

## 3 The Research Projects

### 3.1 *Project A: Organisational Behaviour and Barriers*

Lead Institution: UWE

The objective of this project is to map out the problems and issues affecting the delivery of integrated and sustainable transport and land use solutions and provide the central integrative core of the whole research project. The main objective of this project is therefore the collection of data from our case study cities that will be used by all the other research projects. The data will be collected through questionnaire surveys following the advice from our cluster groups and other investigators. Data collection will be repeated in years 2 and 4.

#### 3.1.1 Research Objectives

To identify the perceived problems and issues affecting the delivery of integrated and sustainable transport and land use solutions, and to provide analysis and feedback that will form the central integrative core of the whole DISTILLATE programme. Information will be collected on each of the five key stages (except operation) identified in Figure 1. This information will be procured through the questionnaire surveys and focus group work with the Local Authority clusters. In particular, this theme will:

- Collect specific data required as inputs to the other research themes. This will include data on:
  - organisational structures and internal processes,
  - the process of engagement and interaction with external stakeholders,
  - the barriers, practices and processes in problem identification, strategy development, scheme design, implementation and monitoring,
  - the current use of policy instruments and appraisal techniques.
- Perform an important feedback function as the project progresses ensuring that the outputs of Projects B to G are effectively addressing the relevant barriers to the processes identified at the start of the project.

#### 3.1.2 Research Tasks

##### Task A1: Initial survey

Data collection will be carried out using documentary analysis and a questionnaire survey. In particular, the initial questionnaire survey task will have the following stages:

- survey and analysis of a number of recent questionnaire surveys on transport policy processes in local authorities for content and format,
- collection of case study organograms and detailed analysis of the organisational structures of a sample of case study local authorities, supplemented by interviews as required,
- generation of questions on organisational issues and collation of questions from the other research themes,
- selection and refinement of relevant and appropriate questions after consultations among the Principal Investigators and the Local Authority Cluster Groups,

- structuring and testing of the draft questionnaire with research colleagues,
- testing and refinement of the design format for the questionnaire and pilot of the draft with a small number of case study cities,
- questionnaire run and follow-up to ensure high completion rate,
- data input into SPSS and data summary,
- more detailed data analysis on organisational behaviour and barriers.

#### Tasks A2,A3: Subsequent surveys

Further data collection will be carried out in years 2 and 4. The aims of these re-surveys will be to assess and account for what has changed. We consider at this stage that it would be more valuable to undertake these re-surveys through a series of interviews with key informants in the case study local authorities. The stages of design, testing, implementation and analysis will be carried out as in the A.1 data collection.

### **3.1.3 Role of Case Studies**

All the case study local authorities will be surveyed. Depending on the complexity of their organogram we would expect 5-10 officers in each local authority to complete the survey. In answering the questions we would expect local authority officers to draw examples from the case studies as listed at Annex 1.

### **3.1.4 Outputs**

There will two principal outputs:

- raw and analysed data on processes and problems in years 1, 2 and 4 as input to the other research themes
- a written report on organisational structures and processes in our case study cities using the ‘supersites’ to provide deeper analysis.

### **3.1.5 Linkages with Other Projects**

The results of the initial Project A survey questionnaire will feed into Projects B to G. Later Project A surveys (in years 2 and 4) will review any changes in local authority practice that have come about as the result of the research and again feed into the other projects.

During the life of the project we will be collaborating with the VIVACITY 2020 team who are analysing “urban planning, design and consultation processes to identify when and how key decisions related to urban sustainability are made. Research will capture stakeholders’ requirements, identify relevant technologies and consider future scenarios for urban development. Urban design decision-making processes will be mapped, and a specification formulated for the development of decision-making support tools and resources to enable widened stakeholder participation.”

We are already in contact with VIVACITY researchers and our research in Task A1, in particular, will feed into the approach they take in 2005-2006 to analysing decision-making processes.

Over the duration of the DISTILLATE programme of research, we will share the information gained with the related EPSRC SUE projects FUTURES and SOLUTIONS, in addition to other EU projects like PLUME as and where appropriate.

### **3.1.6 Timetable**

Task A1 commenced in April 2004 and will be completed by the end of 2004. Raw data and preliminary analysis will be available to Projects B-G in October 2004. There will be 3 months work on Task A2 commencing in autumn 2005 and a second period of 3 months on Task A3 starting summer 2007.

## **3.2 Project B: Improved Tools for Option Generation**

Lead Institution: TSG

### **3.2.1 Research Objectives**

This theme was identified during the DISTILLATE Scoping Study as a major gap in the current local authority armoury of techniques for developing sustainable transport policies, strategies and schemes.

Specifically, the objective of this theme is to develop option generation methods, which will enhance the range, innovation and quality of the options input to the forecasting and appraisal procedures, ensure the greater involvement of stakeholder groups in their formulation, and hence improve the quality of transport/land use strategies and schemes.

To fulfil this objective, this theme will:

- Identify current approaches to option generation in the transport and planning sectors, and weaknesses in those approaches;
- Develop and test new quantitative and qualitative tools for generating transport/land use options at both strategy and scheme levels;
- Ensure that the new tools meet the needs of practitioners; and
- Develop ways to increase stakeholder involvement in the generation of options.

### **3.2.2 Research Tasks**

The research involves five, largely sequential, tasks, as follows:

#### Task B1: Review of local authority practices

As part of Task A1, information will be collected to identify the option generation methods currently used at strategic and scheme levels among local authorities and how these feed into planning and design processes. The ways in which options are developed and presented as part of stakeholder participation and consultation processes will also be identified. This will be followed-up with more detailed discussions among a sub-set of authorities based around particular case studies, to identify specific needs.

