

Enhancing Appraisal Methods to Support Sustainable Transport and Land Use Policies

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This paper reports on the results of the part of the DISTILLATE programme which looked at the process of appraisal and how this affects UK local authorities. Initial surveys suggested that local authorities were concerned that formal appraisal methods represented a barrier to the implementation of more sustainable land use and transport schemes. Their concerns included some of the technical aspects of appraisal and the weight given to some elements, the applicability of techniques to small schemes and some types of measure as well as the ability to assess the distributional impacts of proposals. Responding to these concerns, the project looked in more detail at the reasons for these concerns and at the use of appraisal within the political process of decision making. It developed a simple, transparent technique for analysing small schemes and two methods for assessing the distributional impacts of proposals, both on individuals and agencies. Finally it developed guidance from first principles on the specification of appraisal processes.

Keywords: appraisal; transport policy; decision making; sustainable transport

1. Introduction

This paper is one of a series on a UK research programme, DISTILLATE (Design and Implementation Support Tools for Integrated Local Land use, Transport and the Environment), which carried out research into six barriers deemed of particular importance to UK local authorities, and developed a series of products designed to support local authorities in their decision-making. The DISTILLATE research programme was funded under the UK Engineering and Physical Sciences Research Council's Sustainable Urban Environment initiative, which

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placed a particular emphasis on research which met the needs of practitioners. It also sought research proposals which were multi-disciplinary, reflecting the complex nature of the problems to be tackled, and multi-institutional, given a concern that no one institution might have the critical mass of research skills needed.

The DISTILLATE programme responded to these challenges by involving local authorities and related actors directly in the research programme and by bringing together the research skills of two interdisciplinary transport research groups, a planning school, a policy-oriented research centre, and a national research establishment. It was designed to help overcome those barriers to decision-making which were judged to be most serious, and most amenable to research-led solutions. It set itself a vision of helping to achieve a step change in the way in which sustainable urban transport and land use strategies are developed and delivered. Further details of the programme as a whole, and of the role of the project reported in this paper, are provided in the overview paper (May, 2009).

An important element in the process of developing a transport strategy is deciding which transport schemes or projects to pursue from the options available. The practice of appraisal – that is the formal process of studying the impacts of a proposal in order to decide whether it should be undertaken – is one over which there is substantial debate. The issue of appraisal methods and their use within the development of sustainable land use and transport policies was one which it was felt important to study as part of the DISTILLATE programme.

This paper summarises the results of the “Enhanced Appraisal Methods” project. This looked at the process of appraisal, the barriers that local authorities felt it presented to them and the development of four “products” to help local authorities overcome these barriers. The justification for the work, together with a detailed description of the three tools and the set of guidelines produced by the project are described below. Whilst grounded in UK experience, some of the principles covered in discussion are generic to the European or wider context.

This paper is organised as follows: Section 2 covers the concerns of local authorities, while Section 3 gives some background to practice in England and Wales, which provides the context within which most of our local authorities were working. Section 4 describes the development of a method to assess small schemes. Section 5 looks at some ways of incorporating distributional issues into appraisal. Section 6 looks more fundamentally at the process of appraisal and how it relates to transport policy and touches on the political processes involved. Section 7 presents the key conclusions from the work.

2. The issues raised by local authorities

During the development of the DISTILLATE programme, as well as from surveys carried out during the programme (as part of the project on organisational behaviour and barriers, see Hull, 2009), appraisal was identified as a barrier to the development and delivery of sustainable urban transport and land use strategies by local authorities. Their concerns included certain technical aspects of appraisal (the dominance of travel time savings being the main one), their ability to appraise some types of policy (including small schemes and behavioural and attitudinal measures) and the assessment of the distributional effects of proposals.

The following barriers were identified from the surveys carried out by another part of the programme (Hull, 2009) and from stakeholder (local authority partner) involvement in programme workshops:

1. Some impacts are not well represented in appraisal.
2. We do not know what the impacts of certain policy instruments are.

3. Appraisal or assessment methods for some policy instruments are not well developed.
4. Appraisal can be time consuming, onerous and expensive.
5. Appraisal using methods specified by others can generate results which appear inconsistent with a local authority's objectives. Specifically, central government appraisal criteria can affect scheme selection and implementation because of a focus on "value for money" criteria.
6. The distributional impacts of projects are not easy to represent in appraisal.

Barriers 1 and 2 were felt to be important issues, but of more general concern and with much wider implications; it was therefore decided not to pursue these further. However, some discussion of them was included in the final output from the project.

There were also a couple of more technical issues:

- A concern about the accuracy of valuations
- Philosophical concerns about the valuation of impacts.

Again, these are important (and the subject of considerable academic interest), but of less immediate concern to local authorities and therefore not a priority for the project.

Barrier 4 is a serious issue for local authorities and is well known to the Department for Transport (DfT). One focus of the recent consultation on the New Approach to Appraisal (NATA) was whether the level of effort required to prepare an appraisal is appropriate for smaller major schemes (DfT, 2007b). This concern has now been noted by the Department and guidance on supporting proportionate appraisal is being prepared for consultation in late 2009 (DfT, 2009a). It was decided not to pursue this issue further, though the DISTILLATE project did feed into the DfT consultation.

The project therefore focused on the remaining appraisal and assessment issues, which are considered further in this paper:

- the need for a simpler method for assessing small schemes, such as improvements for pedestrians and cyclists and behavioural and attitudinal measures;
- the assessment and representation of distributional impacts in appraisal; and
- the potential inconsistencies between the conventional appraisal methods and the emphasis on value for money in the UK (DfT, 2004a) and the sustainable transport policies local authorities might want to adopt.

