.

of the different aspects of the local environment. Stated preferences are the most direct approach to assessing the local priorities, and as such have a number of notable strengths. Notable advantages include:

- Reduced potential estimation error: less processing of data reduces opportunities for error. This reduction in processing therefore increases the certainty of the results reflecting the responses of the participants.
- transparency of the methodology: as survey results the methodology can be relatively easily explained. This transparency therefore supports the communication and understanding of the results.
- Openness for scrutiny: as there is no major processing of this data it is relatively open for scrutiny. This approach to prioritisation relies only on the survey sampling and the question design.

78. There is also a range of weaknesses with such an approach, including:

- Strength of preference, while it provides the preference order it does not provide information on the size of the preference. For example it would not be able to identify whether one issue were deemed to be substantially or marginally more important than another.
- Inconsistent interpretation, while every effort is undertaken to test the questionnaire there remains a potential for differing interpretations. For example in this case it may be that some responded on the overall importance of a factor, others considered the importance to improve that factor, while another group might consider the need for protection.
- No constraints, as there is no mention of the cost of action only the need to choose between action there is a potential that respondents may not fully consider the potential costs of action on any of these areas.

79. Based on this methodology the priority order identified from those surveyed is presented in Table 5.1 below.

Table 5.1: Stated preference priority order

Most important							Least important			
Litter	Fly tipping	Dog fouling	Quiet areas	Trees	Odour	Chewing gum	Graffiti	Light pollution	Light intrusion	Fly posting

Marginal values

80. A key result of this research was the set of estimates of the marginal values placed by the public on changes in different aspects of the local environment. Based on these values it is possible to prioritise the different factors. In doing so the factors with the higher marginal value were given the higher priority. In this way this prioritisation is intended to reflect the public importance of changes in each of the factors.

81. Key strengths of this approach include:

- Strength of preference: marginal monetary values provide both the preference order

and an indication of the strength of the preference order. For example comparing one rank to the next there is a major gap between fly tipping and trees (with fly-tipping almost 60 per cent higher) but a very small gap between odour and dog fouling (at just over 1 per cent).

- **Comparability:** monetary values provide the highest level of comparability between the different factors. They also support the wider comparison between the impacts on the local environment and the other impacts of any changes.
- **Marginality:** the monetary values focus specifically on the value of a change. Therefore it only reflects the importance placed on making changes to the factor in question.

82. There are however a range of weaknesses with such a approach, including:

- **Estimation challenges:** the values are estimated from responses ranking different options. In the interpretation of this data the results may not exactly match the responses to direct questioning.
- **Credibility:** as a stated preference study there may be a gap between what people report that they would choose and what they would choose if faced with the decision in real life.
- **Averaging preferences:** taking a average value may hide the strength of feeling of specific groups. For example from Table 4.1, light pollution may be seen to be welcomed by people living in the inner city, broadly neutral to rural residents but a notable concern for suburban residents.

83. Based on this approach the relative prioritisation is presented in table 5.2.

Table 5.2 : Marginal vales priority order

Most important					Least important				
Litter	Fly tipping	Trees	Chewing gum	Odour	Dog fouling	Quiet areas	Light pollution	Graffiti	Light intrusion

Current situation

84. The current status of each of the aspects of the local environment might also be used to prioritise between areas on the basis of the area of greatest need. All the different factors have been placed on a consistent scale to assess where they are between the worst and best situation. Therefore priority might be given to areas that are seen to be furthest away from the best possible condition.

85. Reasons for using this type of approach include:

- **Equality:** as preferences differ across the public specific groups are likely to be sensitive to particular issues. Targeting improvements on the worst performing areas therefore may promote equality.
- **Minimum quality:** it may be argued that the perception of the local environment may be determined by the worst aspect. For example if perception were to focus on the

worst quality improving the other aspects may not impact on the public level of satisfaction.

- Interactions: there are strong links between different aspects of the local environment and having one low level may impact on the other aspects. This view is famously set out in the broken windows theory suggesting that one small discretion may cause further and more significant ones.