#### Task B2: Literature review

A broader and deeper analysis of the literature on option generation will be undertaken, building on the scoping study. This will involve a detailed examination of the algorithms and procedures used, and will extend beyond transport and land use planning to a wider range of disciplines, including business management and engineering design. It will also identify and examine the successful techniques used internationally to involve different stakeholder groups in the option generation process.

#### Task B3: Development of prototype tools

Drawing on the outputs of B1 and B2, this task will identify appropriate tools and develop prototypes covering:

- Option generation at the strategy level; and
- Option generation at the scheme/project level.

In the process, it will determine the best available techniques for stakeholder engagement (for example, based around the use of GIS-P), although it will not be possible to develop wholly new participation techniques.

#### Task B4: Applications of new option generation tools

Selected case studies will be used to apply and test these qualitative and quantitative option generation tools, which will range from quantitative algorithms, to knowledge-based systems and procedures to encourage increased participation in the option generation process. In total we will be seeking three sites covering examples of strategies and five cases of projects/schemes.

#### Task B5: Preparation of guidelines and their dissemination

The tools will be documented and guidelines produced for their wider use, drawing on the case study sites as examples. The local authority clusters will be used to obtain feedback on intermediate results and help to disseminate guidance on the improved approaches to option generation.

### **3.2.3 Role of Case Studies**

All the case studies will contribute to our understanding of current approaches to option generation and related public engagement, in Task B1. The three 'super sites' will provide the opportunity to assess current approaches to option generation in greater detail, and will each contribute one or more sites as Project B case studies.

Provisional possibilities include:

- Bristol: integrated strategy; modelling; showcase bus routes.
- Merseytravel PTE: model development and option generation; objective one developments.
- Surrey: housing development and transport strategy; developing better techniques to enable LTPs to enhance the quality of life.

Other local authority partners that have expressed an interest in applying new option generation techniques include:

- Blackpool (walking strategy)
- Essex (integrated transport strategy for Chelmsford)
- Newcastle (superbus routes; cycling strategy)
- South Yorkshire PTE (Quality buses)
- Strathclyde (public transport option analysis)
- York (decision support for network management)

Other authorities in the Development and Sustainable Modes Clusters will offer comparator case studies.

### **3.2.4 Outputs**

The main deliverable for practitioners will be a Good Practice Guideline, setting out advice on the kinds of option generation tools and stakeholder engagement procedures that are appropriate for different situations, with examples of their application. Appended to this will be the additional information needed to apply these tools, ranging from software to web links and detailed instructions.

Academic papers will be produced, covering the literature and local authority review, and a description and performance assessment of the different option generation tools produced in DISTILLATE.

### **3.2.5 Linkages with Other Projects**

This project will provide inputs to the questionnaire being developed by Project A, and has explicit links with all other projects. Part of the indicator development (Project C) will be concerned with the needs of option generation; Project D will look at how institutional structures can assist or inhibit wide-ranging option generation; while looking at the impacts of financial regimes on the type of options to be generated will be addressed with Project E. Part of Project F is concerned with incorporating option generation into modelling tools, and there are close links between option generation and the needs for appraisal being addressed by Project G.

### **3.2.6 Timetable**

Preparation for, administration and analysis of the relevant local authority survey questions (Task B1), will be completed in December 2004. The literature review (B2) will start in October 2004 and run to June 2005. The development of prototype tools (B3) will run from April 2005 to March 2006, followed immediately by a number of full-scale case study applications (B4), between April 2006 and June 2007. The last six months of the project (July 2007 to December 2007) will involve the preparation and dissemination of guidelines (B5).

### **3.3 Project C: Improved Indicators for Sustainable Transport & Planning**

Lead Institution: ITS

#### **3.3.1 Research Objectives**

The overall objective of this project is to develop an effective set of core indicators that is able to reflect the objectives of the relevant stakeholder groups, to be transparent and measurable, to be capable of use in the setting of consistent targets, to be readily forecast, and to be used directly in appraisal.

To fulfil this objective, this project will:

- complement the scoping study review of indicators with a survey of local authorities' experience in measuring, predicting and using indicators;
- determine the extent to which current indicators correspond to stakeholders' understanding of sustainability and quality of life;
- specify the requirements for a core set of indicators at each stage in the decision-making process;
- identify a core set of outcome indicators that best meets those requirements;
- develop, as necessary, innovative means of measuring and predicting those indicators;
- test those indicators in application in a range of case studies; and
- ensure that the preferred set of indicators can be employed in other DISTILLATE projects.

#### **3.3.2 Research Tasks**

##### Task C1 – Indicator Audit

In conjunction with the survey in Project A, information will be collected on the indicators which are currently used, experience in their measurement and prediction, and difficulties arising in their use for target setting and appraisal. An audit of the current indicators will be undertaken to address issues of relevance, cost-effectiveness, ease of measurement, reliability, durability and statistical robustness. The lists of indicators identified in the scoping study will be used as a comparator for those in use, to identify gaps and duplications. This task will also ensure liaison with the modelling (Project F) and appraisal tools (Project G) to develop an understanding of which indicators are used where in the decision-making process.

##### Task C2 – Review of indicator use and draft specification

A review will be conducted from first principles and from comparison with experience in other sectors, of the need for indicators in problem identification, option generation, prediction of impacts, appraisal, monitoring, evaluation and stakeholder involvement in all of these processes. This will lead to a draft specification on which we will consult, and which we will test with our case studies and, where possible through other SUE projects, particularly within the transport cluster.