3. Background to appraisal practice in England and Wales

The requirements for appraising proposals for transport schemes in England and Wales differ, depending on whether the scheme is a major one (gross cost greater than £5M) or not. If it is a major scheme, a business case for the scheme has to be prepared (DfT, 2007a) which incorporates a process known as NATA (New Approach to Transport Appraisal). The project then has to clear a series of hurdles (including regional prioritisation) in order to be accepted for funding by the DfT. Local authorities have a much greater degree of freedom over smaller projects, which can be funded through the integrated transport block grant, which is part of the settlement they receive based upon their Local Transport Plans (LTPs). These are plans, currently prepared every five years, in which a local authority sets out its plans for improving transport over the next five years and also, in less detail, over the longer term (DfT, 2004c).

In NATA the Appraisal Summary Table (AST) (DfT, 2004b) summarises impacts, some of which are assessed by qualitative scoring, others by quantification and others by quantification and valuation (based on the present value of benefits or costs). The aim is to assess whether the project represents value for money in terms of whether the “overall net value” (DfT, 2004a) is greater than the costs. It is not possible to directly compare all the different impacts to assess an overall net value but “the person assessing the ‘overall net value’ – the ‘assessor’ – is required to derive their own estimate by exercising their own judgement about the relative importance of the various impacts” (DfT, 2004a).

NATA therefore combines elements of disaggregate appraisal (different impacts are presented separately in the AST) aggregate appraisal (the decision maker is asked to combine the impacts using some estimate of relative value) and cost benefit analysis, because a subset of the impacts are valued and a Benefit Cost Ratio (BCR) is derived.

It is also clear from the guidance (DfT, 2004a), that NATA represents an attempt to consider a wide range of different impacts and that it uses (as far as possible) “objective” weightings and sometimes valuations for the different impacts, often derived from willingness-to-pay type studies. Where weightings are not available, the guidance seems to suggest that the assessor (or decision maker) should make a disinterested assessment of the relative importance of the different impacts. However, there is little guidance on how this should be done.

In recent years, the NATA methodology has moved towards the quantification and valuation of more impacts, with noise and carbon dioxide emissions being added to the impacts which are expected to be valued in monetary terms. Guidance issued in April 2009 suggests that the impacts of a scheme on physical fitness should be quantified and monetised where there is evidence that the impacts may be more than slight (DfT, 2009b).

The recently completed NATA Refresh (DfT, 2009a) includes a number of minor changes to the system including the addition of some new analyses and a change in the treatment of indirect taxes. Other changes include modifications to the Appraisal Summary Table to highlight carbon impacts and ensure alignment between local and national goals. The presentation of indirect taxation impacts and journey time improvements are also to be changed to improve transparency. The review, however, does not fundamentally alter the role of NATA and the importance of cost benefit analysis within it. It comments that “NATA makes considerable use of cost-benefit analysis and, where possible, ascribes monetary valuations to impacts so that they can be compared to costs on Government budgets.”

Responses from the local authority partners suggested that NATA was seen as a hurdle that a proposal has to clear, often after a proposal has acquired significant political momentum, rather than as an initial aid to decision making. It is this experience, in particular, which tends to lead local authorities to perceive appraisal as a barrier. The preparation of a business case for a major scheme is also felt to be onerous and can take a significant investment of time and effort, which has to be committed before an appraisal is carried out. This undermines any role that the results of an appraisal might have at an early stage in the process in helping a local authority to decide whether a proposal should go ahead.

DfT (2006) guidance on value for money involves the preparation of a BCR for the project which includes only those impacts which can both be measured and monetised. Value for money is indicated by the BCR and DfT (2006) suggests that the Department will not fund projects with a poor value for money ($BCR < 1$), is unlikely to fund projects with a low or medium value for money ($1 < BCR < 2$), but will fund most projects with a high value for money ($BCR > 2$). The guidance suggests that non monetised impacts should be assessed, but that these will be unlikely to alter the value for money assessment unless they are “sufficiently significant relative to the costs”. It is difficult to see how an assessor can make this judgement, given that these impacts are not monetised, except in an extreme case of, for example, building new infrastructure through an

environmentally sensitive area. In practice, except in extreme cases, it seems likely that the assessment of value for money will be based solely on those impacts which are considered in the cost benefit analysis. This implicitly means that economic value for money of a subset of the scheme impacts dominates the other public policy objectives and impacts.

This in turn means that there is a risk that a proposal, even when it reflects the wider transport policy objectives of the local authority as reflected in the AST, might encounter problems in attracting national funding because of an unfavourable NATA assessment (May et al., 2008 includes an example of such a project). In some cases this problem can be avoided by changing the design of the proposal, but as noted in DISTILLATE guidance on funding (Binsted and Brannigan, 2008a) this may make the solution less consistent with the underlying local objectives. While there is logic in saying that national government funding should be based on national policy objectives, it is inconsistent with the principles of integrated transport planning for these national objectives to be applied to some parts of the strategy and not others.

For smaller schemes (gross cost less than £5m, which will be funded through the integrated transport block grant) detailed preparation of a business case and full appraisal are not required. Local authorities are free to use their own procedures for assessing these smaller schemes though the guidance does suggest that local authorities should identify “benefits and costs of LTP proposals in LTPs – including all non-monetised benefits (such as environmental impacts) specified by the NATA framework and indicating their likely magnitude” (DfT, 2004c). Local authorities are asked by the DfT, as part of the development of their Local Transport Plans (LTPs) to develop policies and proposals to address nationally agreed “shared priorities” (objectives) (DfT, 2004c). There are also a range of mandatory indicators for which local authorities are expected to set targets and monitor performance. The guidance also suggests that value for money is an important consideration in the development of these plans.

Smaller schemes are usually identified in the LTP (except for very small schemes, which may be pooled under more general headings such as “improvements to the cycle route network”) and local authorities are likely to pay particular attention to whether these projects can help them achieve the mandatory or local targets they have set themselves. As such the assessment of small schemes is less likely to be concerned with their performance against the impacts included in NATA and more likely to be based on “best value-for-money solutions to deliver those targets” (DfT, 2004c). This consideration very much guided the development of the assessment method for small and local schemes developed as part of this project (see Section 4).

