



SCOTTISH EXECUTIVE
Development Department

PLANNING

Transport Assessment and Implementation: A Guide

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Transport Assessment and Implementation: A Guide

Contents	Page
PART 1 – FIRST STEPS	1
1. Context	1
2. Who Should Read This Document?	1
3. Document Format	1
4. Transport Implications - The Transport Assessment Form	2
PART 2 - TRANSPORT ASSESSMENT AND IMPLEMENTATION SCOPE AND PROCESS	5
5. Background	5
6. Why Transport Assessment and Implementation?	5
7. The Role of Stakeholders	12
PART 3 – DELIVERY STAGES	15
8. Key Elements of the Transport Assessment and Implementation Process	15
9. Scoping The Transport Assessment	17
10. The Transport Assessment Process	22
11. Implementing Transport Assessments	24
12. Monitoring	26
APPENDIX A	27
TRANSPORT ASSESSMENT: HOW TO ASSESS THE SITE AND ITS IMPACTS	
APPENDIX B	34
DATA AVAILABILITY	
APPENDIX C	47
MECHANISMS FOR IMPLEMENTATION	

PART 1 – FIRST STEPS

1. Context

- 1.1 Most new developments and changes of use will have some form of transport implication. Given the policy significance of the links between land use and transport¹ the likely transport impacts of development proposals need to be identified and dealt with as early as possible in the planning process.
- 1.2 This document seeks to provide a better practice guide to help identify and deal with the likely impacts. It sets out requirements according to the scale of development being proposed; from a minimal change requiring a simple transport statement or explanation of transport issues through to a major complex development where detailed technical analyses will be required.

2. Who Should Read This Document?

- 2.1 The guidance is intended to help all those with a role in the process and to ensure that mechanisms are in place to specify, assess, revise, implement, monitor and review the impacts that development will have on the transport system. The guidance presents an opportunity to deliver sustainable transport consistent with current policy.
- 2.2 Those with a role will include:
- developers and their agents involved in preparing proposals for new developments or the redevelopment of existing sites including changes of use;
 - local authority officers and councillors with responsibilities for development management, covering both land use and transport planning relating to new development;
 - the Scottish Executive in its responsibilities for land-use planning, transport and trunk roads;
 - public transport (bus and rail) providers; and
 - Scottish Executive Inquiry Reporters and others involved in planning inquiries.
- 2.3 It will also be of use to those who may need or wish to understand transport issues within the development planning process including members of the public who may be affected by proposed developments and groups with specific interests in transport.

3. Document Format

- 3.1 The document is divided into three parts and is supported by three appendices. Part 1 of the document deals with first steps providing the user

¹ See Scottish Planning Policy (SPP) 17 Planning for Transport, Scottish Executive, 2005

with some early guidance on the extent of supporting material required to address the transport implications of their proposed development. It also provides guidance on how to move forward in the process where a number of issues require to be investigated in detail.

- 3.2 Part 2 describes the Transport Assessment and Implementation process, its scope and purpose. This process is directed towards the successful delivery of development-related transport measures aimed at achieving sustainable transport outcomes. It incorporates scoping, transport assessment and implementation including travel plans and monitoring. It is focussed on ensuring effective delivery and operation.
- 3.3 Part 3 sets out the four stages of the Transport Assessment and Implementation process with sections devoted to Scoping, Transport Assessment, Implementation (including Travel Plans) and Monitoring.
- 3.4 There are three supporting appendices:
 - Appendix A considers the Transport Assessment in terms of its technical detail. This section explains how to assess the travel characteristics of a development with appropriate emphasis given to public transport, cycling and walking modes. It also explains how travel to the development can be influenced by planning factors such as location, accessibility, scale, density and layout.
 - Appendix B covers the various sources and databases for travel demand information which might assist in the process.
 - Appendix C deals with measures and mechanisms in an implementation context, for example, use of planning and legal agreements.

4. Transport Implications - The Transport Assessment Form

- 4.1 An early indication of the scale of any potential transport impact arising from a development will influence the type of analysis required. A simple Transport Assessment Form² will provide sufficient information to indicate the extent of further steps required. In most cases the completion of the Transport Assessment Form will provide a clear indication of whether or not further analysis is required.
- 4.2 In straightforward minor developments or changes of use where transport impacts are likely to be insignificant, no further action will be necessary. At the next level, a simple transport statement can help inform decision takers. In most other cases where the likely transport impacts require further more detailed consideration, the Transport Assessment Form will be the starting point for a scoping discussion with the relevant planning or roads authority.
- 4.3 If the applicant is in any doubt, it is recommended that clarification be sought with the planning or roads authority at an early stage in order to minimise any possible delays later in the planning process.

² see pages 3 and 4

TRANSPORT ASSESSMENT FORM TO BE COMPLETED FOR ALL PLANNING APPLICATIONS

1. Applicant:

2. Location:

3. Proposed Development:

4. Indicate if the proposed development exceeds the following thresholds:

USE		YES
Food retail	>1,000m² Gross Floor Area	
Non-food retail	>1,000m² Gross Floor Area	
Cinemas and conference facilities	>1,000m² Gross Floor Area	
Leisure facilities	>1,000m² Gross Floor Area	
Business	>2,500m² Gross Floor Area	
Industry	>5,000m² Gross Floor Area	
Distribution and warehousing	>10,000m² Gross Floor Area	
Hospitals	>2,500m² Gross Floor Area	
Higher and further education	>2,500m² Gross Floor Area	
Stadia	>1,500 seats	
Housing	>100 dwellings	

5. If any of the above thresholds are indicated as being exceeded, further information in the form of a Transport Assessment will require to be provided. Contact should be made with the relevant planning and roads authority.

6. If the development proposal does not exceed any of the above thresholds, it is still important to understand what transport changes, if any, are likely to occur. Applicants should therefore complete the following table when the table in Q4 remains unchecked.

Morning Peak Period is:

Evening Peak Period is:

	Morning Peak IN	Morning Peak OUT	Evening Peak IN	Evening Peak OUT
<u>Existing:</u>				
Number of people (include staff, visitors, etc)				
Number of cars				
Number of vans, deliveries.				
<u>Proposed:</u>				
Number of people				
Number of cars				
Number of vans, deliveries				

NOTE; BEFORE SUBMITTING THIS FORM YOU MUST HAVE COMPLETED THE TABLE ASSOCIATED WITH EITHER QUESTION 4 OR QUESTION 6.

PART 2 –TRANSPORT ASSESSMENT AND IMPLEMENTATION SCOPE AND PROCESS

5. Background

- 5.1 This part of the guidance sets out the requirements for the preparation of Transport Assessment and Implementation proposals for a development application. It is based on substantial research carried out for the Scottish Executive in the period 2001-2004, and on consultation feedback obtained in respect of many of the issues and processes referred to in the document.
- 5.2 Transport Assessment and Implementation is intended to evolve as a development passes through concept, planning, delivery and monitoring stages. The process embraces Scoping, Transport Assessment, Travel Plans and Monitoring. It should evolve with each stage and provide a reference framework for ensuring that a development performs, in transport terms, in accordance with its design, its planning permission (and associated approvals) and is monitored following delivery.
- 5.3 The process does not require any additional work to be undertaken than is currently required. It seeks to ensure that all analysis and measurement is recorded in a central reference document more closely associated with the planning application (and approval) and that this is used in the operational stages as a means of validating the delivery mechanisms.

6. Why Transport Assessment and Implementation?

Planning and Transport Delivery Context

- 6.1 *Scottish Planning Policy 17: Planning for Transport* sets out an approach to integrating transport and land use planning through supporting:
- a pattern of development and redevelopment that:
 - supports economic growth and regeneration;
 - takes account of identified population and land use changes in improving accessibility to public services, including health services jointly planned with Health Boards;
 - reduces the need to travel;
 - promotes road safety and safety on public transport;
 - facilitates movement by public transport including provision of interchange facilities between modes;
 - encourages and facilitates freight servicing by rail or water; and
 - enables people to access local facilities by walking and cycling;

- provision of high quality public transport access, in order to encourage modal shift away from car use to more sustainable forms of transport, and to fully support those without access to a car;
 - effective management of motorised travel, within a context of sustainable transport objectives; and
 - the infrastructure for modern electronic communication networks which support home-working, real time information on public transport and in-car information systems to reduce car commuting and congestion.
- 6.2 A framework for delivering better integration of transport and land use planning will be a key policy tool. The objective should be to locate key travel generating uses to support more sustainable travel patterns. The framework should set out:

- proposals for meeting the different transport requirements of different land uses, including designation and management of through routes, development of local services on sustainable networks, use of different modes, and environmental impacts;
- land use implications of traffic and parking management including reference to the regional or local transport strategy in respect of the council's parking standards, public transport priorities and park and ride, congestion charging schemes, and safe and secure provision for walking and cycling including standards for the design and location of cycle parking in support of the land use policies; and
- policy for transport assessments and travel plans to be submitted in support of planning applications.

Key Concepts

- 6.3 Consideration of the transport impacts of a proposed development has to take into account the above objectives. This has several significant implications. Transport Assessment concerns person-trips, not car trips. Transport Assessment applies therefore to new developments and changes of use or intensifications requiring planning permission that alter the transport features of the site. Transport Assessment focuses on the development site within a catchment area determined by the nature of the development, and assesses accessibility of the site to the catchment by different modes of travel.
- 6.4 Depending on agreed area-wide or development site targets, the objective will be to maximise sustainable travel by walking, cycling and public transport, and only then to consider the impact of the residual vehicular traffic. This outcome will be achieved through measures to improve the infrastructure and services to encourage sustainable travel throughout the catchment area, and through careful attention to the design and layout of the development to ensure that those on foot, cycling or using public transport have convenient and safe access to the development without any conflict with vehicular access or vehicles manoeuvring in car parking areas.