##### Task C3 – Generation of preferred list of indicators

The agreed specification from Task C2 will be used to assess those indicators from Task C1 that should be retained, those which should be discarded or modified, and those issues for which new indicators are needed. We will also make a first assessment of the ease with which these preferred

indicators can be measured and predicted. We will test this recommended set of indicators with our case studies and with other SUE consortia.

#### Task C4 – Testing of methods for measuring new indicators

Where it is clear from Task C3 that preferred indicators are difficult to measure, we will investigate and, as resources permit, test new means of doing so. We anticipate that we will be able to draw, in this, on work in the FUTURES consortium on the use of ICT for data collection. Where it is clear that indicators are difficult to predict, we will add this requirement to the brief of Project F.

#### Task C5 – Use of core indicators and review of performance

Over the duration of the project, we will then encourage the use of our core set of indicators in all current case studies, and will review their performance and, as necessary, reconsider our recommendations, at the end of the project. A formal review process that is common across the partners and case studies will be developed to ensure consistency of approach and reporting. This task manages this process and will provide a rolling update to the good practice guide for indicators.

### **3.3.3 Role of Case Studies**

All of the case study authorities within the consortium can contribute to Project C. The study relies on the collection of information about current practice and developing a working understanding of the benefits, limitations and gaps in indicator development that are currently perceived. Whilst all authorities can contribute to the project through the provision of basic information on current indicators in use, the laboratory sites of Bristol, Surrey, the Yorkshire and Humber Assembly and Essex will provide the basis for more detailed discussion and development of alternatives. It will be beneficial to the project if other case study sites contribute to the discussions on indicators and interest in this will be established early in the project.

The comparator sites of Strathclyde, Stockport, Bath, Newcastle, and West Yorkshire PTE will provide a useful context in which to test the development of indicators identified by the laboratory sites. In addition, it is the intention of the project that the indicators developed in Project C be used throughout DISTILLATE. Other laboratory sites should therefore consider the adoption of the outputs of this workpackage.

### **3.3.4 Outputs**

#### Deliverable C1

The principal deliverable will be a core list of indicators which can be used at all stages of the decision-making process, and which are demonstrated as being of value to local authorities. This list will be a key input to work elsewhere in DISTILLATE, and in particular in Projects B, F and G. The deliverable will also provide guidance on good practice in their use, which will be of wider benefit to practitioners and researchers internationally. This document will be a live document, benefiting from experience in the use of the indicators as the project develops.

#### Deliverable C2

The second deliverable will relate specifically to Task C4, and will specify ways in which selected indicators can be more effectively measured and predicted.

### **3.3.5 Linkages with Other Projects**

Project C has an outward facing remit. The objective of the project is to produce a set of transparent, reliable, measurable and relevant indicators that are consistent across all stages of project design, development, delivery and review. It is the intention of the DISTILLATE consortium that the indicators developed in Project C are deployed throughout and, where possible, in other SUE projects. The success of this initiative relies on the provision of good quality information on the use of indicators in all aspects of transport policy design and delivery and this project therefore relies on inputs from all other projects. However, particularly strong linkages are required with Projects B (Improved tools for options generation), F (Enhanced analytical decision support tools) and G (Enhanced Appraisal Tools).

### **3.3.6 Timetable**

The Indicator Audit (C1) will begin in October and be completed in January 2005 with the substantive review work completed by December 2004 and additional work drawing together these findings with the final survey outcomes. The review of indicator use and draft specification (C2) has begun and will be completed in time for review and distribution to all local authority partners prior to the April 2005 workshop which will review the specification. The Generation of the preferred list of indicators will run from April 2005 to June 2005 and then be made available to all projects. The timing of Task C4 is flexible depending on the progress of relevant case studies but it is anticipated that this will be completed by April 2007. Task C5 will begin in June 2005 and will run through to October 2007 in tandem with the case studies.

## **3.4 Project D: Improved Effectiveness in Organisational Delivery**

Lead Institution: SEI

### **3.4.1 Research Objectives**

The principal objective of this part of the DISTILLATE project is to aim to strengthen the ability of practitioners to overcome those barriers to effective development and delivery of sustainable transport and land use strategies which occur at the institutional level.

Thus, Project D will build directly upon the results of the initial part of Project A “Organisational Behaviour and Barriers”, developing further our knowledge on how internal organisational and inter-organisational mechanisms shape how actors decide upon strategies. It will do this by employing best management and other social science theories and applying them to real-case situations from our partners. The focus of Project D will be upon what can be done to foster more sustainable decision making processes and processes that lead towards more sustainable decisions being made. Consequently, while the centre of attention of Project A up until this point is the barriers, the focus of work in this Project is on the overcoming of the barriers; case studies will be of best practice in delivery rather than of most serious barriers.

When a better understanding is gained of good delivery solutions for more effective organisational management appropriate for the different professions involved in sustainable transport planning in a range of different contexts, Project D will ensure proper dissemination, first to partners and then more widely, having first tested their robustness with the appropriate DISTILLATE cluster groups.

### **3.4.2 Research Tasks**

#### Task D1 Organisational linkages data review

In conjunction with Task A1, information will be collected on the key organisations that local authorities work with in developing sustainable transport and land use strategies, and ways in which this affects the planning, design and implementation process. In practice this Task is carried out alongside A1 and the personnel are the same. SEI will maintain links with other Project Managers to ensure that Project D aids the relevance and uptake of findings from other projects especially the two ‘tools’ projects F and G.

#### Task D2 Organisational management issues

This will be followed by in-depth semi-structured one-to-one interviews with a range of actors and participant observation in different settings to gain deeper understanding of (i) the values of key actors, the assumptions they hold, their organisational responsibilities, and the range of resources available to them, and (ii) the internal mechanisms and practices, actors’ interpretations of formal and informal ‘rules’ and their effect on decision making.