86. However, it might be opposed on the grounds of:

- Revealed preferences: a low quality in one area might reflect the preferences of the public towards that issue. If the public are not concerned by the current level then it may be inefficient to focus resources on improving that aspect.
- Scale dependency: the ranking of the area is critically related to the scale used to judge that aspect. Therefore by altering the scale it may be possible to arbitrarily manipulate the prioritisation.
- Unresponsiveness: as this approach does not reflect the priorities of the public it will not tailor provision to local preferences. This approach may not therefore be seen to hamper public participation and influence.

87. Table 5.3 below provides the priority ranking using this approach.

Table 5.3 : Current situation priority order

Most important									Least important
Trees	Dog fouling	Graffiti	Litter	Quiet areas	Chewing gum	Light intrusion	Light pollution	Odour	Fly tipping

Potential improvement

88. By combining the current situation and the marginal values for improvements it is possible to estimate the potential value of improving each aspect to its highest possible level. This gap may be seen to provide an estimate of the social cost imposed by the prevailing levels of damage to different aspects of the local environment. A prioritisation exercise can then be undertaken based on the highest potential improvement. The potential improvement has been estimated by combining the collected evidence on the current status of each aspect, provided in table 2.2, and the marginal values, presented in table 4.1.

89. Some key reasons for prioritising on this basis are:

- Completeness: by reflecting both the current situation and the values placed on changes this estimate provides a rounded picture of the value of improvements.
- Comparability: estimating the benefits of an improvement in monetary terms enables a direct comparison to the costs of actions needed to deliver such improvements.
- Clarity: the estimated monetary values can provide a effective communication tool

to explain the importance of each area. Also by explicitly setting out the prioritisation process it is open for discussion and scrutiny.

90. However, some notable uncertainties include:

- Non linearity: as noted previously the marginal values are most appropriate to model small changes in local quality but this approach reflects significant changes. As this estimates the value of additional improvement the law of diminishing returns would suggest that the values may overstate the true impact.
- Estimation error: as additional processes are undertaken in reaching these values the chance for computational errors increases. It also makes explaining the results more challenging.
- Feasibility: this approach implicitly assumes that the highest level in each area can be achieved. In practice this may not be possible and so may not reflect the potential improvements.

91. Based on this approach the priority ranking and value of improvements are presents in Table 5.4, below.

Table 5.4 : Potential improvement priority order

Most important					Least important				
Litter	Trees	Dog fouling	Chewing gum	Fly tipping	Quiet areas	Odour	Graffiti	Light pollution	Light intrusion

Need for protection

92. The final approach to prioritisation is based on the value of the prevailing level of each aspect of the local environment. This reflects the view that the more valuable assets would justify more protection and therefore would be higher priority. In the same way to the estimation of the potential benefits these figures are based on combining the collected evidence on the current status of each aspect, provided in table 2.2, and the marginal values, presented in table 4.1.

93. Some key reasons for prioritising on this basis are:

- Completeness, by reflecting both the current situation and the values placed on changes this estimate provides a rounded picture of the value of these assets.
- Comparability, estimating the value of these assets means that they can be directly compared to the value of the resources used to protect them.
- Clarity, the estimated monetary values can provide a effective communication tool to explain the importance of each area. Also by explicitly setting out the prioritisation process it is open for discussion and scrutiny.

94. However, some notable uncertainties include:

- Non linearity, as noted previously the marginal values are most appropriate to model small changes in local quality, but this approach reflects significant changes. As this estimates the value of additional improvement, the law of diminishing

returns would suggest that the values may understate the true impact.

- Estimation error, as additional processes are undertaken in reaching these values the chance for computational errors increases. It also makes explaining the results more challenging.
- Worst case scenario, this approach shows the value between the current and the worst possible quality. It is therefore debatable if the situation would ever degrade to this level. For example on dog fouling it is relative to a situation where fouling would be always in view.

95. The results of this approach are presented in table 5.5 below.

Table 5.5 : Need for protection priority order

Most important							Least important		
Fly tipping	Litter	Chewing gum	Odour	Trees	Dog fouling	Quiet areas	Light pollution	Graffiti	Light intrusion

Summary

96. Bringing together these different prioritisation approaches it is clear that the drivers for action can have a notable impact on the ordering. Table 5.6 below brings together the results of all these approaches into a single table. The overall order is the average of the rankings for each approach. The variability, measured by the standard deviation, is also included to provide some indication of how certain the ordering is.