The Transport Assessment and Implementation Process: An Overview

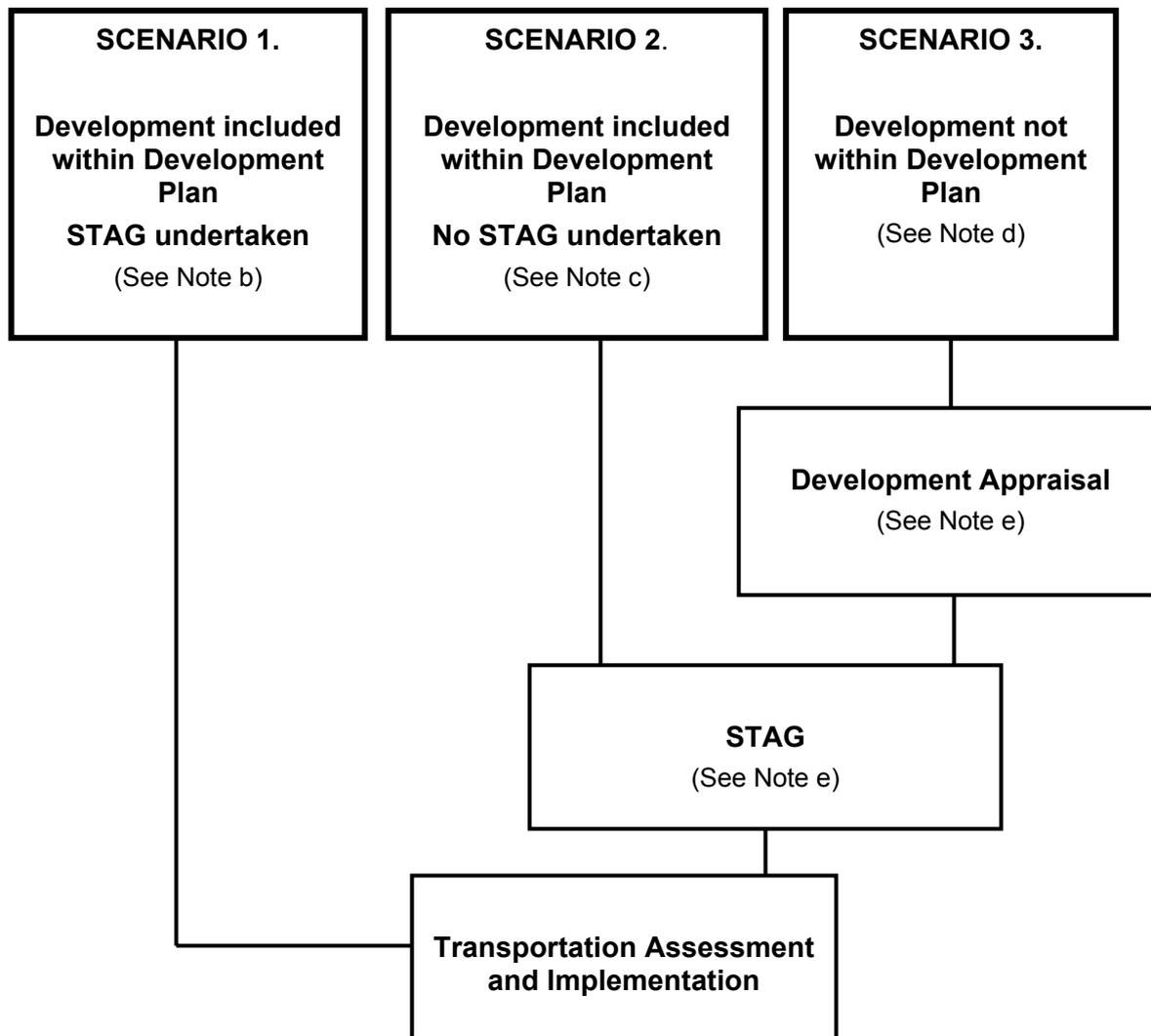
- 6.5 Before commencing the Transport Assessment process for a major development proposal, it is necessary to consider STAG based appraisal. The requirement for a STAG based appraisal will be triggered by a financial contribution, support or approval required from the Scottish Executive. Work to demonstrate that the most appropriate access strategy has been formulated is undertaken implicitly in development plan preparation and approval. However, STAG applies equally to the more detailed aspects of development proposals and to speculative developments.
- 6.6 Where there is any doubt, guidance on the use of STAG based appraisals should be sought from the Scottish Executive Transport Divisions (including where appropriate, the Development Management team within the Trunk Road Network Management Division).
- 6.7 On completion of a STAG based appraisal, the most appropriate transport access strategy should then form the subject of analysis and delivery in accordance with this guidance on Transport Assessment and Implementation. The various STAG-related scenarios which might arise are shown in Figure 1 overleaf.
- 6.8 There is a general presumption against new motorway or trunk road junctions. Such new junctions will only be considered exceptionally and will require significant developer funding. However, many proposals include new trunk road access as part of their development aspirations without consideration of practicable alternatives. These proposals will vary not only in scale but also in their significance in terms of trunk road hierarchy. Besides the possible requirement for STAG, supporting evidence or a development appraisal will be required to allow the Executive to consider why the general policy objection should be set aside. The extent of this appraisal process will vary dependent on the scale and location of the development.
- 6.9 The overall process of Transport Assessment and Implementation can be summarised as shown in Figure 2.
- 6.10 The exact detail recorded at each stage will depend on the scale of the proposed development and the specific circumstances of the case. The Transport Assessment stage may, for example, range from a simple and straightforward process for a small site conforming to the development plan to one that requires extensive modelling using complex data. Completion of the Transport Assessment Form in advance of any scoping discussions will provide some early indications to developers and their agents.
- 6.11 No two developments are likely to be exactly the same; what is appropriate for one development will not necessarily be satisfactory for another. This in turn creates potential for variation in the detail of the procedure and the final output.
- 6.12 Even with these variations however, it is clear that all four stages in the Transport Assessment and Implementation process are required if the appropriate objectives are to be set, implemented and then validated

through a robust monitoring methodology. Whatever the level or significance of the transport assessment, it should be tied more closely to the information provided on the planning application form and the process of the application's validation and registration, placing the responsibility with the applicant.

The Transport Assessment and Implementation Process: Changes from Previous Approaches

- 6.13 The Transport Assessment and Implementation process has a number of major changes from procedures adopted in the past. Whilst the Scottish Executive are adopting these changes with immediate effect, other planning and roads authorities may wish to consider the extent to which they might also adopt these changes.

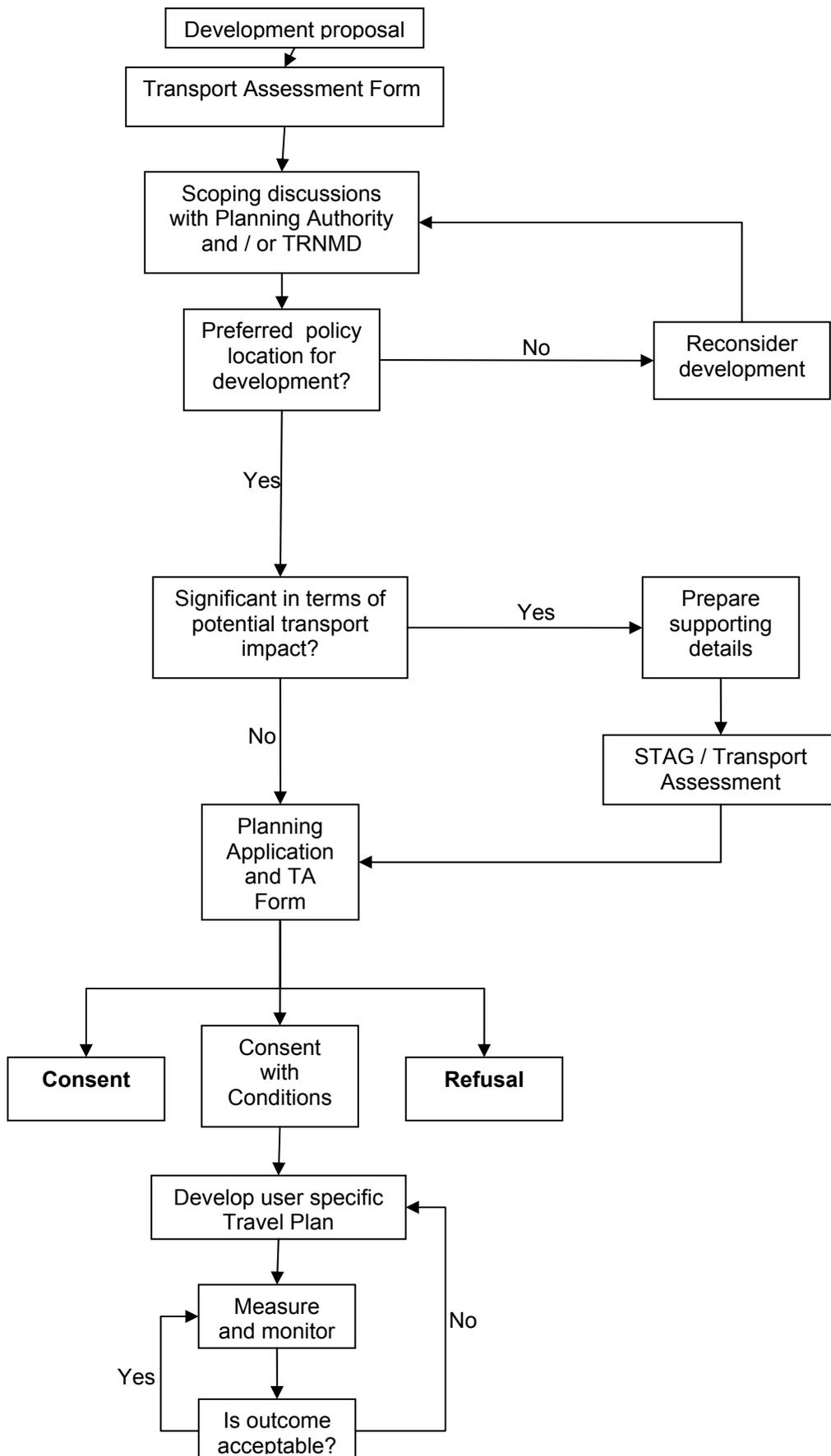
Figure 1:
Process to be undertaken where development proposal is seeking funding or approval from the Scottish Executive
 (see Notes)



NOTES:

- a) this would include, for instance, a situation where a development seeks direct access to the trunk road network
- b) Scenario 1 covers instances where the assessment of proposed land use, in terms of both location and access strategy, have been undertaken as part of the development plan process.
- c) Scenario 2 covers instances where the location of the proposed land use has been determined within the development plan process however a detailed review of the access strategy has not been undertaken.
- d) Scenario 3 covers speculative development where the proposed land use is not in accordance with the development plan
- e) Extent of information required for STAG & DA will be dependent upon the nature and scale of development and access provided (e.g. rail) or the road type on to which new access is proposed.

Figure 2: The Transport Assessment and Implementation Process



6.14 The changes can be summarised as follows:

- The traditional Transport Assessment is now associated with the Travel Plan and Monitoring stages to provide a comprehensive process from planning (concept) through implementation to measurement of output. The Transport Assessment and Implementation central reference document should remain with the development and evolve with it in response to changing planning and transport circumstances.
- Accessibility analysis and location considerations will lead the process of assessment. Person trips will form the platform for all numerical and computational work with numbers associated with car and non-car modes being appropriately addressed in accordance with current policy.
- In many cases, vehicle impacts will still be important and, in terms of the principles involved in the analytical process, will generally follow the well-established IHT procedures. There will be some specific changes as noted below.
- The assessment years will be year of opening or completion for developments with short construction periods (say up to 2 years), and year of opening (or first full year) plus year of completion for developments which are phased over 3 or more years.
- No future year transport growth will be applied beyond year of opening or first year of assessment. The assumption is that any growth prior to opening year should apply since nothing is being done as a consequence of the development to influence this, but that beyond that time the emphasis should be on the applicant/developer addressing the impacts of their additional transport movements and ensuring that measures are in place to deal with those specific impacts.
- Although the above will generally apply, there will be a limited number of occasions where some developments and their associated infrastructure will be of such significance that a longer term design date may be demanded. This requirement should be clarified by developers with the roads authority at the outset.
- It is essential that a clear definition of the basis of assessment is set out at the Scoping Stage. Where roads and planning authorities opt for a no net detriment approach, their definition of no net detriment should be made clear from the outset.
- Developers will be mandated to demonstrate transport delivery consistent with planning approvals and any associated conditions and/or agreements.

7. The Role of Stakeholders

Role of Developers

- 7.1 Each prospective planning application will require to be considered to establish whether the Transport Assessment and Implementation process applies. Developers and their agents are responsible for creating and maintaining the Transport Assessment and Implementation document for a development proposal subject to the influence of local authorities and other parties. The documentation will develop through the process; for example, in the application the Travel Plan and Monitoring sections will be “proposals” but to a level suitable for use within a planning condition or agreement.
- 7.2 Developers should consult the planning authority pre-application to ensure that the type and scale of the proposal is suitable for the site under consideration. They should also liaise with transport authorities, including the Scottish Executive (in the case of Trunk Roads), and public transport operators to demonstrate how the development will function in transport terms and to identify any possible adverse transport impacts. Developers will need to discuss provision for improved public transport services to the site at an early stage.
- 7.3 Detailed design of the proposed development should take account of the policy requirements set out in SPP17. In preparing and executing the Transport Assessment and Implementation, developers or their agents will be required to present detailed information about all modes of transport.
- 7.4 Developers who ensure that new development is located, designed and implemented to promote access by sustainable modes of travel (walking, cycling and public transport) will benefit in a number of ways. Such development maintains high levels of accessibility to customers, workers and visitors, whatever the transport circumstances. In addition, development which is well integrated with other facilities and services is likely to prove more popular as a place to work and visit.
- 7.5 Where reduced dependence on car access can be achieved, this will enable savings on site and construction costs for parking, as well as freeing up potentially valuable land for development use. It is therefore not surprising that many developers see the economic benefits to be gained from ensuring that new development is made highly accessible by several modes of transport and not only the private car.