DfT (2004c) suggests that it would be wrong to see the LTP documents just as bids for funding in the same way as major scheme proposals. The guidance makes it clear that local authorities should see an LTP as a “prioritised programme to deliver the best possible value for the indicative capital funding levels” (DfT, 2004c). However, the proposals that local authorities might develop in their LTPs to address their indicators and targets may well differ from the set of proposals which would give the best results in a NATA appraisal.

4. Assessing small schemes

The concerns of local authorities suggested that they needed a less onerous, time consuming and expensive method for assessing small schemes, costing less than £5m, for which formal NATA appraisal is not required. Page et al. (2007) identified that appraisal methods appropriate for the assessment of such schemes were not well developed. These schemes include small scale improvements for pedestrians and cyclists, minor traffic management schemes and also behavioural and attitudinal measures such as marketing campaigns. To date, assessment of schemes such as these has been patchy but there existed a desire, on the part of local authorities, for a way of comparing such schemes with each other, to help in deciding which to pursue in a

situation where funds were inevitably limited. The need was for a method which might help them most easily to achieve their own objectives or to address the differing criteria required by a range of alternative sources of funding.⁶

To date the assessment of schemes that do not require a full NATA appraisal has not been formalised; however, there has been an expectation from the DfT that local authorities use some form of appraisal methodology in identifying the “benefits and costs” of schemes (DfT, 2004c). A number of local authorities had developed in-house methods for prioritising their local schemes, reviews of which are provided in Kelly et al. (2008) and Atkins (2008). Issues identified with these methods included that there was often little transparency in the link between the inputs and outputs of the method, there was little flexibility in how the schemes were assessed, certain methods did not allow several schemes to be directly compared and in other cases the amount of data input that was required was felt to be burdensome.

There were a number of common characteristics of these methods. Firstly, the schemes reviewed were all being assessed against specific indicators. For example, in preparation for the second Local Transport Plan submission, certain local authorities had developed methods to assess their schemes against the key local transport plan indicators specified for the plans (DfT, 2004c). Secondly, the methods considered both the impact of a scheme against an indicator and the relative importance (or weight) that was put on that indicator by a local authority or funding source. Other key elements included in the methods reviewed were the value for money of the schemes (how do the estimated costs compare with the expected benefits?), how deliverable the schemes were (is it likely that the schemes will proceed/ what are the risks?) and a facility for sensitivity testing.

Based on this analysis, the DISTILLATE project developed a tool for appraising small schemes (described in full in Kelly et al., 2008). The key requirements for the tool were that it should:

- be appropriate at a small scheme level
- be an assessment of schemes against indicators (impact and relative weight)
- be, to some extent, comparable with a NATA appraisal
- be transparent, quick and uncomplicated to use
- incorporate some consideration of value for money and allow sensitivity testing.

The tool developed is an assessment matrix, which allows users to select a set of indicators appropriate to their circumstances, weight the indicators in terms of importance, assess the impact of proposed scheme(s) against the indicators and finally combine the weighting and assessment to derive a final score that will give an indication of whether a scheme is worth pursuing, or a priority list where more than one scheme is assessed. The tool provides a pick list of potential indicators derived from transport and land use indicator sets including NATA (DfT, 2004b), national guidance on Local Transport Plans (DfT, 2004c) and other appropriate sources, and builds on guidance described in Marsden and Snell (2009). The flexibility in the tool allows users to add their own local indicators, which may reflect specific local or regional concerns, and those of funding agencies. It thus allows the assessment to be more tailored to the differing priorities of different funding sources. By using the NATA indicators in the assessment it is also possible to use the tool as a quick preliminary assessment for a major scheme before conducting a full NATA appraisal.

Once the indicators have been selected, the user can then weight the importance of the indicators in the assessment on a scale of 1- 5 (1 = lowest importance, 5 highest importance). Flexibility here

⁶ Binsted and Brannigan (2008b) provide a toolkit describing the full range of sources and suitability of funding for different local authority schemes.

is important - for example, environmental indicators may hold a higher weight for certain sources of funding. This element could also be used to show how weightings differ depending on the stakeholders involved. The user then assesses the impact of a scheme against each indicator on a scale of -3 to +3 (-3 = highly significant negative impact, 0 = neutral, +3 highly significant positive impact). A simple linear additive model is then used to combine the assessments for the individual indicators and produce the final "score" for a scheme (Figure 1). The higher the score the better the scheme has performed against the selected indicators and weights. The method can be used to investigate, in an iterative manner, the sensitivity of the final score to changes in the levels of impact or weight for different indicators. Care has been taken to ensure that the user is aware of the implied trade-offs which can emerge from the process. For instance, an increase in the level of impact of an indicator can offset a reduction in its weight.

STAGE 4: RESULTS					
Scheme Description		Pedestrian Crossing	Assessors Initials	ck	
DATE OF ASSESSMENT		12/11/2007	Expected cost of scheme	£20,000	
Number of Indicators included		12	You need to add in your estimate of the cost		
SCORE		31	You then need to either save this page as .txt file or copy and paste into the scheme comparison file. Then you can re do stage 3 and 4 for the next scheme		
Type	Indicator	Category	Combined score (impact x importance)	Importance Score	Impact Score
LTP_Mandatory	% of a) households; b) households without access to a car; within 15 and 30 minutes of a GP by Public Transport	Accessibility	3	3	1
LTP_Mandatory	Congestion (vehicle delay).	Economic	0	2	0
LTP_Mandatory	Cycling Trips (Annualised index)	Accessibility	0	2	0
LTP_Mandatory	Bus punctuality Indicator	Accessibility	0	4	0
LTP_Mandatory	Total killed and seriously injured casualties	Safety	10	5	2
LTP_Mandatory	Child killed and seriously injured casualties	Safety	5	5	1
LTP_Mandatory	Principal Road Condition	Maintenance	2	2	1
LTP_Mandatory	Footway Condition	Maintenance	0	3	0
Local	Percentage of residents surveyed who said they feel 'fairly safe' or 'very safe' during the day whilst outside in x (authority name)	Safety	6	3	2
Local	Number of Home Zones	Other	0	4	0
Local	Percentage of all households within 13 minutes walk of an hourly or better bus service	Accessibility	2	2	1
Local	Number of days of air pollution	Environmental	3	3	1