Table 5.6: Relative importance of local environmental factors^{16 1}

	Prioritisation approach					Average (Standard Deviation ¹)
	Stated	Values	Current	Improvement	Protection	
Litter	1	1	4	1	2	1.8 (1.3)
Trees	5	3	1	2	5	3.2 (1.8)
Dog Fouling	3	6	2	3	6	4.0 (1.9)
Fly-tipping	2	2	10	5	1	4.0 (3.7)
Chewing Gum	7	4	6	4	3	4.8 (1.6)
Quiet Areas	4	7	5	6	7	5.8 (1.3)
Odour	6	5	9	7	4	6.2 (1.9)
Graffiti	8	9	3	8	9	7.4 (2.5)
Light Pollution	10	8	8	9	8	8.6 (0.9)
Light Intrusion	9	10	7	10	10	9.2 (1.3)

¹ Standard deviation is presented as a indication of the level of variation in the rankings

97. Some interesting results from this analysis are:

- Across the different approaches to prioritisation litter and trees are consistently highlighted as high priorities while light pollution and intrusion are seen to be low priority areas. Across these four areas there is a high level of consistency in these results;
- Fly tipping and graffiti both show high levels of variability depending on the approach to prioritisation. In relation to fly-tipping this appears to show that currently the level is very low but the costs if it were to start are very high. Graffiti however has almost the opposite position where the current levels are judged to be relatively high but the public are relatively accepting of it.

¹⁶ Fly-posting has been removed from this list as it is only possible to include it in two of these approaches to prioritisation. This omission does not however impact on the average prioritisation.

- While there is much consistency in the results it is clear that the reason for taking action can have a notable impact on the priority areas. This could have important policy impacts. For example in cases where additional resources are intended to improve public satisfaction, on average investing in reducing litter would be the best option. However, if those resources were intended to reduce the risk of deterioration of an area it might be justifiable to use them to prevent fly-tipping.

98. Placing these results into the context of wider evidence yields some mixed results, thereby highlighting the need to consider these results in the round. For example the Local Authority Statutory Nuisance Survey (LASNS) identified a range of areas not included in this study that are generating significant complaints. Most notable being the complaints about noise of which there were around 314,000 complaints in 2010/11, and smoke which account for around a quarter of all non noise nuisance complaints, the second highest area.

99. In relation to specific aspects of the local environment:

- LASNS broadly supports the results on litter finding that over 40 per cent of non-noise complaints related to accumulations;
- The LASNS suggest that odour is a more important issue than Table 5.6 may immediately suggest as it accounts for around one in eight complaints.
- Data from the Artificial Light Nuisance Report (2010) suggests that the importance of light might not be as low as it immediately appears. While not directly comparable there are more complaints on light than animals, insects, dust and steam.¹⁷ Ranking purely on this basis would suggest it as a medium priority. A potential explanation for this might be that the effects of light have been disaggregated into light intrusion and light pollution.

¹⁷ The two key differences being: complaints on light were collected over a 3 year period while the LASNS presented data for a single year; and their was a different response rate to

6. Conclusion

100. The environment in which people live has a profound impact on their quality of life and wellbeing. In surveys the public have consistently identified local environmental factors as being one of the most important factors in their wellbeing. Therefore it is important that where programmes, policies and projects have a notable impact on the local environment they are assessed and reflected in the decision making process.

101. The research undertaken by the Institute for Transport Studies, the University of Leeds and the Transport Studies Group at Loughborough University looks to support this objective by estimating the public value placed on changes in the local environment. The key findings of this research are presented in table 6.1.

Table 6.1: Key results

	Current situation (1=worst, 5 best) ¹	Importance rating ²	Willingness to pay for an improvement (per month) ³
Litter	3.43	1	£3.95
Fly-tipping	4.28	2	£3.71
Trees	3.21	5	£2.33
Chewing Gum	3.68	7	£2.17
Odour	3.93	6	£2.33
Dog Fouling	3.37	3	£1.89
Quiet Areas	3.49	4	£1.37
Light Pollution	3.88	10	£0.63
Graffiti	3.40	8	£0.56
Light Intrusion	3.84	9	£0.34
Fly-posting	3.77	11	_4

¹ Different aspects were assessed using different scales. For comparability all the results have been placed on a common scale from 1-5. Light pollution and chewing gum were assessed on a scale of 1-3 while litter, light intrusion, trees and fly tipping were assessed on a scale of 1-4.