Role of the Local Authority

- 7.6 Scottish local authorities are both the transport authority and the planning authority, except in respect of passenger transport within the area of responsibility of Strathclyde Passenger Transport. The Scottish Executive has management responsibility for the trunk road network, and planning authorities are required to consult the Scottish Executive in all cases where a proposed development is likely to result in a material increase in the

volume of traffic or a material change in the character of traffic entering or leaving a trunk road.

7.7 Local authorities have a key role in the Transport Assessment and Implementation process in their functions relating to land-use planning, roads and transport. They should:

- set out in their development plans their preferred sites for future development, based on accessibility appraisal or transport modelling, prioritising those sites which enable good accessibility by walking, cycling and public transport, and identifying residual traffic impacts and proposals for mitigation;
- prepare a Local Transport Strategy and/or work towards the preparation of a Regional Transport Strategy;
- encourage pre-application discussions with developers to cover Transport Assessment and Implementation issues, sources of information, good practice advice, and clear guidance on what developers may be expected to provide;
- use the Transport Assessment and Implementation document to assess the suitability of the planning application in liaison with bodies such as the Scottish Executive, and public transport operators; and
- use the Transport Assessment and Implementation document to monitor implementation and ensure that, in transport terms, the development is consistent with the Transport Assessment and Travel Plan.

7.8 Local authorities will be involved in assessing the transport and travel characteristics of all development and redevelopment proposals. They will also be involved in developing transportation measures to support major development proposals, such as traffic management and on-street parking, or providing new infrastructure.

Role of Public Transport Operators

7.9 Developers are advised to discuss public transport provision to the site, first with the local authority and Strathclyde Passenger Transport where appropriate, and then with public transport operators such as local bus companies, Train Operating Companies and the Scottish Executive as rail authority. Local authorities are well placed to assist in discussions with these organisations.

7.10 Public transport operators will need to consider what alterations may be needed to existing services or what infrastructure provision must be made for new services to maximise access opportunities to the development. They may also be able to advise and comment on the layout and design of development.

7.11 In some cases where new services and associated infrastructure are being promoted to improve public transport provision, the involvement of the operator(s) will be essential if appropriate and binding agreements are to be developed in support of any planning application.

- 7.12 In most cases it will be preferable to pursue development proposals where infrastructure and services are already well-established. Development proposals which are dependent on new provisions subject to the development proceeding can make it difficult to build confidence with operators whose primary role is to provide and operate services.
- 7.13 Trying to build partnerships to implement future services where outcome in relation to a planning approval is uncertain or where a planning consent may not be implemented can be viewed by some as wasteful of resources. Operators should be encouraged to discuss associated risks in pre-application discussions as it may be that options for the proposed layout of the site are the keys to its accessibility and to service viability.

PART 3 –DELIVERY STAGES

8. Key Elements of the Transport Assessment and Implementation Process

8.1 The Transport Assessment and Implementation process consists of four distinct elements, each of which is covered in turn in the remainder of this section:

- Scoping
- Transport Assessment
- Travel Plan
- Monitoring

Scoping

8.2 Scoping is fundamental in ensuring that the subsequent analysis remains focused and achieves the desired objectives. It sets the basis on which all analysis is undertaken and provides a simple reference framework should influential factors change at some future stage in the overall process; for example, a call centre with 300 employees may change to having 450 employees part way through assessment.

8.3 The Transport Assessment Form provided in Part 1 of the document provides a useful starting point from which to initiate the scoping process.

Transport Assessment

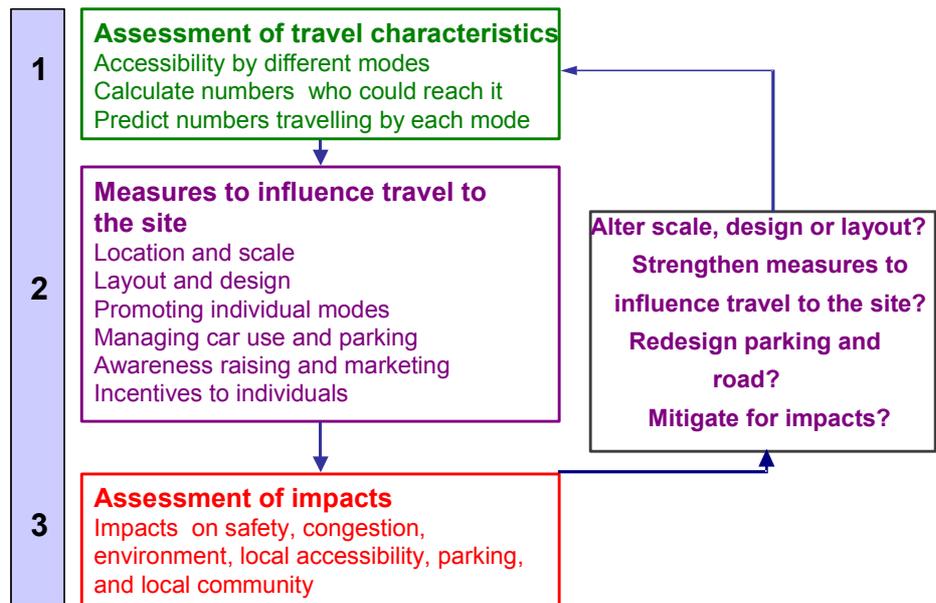
8.4 A Transport Assessment for a major development or redevelopment proposal (or one with significant transport impacts) should have three main elements:

- An assessment of travel characteristics.
- A description of the measures which are being adopted to influence travel to the site.
- A description of the transport impacts of the development in a dynamic network and how these will be addressed.

8.5 The diagram (Figure 3) overleaf outlines the key elements of the Transport Assessment.

8.6 Minor developments can generate additional person trips that may not require a full Transport Assessment. The completion of transport related questions on the Transport Assessment Form will assist in these considerations. If more detail is necessary a transport statement identifying the characteristics and mode for the additional trips should accompany the planning application before it is determined.

Figure 3: Key Elements of a Transport Assessment



8.7 For larger developments, or those with significant transport impacts, the process is an iterative one, with refinement of the layout design, improving public transport services and so on, leading to regular discussions between the developer and local authority, and possibly other stakeholders, such as the Scottish Executive.

Travel Plans

8.8 The Travel Plan for the development should first appear, in however skeletal a form, in the Transport Assessment, and be developed as required through to the operational phase of the development. It is essential in translating the theoretical work of the Transport Assessment into operational reality. As such, it will need to develop over time to take account of changing circumstances and ensure that it continues to remain focussed on providing up to date information on transport choice.

8.9 Where Travel Plans are recognised as being highly influential to the travel patterns that develop in a given location, strong emphasis should be placed, particularly in the early years of the development to ensuring that the practice reflects the theory. There is little point in looking too far ahead in theory if the delivery is misdirected in years 1 and 2.

Monitoring

8.10 Many Transport Assessment and Implementation documents will be developed with a Travel Plan that already embraces a monitoring requirement. Whether or not this is the case, it will be essential to monitor the performance of the development’s transport effects to ensure that it is behaving in the manner predicted. This may involve measuring the modal share to assess if targets are being achieved and assessing parking demand and usage.

- 8.11 The delivery of future monitoring needs to be considered and addressed as part of the overall planning process. Whilst planning and legal agreements may provide an appropriate mechanism, consideration should be given to financial bonds in order to ring fence funds allocated for this specific and important use. Monitoring is discussed in more detail in Appendix C.

9. Scoping the Transport Assessment

Scoping Discussions

- 9.1 Scoping is key to the future development of the Transport Assessment and Implementation document. It is the first opportunity to consider the various transport issues and to create a benchmark for everything that follows.
- 9.2 Developers contemplating a new development or redevelopment should hold discussions with the planning authority as early as possible to agree the approach to the Transport Assessment and Implementation process. This will enable developers to clarify whether the transport elements of their proposals are likely to be acceptable or whether additional analysis or measures will be required.
- 9.3 Throughout the process of securing planning permission, the main point of contact for the developer will be with the planning authority. However other bodies (such as the Scottish Executive and public transport operators) may also need to be involved. Where a development is likely to result in a material change in the volume or character of traffic entering or leaving a trunk road, the planning authority must consult the trunk road authority (TRNMD). Initial contact with the planning authority can also identify the need for discussions with other stakeholders. Early discussions with these parties could save time later in the planning process by improving the possibility that all issues have been covered in the process from the outset.
- 9.4 Early discussions can assist the developer in ensuring through the Scoping and Transport Assessment stages of the process that the proposal complies with the development plan in promoting sustainable transport. Subjects for discussion should include:
- the location, type and scale of the development;
 - whether the development is in line with national guidance and development plan policy;
 - whether alternative locations should be considered (or if the developer only has the one site, what other type or scale of development may be more appropriate);
 - the content and level of detail of any Transport Assessment and Implementation document;
 - Mode Share Targets;
 - monitoring travel behaviour to the site; and
 - implementation of the provisions of any necessary Section 75 planning agreement.

- 9.5 The key issue initially is whether the proposed site is in a suitable location and is consistent with policy described in SPP 17, other Scottish Planning Policies and in the Development Plan. Development Plans should identify those sites with good accessibility by non-car modes for early development as compared to those which can only be accessed by car. The choice of a suitable location for development means that any adverse impacts are more likely to be minimised.
- 9.6 Discussions should also be used to identify measures needed to promote a wider choice of access to the site particularly by non-car modes, including:
- improvements or modifications to pedestrian access (including facilities for people with reduced mobility);
 - improvements or modifications to cycle access;
 - improvements or modifications to public transport services;
 - the need for a Travel Plan; and
 - funding and the use of planning conditions and planning and other legal agreements to secure these measures.
- 9.7 Wherever possible, planning authorities should avoid continually requesting additional information from a developer when this could have been agreed early in the process. Scoping will also provide the opportunity for developers to enquire about the availability of local data that may assist in working through the Transport Assessment and Travel Plan stages as well as providing a basis for future monitoring.

Mode Share Targets

- 9.8 Transport Assessment and Implementation documents are appropriate for identifying how Mode Share Targets (MSTs) set by local authorities for individual developments will be met.
- 9.9 No-net-detriment can be a useful target to aim for in setting MSTs or defining infrastructure improvements. No-net-detriment means no net increase in travel time or risk of accident as a result of the development. No-net-detriment may also be related to environmental criteria.
- 9.10 The Transport Assessment and Implementation document should identify how the expected mode share compares to the authority's own MSTs. For a major travel generating development the MSTs should be set on the basis of what is realistically achievable. If the impact of a development proposal on the capacity of a road network requires a modal shift greater than is realistic to achieve "no-net-detriment", the target would not be met, the road would go over capacity and lead to increased congestion and travel time. This may point to such a development being refused planning permission.

Deciding on the Scope and Form of a Transport Assessment

- 9.11 A Transport Assessment for a development proposal should present all the transport implications of the proposal. The transport impacts of any development proposal are not always easy to predict. It is necessary for developers to be given the opportunity to explain how the impacts may be

different from what might otherwise be interpreted from a simple and brief description of a proposal and its location.