Figure 1. The results page – note that the calculation of the overall score (a simple sum of the combined scores) is transparent

The outputs from the tool focus on which scheme would best suit the weighted indicators that have been selected. Schemes assessed against different indicator sets would not be directly comparable. The key output from this tool is the final score (as shown in Figure 1) that can be compared across schemes assessed by the same assessors and using identical indicators. In addition to this there are a number of other key outputs. It is possible to add in an estimate of the cost of a proposed scheme, so allowing a comparison between score and cost, as shown in Figure 2. Figure 2 compares four schemes against one specific indicator set. In this example scheme 2 had the lowest score and was estimated to cost the local authority the most money to implement. In comparison, scheme 1 had the best score against the selected indicators and was estimated to cost less than scheme 2. This output provides a visual depiction of the relative value for money of the schemes (Figure 2). Another feature is the functionality to compare the scores across the schemes against each of the individual indicators (Figure 3). Figure 3 provides a comparison of two schemes against 27 selected indicators showing explicitly where they have achieved both high and low scores. This function allows the assessors to identify particular ways that could be used to improve the scheme's score by modifying the scheme to target improvements in indicators that have not scored highly in the assessment.

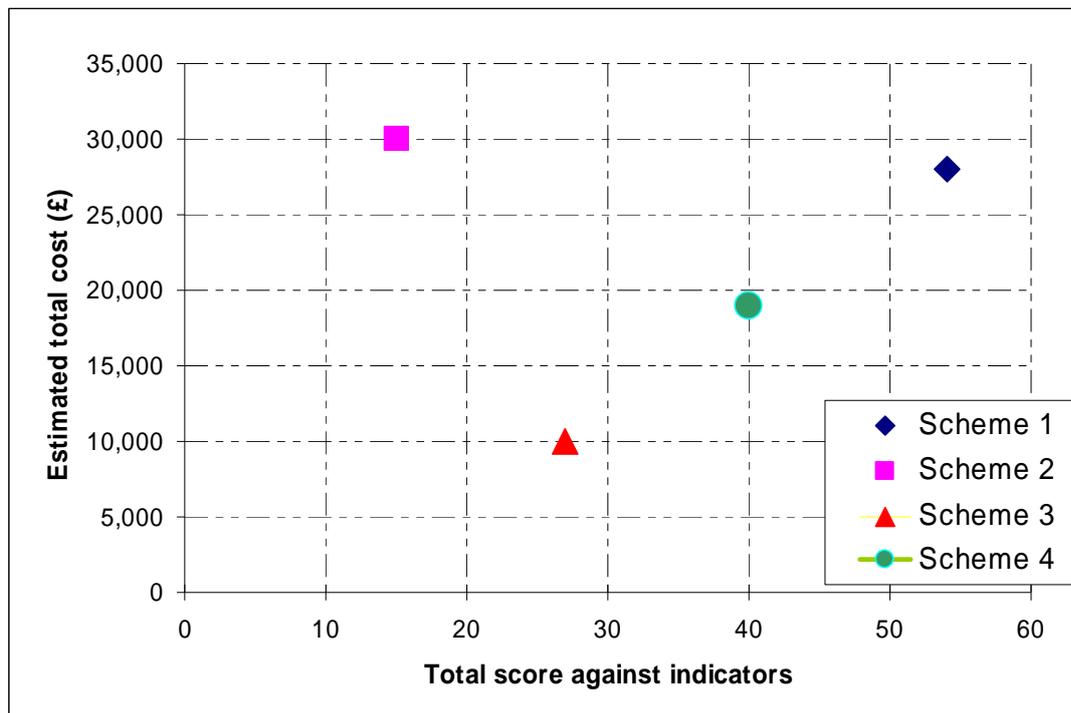


Figure 2. Comparison of score against cost

This method has the key advantage of transparency. Users are encouraged to use the method to explore their own decision making process in an iterative manner. It can highlight which schemes could help authorities meet their objectives and targets at a local level. It can also be used as a tool to show how a decision was reached and demonstrate this decision making process to stakeholders.

It is important to note that the assessment method should be seen as an input to a decision making process; it should not (on its own) determine whether a proposal goes ahead, nor should the output be used as a hurdle which a proposal has to clear before it can progress. Different stakeholders might well score the same proposal differently using the method, because they weight different impacts differently. It is hoped, however, that there will be agreement on the actual magnitude of the impacts a proposal will have. Expert advice, knowledgebases such as KonSULT (Jones et al., 2009) and sketch planning models (Shepherd et al., 2009) can all contribute to improving the understanding of such impacts.

The tool was used by Blackpool Council to look at the assessment of pedestrian provision. They found the speed and interactivity of the tool beneficial. It also allowed them to look in detail at the contribution that different indicators were making to the overall "score" of a proposal and compare these with other proposals. Figure 3 shows two different schemes, assessed against the same 27 indicators, but exhibiting different patterns of impact.