This can be done in one (or both) of two ways: it can be done ‘in-house’, as it were, by DISTILLATE personnel and a standard interview pro-forma may be devised following interrogation of the questionnaire results from Task A1. Alternatively, it may be possible for DISTILLATE personnel to carry out more in-depth ‘participant observation’ within contexts agreed with partners. This would allow a researcher to develop a better understanding of the ‘internal

culture' and drivers of actual behaviour. The strengths of the latter approach are off-set by its resource intensity and narrower focus. Nonetheless, it could provide a useful 'show case' of best practice.

Whichever method is employed, the analysis will assess the level of common understanding and explain behaviour within the 'action arena' using management and other behavioural science theories. This analysis will be checked with LA officers and with the appropriate city cluster groups.

#### Task D3 Tracking power and influence

If appropriate, this sub-task will take a project focus. An analysis of a selected project will identify and follow through the chain of events, involving various organisations, from problem identification, strategy development, project design and implementation, and track the (non-technical) use of models and tools to see who wields power and influence over their framing and use. The specific project examined will be agreed with the authority concerned but may include the Surrey housing expansion project, Bristol's 'Superbus' project or Merseyside's links with other organisations.

#### Task D4 Cluster review of organisational issues

The identification of organisational triggers for more sustainable and radical transport action garnered from best practice, from the literature, and from our own research experience within DISTILLATE will be tested, firstly against the analysis from the above sub-tasks and secondly, in our cluster groups.

#### Task D5 Dissemination of organisational issues

Development of the Good Practice Guidelines on communication, management and good governance to facilitate better cross-sectoral working. These will be disseminated via a dedicated web-site, CD-ROM, printed material and workshop presentations involving the city cluster groups and invited participants from DfT, LGA and IDeA.

This latter will be carried out in conjunction with the other Project Deliverables where and when appropriate and will take the form of a 'live document' most probably on the Virtual Knowledge Park website hosted by the University of Leeds.

### **3.4.3 Role of Case Studies**

It is envisaged that Project D will work primarily in the three Supersites; and findings will be validated with the relevant cluster groups to obtain wider city involvement.

Agreement of partners is vital to the success of Project D, and, as it is not foreseen that substantive research will start until after Task A1 reports, the final selection of cases will not take place until late 2004.

Other authorities who might be interested in taking part in this Project are invited to make themselves known to DISTILLATE partners through the summer of 2004. Project D will, therefore, interact with as many of the case studies as are interested in making a contribution to this part of DISTILLATE (and vice versa) providing that resources can be found. There is, however, a preference for a focus on the super-site case studies; Merseytravel Objective One & organisational linkages has been agreed in principle as a leading laboratory case study. Interest has yet to be confirmed (from the local authority concerned) for the Surrey housing development and Bristol

integrated strategy cases to be laboratory cases. Other case studies which could be laboratory case studies include: Blackpool's walking strategy; Strathclyde's option analysis; Newcastle's internal management; and/or Sheffield's city centre redevelopment and York's network management. Any of these cases, if not laboratory, may be comparator cases.

#### **3.4.4 Outputs**

The outputs from this project are listed above. They are: from Task D1, the raw data gathered from the Task A1 questionnaires, the inception of the literature review, and the development of links with the other DISTILLATE projects; and from Task D2 the deeper, grounded understanding of the organisational behaviour of our partner organisations and the continuation of the data and literature review focussing particularly on the successful overcoming of barriers. If followed, Task D3 will deliver a life history of a model in use. The outputs from each of the above listed will be a brief write-up for the DISTILLATE management group, Project managers and for our partners if appropriate.

Task D4 will complete the literature and data review and produce a consultation document detailing examples of overcoming barriers which can be checked with our partners and the appropriate DISTILLATE cluster group(s). The product of this consultation and any recommendations forthcoming will be published on the DISTILLATE web portal.

Task D5 will gather all of the above information into good practice guidelines which can be distributed as widely as possible. Task D5 will further seek to revisit the links with the other DISTILLATE Projects to seek synergies and added value by homogenising published guidelines and by aiding the relevance and institutional uptake of findings from other projects where possible.

#### **3.4.5 Linkages with Other Projects**

Project D will build upon Project A and attempt to develop further our knowledge on what internal mechanisms shape how actors decide upon strategies and what can be done to foster more sustainable decision making processes.

Project D will also link to Project B (Option Generation), Project E (Implementation), and, Projects F and G (Appraisal and Analysis) at the appropriate times throughout the DISTILLATE programme.

#### **3.4.6 Timetable**

Task D1 will start as soon as the Initial output from Task A1 is crystallised (late 2004). This task should take 4 to 6 months to complete. Task D2 can start as soon as outputs from D1 become clear. Tasks D2 and D3 can be carried out at any stage throughout Years 2 and 3. Access, personnel, and in some cases resourcing need to be agreed between project participants and partner contributors so exact start and finished dates cannot be set. Reports should be complete by the end of Year 3 where at all possible.

Task D4 will start as soon as there is viable data to bring to the clusters (probably late 2005) and Task D5 will need to have delivered reports by the end of year 4.