Criteria for a Transport Assessment

- 9.12 A Transport Assessment will be required where the development or redevelopment is likely to have significant transport implications, no matter the size. The coverage and detail of the Transport Assessment should reflect the scale and the likely extent of transport impacts of the proposed scheme. The planning authority and developer and, in the case of developments that affect trunk roads, TRNMD and their operators should discuss the content and level of detail of the Transport Assessment required as part of the planning application.
- 9.13 More detail may be required for those developments that meet or exceed any of the following criteria:
- The size thresholds set out in SPP 17 for Maximum Parking Standards and described in Table 1 overleaf;
 - residential development of 100 units or more;
 - 100 or more vehicle movements per day;
 - 10 freight movements per day; or
 - when the planning authority has significant concerns about the possible transport impact of the proposed development.
- 9.14 The possible transport impact of proposed developments is likely to be greatest where any of the following criteria are triggered:
- Location: sites that are not consistent with national guidance or accessibility criteria or policy contained in the structure or local plan. These sites are likely to be those only easily accessible by car, generally located out of centre or on the edges of urban areas.
 - Size: the indicative sizes criteria in Table 1 overleaf are met or exceeded.
- 9.15 Further details may be required where the local authority consider the proposals raise significant transport implications, such as where the development is likely to:
- generate traffic at peak times in a congested area or the nearest trunk road junction;
 - generate traffic, particularly lorries, late at night in a residential area; or
 - raise significant concerns over road safety.
- 9.16 Planning authorities may wish to pursue other criteria or require a more detailed approach for some applications or in particular areas. Such cases may arise, for example, for development proposals in sensitive tourist areas.

Table 1: Indicative Size Criteria above which a Transport Assessment should be Required

USE	Criteria above which more detail than a completed TA Form is required
Food retail	1,000m ² Gross Floor Area
Non-food retail	1,000m ² Gross Floor Area
Cinemas and conference facilities	1,000m ² Gross Floor Area
Leisure facilities	1,000m ² Gross Floor Area
Business	2,500m ² Gross Floor Area
Industry	5,000m ² Gross Floor Area
Distribution and warehousing	10,000m ² Gross Floor Area
Hospitals	2,500m ² Gross Floor Area
Higher and further education	2,500m ² Gross Floor Area
Stadia	1,500 seats
Housing	100 dwellings

- 9.17 The criteria outlined in Table 1 are intended only as a general guide. However, in setting their local criteria, planning authorities should remember that absolute or inflexible thresholds might encourage developers to try to submit planning applications for schemes that fall just below the threshold in order to avoid preparing a detailed Transport Assessment. The completion of the Transport Assessment Form will assist in determining whether any further statements or reports are necessary, whether a simple transport statement is appropriate or whether complex analysis and reporting is required.
- 9.18 Another potential concern is that developers may submit planning applications on an incremental basis for parts of a site in order to avoid the requirement to prepare a detailed Transport Assessment for the whole site. This is most likely to arise in the case of housing development. Where this pattern of development will have a cumulative impact on the trunk road, TRNMD will require a comprehensive Transport Assessment and Implementation document which covers the development as a whole.
- 9.19 Furthermore, local authorities must recognise that the importance or relevance of impacts is not related solely to size. Although as a general rule the larger the proposed development the more information will be required, there will be exceptions whereby relatively small developments have potentially serious impacts. For mixed-use development, it will probably be best to discuss the requirements for a Transport Assessment for each separate proposal rather than devising general criteria, as each element is likely to be different.
- 9.20 The criteria outlined above may also refer to developments where there may be changes of use or alterations or intensification of an existing use. However, where there is likely to be no change in the amount of vehicle or people movements, a simple statement on transport matters may suffice.

- 9.21 For policy compliant proposals i.e. those in accordance with an up to date Development Plan, the level of detail required for the Transport Assessment may be reduced.

Other Purposes of Scoping Discussions

- 9.22 In addition to defining the scope of the Transport Assessment and Implementation document, discussions between a developer and a local authority should highlight, at the earliest possible stage, any additional requirements or changes that may be needed to the layout and design of the proposed development. These might include infrastructure changes to make access on foot or cycle easier, required improvements to public transport services, whether a Travel Plan needs to be submitted, and the likely content of a Section 75 agreement. On-going liaison between developers and the local authority will enable agreement on the nature and scale of the development so that changes at a later date are less likely to be needed.
- 9.23 While a key aim of the process is to promote and monitor access by sustainable modes and to reduce car dependency, there will in many cases still be road infrastructure impacts to be addressed as part of the planning application. It is important to ensure that all possible ways to promote sustainable modes and reduce car-use have been fully explored and used. Other traffic management measures should also be assessed before considering any increase in road capacity.

10. The Transport Assessment Process

Overview

- 10.1 Transport Assessment is a comprehensive review of all the potential transport impacts of a proposed development or redevelopment. Preparing a Transport Assessment is part of the process of securing planning permission. It should enable decision-makers to understand how the proposed development is likely to function in transport terms. It should set out proposed methods of mitigation designed to reduce adverse transport impacts. It should also highlight the ways in which the development can be made more sustainable in transport terms.
- 10.2 Transport Assessment should aim to provide supporting evidence to accompany the planning application to demonstrate that the development is sited in a location where current and likely future travel behaviour will produce a desired and predicted transport output. Where developments are proposed in locations that have not been identified as being compliant with land-use planning policy, including Development Plan policy, the developer should demonstrate through the Transport Assessment how the development can support sustainable transport policy.
- 10.3 The Transport Assessment should provide information in a suitable form to enable the local authority and, if necessary, the Scottish Executive Trunk Road Network Management Division (TRNMD) to assess and determine the planning application, seek any changes to the proposal and devise necessary planning conditions or negotiate planning or other legal agreements. Of central importance will be a clear summary of the Transport Assessment that can be used by planners, councillors and inquiry reporters to come to an overall view on the suitability of a proposed development or redevelopment of a specific site. This summary must also enable decision-makers to compare proposals for different locations.
- 10.4 The detailed content of a Transport Assessment will vary depending on the location, scale and nature of the proposed development. The circumstances of each planning application will also influence the level of detail required in the Transport Assessment. The Transport Assessment should be presented in clear language so that lay people can understand the implications.
- 10.5 Failure to agree a proposed development as a result of deficiencies in a Transport Assessment may result in the need for a revised submission to be made. Scoping discussions that address all potential impacts can reduce the need for revisions to a Transport Assessment.

Key Elements of the Transport Assessment

- 10.6 Having assessed the travel characteristics of the development and the potential of the site, the Transport Assessment has to assess the impacts and if necessary suggest supportable approaches to mitigate those impacts. Further details about the preparation of a Transport Assessment are set out in Appendix A.

- 10.7 The Transport Assessment should consider impacts similar to those in the Scottish Transport Appraisal Guidance (STAG) (Scottish Executive, 2003) which has been developed to appraise major transport related schemes. While the objective of a Transport Assessment is to help promote more sustainable developments, the impacts considered need only focus on the transport-related impacts of a proposal: accessibility, integration, and safety. There may also be some cases where some specific environmental issues should also be covered (although these may be the subject of an EIA).
- 10.8 The summary of transport impacts and the measures being taken to deal with them should be set out clearly in the Transport Assessment and Implementation document. It is important to make at least an initial assessment of transport impacts as early in the process as is possible (which is the purpose of the Transport Assessment Form) so that any necessary changes to the proposal can be brought into the design of the scheme.

Accessibility

- 10.9 New developments can have both positive and negative impacts on accessibility (which may be intended or unintended) including access to transport systems, the local area and community focus and cohesion:
- **access to transport systems:** changes which should be identified and appraised as part of the Transport Assessment include the location of access points and links by foot and cycle to the wider public transport and road networks; the creation of new public transport nodes or links provided to serve the development that will benefit others; access for freight to the road and rail networks;
 - **access to the local area:** such changes should have been identified in the measurement of accessibility in the first part of the Transport Assessment. In most cases this should support the development (providing accessibility and social inclusion benefits to local people), but such analysis may highlight measures which can further enhance access to the local area; and
 - **community severance:** it is possible that a development might simultaneously improve access to the site, whilst creating a barrier to access within the local community. The assessment should identify any effects which the proposed development could have on the cohesiveness of communities. These impacts include:
 - whether the development itself or changes to transport infrastructure act as a barrier to movement and previously used routes;
 - whether the level of traffic accessing the site or using nearby roads make links between parts of the community more difficult.

11. Implementing Transport Assessments

Change of Use

- 11.1 Even where the initial occupier is known some land uses such as offices and retail could change their operational characteristics over time. For example, an office used as a telephone call centre could change into a training centre for the same occupier but with significantly different transport consequences.
- 11.2 As a change of use could easily result in different travel characteristics, a Transport Assessment should be requested where the change is likely to result in a material change in trips. Unless a site has been cleared (in which case any proposal is more likely to be for a new development anyway) the change of use is from the previous or original use (in planning terms) rather than the current vacant status of a building or site. The baseline should be that of the original use or activity on the site.

Speculative Development

- 11.3 Speculative development raises a particular issue since it may be unclear who the eventual occupier of a development will be. While some developments may only be useable for one purpose, others, such as industrial units or offices, could be used with radically different intensities with differing transport impacts.
- 11.4 Speculative development and outline planning applications pose difficulties since the ultimate occupier or details of the scheme will not be identified as part of the application. Such proposals must be handled carefully to ensure that the benefits of the Transport Assessment and Implementation process are not lost. Relevant points to note are:
- Transport Assessment and Implementation may incorporate some elements which require implementation by the final occupier to be successful, such as financial inducements to encourage behavioural change. Other elements may be self-enforcing, for example restrictions on parking provision.
 - For outline planning applications, planning authorities should ensure that the description of the development is sufficient to enable the main transport impacts to be identified and assessed. The Transport Assessment and Implementation document should indicate the conditions to be imposed on any outline planning consent to ensure that any subsequent applications maintain the conditions of the original application.
 - One approach will be to consider the worst likely case. If the resulting trip generation is acceptable then any other outcome can be regarded as acceptable.
 - Planning permission normally rests with the land and not the occupier. Planning or other legal agreements will be enforceable against the person who entered into the agreement and in the case of registered Section 75 planning agreements any person who derives title from that person.

- 11.5 It may be appropriate to confine the Transport Assessment only to infrastructure matters that can be provided by the developer and require a Travel Plan to encourage behavioural change from the occupier. The developer would be required to take on responsibility for the Travel Plan prior to passing it to the occupier.
- 11.6 As part of the overall process, the occupier would also be responsible for carrying out post-implementation monitoring to ensure that travel patterns are developing as intended or to help identify courses of action required through modifications to the Travel Plan.

Cumulative Impact

- 11.7 With several minor proposals in close proximity, a more detailed Transport Assessment of the cumulative impact of the proposals may be more appropriate than one for each proposal in isolation. If a planning authority wishes to promote several minor developments near each other, they should aim to assess the cumulative transport issues arising from the entire scheme, ideally at the time the site or area is being designated in the Development Plan.
- 11.8 Conversely, where proposals may emerge independently from one another, rather than as a single proposal, the situation is more complex. This can give rise to a domino effect when one successful application leads to further proposals, as may occur with housing. Planning authorities may be able to foresee when this is likely to occur (or react when it starts to happen), by aiming to assess the sites together, possibly as part of an area-wide development brief or master plan.

Freight

- 11.9 Most developments will require service access for freight or delivery vehicles. In addition there will be some activities that are major generators of freight movements. Transport Assessment and Implementation documents will be required for major freight generating developments.

12. Monitoring

The Purpose of Monitoring

- 12.1 Monitoring is a much under-used feature of modern transport planning yet in the context of the Transport Assessment and Implementation process it provides an opportunity to learn extensively about whether or not our planning and delivery techniques are appropriate and sustainable.
- 12.2 The purpose of monitoring within the Transport Assessment and Implementation process is to ensure that the transport related impacts at delivery are consistent with that for which approval has been sought and obtained. The objective is not to deal retrospectively with this for any single developer but to learn from the process to ensure that the same “mistakes” are not repeated time after time.
- 12.3 The monitoring process should seek to examine not only the effects of behavioural or soft measures, but also the extent to which any infrastructural alterations are performing in operational terms. TRNMD is already undertaking research in this area but the additional opportunity afforded by developers collecting and providing this data would further assist the available knowledge base.