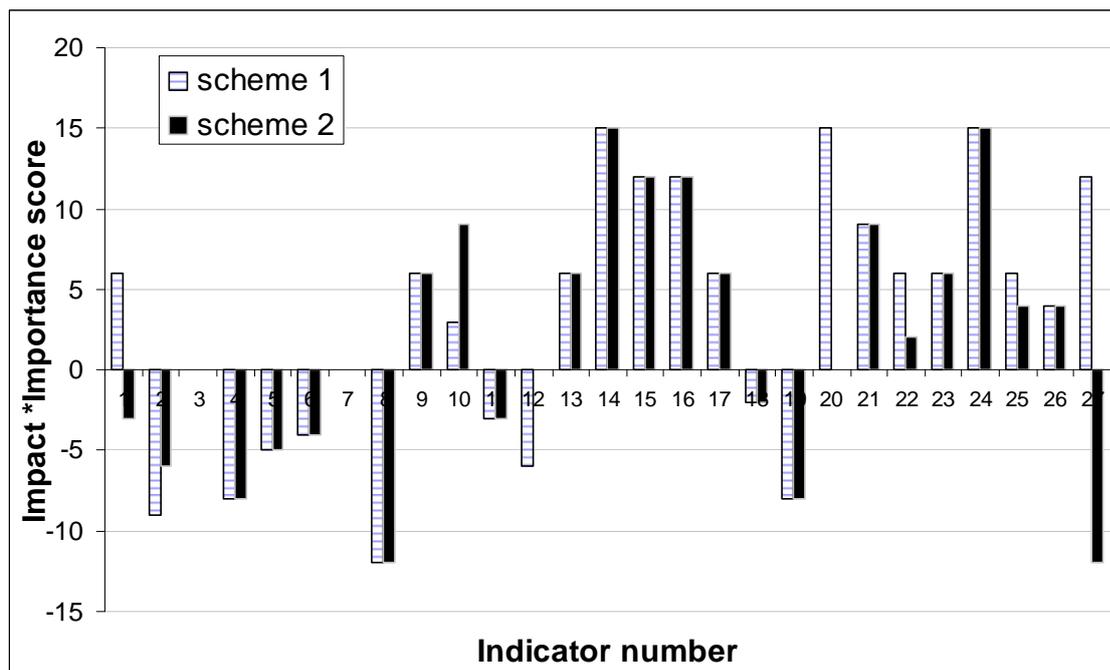


Figure 3. Breakdown of score by different indicators

5. Incorporating distributional impacts into appraisal

Local authorities were also concerned about the difficulties they had in representing the impacts of proposals on different groups as part of an appraisal. While DfT and Treasury guidance both stress the need to take into account distributional issues in project appraisal (HM Treasury, 2003, DfT, 2004d), there is little detailed information or experience on how this might be achieved in practice.

Most efforts have focused on the spatial disaggregation of data, rather than any social disaggregation. DISTILLATE has developed two methods for identifying the distributional impacts of proposals, one covering end user groups at scheme level and the other considering inter-agency impacts at strategy level.

5.1 Scheme level impacts

The scheme level application was developed in the West Midlands, linked to another DISTILLATE project on generating options for street space reallocation (see Jones et al., 2009). This has resulted in the development of a spreadsheet tool that assesses the benefits of different designs for various street user groups.

The tool has four main components (Jones and Paskins 2008a). First, a matrix is developed, showing different street user groups and potential design elements that might be included in a street space allocation option, with an indication of whether a group would benefit (+1) or disbenefit (-1) from that provision, as shown in Figure 4.

Third, the user is invited to consider whether they wish to apply weightings in the appraisal. These can be of various kinds, in particular for:

- Different street user groups (e.g. giving a priority weighting to street users with disabilities)

- Different street design elements (e.g. giving a higher weighting for loading than for parking bays)
- Varying levels of provision (e.g. reducing unit weights once more than five parking spaces are provided)

Return to Inputs & Impacts sheet Return to Select Relationships Reset All to Overall SDE Reset All to Linear									
User Group/Design Elements Matrix: Basic Relationships									
User Group \ Design Element	Pedestrians	Pedestrians who have mobility difficulties	Those using the street to socialise/relax	Cyclists	Bus users visiting the street	Those travelling to other destinations - all modes	Car users (non-disabled) visiting the street	Disabled car users visiting the street	Shopkeepers
Lanes									
General traffic				1	1	1	1	1	
Bus lane	-1	-1		1	1				
Cycle lane				1					
Bays and Crossing Places									
Parking bays							1		
Disabled parking bays								1	
Loading bays									1
Bus bays					1				
Crossing places	1	1			1	-1			
Other Design Elements									
Traffic island	1	1	1		1				
Street seating								1	
Cycle stands	-1	-1		1					

Figure 4. Assessment of potential design elements

Source: Jones and Paskins (2008a), Figure 14

Second, details of the current street layout and an alternative design option are entered into the spreadsheet, in the format indicated in Figure 5.

Street design elements									
Current provision						Proposal			
Lanes	Element weight	Relationship	Colour	Number	Total length	Average Width	Number	Total length	Average Width
General traffic	1	Linear (constant)	Grey	2 Lane	0 m	N/A	2 Lane	0 m	N/A
Bus lane	1	Linear (constant)	Red	1 Lane	0 m	N/A	1 Lane	0 m	N/A
Cycle lane	1	Linear (constant)	Green	1 Lane	0 m	N/A	1 Lane	0 m	N/A
Bays and Crossing Places									
Parking bays	1	Linear (constant)	Yellow	4			4		
Disabled parking bays	1	Linear (constant)	Blue	2			8		
Loading bays	1	Linear (constant)	Brown	2			2		
				Total number of parking and loading bays	8		14		
Bus bays	1	Linear (constant)	Orange	1			1		
Crossing places	1	Linear (constant)	Magenta	0			0		
Other Design Elements									
Traffic Island	1	Linear (constant)	Cyan	0			0		
Street seating	1	Linear (constant)		0			0		
Cycle stands	1	Linear (constant)		0			0		

Figure 5. Details of the current and alternative street layouts

Source: Extracted from Jones and Paskins (2008a), Figure 15

Once this information has been input (or the default settings have been accepted), the spreadsheet provides an appraisal output in the form of a total weighted score and the component scores for each street user group, for both the current street layout and the proposed scheme. This is illustrated in Figure 6. Here we can see that, in this case, the proposed plan only benefits bus users visiting the street when compared with the current provision – but does not disadvantage any other street user groups in the process.

This technique helps the street designer to identify in a systematic way the particular groups of street users for which he/she should attempt to cater and to articulate their design requirements; and, from a policy perspective, the tool shows the consequences of applying different sets of weightings in influencing what emerges as the preferred design solution.

