



**DEVELOPMENT PLANNING AND MANAGEMENT
TRANSPORT APPRAISAL GUIDANCE
COPY FOR PEER REVIEW**

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Chapter 1: Introduction

Purpose

1. This document provides guidance to Development Planners on Transport Appraisal to inform the preparation of development plans. It sets out the issues Transport Scotland considers when assessing the impact of proposed development on the Strategic Transport Network arising from applications for planning consent. It also sets out the specific issues to be considered when preparing a Transport Appraisal relating to the Strategic Transport Network at different stages of development plan preparation and the development management process.
2. This guidance seeks to demonstrate the alignment between Transport Appraisal and the development plan process, and highlight the value of effective engagement between Transport Scotland and Planning Authorities. The clear aim of this guidance is to enable Transport Scotland to support the principle of the land use allocations and transport interventions set out in development plans as they affect the Strategic Transport Network. The guidance is intended to assist early and effective Transport Appraisal during development plan preparation where it can be most effective in assisting the delivery of plan proposals and, where relevant, help the transition of transport projects through the various statutory processes.
3. Transport interventions that emerge from the development plan process and have been appraised using this guidance, and receive support in principle from Transport Scotland, will not need to be subject to further Transport Appraisal at a later stage. This will help to deliver the land uses that are set out in the development plan and provide clarity for the transport interventions that are agreed to be necessary to support successful development.
4. Through engagement with the Planning Authorities, Transport Scotland seeks to:
 - support the aspirations of Planning Authorities for the future development of their area and to promote sustainable economic growth
 - continue to deliver a safe, efficient, cost-effective and sustainable Strategic Transport System that meets the needs of all the people of Scotland
 - continue to ensure that the Strategic Transport Network performs its function of improving connections across Scotland
5. This guidance is consistent with the principles of best practice contained in the Scottish Transport Appraisal Guidance (STAG). It sets out three levels of objective-led appraisal, proportionate to the scale of land use and/or transport intervention being considered. The three levels of appraisal and their role for Strategic and Local Development Plans are explained in Chapter 2. This guidance focuses on Transport Appraisal of new developments in the context of Strategic Transport Network. It may also be used to assist Planning Authorities

in assessing the impact of proposed development on the local transport network and identify the nature and location of local transport interventions.

6. This guidance supersedes PAN 66: Best Practice in Handling Planning Applications Affecting Trunk Roads.

Benefits of Transport Appraisal

7. The benefits of using this guidance in preparing a development plan are:
 - It will provide an understanding of changes in travel demand arising from changes in land use, population and economic activity
 - It will provide an understanding of the resultant changes in transport supply that would be required and can to be delivered to reach an agreed level of operational performance of the Strategic Transport Network
 - It will provide an understanding of the impact of choices for the Strategic Network Transport on the wider social, economic and environmental policy aims of the plan
 - Where relevant, it will form an outline business case for proposed enhancements to the Strategic Transport Network that complies with transport statutory approval processes for infrastructure schemes
 - It reduces appraisal burdens at the Development Management stage
 - It gives greater certainty to developers
 - It ensures compliance with the initial steps of Transport Appraisal required to inform future national transport infrastructure investment decision making
 - It provides clarity on the level of support from Planning Authorities and Transport Scotland for transport interventions related to development plans

National Planning Policy

8. The consolidated Scottish Planning Policy (SPP)¹, published 2010, sets out the Scottish Government's policy in terms of the impact of new development on the Strategic Transport Network, including policies in respect of new junctions onto the Scottish motorway and trunk road network and new railway stations. When bringing forward new motorway and trunk road accesses and new railway stations, Transport Appraisal at an appropriate level provides an understanding of the impacts and implications of proposals and needs to be agreed with Transport Scotland.

¹ Scottish Planning Policy, The Scottish Government – available through the Scottish Government's website at: <http://www.scotland.gov.uk/Publications/2009/04/01132105/0>

9. The National Planning Framework for Scotland 2 (NPF2) takes forward the spatial aspects of the Scottish Government's policy commitments on sustainable economic growth and climate change. For transport infrastructure it promotes the strategic outcomes set out in the National Transport Strategy and incorporates the recommendations of the Strategic Transport Projects Review (STPR).