The Monitoring Process

- 12.4 The monitoring process could consist of data such as traffic counts, queue lengths, video surveys, interviews, etc and would be designed to suit the circumstances of a particular development.
- 12.5 The obligation would be placed on the developer to collect this information as part of their planning permission. It could be, for example, a condition that at intervals of 12 months and 24 months after the development commencing operation that certain data sets were provided.
- 12.6 Further consideration of monitoring is considered in Appendix C.

APPENDIX A

TRANSPORT ASSESSMENT: HOW TO ASSESS THE SITE AND ITS IMPACTS

A. THE TRANSPORT ASSESSMENT IN DETAIL

The Site Visit

A.1 The role of the Transport Assessment is to provide decision makers with a good understanding of how the transport aspects of the development will function. The first stage to be undertaken, either in association with or before the scoping discussions, is a site visit.

A.2 One or more site visits may be needed to examine aspects such as:

- accessibility within the site boundaries. For larger developments it will be necessary to consider the travel time across the *functional area* of the development: from the boundary of the site with public access routes to the 'entrance' of the building(s). The site visit may suggest other layouts for the building/s and locations of doors and entrances to the site which could save time and provide better quality access by non-car modes;
- accessibility on foot to the site, including for those with mobility impairments, from the surrounding locality, bus stops and railway stations;
- pedestrian crossings and safety, including whether alternative layouts on the surrounding roads might reduce conflicts between pedestrians and motorised traffic or cycles;
- access by bicycle, identifying opportunities for improving cycle access including cycle lanes, junction and crossing improvements;
- access from bus stops (railway stations), calculating walking times from bus stops (or stations) and considering whether new bus stops are required or existing ones need to be relocated; and
- access for vehicular traffic (buses, if appropriate, cars and lorries), identifying potential conflicts with non-vehicular modes, as well as possible local congestion problems.

Measurement of Site Accessibility

A.3 There are various measures of accessibility and methods of calculation. Determining the accessibility of a site will require calculating the travel time by different modes of access: walking, cycling, public transport and car. Travel time assessments determine the catchment area of a development by different modes: areas within which one can reach a development within set times or time-bands (e.g. 30 mins). Catchment areas for a location can be shown in isochrones on maps. The choice of time-band may vary in response to the use and scale of the development. People may be prepared to travel further for some activities, for example, to a sports stadium than to a shop.

A.4 Journey times of 20-30 mins are appropriate for walking and 30-40 mins for cycling. A two-stage process is recommended: estimating time to the

development site by analysis of maps; then checking the actual times of people travelling these routes, which will help take account of factors such as the time required to cross roads or walk/cycle up hills.

- A.5 Public transport journey times can be calculated by a combination of analysis of timetables and maps. This should be complemented by observation of walking times to actual (or potential) bus stops. A 30 minute door to door travel time (including the walk, wait, journey time, and walk to the destination) is an appropriate choice of time-band by public transport for most types of development although it may also be helpful to consider a 45 minute door to door travel time. For developments of national or regional importance, 1 hour may be appropriate.
- A.6 Car access can be calculated in various ways, including analysis of maps and route planning software. It should include estimates of the in-vehicle travel time together with walking to the vehicle, searching for a parking space, and walking from the vehicle to the site entrance plus likelihood of known congestion on route. Time estimates for other motorised vehicles - motorcycles, mopeds, light vans, HGVs - can be assumed to be the same.
- A.7 For housing developments a different approach is needed since it is an origin rather than a destination for journeys. The travel time assessment should measure the time taken to reach services (e.g. shops, employment centres) from the housing development, but the basic methods used will be the same. Travel times across the development site for larger housing developments may be significant, and separate analyses may be needed for different parts of a very large development.

Estimating the Travel Generated and Likely Mode Share

- A.8 The estimation of how many people will travel to the site (or in the case of housing, from the site) and by what mode requires consideration of the:
- location of the site;
 - how many people are living within the travel time isochrones by each mode;
 - whether there are competing developments that will significantly affect the catchment area;
 - the likely propensity of people within each catchment to use the proposed facility;
 - larger catchment areas (often for larger developments) imply a higher modal share for car-use but also offer more potential for public transport use;
 - whether people need to carry bulky items to or from it, such as for DIY stores;
 - whether people will be likely to visit the site as part of a linked-trip to other locations, for example for pass-by shopping;
 - how design and layout within the site helps or hinders access by different modes and adds to or reduces travel times; and
 - measures taken to influence modal split and how they are likely to influence the choice of mode.

Available Databases

- A.9 Estimating travel generation and mode share requires appropriate data. However the suitability of data for Transport Assessments is of variable quality, with much depending on the location where the development is proposed, and the resources available to the developer undertaking the assessment. Since analysis can only be, at best, as good as the data on which it is based, there is an ongoing need to collect and use good quality data. Appendix B describes the data available in Scotland.

Integration

- A.10 Transport policy emphasises the need to integrate the different modes of transport, and development proposals provide opportunities for achieving this objective. Transport Assessment and Implementation documents should clearly identify how the proposal will influence interchange between modes in the area. Where large flows of people are forecast there may well be impacts on the efficiency of interchanges, and for developments such as arenas and stadia these may affect interchanges at some distance from the proposed site. Many of the improvements to foot, cycle and public transport described above will help address any identified problems.
- A.11 The Transport Assessment should also identify how the proposed development would affect activities within the local area. For instance, mixed-use development may provide for linked trips without the need for additional car journeys. Some developments may mean that certain functions are within walking distance where previously a journey out of the area would have been needed. The opposite can also apply, particularly in relation to single-use car orientated development, such as business parks located on a by-pass.

Safety

- A.12 The two main areas of impacts that should be assessed are:
- the risk of traffic related accidents for those using and passing by the site; and
 - feelings of insecurity for those using and passing by the site.
- A.13 Changes in the risk of accidents result from changes to the volume and mix of traffic, the layout of footways, cycle-ways and roadways, and accesses to roadways. These can be appraised before the introduction of the development by means of a safety audit. For developments on trunk roads this is a legal requirement.
- A.14 The most direct indicator of safety is the number of recorded accidents. For larger developments it may be possible to predict likely impacts on the number of accidents by considering data relating to accidents on different types of road and junction types.
- A.15 For smaller developments this is usually not possible, nor does it cover all aspects of safety relating to accidents. In these situations it is necessary to look for design factors which are likely to lead to conflict between different users.

- A.16 A range of design and social factors determine perceptions of risk and personal security depending on the characteristics of areas that pedestrians use. Design factors include:
- characteristics of site perimeters (such as whether solid walls are used, and the design features of entrances and exits);
 - surveillance systems (such as CCTV, and staff with the role of surveillance);
 - informal surveillance (relating to visibility lines from busy areas);
 - landscaping (relating to visibility, and 'cover' for intruders);
 - lighting and visibility (such as placement of pillars, recesses, and quality of lighting);
 - the provision of emergency call facilities;
 - how busy the area feels: a greater presence of people leads to greater feelings of security; and
 - good sight lines and a lack of 'dead ends'.

Environmental Impacts

- A.17 The environmental impacts of a development proposal are generally outside the remit of the transport assessment process, as they should be picked up through an Environmental Impact Assessment (EIA). For some types of development an EIA is always required; for others it is required if the planning authority considers that the development is likely to have significant effects on the environment. Where both an EIA and a transport assessment and implementation report are required, usually for a very large development, the Transport Assessment stage of the report would provide much of the transport-related information needed for the EIA.
- A.18 In some cases, the local authority may think it is appropriate that the report covers one or more specific environmental issues:
- **Noise levels:** if the development is likely to generate significant levels of additional traffic, an estimation of the impact upon local noise levels may be necessary.
 - **Local air quality:** for developments generating significant levels of additional transport, the local authority may consider that an estimation of the impact upon local air quality should be incorporated within the Transport Assessment.
 - **Landscape, townscape and heritage impacts** caused by transport would normally be part of the planning application as a whole. However, the local authority might consider it necessary for the Transport Assessment to provide a particular focus on certain of these issues, to avoid the need for separate studies.

Road and Traffic Impacts

- A.19 Transport Assessment must cover traffic and road issues, parking and any particular impacts caused by abnormal loads.
- A.20 While a key aim is to promote access by sustainable modes and to reduce car dependency, there will in many cases still be road and traffic impacts to

address and deal with as part of the planning application. However, it is particularly important to ensure that all the ways to promote sustainable modes and reduce car-use have been fully explored and utilised. Other traffic management measures should also be considered before looking to increase road capacity.

- A.21 If an initial assessment of the proposal indicates that the predicted traffic levels are still unacceptably high, it should indicate a need to re-consider whether further measures to reduce the level of traffic generation are necessary. If after further consideration, the proposal illustrates that considerable extra road capacity will still be required to accommodate predicted traffic increases, the local authority may need to consider reducing the scale of the development or refusing planning permission.
- A.22 When increases in road capacity are considered necessary and acceptable, the design should give adequate priority to walking, cycling and public transport. Such measures should also be consistent with the Local Transport Strategy.

Traffic Impact Analysis (TIA)

- A.23 Transport Assessments must identify both the volume and distribution of vehicle trips related to the development and set this within the context of existing traffic movements in the locality. This is the element of the process most closely related to TIAs. The guidance on TIAs (IHT, 1994) sets out the practice in this area, but the following should be noted:
- **Extent** of the Transport Assessment should be sufficient to identify significant traffic effects. These impacts may be some distance from the development.
 - **The significance** of a traffic impact depends not only on the percentage increase of traffic but the available capacity. A 10% increase on a lightly trafficked road may not be significant, whereas a 1% increase on a congested motorway will be.
 - **Design dates** for appraisal should generally be for shortly after opening, within a year, especially for retail and employment uses, or on completion of the development in the cases where the development is large and phased over a long period of time (e.g. large residential developments). The susceptibility of infrastructure and services to growth should be clear from examination of the proximity to design thresholds. Some developments and their infrastructure requirements will be of such significance that a longer term design date may be demanded. Developers should seek clarification on this issue from the roads authority at an early stage in the process.
 - **Phasing of development** should also be taken into account. In the case of housing, this may require testing at a number of future dates to align transport provision with increasing demands. This could also link with a timetable for developer contributions.

- **Future effects** of other measures to increase travel by non-car modes should be taken into account. These may form part of a planning agreement or Travel Plan due to be implemented over time.
- **Catchment and locational features** should be clearly related to trip generation assumptions. Whereas the size of the catchment area will determine potential traffic generation, the location will determine the level of diverted and pass-by traffic.
- **Retail impacts** can be complex. Account should be taken of the potential for growth in some retail markets (e.g. non-food) but not in others (e.g. food). Retail developments can influence trip-making as markets mature, but this depends on the scale and catchment of the store.

A.24 In most cases, complex calculations as above will not be required since the impacts of most new developments are usually very localised. This will not necessarily be the case for residential and the larger commercial and mixed-use developments. Their traffic impacts must therefore be assessed over a larger area.

A.25 Whilst road traffic impact analysis should focus on peak periods, in line with current junction-testing techniques, the effects of peak spreading and the impact during inter-peak periods should not be ignored. The Transport Assessment should indicate days and times when the combination of development and non-development traffic will peak. Daily travel information and traffic time profiles are useful in the following areas:

- identifying busy hours for testing;
- assessing bus and rail service viability; and
- assessing car parking accumulations over time.

A.26 The models and procedures for testing the effect of traffic levels are not expected to change significantly, since they are based on the way traffic is observed to flow. However, an exception is the use of micro-simulation software, which is still developing and involves incorporating junction assessment techniques into a wider representation of network operations. Microsimulation models are often used for the analysis of the roads impacts of development. Some have the ability to model bus priority and even air quality and can have a useful role in public consultation.

A.27 More traditional models:

- focus on road traffic impacts, so it is important not to let them deflect attention from provision for other modes;
- need to be validated against current traffic behaviour (such as link and turning flows, queues and delays, etc.) before they are used to predict trends; but
- are particularly useful where a major change to traffic movements is contemplated (which is fairly rare).