Impacts	Current provision	Proposed plan	Plan comparison
Pedestrians	-3	-3	0
Pedestrians who have mobility difficulties	2	2	0
Those using the street to socialise/relax	5	5	0
Cyclists	7	7	0
Bus users visiting the street	35	40	5
Those travelling to other destinations - all modes	4	4	0
Car users (non-disabled) visiting the street	5.5	5.5	0
Disabled car users visiting the street	36	36	0
Shopkeepers	2	2	0
Total	93.5	98.5	5

Figure 6. Assessment of the proposal by user group
 Source: Derived from Jones and Paskins (2008a), Table 5

5.2 Strategy level impacts

Work in South Yorkshire, looking at the accessibility needs of different population groups, led to an examination of how decisions taken by one agency impact on the domains of other agencies – often in a negative manner. This led to the development of a simple visual tool that was used interactively with participants in professional workshops to identify the potential distributional impacts of decisions taken by one agency on other agencies (Jones and Paskins, 2008b).

This is illustrated in Figure 7 using a diagrammatic representation based on the following principles (see right hand column of Figure 7):

- The policy change is shown in a brown rectangle
- Direct behavioural consequences are described in black lined rectangular boxes
- The lines outlining the ellipses indicate either the resulting benefits (green) or disbenefits (red) of each consequence. and
- The fill in each shape is colour coded, according to the sector that is most directly affected.

The tool therefore provides a simple palette of components to allow the users to explore interactively all the consequences of a policy change by developing a consequences “tree” consisting of direct consequences and resulting impacts (beneficial or otherwise). Users can do this either by editing an existing tree (as shown in Figure 7), or by building one up from combinations of the components provided to the left of the screen. The use of shape, fill and outline colour give additional details of the element they apply to.

This agency impacts tool provides a simple, systematic means of exploring how decisions taken by one agency can impact more widely (and often negatively) on other agencies, and also potentially have some indirect negative consequences for the initiating agency. It therefore explores the distributional consequences of a policy in terms of its impacts in different sectors (and therefore on potentially different groups of stakeholders). The tool was presented to professionals at a cross-agency workshop in South Yorkshire, where it was felt to be a useful aid for exploring cross sector impacts. Were it to be routinely used at the preliminary planning stage, it was felt that it would help to identify the stakeholder groups with an interest in the scheme, and could be used to stimulate consideration of modifications to the initial proposal which would minimise negative impacts and maximise synergies.

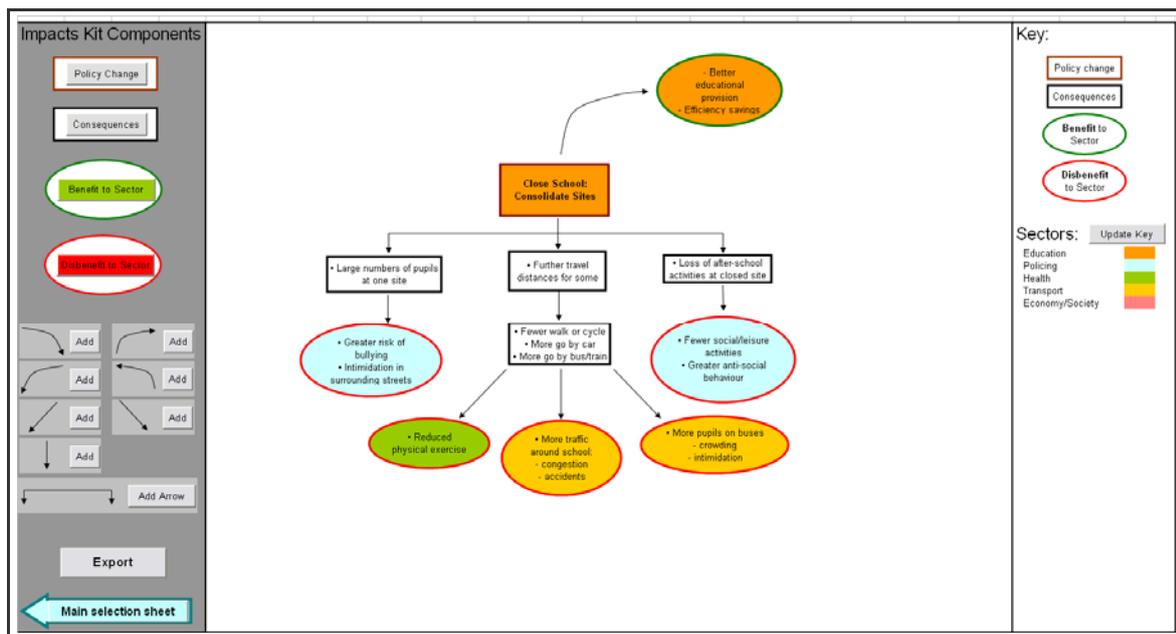


Figure 7. Assessing the strategy level impact of a policy change
 Source: Jones and Paskins (2008b), Figure 4

6. The Possible inconsistencies between appraisal and policy

As noted in Sections 2 and 3, local authorities were concerned by the potential for inconsistencies between the transport policies which they would like to pursue, those which appear best to satisfy given targets (either internal or externally supplied), and those which perform best in terms of a NATA-based value for money assessment.

Following extensive internal consultation and consideration, it was felt that this issue required a more fundamental look at the purpose of appraisal, how it was used by local authorities and how therefore these inconsistencies might occur. Some of these issues are raised in Section 3 above. The result of this exercise was the development of a guidance note which starts from first principles in introducing the concept of appraisal, what it can be used for and how it is used in practice (May et al., 2008). This includes discussion of:

- What appraisal can be used for
- Deciding which impacts are relevant
- Predicting the impacts of a proposal
- Judging the performance against the relevant impacts
- Determining the weights and values to be used
- Taking the impacts on different groups into account
- Using the results of appraisal in the decision making process and
- Setting appraisal within the wider political process.