## **3.5 Project E: Improved Mechanisms for Funding and Phasing of Implementation.**

Lead Institution: TRL

### **3.5.1 Research Objectives**

This task is concerned with the influence of different models for funding and decisions about phasing on the planning, design and delivery of strategies and schemes. The private sector is providing an increasing source of funding for a wide range of schemes from light rail construction to school bus networks, yet the scoping study has demonstrated that there is little evidence of how this might be influencing priorities, selection of designs and the phasing of implementation. Is it making it more difficult to achieve sustainable outputs and outcomes? For example, private sector funding may influence the route of a proposed new road, and the timing of scheme implementation, in a way that does not maximise community benefits. In addition, it is rarely the case that integrated projects can be implemented so that all elements of it are in place and operational at the same time. The phasing inherent in construction and implementation (whatever the planned phasing of projects), and may affect the operational availability of measures, affect the financial performance of the project, the attitude of stakeholders and users and the actual impacts of the package. Sequencing of package measures over a significant timescale runs the risk that later elements of the package may fail through lack of finance or changing stakeholder acceptance - and thus only partial solutions are implemented. This leads to the question as to whether any adverse consequences on the urban system can be minimised. The scoping study has shown however that existing literature focuses on the guidance, consultation, appraisal and procurement of projects, but neglects to explore how schemes are actually designed, altered, improved and redrafted in practice. It is known that whole life costing of transport schemes and projects has importance effects for the operational performance and financing of the scheme, but it is unknown if the process has any effects during the design and planning stages, causing alterations to occur.

The overall objective of this task is therefore to provide guidance for local authorities that will enable them to address at the project planning stage the implications of different funding strategies and contractual arrangements and the ways by which implementation may be phased, in order to achieve a more effective delivery of sustainable transport and land use schemes. To fulfil this objective, the work will involve four, largely sequential, tasks:

- Build on the work of the scoping study, through exploring practice within our case studies.
- Understand the funding procedures which affect transport and land use projects and how these procedures affect project implementation, and to develop improved methods for dealing with different funding strategies.
- Understand how the phasing of implementation may affect the projects outcomes, and to suggest how phasing should be handled at the planning stages.
- Produce a manual of Good Practice encapsulating these findings and the resulting recommendations.

### **3.5.2 Research Tasks**

This work will initially draw on Project A, then conduct interviews with key private sector players and carry out additional case study investigations; it will seek to identify any distorting effects and

how these can be assessed and minimised using an appropriate methodology in the selected case studies. Findings will be published in the form of Good Practice guidance. Key tasks are:

#### Task E1 Identify mechanisms

As part of an enhancement to Project A, information will be collected from actors in the case studies to identify funding mechanisms used for projects and how implementation was sequenced. This will take as its starting point the information collected from the literature during the scoping study.

#### Task E2 In depth examination

Detailed examination with individual local authority actors through focus groups on (a) financial and (b) implementation regimes used, and their impact on scheme performance. A key element of this task will establish the range of financial methods used in practice, how they are chosen and the extent to which their impact on implementation is taken into account at the planning stage. Where relevant, users' views of the outcomes will be considered. A framework of analysis will be developed to enable comparative analysis of different funding and implementation regimes and how these regimes affect project outcomes.

#### Task E3 Validation of findings

Validation of the findings from E1 and E2 through feedback to the 'Development' and 'Sustainable modes' clusters. The findings will be amended on the basis of this verification exercise. Recommendations will be established incorporating the outcomes.

#### Task E4 Development of toolkit

In close association with our case studies, production of a toolkit for local authorities addressing effective delivery of transport and land-use projects. Given the limited number of DISTILLATE case studies available a selection of different types of case study is essential in order to produce a toolkit that accurately reflects required practice. This limitation will need to be considered when finalising the toolkit to ensure that it is a representative and useful tool.

#### Task E5 Testing the Toolkit

The toolkit will be tested on as many of the case studies as appropriate given the stage which they have reached in implementation.

### **3.5.3 Role of Case Studies**

It is intended that a selection of up to eight laboratory case studies (including the supersites) will be used. The other case studies in the Development and Sustainable Modes cluster will be used as comparators. The case studies range from large-scale housing developments through to smaller-scale soft measures in order to provide an insight into the delivery of different project types. The following laboratory case studies are identified:

- Bristol - Showcase Bus Routes
- Merseytravel - Objective One
- Surrey - Housing development
- Essex - Chelmsford Integrated Transport Strategy
- Sheffield- City Centre Development
- Sheffield - M1 Redevelopment
- Newcastle - Cycling strategy, or Blackpool - Walking Strategy
- South Yorkshire - Quality Routes, or Strathclyde – Rail

### **3.5.4 Outputs**

A toolkit for local authorities addressing effective delivery of transport and land-use projects.

### **3.5.5 Linkages with Other Projects**

Task E1 clearly links with Project A. The final findings will link with, in particular, Project B and Project D. If the conclusions require a need to incorporate more elements into decision support tools, the findings will be important for Project F.

### **3.5.6 Timetable**

The initial case study information collected in Task E1 will proceed as part of Task A1, while the other elements (from literature, etc) will proceed in parallel. The main part of the work will commence with Task E2 in month 6 with Tasks E3 and E4 proceeding sequentially thereafter. It is intended to provide initial results in year three as inputs to Projects B, D and F, and subsequently test and update the toolkit during the remaining 12 months against the relevant case studies.

## **3.6 Project F: Enhanced analytical decision support tools**

Lead institution: ITS

### **3.6.1 Research Objectives**

Research for the Department for Transport and for the EC and our own scoping study discussions have indicated that a substantial proportion of local authorities do not use models for strategy formulation or scheme design and appraisal, and that others who do are doubtful of the value of the models which they use. These situations arise for a number of reasons: most models are unable to reflect the range of policy instruments which local authorities now use; model predictions often appear unreliable; models are often too complex for local authority staff and stakeholders to use themselves; and as a result models are typically run by consultants and treated as black boxes by local authorities. Project B will be developing new approaches to strategy generation and scheme design; Project D will look at how models are used (and misused) in the planning process, and this project will build on this to identify ways of increasing the beneficial use of currently available models. In this project we intend to develop low cost enhancements to existing models to build on the work of Projects B and D. We will focus on three themes: the lack of coverage of policy instruments, the need to enable a wider and more effective use of models and the need for enhanced strategy **[and scheme?]** generation tools.