² This priority ordering comes directly from participants responses and so does not exactly match the importance ordering from the willingness to pay estimates.

³ These estimate the values that an individual would be willing to pay in additional council tax per person per month in order to improve that factor by one unit on a ten point scale from worst to best.

⁴ No effect from fly-posting was detected in the study therefore it was not possible to estimate the marginal value of changes.

102. While the uncertainties must be kept in mind Defra believe that these results can still

play a useful role to support programmes, policies and projects that are likely to impact on these aspects of the local environment. Where better evidence is not available Defra recommends their use to support:

- Prioritising between different aspects of the local environment.
- Valuing small changes in these aspects from relevant decisions.
- Producing indicative estimates for larger changes in the local environment.

103. To support the appropriate use of the marginal values Defra has provided a framework for their application. It should, however, be stressed that the use of this evidence should be informed by the analyst undertaking the assessment in the context of the decision and available information. It is not intended as a 'one size fits all' valuation for all the different aspects of the local environment. This guidance is provided in Chapter 4 of this paper.

104. However, with any use of these values it is important that the uncertainties and wider context around these results are considered. Some key considerations are:

- Values and any prioritisation derived from this research only reflect the amenity that the respondents are consciously aware of. Therefore it is likely to exclude a range of wider impacts which may be socially important.
- These values are intended to supplement the available information for decision making and not to replace it.
- The survey undertaken for this research was undertaken based on a representative but relatively small number of observations.
- It is unlikely that value changes in a linear manner with the status of the area.
- Decisions using this information should also reflect stated national priorities.

Annex A: Illustrations of local quality

	Worst	Best
Litter		
Trees		
Fly-tipping		
Chewing Gum		
Graffiti		
Dog Fouling	Never or very rarely	Always dog mess in view
Quiet Areas	Quiet area within 1 minute walk of home	No quiet areas around here
Odour	No bad smells	Bad smells all the time

Light Pollution	I can see many stars	I can't see the stars
Light Intrusion	No light intrusion from any source	Light intrusion affects the sleep of someone in my household.

Annex B Complete set of local environmental quality illustrations

B.1 This annex provides the illustrations which were used in the valuation exercise to describe the different levels of environmental quality. In this scale the higher ranking equates to better environmental quality.

Chewing Gum		
		
1	2	3

Litter



1



2



3



4

Trees



1



2



3



4

Fly tipping



1



2



3



4

Fly posting



1



2



3



4



5

Graffiti



1



2



3



4



5

Annex C: Sample survey

Section 4							
We would now like you to consider the various local environmental factors that have just been shown to you and identify which situation best describes the current situation you experience							
Worse Situation				Better Situation			
Light pollution on a clear night	I can't see the stars		I can see some stars		I can see many stars		
Discarded chewing gum							
Litter							
Light intrusion at night	Light intrusion that affects my sleep or that of someone else in my household	Light intrusion that I can't block out with heavy curtains but doesn't affect my sleep	Light intrusion into my home that I can block out with heavy curtains	No light intrusion from any source			
Trees							
Fly-tipping							
Access to quiet areas	No quiet areas around here	Quiet area within 15 minutes walk of home	Quiet area within 10 minutes walk of home	Quiet area within 5 minutes walk of home	Quiet area within a 1 minute walk of home		
Graffiti							
Odour	Bad smells all the time	Bad smells occur weekly	Bad smells occur every month or so	Bad smells occur once or twice a year	No bad smells		
Fly-posting							
Dog fouling occurs	Always dog mess in view	Every minute when walking	Every 5 minutes or so when walking	Every 15 minutes or so when walking	Never or very rarely		
Council Tax you would pay	£12 more each month	£5 more each month	£1 more each month	As Now	£1 less each month	£5 less each month	£12 less each month