Coincidentally, the UK Government announced a review of the NATA process at the same time as the guidelines were being developed (DfT, 2007b) and these guidelines formed the DISTILLATE contribution to that process. The principal findings are outlined below.

6.1 *The uses of appraisal*

Experience from discussing the matter with local authority partners suggested that appraisal was most commonly used in the final stages of decision-making, when one or more schemes have been developed and a decision is needed on whether to finance and implement them. But appraisal can be of considerable value much earlier in the decision-making process, in prioritising outline solutions to be developed further and in enhancing the design of such options by identifying early on those attributes on which it scores badly. An early review of appraisal practice by the Leitch Committee (ACTRA, 1977) placed particular emphasis on this role of appraisal. At a later stage, appraisal can be used to choose between alternative strategies, alternative major projects, or alternative packages of minor schemes. As the guidance notes, the same appraisal method is unlikely to serve all of these functions. Instead, task-specific appraisal methods are needed, while maintaining logical consistency between them.

6.2 *Deciding on the impacts to be appraised*

Appraisal can focus on all possible impacts (as attempted in the UK NATA method (DfT, 2004a)), or those objectives which are of concern to the authority making the decision, or indicators which reflect some or all of these impacts or objectives, or targets set internally or externally (e.g. by national government) for some or all of these indicators. The choice between these, and the application in parallel of appraisal methods which adopt different approaches, is at the root of much of the concern among UK local authorities over current appraisal practice. It is inevitable that an appraisal based on a set of objectives which relate to a subset of the possible impacts will produce a different answer. It may be an answer which is more consistent with the authority's objectives, but if another agency or tier of government is involved in the decisions (see Section 6.5), their objectives need to be reflected also.

Indicators can be a useful way of quantifying the chosen objectives, but they need to be appropriately specified and focus on outcomes rather than outputs (Marsden and Snell, 2009). The tool described in Section 4 reflects this approach. Appraisal against targets is a much more questionable approach. As the guidance notes, it involves implicit assumptions on the relative cost-effectiveness of achieving targets for different objectives. As earlier research has shown, optimisation against targets can result in a strategy which is very different from one optimised against objectives (May et al., 2005). On balance it appears preferable not to use targets in the appraisal process, but instead to apply them in monitoring performance as the strategy is implemented.

6.3 *Prediction, judgment, valuation and distributional impacts*

For schemes or strategies to be implemented in the future, impacts or indicators will need to be predicted. This in turn implies that, ideally, the predictive model used should be designed to estimate each of the impacts or indicators required (Shepherd et al., 2009). Where impacts cannot be predicted, they need to be reflected as estimates in the appraisal; otherwise the appraisal will be biased. Equally, where models cannot predict impacts reliably, a range of estimates should be provided, so that the sensitivity of the appraisal to them can be judged.

Once the individual impacts have been determined, they have to be combined in some way in the appraisal. The options include a wholly disaggregate appraisal, in which each impact is considered separately, a multi-criteria appraisal, in which each impact or objective is assigned a weight, a cost-effectiveness appraisal in which the weighted sum of the impacts is compared with the cost, and a cost-benefit analysis, in which each impact is valued. The more aggregate the appraisal method, the easier it is to make a decision, but the more dependent is that decision on the assumptions made. On balance a weighted multi-criteria appraisal method probably

represents the best compromise, since the weights can be determined by the decision-maker and the sensitivity of the outcome to those weights can be tested.

Current UK government guidance (HM Treasury, 2003) places particular emphasis on value for money but, as noted in Section 3, different approaches can be adopted by local and central government in deciding which elements to include as “values”. Value for money can be a straightforward output of cost-benefit analysis, though the values used for different impacts are always open to debate. In general, the weight which can be put on a value for money calculation must take into account the range of impacts valued and included in the calculation.

One element of appraisal which is very difficult to incorporate into an aggregate appraisal is the distribution of impacts on different groups. An effective method for appraising distributional impacts needs to identify all the impact groups of concern, and to obtain reliable estimates of such impacts. Methods for doing this are still at an early stage of development, although we have contributed some new approaches (Section 5). Moreover, predictive models are not well suited to predicting the range of impacts of concern, such as those on people with mobility handicaps. As the guidance note comments, even after such methods have been enhanced, “it is difficult to conceive of such methods being combined with any form of aggregate appraisal.”

6.4 *Using the results in the decision-making process*

Experience with our practitioner partners suggested that, in practice, the results of appraisal are used in three distinct ways:

- a) as an aid to decision-making in conjunction with other inputs to the decision-making process (see Section 6.5 below);
- b) as an initial hurdle to be cleared before considering other issues; or
- c) as the sole basis for determining whether to proceed.

Given the potential pitfalls identified above in the appraisal process, it is difficult to justify option (c), which relies solely on appraisal. In considering the other two approaches, an important distinction emerged (Page et al., 2007) between two different approaches to the use of appraisal.

First, appraisal can be used to decide the overall net “value” of a proposal by application in an “objective” way – that is by (as far as possible) an impartial application of relative valuations or weightings over the full range of different impacts. In this case, the valuations or weightings may be supported by research or empirical studies into the appropriate importance of the impact and the approach will attempt to cover all the possible impacts of the scheme. In this approach to appraisal, impartiality and comprehensive coverage are the guiding principles so that the appraisal can be presented as being as “objective” as possible. Appraisal in this sense is most often conducted with aggregate appraisal methods, though disaggregate methods can be used provided that the basis for the final judgment is made clear. This approach is commonly used in situation (b) above.

Alternatively, appraisal can be used in a more interactive way to explore the consequences of using different ways of judging the performance of a proposal. This can allow prioritisation of different objectives, but implies a more subjective assessment of the relative importance of different impacts and could be expected to lead towards a more subjective result. The assessment method described in Section 4 is largely an example of this approach. Appraisal in this sense is more commonly conducted with disaggregate appraisal methods. However, when conducted with aggregate appraisal methods the decision maker can explore the sensitivity of the result to the use of different weightings for different impacts and the possible omission of certain impacts altogether if they are not felt to be important. This approach is more appropriate to situation (a) above.