- A.28 It is important to recognise that where models are to be applied to detailed development-related traffic issues the models must be “fit for purpose”. An area-wide model validated across that area to DMRB standards may not be appropriate for specific corridor testing unless that corridor validates to the required standard.

Parking Impact Analysis

- A.29 On-site parking provision should conform to demand management principles and be compatible with the policy guidance on parking set out in SPP 17 and levels stated by the local authority, particularly in the Local Transport Strategy and local and town centre parking strategies.
- A.30 Transport Assessment should demonstrate how the need for parking has been minimised in new development and redevelopment. It is no longer appropriate to focus on providing sufficient parking to satisfy all demand. Over-provision of parking is still common in development proposals, largely based around the routine use of the 85th percentile in car trip rate assumptions. A more appropriate trip rate choice will therefore lead to more realistic parking provision. Such an approach will often be of benefit to developers, who may then be able to increase the density of the development.
- A.31 The analysis of parking should focus on the requirement for parking as an output of the design of the development, once other measures have been fully taken into account. It should highlight whether there is potential to level the peaks of parking demand, for instance through shared use of spaces between parts of the development which have different peaks in demand. On-site parking controls and charges may also need to be introduced.
- A.32 Off-site parking provision and controls need to be included in the Transport Assessment stage and reflected in the other areas of the report. Restrictions on on-site parking may lead to overflow parking in the surrounding area. Development proposals may need to contribute towards the introduction of on-street parking controls, for instance for a residents’ parking scheme, as part of the overall package of measures associated with an application.

APPENDIX B : DATA AVAILABILITY

B. DATA AVAILABILITY AND SOURCES

B.1 This appendix reviews Scottish and UK data that is available for those wishing to prepare a Transport Assessment and Implementation document for their development. The scale of analysis required for the Transport Assessment stage will vary widely between proposed developments.

Journey Time and Distance Data

B.2 Journey times and distances will be used to calculate isochrones and to determine catchment areas. A large number of sources are available, ranging from simple paper based maps to sophisticated electronic transport models.

B.3 A distinction between data sources can be made on the basis of how journey time information is supplied. Some data sources/software packages supply information on an interrogative basis, i.e. for specific pairs of origins and destinations at a time. For instance, a rail journey planner can be used to provide journey times between two stations on the rail network. Other data sources or systems will be able to provide journey times for a range of origin-destination (O-D) pairs at a time. Transport models for instance, where available, can be used to supply journey time matrices for car or public transport modes for any combination of O-Ds in a study area.

Modal Split

B.4 One area of concern is the paucity of research that can predict the effects of measures designed to alter modal split. Many research projects have been undertaken to measure the effect on modal split of measures varying from new light rail networks to traffic calming, and persuasion campaigns. Research findings often contradict one another, and the caution on the part of researchers can cast doubt that many measures would have any significant measurable effects.

B.5 The following comments should be made:

- Most exercises try to isolate the effects of one policy in a 'laboratory situation'. Such an approach does not generally produce results because of background influences, and the length of time needed between studies.
- Few studies measure a package of policy measures, which tends to be the situation where policy makers are trying to influence behaviour. Since one package is unlikely to be the same as another package they are equally difficult to compare.

B.6 Recent publications, such as that by Rye and McGuigan (2000) "Green Commuter Plans - Do they work" are starting to provide a framework for understanding what measures may work in combination with others, and the effectiveness that can be expected. This understanding will grow rapidly as more Travel Plans are implemented and as monitoring grows.

- B.7 It must be recognised that many measures designed to encourage access by means other than the car will only have a minor effect when introduced on their own. As part of a package of measures, however, their impact can be significant. Research to investigate the combined impact of a range of measures is developing and in the future will be of use in producing a Transport Assessment and Implementation document.

Trip Databases

- B.8 Trip generation databases such as GENERATE, TRAVL and TRICS are important sources of information on car travel but their information on non-car travel is limited. Since the databases do not yet contain much information on non-car transport impacts or on developments with operational Travel Plans, they should be employed with caution in a Transport Assessment – possibly as a starting point for the base level of travel and modal share for example. Although their data content is evolving to become more multi-modal, they were originally created to support TIAs, with an overall focus on car travel and so do not provide all the data required for a Transport Assessment. In addition, their use may tend to replicate past travel patterns, thus encouraging developers to provide for more car travel than is necessary, rather than promoting sustainable modes as current government policy advocates.
- B.9 Nevertheless, for the present, these databases remain necessary tools, since they provide more information on behaviour than other surveys. Furthermore they are now evolving to allow inclusion of data for modes other than the car. In time, as the expanded new data set continues to grow, they will provide a useful source of information for the various new initiatives being developed and delivered currently.

Trip Generation and Trip Rates

- B.10 TRICS (Trip Rate Information and Computing System) is a large database containing traffic count data for a number of days at a large number of sites of different categories of land-use. In addition the database also contains information on the size of the development (retail floor area, office space, number of residential units, etc.). The database contains data for a large number of sites throughout the country and is updated regularly. The large data set traditionally has a south east of England bias although the current data collection programme is addressing this issue.
- B.11 TRICS allows the user to calculate trip rates from individual or a group of selected development sites, which can be selected by the user imposing a range of criteria, such as Gross Floor Area, Retail Floor Area, number of employees etc. The database is generally constructed from vehicle counts only. Most records contain no information on trip lengths, car occupancy levels, origin-destination information, or trips by public transport, on foot or by bicycle. However, a number of surveys have now taken place and some sites with multi-modal data have been incorporated.
- B.12 Two technical terms must be understood:
- “Trip generation” refers to trips associated with a land use, such as trips to a hospital.

- “Trip rates” refer to trips per time period, and can be personal trip rates (as in trips per person per day) or trips associated with a land use per day.
- B.13 The selection of a trip rate is important in estimating the travel generation of a site. The following factors need to be taken into account in selecting a rate:
- the size of the walking catchment;
 - the propensity to cycle;
 - the type and quality of public transport provision;
 - the level of on-site parking restraint;
 - whether there are parking controls in the vicinity of the scheme;
 - the potential for linked trip opportunities; and
 - for retail sites, competition within the locality.
- B.14 In the past TIAs have compared the proposed development with similar ones, and have been careful not to underestimate the vehicle trip generation. Typically the "85th percentile" trip rate has been chosen. This means that "of 100 similar developments, the proposed development will have trip generation characteristics corresponding to the 85th of these when their trip generation characteristics are placed in order". This approach has often resulted in TIAs assuming higher than average traffic levels. This discourages other modes of transport, given that if significant parking is provided it will reduce the likelihood of people using non-car modes.
- B.15 In preparing Transport Assessments it is important to consider a wide range of trip generation rates such as 15th, 50th and 85th percentile trip rates. Depending on the nature of the development it is likely that a pair of lower (15th and 50th) or higher (50th and 85th) rates will be appropriate for most developments. If satisfactory measures designed to reduce car use at proposed developments are included, e.g. maximum parking standards, it is hoped that the higher rates will seldom be needed. The difference between 15th and 85th percentile rates can be large, involving factors of between 2 and 4. Care must be taken when using the lower rates, particularly with maximum parking standards, that lower car use can actually be achieved.

Person-trip Travel Surveys

- B.16 It is important to undertake a person-trip based assessment for all developments with significant transport implications. The main sources of person trip data in Scotland are currently: the National Travel Survey; the Census; and local movement surveys (if conducted by local authorities). However, these surveys are not primarily designed for use in Transport Assessment and Implementation and should be used with care:
- **The National Travel Survey** contains detailed information and can be useful for estimating trip generation from housing developments. However, it records journey purposes (such as "shopping") rather than trips to development types (e.g. "corner shop", "supermarket", or "town centre"), and it cannot be used for detailed local analysis.

- **The National Census** deals with home-based work journeys only, and records only the mode of travel for the main part of the journey. This can obscure information which is of use in Transport Assessment and Implementation such as the mode used to leave or arrive at a development.
- **Local movement surveys** can vary in their value depending on the purposes for which they have been carried out, and the detail included.

B.17 A major benefit of the National Travel Survey and the Census is that there is information on all modes, in contrast with the focus on car use that is common in vehicle databases. However, the NTS and Census cover trips from housing, so a likely difficulty will lie in estimating trips to and from other land uses although this can be overcome. Developers are recommended to inquire about the availability of area data from the local authority that may assist in the preparation of a Transport Assessment and Implementation document.

Estimating Modal Split

B.18 Modal split estimates can draw on catchment area analysis, comparing travel behaviour with activity elsewhere and supported by reasoned argument about likely travel behaviour. However, it may be possible to make good estimates with less emphasis on these techniques by comparisons with similar existing developments, and including the effect of proposed measures to influence travel in the proposal. In seeking suitable sites, one should look for comparable locations, scale, public transport provision and non-car accessibility.

B.19 Using these techniques should provide estimates of the numbers travelling to the site, their choice of mode, and the overall modal split.

B.20 In general:

- Data for analysing populations within catchments according to travel times are available for certain areas to a high degree of accuracy using GIS sources linked to population data. But outside major urban areas the information, especially with regard to public transport, may be more difficult to come by.
- For rural areas access by non-car modes may be simple to calculate without data sources other than maps, and bus timetables. In between the larger urban areas and rural areas, and for smaller developments within larger urban areas, data for complex analyses will be difficult or impossible to obtain, or may be too costly for smaller developers to gain access to.
- Data on travel behaviour from which modal split predictions might be made is good at the national level, but only at the level of trip making for different journey purposes. For journeys by non-car modes to specific developments (especially 'new types' of development such as multiplex cinemas) data availability is not good.

Road Networks

- B.21 For the purpose of undertaking Transport Assessment and Implementation four road network data sets based on OSCAR (Ordnance Survey Centre Alignment Of Roads), are available, with a varying degree of detail. Roads and the information associated with them are modelled in a vector network of links and nodes (Source: www.ons.gov.uk). Similar networks from other suppliers are also available.
- OSCAR Asset-manager is the most detailed of these and provides a comprehensive representation of all public and selected private roads. The whole country is covered and available at levels of detail relating to 1:1250, 1:2500, and 1:10000 scales.
 - OSCAR Route-Manager has been designed for regional routing and networking requirements. The entire public road network is included, with the exception of short cul-de-sacs. Complex road junctions are shown as single nodes and multi-carriageways as single links.
 - OSCAR Traffic-Manager includes all public and selected private roads and includes Drive Restriction Information (DRI). Drive Restriction Information shows the restrictions, which affect the route of a vehicle, such as one-way streets or banned turns. DRI is available for all classified roads, and within the urban envelope of all Metropolitan areas and selected District Council areas. In addition, the centres of 300 towns are also available.
 - OSCAR Network-Manager has more simplified road geometry than the other road products, containing only Motorways, A and B roads.

Deriving Walk and Cycle Times

- B.22 Road networks, like OSCAR can be used to derive walk and cycle access times. Distances between origin and destination pairs via the network are calculated and converted into time using an assumed average travel speed. It will generally be necessary to use the most detailed networks available. The following should be noted:
- All roads in the network (including motorways and inappropriate roads) will be included in the calculation, but paths and other shortcuts will not.
 - Euclidean (straight line) distances may be calculated with assumed average speeds, but that would not take into account the characteristics of the actual walking network, such as hills or pedestrian crossings.
- B.23 This data source is inadequate for realistic walking and cycling catchment area calculation unless specially adapted to overcome the above.
- B.24 A three-year Scottish Cycling Development project was carried out in Scotland in 1997. One of the outputs is a Scottish Cycling database on the Internet which contains information on cycle networks which can be used to derive cycle access times. (www.scottishcycling.co.uk)

Deriving Car Drive Times

- B.25 A number of software packages are available (within GIS systems) which perform shortest path calculations through road networks and convert distances into times. In most cases the road network is divided into different road types and a database containing typical speeds by road type is used to derive link times. Routing algorithms are used to calculate a shortest path. Off-peak travel times and free flow traffic conditions are usually used in calculations. For the purposes of Transport Assessment and Implementation it might be necessary to represent a network for the AM or PM peak period. Although road speeds can be customised to reflect local conditions, the process to validate journey times in a network might be time-consuming.
- B.26 Examples of software packages to calculate road journey times include Drivetime, RouteView, Geoconcept, and Autoroute. Drivetime contains 38 classes of roads with associated speeds. Autoroute is most suitable to derive journey times at a national level. It includes major roads only and uses 10 categories of roads in its journey time calculation. Autoroute is used on an interrogative basis and only allows the user to look at one origin-destination pair at a time.