Climate Change

10. Scotland aims to become a leading nation in developing a sustainable way of life, reducing the impact its people have on the local and global environment. The choices made will be critical to shaping a modern, successful and sustainable Scotland and to maintaining a quality of life which retains and attracts talented people and investment. Emissions reductions in the transport sector can be achieved in a number of ways including reducing demand for travel.
11. The Climate Change (Scotland) Act commits Scotland to reduce its emissions by at least 80% from 1990 levels by 2050; with an interim target of at least 42% by 2020. The Climate Change Delivery Plan: Meeting Scotland's Statutory Climate Change Targets² provides an outline of how we will achieve the statutory emission targets.
12. Emissions reductions in the transport sector can be achieved in a number of ways through, for example, measures which encourage a shift to more sustainable transport modes or a reduction in travel demand. Responsibility for a number of key policy levers for the transport sector rests at the UK or EU level. However, the Scotland Government has powers over measures such as:
 - transport infrastructure
 - smart measures, including local speed limits, active travel (cycling and walking); and fuel efficient "eco-driving"
 - demand management measures, including road space re-allocation in favour of more sustainable travel modes
 - the location and nature of new development through the planning system

Transport and Land use Planning

13. Demand for transport is derived from land use - transport provision also influences patterns of land use. Changes in land use can affect the demand for transport and, depending on the availability of capacity in the transport network at a local or strategic level, this can impact on the operational performance of

² Climate Change Delivery Plan: Meeting Scotland's Statutory Climate Change Targets, The Scottish Government. Available through the Scottish Government's website at:

<http://www.scotland.gov.uk/Publications/2009/06/18103720/0>

these networks. This in turn may have social impacts (e.g. accessibility), economic impacts (e.g. queuing and delays affecting journey times, journey time reliability, access to markets) and environmental impacts (e.g. emissions). Transport impacts should therefore be considered early in the process of identifying sites for development, along with other key factors influencing land use proposals.

14. In considering different land use strategies it is important to understand the consequences that changes in land uses has on:
 - whether the current Strategic Transport Network and planned enhancements are capable of accommodating future land use proposals at agreed performance levels
 - the potential impact of no changes in the current or committed Strategic Transport Network
 - The nature, scale and location of additional measures that could be implemented to more closely align transport supply and demand, if appropriate. Such measures could involve either changes in land allocations, in the demand for transport or the supply of transport
15. Transport Scotland uses the outputs from the Transport Appraisal to come to a view on each of these areas, and may request additional information. That view is represented to the Planning Authority as one of the factors to be considered when preparing a development plan or in reaching a planning decision.

Mode Hierarchy

16. Adopting a mode hierarchy approach requires consideration to be given to meeting demand via walking, cycling and public transport first before considering the extent to which the private car use should be accommodated, reducing the need to travel and encouraging travel by sustainable modes.
17. Influencing the choice of travel mode for an individual requires knowledge of how people travel and why people travel the way they do. Policies, measures and resources can then be targeted directly and efficiently to influence behaviour and promote sustainable travel choices. National planning policy supports integration of land use and transport planning and promotes the principles of mode hierarchy. Guidance on how to plan for different modes of travel is provided in Annex 1.

Transport Investment

18. Strategic transport investment can require long lead in times and to assist with this, the Scottish Government provides a framework for the prioritisation of transport investment. This is set out in the Infrastructure Investment Plan³ and

³ Infrastructure Investment Plan 2008, The Scottish Government – available through the Scottish Government's website at <http://www.scotland.gov.uk/Resource/Doc/217601/0058293.pdf>

developed through the outcomes of the Strategic Transport Projects Review (STPR)⁴ STPR sets out investment priorities over A 20 years horizon which will be delivered subject to the transport allocation within future Spending Reviews and affordability.

19. The Scottish Government's transport investment hierarchy for the Strategic Transport Network focuses on:
 - maintaining and safely operating the Strategic Transport Network then
 - making best use of existing assets, followed by
 - targeted infrastructure enhancements to increase capacity
20. Future development plans should take account of published transport investment plans. Where those plans propose additional transport interventions related to the Strategic Transport Network which do not form part of current transport investment plans Transport Scotland will seek a delivery mechanism such that these additional transport interventions are capable of being delivered without funding support from the Scottish Government.
21. Only in exceptional circumstances, where it can be demonstrated that alterations to the infrastructure investment plan will deliver significantly greater national benefits, would consideration be given to altering the published transport investment plan.