The overall objective of this project is to enhance existing predictive transport and land use models so that they can be used more effectively and intensively by local authorities and other stakeholders. Within this overall objective, the project has the following more specific sub-objectives to:

- Identify those policy instruments which could most usefully be incorporated into existing models and to develop and test ways of doing so
- Enhance existing sketch planning models so that they can be used more effectively and interactively by a wider range of stakeholders
- Develop our sketch planning models and network management design tools as pilot strategy and scheme generation tools.

### **3.6.2 Research Tasks**

This research will be founded on two areas of research: the development of demand and supply modelling in transport and land use over the last 40 years, and the more recent research into the behaviour of organisations in the use of information systems. The former is being reviewed and extended as part of the Platform Grant; the latter is covered in Projects A and D. The project will also maintain strong links with Project B on option generation, Project C for possible new indicators and Project G for possible revised appraisal approaches.

#### Task F.1: Links to Project A

In this Task we will build on the work of Project A to obtain additional information from our local authority partners, and others such as DfT, to provide background for the three sub-objectives. We will seek guidance on the types of policy instrument which would most usefully be incorporated into predictive models, and other model enhancements which could be considered at the same time. We will draw directly on the Project A survey of needs for option generation as input to the third sub-objective.

#### Task F.2: Information on impacts of policy instruments

Having identified the policy instruments which merit inclusion, we will collate the information available on their impacts on demand and supply, and ensure that this information is incorporated into our knowledgebase on transport policy instruments, KonSULT. This will predominantly involve literature review, but it may also be possible to collate existing data from current case studies, including those within our clusters. The information in KonSULT will be made widely available to local authorities, so that those without models can use it directly for guidance. The case studies will be defined in response to the surveys in Project A.

#### Task F.3: Representation in models

We will take the evidence from Task F.2 on the demand and supply responses and develop (i) a theoretical or possible modelling approach which will be made public, (ii) test in an appropriate model (selected from our own models STM, MARS, TPM, SATURN and STEER), and calibrate those changes against the data available from Task F.2. Finally we will present the results of (i) and (ii) to local authorities and consultants and consider jointly possibilities for implementation in other models.

#### Task F.4: Enhanced sketch planning models

In this Task we will enhance our current sketch planning models, TPM and MARS, to reflect the needs of our consultees as identified in Task F.1. The work involved will depend on the nature of these needs. Those involving new policy instruments will have been covered in Task F.3; those which require disaggregation of existing representations will require a similar approach of information gathering, model enhancement and testing; those involving enhancements to indicators and appraisal mechanisms will draw on the results of Projects C and G, and will be developed and tested interactively with end users. As an initial step MARS is to be migrated to VENSIM which is a software platform for developing dynamic models. VENSIM will allow us to display all causal loops included in the model and to conduct sensitivity tests to model parameters. This development addresses some of Simmonds' suggestions that models should display all causal processes and test robustness of results against parameter variations. It should also increase understanding of how the model works when presented to decision-makers and aid the discussions when developing representation of new instruments.

#### Task F.5: Strategy and scheme generation tools

In this Task we will develop one or more models as strategy and scheme generation tools, building on the concepts developed in Project B. The final choice of models which we will adapt will depend on the requirements generated by Project B; however provisionally we expect to test techniques at both ends of the complexity scale: our sketch planning models and our network design tools. We envisage an approach in which objectives are specified and problems identified, as for the conventional application to model a "do-minimum" strategy, the information in knowledgebases such as KonSULT is used to suggest policy instruments which might be adopted, and an optimisation routine is used to specify the way in which each policy instrument might be applied. These results would then be fed back to the designer or stakeholder group, who could intervene to suggest, or request, other options.

#### Task F.6: Testing and dissemination

In this Task we will present the results of Tasks F.3, F.4 and F.5 to our local authority partners, and test them in the course of the most appropriate case studies. Where necessary we will feed back comments and criticisms to the earlier tasks, so that further enhancements can be made within the resources available. We will also disseminate our results more widely, and exploit them through the bodies responsible for marketing the existing versions of the models which we modify.

### **3.6.3 Role of Case Studies**

This Project will work closely with the case studies in Cluster 1, and in particular with the models being developed in Nottingham, Stockport, Strathclyde (STM) and York (STEER). The case studies in Merseyside, Surrey and Newcastle will be used as comparators. The role of these case studies will be to provide detailed information on possible modelling issues including, LA requirements and the use of data if available. In addition we envisage some new model development case studies for Leeds (SATURN, STM and MARS) and Bristol (TPM). For Leeds we will be able to look at modelling needs at different levels of decision-making i.e. (local, metropolitan and regional levels).

### **3.6.4 Outputs**

The key outputs of this Project will be:

- i. enhanced models able to represent a wider range of policy instruments;
- ii. enhanced sketch planning models able to meet the needs of local authorities and others stakeholders more effectively;
- iii. an experimental strategy generation tool capable of developing strategies which achieve improved performance against policy objectives.

### **3.6.5 Linkages with Other Projects**

Project F interacts with all other projects within DISTILLATE. Project A will provide the initial policy requirements in terms of modelling from the local authorities. Project B will link option generation tools with modelling tools where appropriate. Project C will define any new requirements for indicators. Project D will help set the research priorities for model use in the initial stage and check that the enhancements to tools are useful to local authorities in the later stages. Project E will feed in any new requirements for modelling of funding regimes. Project G will provide any revisions to appraisal mechanisms required for modelling of new instruments and slow modes.