Public Transport Networks

- B.27 There are various paper-based data sources available providing information on public transport networks. In Scotland, the Traffic Commissioners and the relevant local authority, or Strathclyde Passenger Transport (SPT) in the areas covered by SPT, should have information on routes operating, and may have mechanisms in place for obtaining information from public transport operators. Often printed timetables are provided. Details on the rail network can be found in the Great Britain Passenger Timetable. Details of bus operators can be found at www.barrydoe.plus.com
- B.28 Information on the rail network, including station locations is available in digital format from a number of suppliers. Information on bus networks is not widely available in digital format, although it would be possible to represent a bus network in GIS by selecting roads served by buses as a subset of one of the road networks.
- B.29 Calculating journey times through a public transport network is more complicated. It is not just a matter of selecting routes served by buses and using average bus speeds as various other elements need to be taken into account, including:
- The time to walk to a bus stop or station;
 - Wait time at the bus stop;
 - The travel time spent on the bus;
 - Interchange time (if relevant); and
 - The time to walk from the bus stop to reach a destination.

Deriving Public Transport Journey Times

- B.30 Currently, data and software to provide door-to-door public transport journey times is not readily available without a large degree of effort, unless special local exercises have been undertaken. The data generally exists to allow such exercises, but the effort involved might only be justified for large development proposals. Availability of accessibility planning software tools is slowly changing this perspective.
- B.31 Information about railway station locations and railway lines is widely available in digital format for use with GIS. Electronic data on bus stop locations is less widely available, although databases tend to exist in the larger Metropolitan areas. Alternatively, bus operators might be able to supply information on bus stop locations. Data on service patterns and frequencies will generally be paper based and locally available, though increasingly they are available on the internet. Walking times to and from rail stations and bus stops can be calculated in a similar way as described under the heading 'Deriving walk and cycle times'.

Bus and Coach Statistics

- B.32 These statistics provide information about the trends in bus and coach services in Scotland, and include data on distances travelled by vehicles, numbers of bus passenger journeys, fare indices, passenger receipts, public transport support, operating costs, vehicle stock and staffing. The most recent Statistical Bulletin Transport Series Trn/2005/1 Bus and Coach Statistics: 2003-2004 was published in March 2005. Bus and Coach Statistics are produced annually. The data may contribute to the assessment by providing background information.

National Rail Journey Planner

- B.33 The National Rail journey planner can be used to provide journey times between any two stations served by the National Rail network. Service patterns and frequencies as well as interchanges can also be derived.

Bus Journey Planners (Traveline and Transport Direct)

- B.34 A number of bus journey planners are available through the Internet allowing the user to identify bus journey time information for a number of networks around the country (free of charge), although there appears to be much variation in the quality of information supplied. Examples include express services in Scotland, the Scottish Citylink website at www.citylink.co.uk and www.transportdirect.info.

Telephone Enquiry Lines and "PTI" data

- B.35 The Transport White Papers called for a Public Transport Information (PTI) system to be systematically extended across the UK. Work is well advanced and is being led in Scotland by a consortium of transport operators and local authorities and the Scottish Executive. "Traveline" call centres have been set up in Scotland and in regions throughout the UK which can be accessed by a single telephone number. Callers are automatically connected to the nearest call centre. There is an easy transfer of calls between call centres to access information not covered by the centre a

caller is connected to. The information available includes that currently provided by the National Rail Enquiry Service (NRES).

- B.36 As part of this public transport information system, data on all public transport services in the UK are being coded for computer interrogation. PTI data on public transport is not yet made available in data form, but when it is, it should be of great value for public transport system coding. It should be possible to link this data to a GIS to use in accessibility analysis.
- B.37 PTI systems should comprise a database of records disaggregated into bus stop locations, service network, service details, and route details, which can be interrogated in order to answer individual enquiries from passengers. GIS can be used to display bus stop locations and route networks, and accessibility analysis can be carried out on the underlying public transport service level data. The process of reformatting data can be simplified by developing an interface between the two systems.
- B.38 The UK Public Transport Information (UK PTI) website contains links to a wide range of local and national public transport operators, with information on routes, timetables and booking. It can be found at www.pti.org.uk.

Transport Modelling Software

- B.39 Transport modelling packages may be used for performing routing calculations through public transport networks. For each O-D combination journey time, wait time, interchange time and walk time will be reported and can be included in journey time matrices. Setting up a transport model can be a complex task and, depending on the size of the study area, may require a significant resource commitment. In some cases, particularly in the case of very large developments, it may however be necessary.
- B.40 A number of software packages are available to provide information about public transport journey times. Most of these will be able to provide information on an interrogative basis providing journey details for one or more O-D combinations at a time. These might be helpful in the case of smaller developments.

Land-Use Data

- B.41 Information on locations of population, and facilities such as schools, hospital, etc. will be needed to calculate catchment areas. Information on land-use and facilities will also be useful when estimating trips that will be diverted from existing facilities to new developments.

National Land Information Service (England and Wales only)

- B.42 The National Land Information Service (NLIS) is an initiative to provide national information on land and property. NLIS is the generic term for a set of services allowing access via computer to geographically related information from a large number of sources (both public and private). The system will be based around a gazetteer, known as the National Land and Property Gazetteer (NLPG). The NLPG will be a national index of all land and property units for Great Britain.

The National Census

- B.43 The census provides information on the number and characteristics of people and households for the whole of the country. Between censuses population estimates are updated using data from registrations of births and deaths and estimates of migration based on information on the number of people changing their general practitioner, changes in the electorate and other material from sample surveys.
- B.44 Data is available at 'enumeration district' (ED) level for the 1991 census and at postcode level for the 2001 census. This allows easier linkage with other data.

Census Special Workplace Statistics (CSWS)

- B.45 The 1991 and 2001 Censuses asked about people's place and address of work, and mode used to travel to work. Means of Travel to Work shows the mode of transport normally used for the longest part, by distance, of the journey to work. For the 2001 Census for Scotland place of study for students and schoolchildren is also included. Data for a random stratified 10% sample of the 1991 Census was coded and this forms the CSWS. This data provides a useful source for analysing modal split according to distance, type of area and other characteristics, but would require further in-depth analysis by experts to provide useful information for developers carrying out a transport assessment.
- B.46 CSWS provides information about persons in employment by their area of residence. The 'resident population' base is restricted to those who are employees or who are self-employed. It covers the full address of the workplace and how the longest part of the journey by distance of the person's trip to work is made. Workplace address postcodes are used for the location. The distance to work has been calculated as a crow fly-related distance between the co-ordinates of the home and workplace. This data can be useful for assessing the realism of predictions made about mode split and catchments.

Information Held by Various Public Bodies

- B.47 The table below provides an overview of various types of information held in respect of land-use and facilities, the organisation holding the data and the type of data held.

Public Body	Description of information held	Data coverage
Local Authority	Information on land use changes	Owner of property, title deeds, licences, tenancies
Local authority	Information on facilities	Parks, Leisure facilities, Roads, Schools Common land, Electoral register, Conservation areas, Planning policies
Sportscotland	Information on sports facilities	Sports facilities, Playing fields
Schools Register	Information on schools	Schools, Further education colleges
Higher Education Statistics agency	Information on higher education	Higher education colleges, Universities
Civil Aviation Authority	Airports/ air related facilities	
Network Rail	Rail facilities	
NHS and trusts	Hospitals and medical facilities	

Local Facility Databases

- B.48 Data on service centres and facilities (community, health, education, shopping etc) can be collected at various levels. Even the most basic of data can be useful for accessibility purposes; it can be added to as needed. Useful sources include local knowledge, local development plans, publicly available directories such as Yellow Pages, and commercial databases of facilities.
- B.49 Many local development plans already include maps or lists of local facilities such as service centres. Such lists can be added to by using available data collected locally, or by use of directories such as Yellow Pages (which is available on the internet).

Commercial Geo-coded Facilities Data

- B.50 Geo-coded retail and service datasets are available from a variety of companies. They may use existing databases of such information and 'add value' to them by undertaking further research, cleaning and checking data, classifying and summarising records, and geo-coding. MapInfo sells databases for various land uses including post offices, banking and finance, hotels etc, public houses, petrol stations, food retailers, clothing and footwear, newsagents, household goods stores, services and estate agents.

Trip Rates and Travel Behaviour

- B.51 One of the methods to estimate the likely amount of traffic a new development might generate is to compare a development with similar existing developments. A number of trip databases exist which allow such comparative analysis to be carried out. It is envisaged that these databases will continue to have a similar role in the transport assessment and implementation process, though they will have to adapt to provide the information on travel by all modes, and to provide stronger links between catchment areas and modal split.
- B.52 The National Travel Survey (NTS) is also of use, as well as other sources of data on travel behaviour.
- B.53 The Scottish Household survey is an ongoing survey funded by the Scottish Executive, and collects a wide range of data on household characteristics and behaviour, including transport. Statistical Bulletin TRN/2004/6 on Household Transport contained information from the Scottish Household survey on topics including the accessibility and frequency of bus services, travel to work/ school/ study and many others. It is available on the Internet at www.scotland.gov.uk/stats/bulletins/00375-00.asp
- B.54 A recently initiated three year project, Scottish Neighbourhood Statistics will be creating a database of local statistics, aimed at informing community planning and regeneration processes. Amongst the areas it will cover will be access to services, within which it hopes to reference the location of key services such as doctor's surgeries and Post Offices, and model travel times and accessibility. See www.scotland.gov.uk/stats/neighbours/neighbour.asp.

Visits to Tourist Attractions

- B.55 The database of Visits to Tourist Attractions contains information on number of visitors to United Kingdom tourist attractions with more than 10,000 visitors in the year. It includes a brief summary text, followed by many tables, showing the more successful sites by type of attraction, and lists of sites for Scotland, England, Wales and Northern Ireland. More detailed presentation of the survey information is contained in Sightseeing in the United Kingdom. (Source: Office for National Statistics – www.ons.org.uk/)

The National Travel Survey

- B.56 The National Travel Survey is a survey of household and individual travel behaviour and characteristics carried out in Scotland, England and Wales. Since 1989 it has been conducted as a continuous survey with a sample of about 3,500 households per year, but doubled in scale from 2003. The data covers:
- Variables for data relating to the household (such as location, vehicle availability, head of household characteristics, family structure etc);
 - Individual variables (such as age, gender, driving licence);
 - Variables relating to vehicles (such as engine size, annual mileage); and

- Variables relating to 'journeys' and 'stages' of journeys (for a period of one week), where a journey is defined by a trip with a 'purpose', and a stage is the use of a mode of transport or vehicle.
- B.57 In addition, journeys over 25 miles are recorded in a three-week diary to increase information on longer journeys.
- B.58 While it is of use in providing a general indication of the kinds of travel behaviour that might be expected, it is not accurate enough to provide:
- Data on travel to specialised developments, such as call-centres, since destinations of journeys are only defined in terms of their 'journey purpose'.
 - Data for local areas. The data can be analysed with confidence to a regional level, but the sampling structure does not allow for disaggregation at any lower level (even at County level).