In applying appraisal in the first sense, at least in theory, all the impacts of a scheme are considered in an “objective” manner, so it is difficult to argue that the result is “wrong”, unless there is some flaw in the method. However, in practice, given the range of impacts included, the approach will inevitably involve some element of judgment on relative weights and values, which may be implicit rather than explicit. Moreover, appraisal in this sense has traditionally ignored the distributional impacts of a scheme which could be seen as an additional “dimension” to the decision making process. It could be entirely sensible to put to one side the results of an appraisal, even in the first sense, if the equity impacts are unacceptable.

Appraisal in the latter sense is more in keeping with the way that transport strategies are developed and implemented, which takes into account the changing policy context and concern for the distribution of impacts across the population.

The concerns raised by some of our local authority partners were associated with situations where schemes were developed to address specific policy concerns, but did not perform well against an appraisal methodology in the first sense. This can cause problems because a favourable NATA assessment is important in securing central government funding for a proposal. It is for this reason that some local authorities could see the formal NATA process as a barrier to the development of sustainable land use and transport schemes.

6.5 *Appraisal as part of the political process*

From our own empirical evidence, what is usually happening in the process of transport appraisal is that an analyst with expertise in the impacts of transport projects uses formal and informal appraisal methods to assess these impacts. This evidence is then presented to decision-makers (who may be politicians). The acceptability of the appraisal process will be affected by the allocation of responsibility for those decisions. It is possible to identify a range of situations, which range from where the appraisal analysts make the decision themselves through situations where analysts interact with decision makers in different ways and at different levels of governance.

Early in the project, it was noted (Page et al., 2007) that there are forces at work in the decision making process which include individual political and policy actors’ experience and knowledge and their assumptions about the finance, context and ‘buildability’ of strategies and schemes. Properly used, appraisal tools are an attempt to rationalise this process. Appraisal, in one sense, aims to be an objective process: ‘is X or Y an intrinsically worthy thing to do?’ and some appraisal tools are assumed to be ‘objective’. However, this objectivity is quite limited, while the political decision-making process is not. Page et al. (2007) also note that the Social Policy literature agrees that a rational approach to decision making is rare. This is not to say that appraisal tools cannot be objective, but rather that their use within the political decision-making process is rarely objective. This is not intended to imply that individual actors deliberately misuse appraisal tools in decision making processes, but rather that the political decision making process is inherently focused on bringing about a desired outcome. Hence, there is a natural tension between what appraisal is trying to do (in an objective sense) and the political decision-making process, and any tool used within it is unlikely to be put to fully objective ends.

However, it has been observed from our practitioner partners that disaggregate appraisal, in which performance against different impacts is measured separately, can help to rationalise political decision-making. The use of disaggregate appraisal tools may lead to different decision-makers reaching different decisions. This can be seen as being a desirable outcome, since it demonstrates the sensitivity of the appraisal to differing political judgments and priorities. It can, however, appear to challenge the technical abilities of the transport analyst. This challenge can be addressed if we think of the problem in terms of policy spheres (see also Forrester 2008). In the

initial stages of appraisal, the politician and other decision-makers enter the technical sphere, but when the decision is being made it is the technical actor who is entering the political sphere. In the technical sphere, objective prediction of impacts is paramount, while in the political sphere judgments on the relative importance of different outcomes dominate. An effective appraisal-based decision-making process needs to marry these two spheres, rather than see them as being in opposition. DISTILLATE guidance on partnership working provides examples of good practice in dealing with such situations (Forrester, 2008).

7. Conclusions

This paper has outlined the results of the work that was carried out in connexion with appraisal in the DISTILLATE project.

In response to local authority concerns about appraisal and their capability to assess the full range of different schemes in an appropriate way, four products have been produced:

- An assessment method for assessing small and local transport proposals
- A tool for representing the distributional impacts of schemes in appraisal
- A tool for representing the distributional impacts of strategies in appraisal
- Guidelines on addressing the inconsistencies in appraisal practice.

The first product helps local authorities to assess smaller schemes in a transparent way and to explore their own decision making iteratively. It should also help them to justify their schemes to stakeholders.

The second and third products address the concerns about the distribution of the impacts of proposals at both the scheme and strategy level. They allow decision makers to identify the key stakeholders and assess the impacts of proposals on them.

The fourth product takes a more fundamental approach to understanding why a more formal approach to appraisal can come into conflict with the policy direction that a local authority might want to adopt. It argues for greater transparency in the use of appraisal and makes a number of recommendations on good practice.

The first three products are designed specifically for local authorities, and it is hoped that they will provide help in overcoming the barriers associated with appraisal which they identified. Overall they should improve decision making and its transparency and therefore prove useful for local authorities as they face the challenges of developing (and justifying) measures to improve the sustainability of land use and transport. It is anticipated that they will be tested further in the next round of Local Transport Plan preparation. These products should also be of value to cities internationally, since the issues which they address are of universal concern.

The fourth product was developed to address, and to question, the way in which appraisal methods are specified in the UK. The Department for Transport has just revised its advice on appraisal following the public consultation on “refreshing” NATA (DfT, 2009a), and this product fed into this review. This revision did not fundamentally alter the NATA process or reduce the importance of cost-benefit analysis within it and so many of the local authority comments about the appraisal process remain. The issues raised in this product touch on concerns which may be generic to the European or wider context. As the DISTILLATE guidance demonstrates, it is essential that appraisal methods are designed to be fit for purpose, and in particular to be consistent with the decision-maker’s objectives and priorities. Where, as in the UK, appraisal methods are largely specified nationally, the principal responsibility for achieving this will rest with national government. Where appraisal methods can be defined locally, the guidance in this

fourth product should be of assistance in providing a logical sequence of questions to be answered.

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