### **3.6.6 Timetable**

The first task F1 will be to follow up the project A survey with a series of in-depth interviews with selected case studies to discuss further the needs for modelling new instruments. This will take place during September-November 2004. Task F2 will then review evidence on the new instruments selected (prioritised by project D) and report by March 2005. Task F3 will finalise theoretical models and implement new instruments within appropriate tools by March 2006. Task F4 will provide any other enhancements required and as such requires inputs from projects C, E and G in 2005. Task F5 is to demonstrate the use of option generation tools and as such requires inputs from project B by March 2006. Task F6 begins in April 2006 and will be used to demonstrate enhancements made to tools which will be selected in discussion with other projects. This task runs for two years and will therefore allow for an iterative process of further developments if managed carefully – however most of the developments should take place in Tasks F3 and F4.

## **3.7 Project G: Enhanced Appraisal Tools**

Lead institution: ITS

### **3.7.1 Research Objectives**

During the course of the scoping study it became clear that local authorities have a number of reservations about current appraisal methodologies and practice. An underlying subtext was that the way appraisal is used might be different from its theoretical role as an ‘objective’ measure of the value of a project. Their concerns crystallised into three different areas:

- Concern about the importance of journey time savings in appraisal and whether the emphasis on these is justified;
- The difficulty of appraising small schemes (particularly walking and cycling schemes) and behavioural and attitudinal measures;
- The lack of detail in current appraisal techniques on the distribution of impacts across different groups.

Current formal appraisal methodologies are heavily influenced by journey time savings, but the benefits accruing from such savings are often only of limited duration and may not therefore be capable of indicating whether the scheme achieves longer term (sustainability) objectives. It has been known for some time that, in certain circumstances, journey time savings can be eroded by induced traffic. One mechanism for this could be that lifestyle change, facilitated by, say, a successful scheme to increase road capacity, leads to changes in travel patterns which run counter to sustainability aims. As well as determining how best appraisal methodologies could take this effect into account, the project will also consider whether they could be broadened and re-weighted to take account of wider quality of life indicators. Local authorities felt that the problem was particularly relevant for public transport projects which often do not score highly relative to road schemes under current appraisal methodologies partly because the emphasis on value of time and travel time savings gives undue weight to benefits for car users.

Small schemes (such as walking and cycling schemes) are not easy to appraise and are often overlooked as a result of this. An appraisal on the same scale as that carried out for, say, a new road scheme would be difficult to justify on cost grounds, so what is required is a quicker, easier methodology which adequately enables calculation of the benefits of such schemes (either individually or in groups), so that they can be compared with other competing schemes. Current appraisal methodologies are also inadequate to assess the full range of attitudinal and behavioural measures which are now emerging as an important part of local authorities’ transport policies. These include walking buses, policies for encouraging voluntary travel behaviour change and the kinds of promotion and publicity activities that are now an established part of a local authority’s transport planning activity. For these smaller schemes and initiatives it is important that the wider benefits – health, environment, safety etc – are fully represented, since, as above, the time savings will otherwise be pre-eminent.

While appraisal methods can indicate whether a scheme is worth pursuing, current methodologies tell us little about how the benefits and costs are spread among different groups within society. This information is an emerging concern with the recent emphasis on social exclusion and transport and there is significant current research interest in accessibility. This project will build on this work by

studying how greater attention can be given to the spatial and social distribution effects of transport schemes and policies.

The overall objective is to develop improvements in appraisal methods to reflect more effectively the requirements of sustainability. There are three main sub-objectives:

- To investigate the ways in which the value of time is used in the appraisal of local transport schemes, whether this is appropriate given current sustainability objectives, and how best to reflect additional quality of life indicators specified in Project C.
- To develop methodologies for appraising small schemes and attitudinal and behavioural measures.
- To develop ways of representing and giving greater prominence to the distributional effects of transport policy instruments and strategies.

Each of these sub-objectives will also involve considering appraisal in its political context and exploring the subjectivities around appraisal's theoretical role as an 'objective' measure of the value of a project. They will thus investigate the differences between theory and practice in the local authority context.

### **3.7.2 Research Tasks**

The work will explore the enhancement of appraisal techniques. This will involve looking at how these techniques are currently used and how (and whether) they could be improved so that they are more appropriate for achieving the objectives that local authorities have in developing sustainable transport and land use policies. An important input for this work will be the development of improved indicators being carried out in Project C. One focus for investigation will be the ways in which the value of travel time is used in the appraisal of local transport schemes and whether this is appropriate given current sustainability objectives. The main research activity of this proposal will take place in Tasks G3, 4 and 5, which relate to the three sub objectives above. These tasks will run in parallel, since they cover different aspects of appraisal and can, to some extent, be independent of each other. Task G2 will precede these tasks to provide a common formative stage leading up to Workshop 2. Tasks G3, G4 and G5 need to be performed with a consistency of approach and the results will need to be brought together to enable recommendations to be drawn – this is the purpose of Task G6.

#### Task G1: Link to Project A

This task will provide input to Project A to ensure that information relevant to this project is included in the surveys to be carried out as part of task A1. It will also build on this work to provide extra background information from local authority partners and the DfT on the three areas identified.

#### Task G2: Common stage and establishment of links

This task provides a common formative stage for the exploration of appraisal methodologies and feeds into Workshop 2. It also provides a link with Project C. The development of the indicators as part of Project C will be important to this project and the set of outcome indicators that emerge will also be an important input to the proposed consideration of appraisal methodologies. This task also provides a link with Project B as appraisal could provide an input to option generation and this task therefore feeds into task B3. In addition, this task provides a link with Project F, this will require input to task F4.