TEMPRO

- B.59 The TEMPRO database might be useful in the Transport Assessment stage of the reporting process to determine future year traffic forecasts and to get an understanding of traffic growth. The TEMPRO software provides access to the NTEM (National Trip-end Model) trip-end forecast database as well as the underlying car ownership and planning data projections. Data for any year from 1991 through to 2031 can be retrieved and the growth rate between a selected base and future year provided. TEMPRO calculates values by interpolation and displays the results in terms of the growth between the two selected years at Great Britain, regional, county and local authority levels.

Other Transport Models

- B.60 The Transport Model for Scotland (TMfS) maintained on behalf of the Scottish Executive, provides an additional and powerful tool for forecasting traffic at the strategic level. Other models held by authorities and the SITM model, maintained by Strathclyde Passenger Transport (SPT), complement TMfS. Access and use of such models will often require additional resources and will have timescale implications that need to be considered and planned.

Scottish Transport Statistics

- B.61 This compendium of statistics, which covers road transport vehicles, bus and coach travel, road freight, toll bridges, the road network, road traffic, injury road accidents, rail services, air transport, water transport, finance and personal and cross-modal travel for Scotland contains descriptive text, tables and charts. It is published annually. The Statistics also cover trends over a 10-year period in the areas, as well as some longer-term trends and compares with some key statistics for Great Britain.

Monitoring Studies of Travel Plans

- B.62 Travel Plans and other measures are being increasingly monitored but the level of understanding about which measures have significant impacts on travel behaviour and modal choice for different developments is still at an

early stage of development. Reports such as that by Rye and McGuigan "Green Commuter Plans - Do they work?" (2000) shows that we are now at the stage where informed statements can be made, but caution should be exercised if transferring such research findings to proposed developments where the details of users, and measures to be utilised, are not fully known.

Conclusions

- B.63 The data available is suitable for many Transport Assessment and Implementation reports. It can be of variable quality, with much depending on the type of area in which a development is proposed, and the resources available to the developer undertaking the assessment. Data exists to analyse and predict modal split, but as with any forecasting procedure the output forecasts may be of questionable accuracy and validity.
- B.64 If the Transport Assessment stage of the assessment is to be practicable it must be straightforward to carry out and be understandable by many people (including the developers, planning inquiry reporters, and others). Existing data sources will adapt over time to include additional data, and new data sources may be created so that in future developers will be able to draw on a wider range of data than currently exists. The monitoring stage of the assessment will assist in this regard.
- B.65 In the meantime, whatever the form of prediction suggested, there will be approximation, and room for possible debate between proponents and opponents of developments. Those who have access to expert opinion will be in a stronger position unless effort is made to set up shared databases that all can access freely.
- B.66 The main conclusions of this review are that:
- Data for analysing populations within catchments according to travel times are available for certain areas to a high degree of accuracy using GIS sources linked to population data. Outside major urban areas the information, especially with regard to public transport, may be more difficult to find.
 - For rural areas access by non-car modes may be simple to calculate without data sources other than maps, and bus timetables. In between the larger urban areas and rural areas, and for smaller developments in the larger urban areas, data for complex analyses may be difficult to obtain, or may be too costly for smaller developers to gain access to.
 - Data on travel behaviour from which modal split predictions might be made is good at the national level, but only at the level of trip making for different journey purposes. For journeys by non-car modes to specific developments (especially 'new types' of development such as multiplex cinemas) data is poor.

APPENDIX C – MECHANISMS FOR IMPLEMENTATION

C. IMPLEMENTATION ASPECTS

- C.1 The key to implementation is to make sure that those actions and measures which are described as being part of the proposed development are properly specified when planning permission is granted. The measures should be identified in the Transport Assessment and Implementation document. On-site infrastructure proposals should be clearly shown on the plans and drawings accompanying the planning application. The requirements, including infrastructure changes expected of developers, should be secured through planning conditions or a planning or other legal agreement. A Travel Plan can help secure maximum change in travel behaviour in accessing the site by specifying appropriate targets.

Local Authority Policies

- C.2 Planning authorities must set out sufficient detail in up to date Development Plans and Local Transport Strategies (LTSs) to indicate what they require in development proposals and the general approach to the transport assessment process. This will provide a transparent basis for planning decisions including the use of planning conditions or Section 75 agreements. It will also enable easier negotiations with developers on the use of planning or other legal agreements, and will give developers more certainty in these discussions.

Planning Conditions and Planning or Other Legal Agreements

- C.3 As part of the planning process it may be preferable to use planning conditions to secure certain measures, particularly where these can be clearly defined and for implementing measures in relation to small schemes. Although Section 75 agreements can be difficult to enforce for Travel Plans, they are available within the legislation alongside planning conditions and are therefore to be used.
- C.4 In many cases planning or other legal agreements may be necessary since developers will be expected to provide financial contributions towards a package of measures associated with their development. Improvements to public transport provision are an area of potential financial support. Outcome measures resulting from the interventions introduced, such as Modal Share Targets, can be included in planning obligations. Input measures that form part of the design, for example infrastructure improvements, or output measures of travel behaviour, such as the numbers accessing the site on foot, may also be useful in some cases.

Transport Assessment and Implementation

- C.5 Transport Assessment and Implementation provides the framework to ensure that development travel patterns reflect policies in SPP17 and development plans and the intention of the planning approvals and legal agreements. They provide a mechanism for measuring the appropriate outcomes. Transport Assessment and Implementation consists of four

stages, the key documents for which will be held collectively in order that the process can be followed from concept, through scoping and analysis, to delivery and monitoring.

Travel Plans

- C.6 Travel Plans can provide considerable benefits to companies and organisations: reduced costs and increased efficiency will benefit the company while reducing local road congestion can benefit the whole community. A travel plan is a means of promoting sustainable development and of securing the requirements of the Transport Assessment. A Travel Plan is only required if the development is a major travel generating use. Unless a travel plan is submitted alongside the application delays in decision-making could result.
- C.7 A Travel Plan will incorporate a package of the various measures developed during the Transport Assessment stage of the process. These will be tailored to the particular circumstances of the development proposal. Travel Plans provide an effective way of co-ordinating the whole range of transport-related measures associated with a particular development or site. Such a package of co-ordinated measures will be more effective in changing travel patterns than individual initiatives. In addition, the information on travel patterns gained through monitoring as part of a Travel Plan can also provide very useful data for designing the details of additional measures to ensure effective enforcement. Whilst Travel Plans are separate from the infrastructure provision etc, in practice the plans are often linked to the physical layout of the site and of course the intended land uses, in support of wider transport and planning policy.
- C.8 SPP17 explains that a travel plan associated with a planning permission should be specified through a planning agreement in order to be implemented and enforced and to demonstrate ways the developer expects to meet Mode Share Targets and mitigate transport impacts rather than be submitted as part of the planning application. In the case of a speculative development where the developer does not have an end user identified, it may be appropriate that a developer still produces a Travel Plan (which would be amended by the occupier) and would agree the basic provisions.

Targets

- C.9 Implementing Travel Plans through the planning system requires clear targets which are easy to measure and relate directly to the planning permission. Various targets can be used for monitoring, including:
- number of vehicles entering a site;
 - the modal share (walking, cycling, public transport, car) of those visiting the development;
 - the maximum level of parking to be provided (by comparison with similar developments);
 - parking usage (e.g. proportion of available parking used);
 - on-street parking on surrounding roads;

- the maximum number or proportion of single occupancy vehicles entering the site;
 - the level of car-sharing; and/or
 - the provision of travel (e.g. public transport) information to staff and customers.
- C.10 Some targets will be easily measurable while others require a degree of interpretation. The modal share, for example, can be measured annually but the provision of travel information requires a qualitative judgement. If there is an agreed overall target, e.g. modal share, the local authority may not need to be involved with monitoring all the individual components of the plan.
- C.11 Transport Assessments are concerned with mode split to the site, with the aim that this should be influenced towards encouraging non-car modes. The issue of how far the traffic will travel is not usually considered. The emphasis is on local congestion rather than wider environmental impacts or sustainability issues. If catchments are used as part of the travel predictions for the site there is the option to predict total travel generated. The Scottish Executive would support such a wider view especially for larger developments.

Validation

- C.12 Lengthy discussion often occurs to agree the various technical parameters on which the analysis set out in any Transport Assessment is based. Further discussion is also required in respect of Travel Plans to ensure that these are compatible with the delivery outcomes used in the Transport Assessment. In all aspects of the process, professionals use their judgment to reach a view on their estimate of likely outcome.
- C.13 To date, it has rarely been the case that any form of follow-up activity has been undertaken to validate the assumptions used and the predicted outcomes. The strong emphasis on monitoring within this guidance should result in additional follow-up activity but it is important that any data collected is then re-applied and used to validate earlier assumptions. This issue will be crucial in areas where there may be an ongoing development programme over many years and where the assessment process can evolve as data is collected during each phase of development.

Monitoring

- C.14 Arrangements for monitoring must be agreed at the outset and included in the Transport Assessment and Implementation document and planning agreement. This may involve estimates of modal share, counts of trips on foot/bicycle/bus etc. over a period of time. Measurement may take place monthly, quarterly or annually, depending upon the local circumstances. Provision should be made for possible future changes to be implemented in view of the outcomes of the monitoring process. This may be in the form of revisions to the Travel Plan or changes to bus services and local infrastructure, for example.

- C.15 The developer, occupier, local authority, or less frequently, a third party (such as the Scottish Executive) can undertake monitoring. However, it is probably best for the occupier of the building to carry out the monitoring. Monitoring could involve the building occupier submitting an annual or bi-annual report to the local authority presenting the outcome of perhaps monthly or quarterly monitoring exercises. Small companies or organisations might be affiliated to a wider organisation responsible for monitoring targets on behalf of all member organisations. The occupier of the development should pay for monitoring.
- C.16 An occupier monitored Travel Plan must be audited, perhaps by the local authority or Scottish Executive where issues related to trunk roads are involved.
- C.17 If the relevant target relates to parking, the monitoring would comprise periodic surveys of parking levels as well as possibly monitoring complaints from residents in relation to parking problems in the surrounding area. If the target relates to single occupancy vehicles the monitoring could comprise periodic surveys at the site entrance.

Enforcing Obligations

- C.18 Transport Assessment and Implementation is an ongoing part of the land-use planning process which includes monitoring as an integral part. This is important, since the issue of enforcing obligations agreed by the developer (particularly of predictions of travel implications or parking usage) is a difficult issue. Without monitoring, the benefits to be derived from the implementation phase could be undermined.
- C.19 If planning or other legal agreements have been secured, the arrangements for the enforcement of obligations need to be set out in the agreement. A Section 75 agreement can be used to set Mode Share Targets.
- C.20 In the event that targets are not met this might involve requiring the developer/occupier to provide extra resources to specific measures such as improved public transport, or the provision of funds towards implementing on-street parking controls in the surrounding area. The agreement might set out that, in the event of a failed target, a revised Travel Plan incorporating extra measures, such as charging for parking, will be submitted to the local authority for approval.
- C.21 Where a development is in more than one phase, the planning authority might give permission for the first phase only, and indicate that failure to meet the relevant targets in the first phase could result in further phases being refused, or less floor-space or parking being considered acceptable in applications for subsequent phases.
- C.22 If targets have not been achieved the authority might make clear the action required in the event of the target not being met, such as further improvement (or increased priority being given) to pedestrian or cycle access to the development.
- C.23 For some developments the planning authority may limit the scale of operations at the site. This might mean that a part of the development may

have to be smaller than desired, e.g. a floor-space limit might be fixed. In some cases the planning authority may require that parts of the development remain unoccupied for all or part of the time (i.e. some of the seats in a stadium remain unused) or that some or all of the activities on the site might have to cease at certain times.

- C.24 Some Travel Plans can be self-reinforcing. For example if parking is physically limited, and alternative parking is not available in the vicinity, there is less need to enforce an obligation relating to traffic using the site. However, the planning authority might want to ensure that on-street parking controls on the surrounding roads are effectively policed.

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