### Task G3: Broadening the scope of appraisal

This task will involve studying the way that appraisal methodologies currently work, especially in the local authority context. This will involve interviews with practitioners through the relevant case studies. Past appraisals will also be examined to explore the way appraisal is carried out and its role in real life decision making. The focus will be on the dominance of travel time savings in appraisal and to what extent this dominance gives rise to solutions that conflict with sustainability objectives; the political context of the way appraisal is used in practice will also be studied. The task will develop ways of broadening the approach to appraisal to include other quality of life indicators and will test those methods in case studies and develop recommendations. This task has links to project B as certain options can make new demands on appraisal. In particular, this task will receive inputs from task B3 on the relevant ways in which option generation affects the scope of appraisal.

### Task G4: Appraising small schemes and attitudinal and behavioural measures

This task will study the ways in which the full range of costs and benefits of small schemes can be properly assessed, perhaps with the use of more streamlined appraisal methodologies which take into account the different range of impacts which might result from these schemes and the methods by which they might be predicted. This task will also look at the appraisal of attitudinal and behavioural measures, which are often also relatively inexpensive, but which might have a different range of impacts from a traditional engineering scheme. The task will involve desk based work establishing a framework for appraisal, in conjunction with discussion with case study local authorities to explore the possible needs of real life situations. The approach proposed as a result of these investigations will be tested in case study locations to establish whether it is practical and cost effective. There will also be discussions with the DfT to check that suggestions would be appropriate for local authorities to use to justify schemes in their Local Transport Plans. This task has links to project B as certain options can make new demands on appraisal. In particular, this task will receive inputs from task B3 on the relevant ways in which small schemes and new measures might require consideration at the level of option generation.

### Task G5: Distributional effects

This will involve identifying ways in which the impacts of schemes on different groups within society can be evaluated and represented within appraisals, both socially and spatially. Some of the most obvious ways of differentiating affected groups are geographical, so the use of GIS will be important, but other disaggregations will also be studied (e.g. car ownership, gender, income). Given the current emphasis on developing accessibility planning techniques to assist in dealing with the problems of social exclusion and transport, one starting point will be to see how the outputs from these exercises can best be incorporated into formal appraisal. This task will also draw upon data sources such as the new census data and the wealth of information being developed at ward and enumeration district level on deprivation and other indices (much of it available freely over the internet). Examples of transport schemes will be sought from local authority partners and evaluated according to how different groups within society have been or might be affected. The results of such analysis are liable to be politically sensitive and therefore a high degree of discretion will be required in liaising with local authority partners. This task has links to project B as certain options can make new demands on appraisal. In particular, this task will receive inputs from task B3 on the relevant ways in which distributional effects might require consideration at the level of option generation.

### Task G6: Coordination

While tasks G3, G4 and G5 are to some extent independent, the strands of the research will need to be brought together and the links between them exploited. It will be important to ensure that the results are mutually consistent and will provide a platform for recommendations on future possible

approaches to appraisal. This task will feed into Workshop 5. This task will also include the dissemination of the expected outputs of the project (see below).

### 3.7.3 Role of Case Studies

Case studies will be used for two distinct purposes, to explore the issues raised by the project and also to try out possible new techniques developed as a result. Initially, it is suggested that the following case studies should be used to explore the issues:

Nottingham	Modelling workplace parking levy
Nottingham	Modelling soft policies
Nottingham	NATA applications for sustainable transport projects
Bath	Conflicts between heritage and sustainable transport
Sheffield	Redevelopment of Sheffield city centre
Newcastle	Cycling strategy
Blackpool	Walking strategy

The following offer a wide range of potential types of scheme on which to test the newly developed approaches:

Bristol	Modelling
Strathclyde	Public transport option analysis through transport and land use models
Sheffield	Redevelopment and the M1
Bath	Western Riverside Development
Essex	Integrated transport strategy for Chelmsford
West Yorkshire PTE	Extension of strategic high quality rapid public transport in West Yorkshire

It is likely to be more beneficial to concentrate on a few case studies and the decisions over which to pursue will be taken in tasks G1 and G2, once the results from the surveys undertaken as part of Project A have been considered.

### 3.7.4 Outputs

These will include:

- A report on the role of appraisal in decision making in local authorities, including the treatment of travel time savings, and proposals for alternative approaches.
- Proposals and recommendations for simple appraisal techniques for small schemes and behavioural and attitudinal measures.
- A report on the appraisal of the distributional effects of transport measures, including the results from some case studies, with recommendations for ways in which decision-makers should approach the issue.

### 3.7.5 Linkages with Other Projects

Task G1 has links with task A1 in order to provide input to the development of the initial survey and help to analyse the results, seeking further information where this is required. In a similar way, there are links with task A2 (G3, G4, G5) and A3 (G6). There are links with project B - task G2 will link with task B3 which is to do with developing prototype tools for option generation. The links with project C will be between tasks G2 and C3 which will involve liaising on the preferred

list of indicators. Task G3 which is taking a wider look at the scope of appraisal, has links with tasks D2, D3 and D4. Task G4 has links with task F3 on the modelling of new instruments and task G5 has links with task F4 if the development of the sketch planning models includes consideration of the distributional effects.

### **3.7.6 Timetable**

Task G1 starts at the beginning of the project and continues until the end of 2004. Task G2 starts at the beginning of Q4 in 2004 and finishes at the end of Q2 2005. Tasks G3, G4, and G5 start at his time and continue until the end of Q1 2007. Task G6 starts as these tasks end and ends at the end of 2007.