Transport Scotland engagement in plan preparation

22. Transport Scotland will engage with Planning Authorities throughout the preparation of plans with the aim of reaching a position such that Transport Scotland is able to support, in principle, the proposed plans. In seeking to reach such a position, Transport Scotland will only consider those issues which affect the Strategic Transport Network, and will be informed by the proportionate Transport Appraisal prepared as part of the development of the Plan.
23. There is a balance to be achieved between the level of Transport Appraisal needed to inform the development of a plan, the time and resources available and the level of detail/certainty which can be attached to the different types of plan. This last point is crucial in the scoping and determination of the level of Transport Appraisal possible since considerable detail is often required to fully understand the transport implications of land uses. This may be particularly relevant for Strategic Development Plans, where there may be little detail on proposed land uses, and detailed Transport Appraisal is therefore not possible. As a result there will be greater risks associated with the delivery of the plan, which may limit the support Transport Scotland can offer the proposals of the emerging plan. Such support is likely to be conditional on further appraisal as

⁴ Strategic Transport Projects Review, Transport Scotland - available through Transport Scotland's website at <http://www.transportscotland.gov.uk/stpr>

land use allocations, transport interventions and designs (including any departures from standard) evolve.

24. Through involvement in the preparation of Main Issues Reports and Proposed Plans Transport Scotland will endeavour to indicate what level of support can be attributed to elements of the emerging plan. This level of support will also be expressed within the overall Scottish Government response on the Main Issues Report or proposed plan as appropriate. This is outlined in Table 1.

Table 1: Level of Support

	Description
Support in Principle	<p>Transport Scotland can support the principal of the land use and/or transport intervention and more detailed considerations can be taken through the development management process.</p> <p>This will be subject to completion of a Transport Assessment to support the planning application, the preparation of a detailed and positive business case and in the case of trunk road interventions, a solution that complies with the Design Manual for Roads and Bridges (DMRB).</p>
Conditional Support	<p>When there is not sufficient detail on either proposed land uses or associated Transport Appraisal to enable Transport Scotland to confirm support in principle for the proposals of the emerging plan. This could be where there is general acceptance of the land use but not of the density/mix or, where the need for a transport intervention has been identified but it is not yet clear if a technical solution can be delivered. It is anticipated that this will be most applicable in the consideration of Strategic Development Plans.</p>
Objection	<p>Will only be applied when a land use and/or transport intervention compromises the performance of the strategic transport network to the detriment of safety or the promotion of sustainable economic growth at a national level.</p>

25. Transport Scotland will seek to continue to support emerging plans as the detail of land uses develops and will work proactively with Planning Authorities to understand the transport implications of those land uses as more detailed Transport Appraisal is completed. It is clear, however, that the level of support may change as the detail emerges, with the potential that the level of support decreases as the full transport implications become clear.
26. Evidence has a fundamental role to play in the Transport Appraisal which informs both the emerging plan and the level of support Transport Scotland is

able to offer that plan. In order to secure the greatest level of support for an emerging plan, it is recommended that the majority of the Transport Appraisal be undertaken to provide input prior to the publication of the Main Issues Report. In circumstances where this is not possible or practical, it is strongly recommended that the Transport Appraisal work is completed to inform the proposed plan at the very minimum.

Chapter 2: Development Plans

27. There are clear links between development plan preparation and its supporting Transport Appraisal. The key stages in preparing a development plan are set out in Planning Circular 1/2009 Development Planning, and summarised in Figure 1 indicating both the development plan stages and the Transport Appraisal stages. This Figure applies to Strategic and Local Development Plans. The central theme of this guidance is to ensure that the scale and level of detail of the Transport Appraisal is in proportion to the nature of the issues and proposals being considered as well as the timing of that consideration within the plan process.
28. Throughout the preparation of the development plans Transport Scotland will be available to offer advice on transport appraisal tools and methods and also to provide feedback and comment on proposals as they evolve. Development plan teams are encouraged to make use of this resource as the benefits of early and continued engagement are clear.

Monitoring Statement and the Evidence Base

29. Information on the performance of the Strategic Transport Network in supporting current and future demand for travel derived from land use over the plan period and beyond will form an important part of the Monitoring Statement and evidence base for the plan and the baseline for later monitoring. This information can be provided by Transport Scotland and will be based on outputs from the LATIS service (Land use And Transport Integration in Scotland) provided by Transport Scotland, which incorporates the Transport Model for Scotland (TMfS) and the Transport and Economic Land Use Model of Scotland (TELMoS)⁵.
30. Transport Scotland can provide the information required to inform the Monitoring Statement on the performance of the Strategic Transport Network. The input at this early stage of plan preparation will be based on previous forecasts of land use change and will not take account of any further proposed changes in land use that will emerge through the plan production stage.

Preparing the Main Issues Report

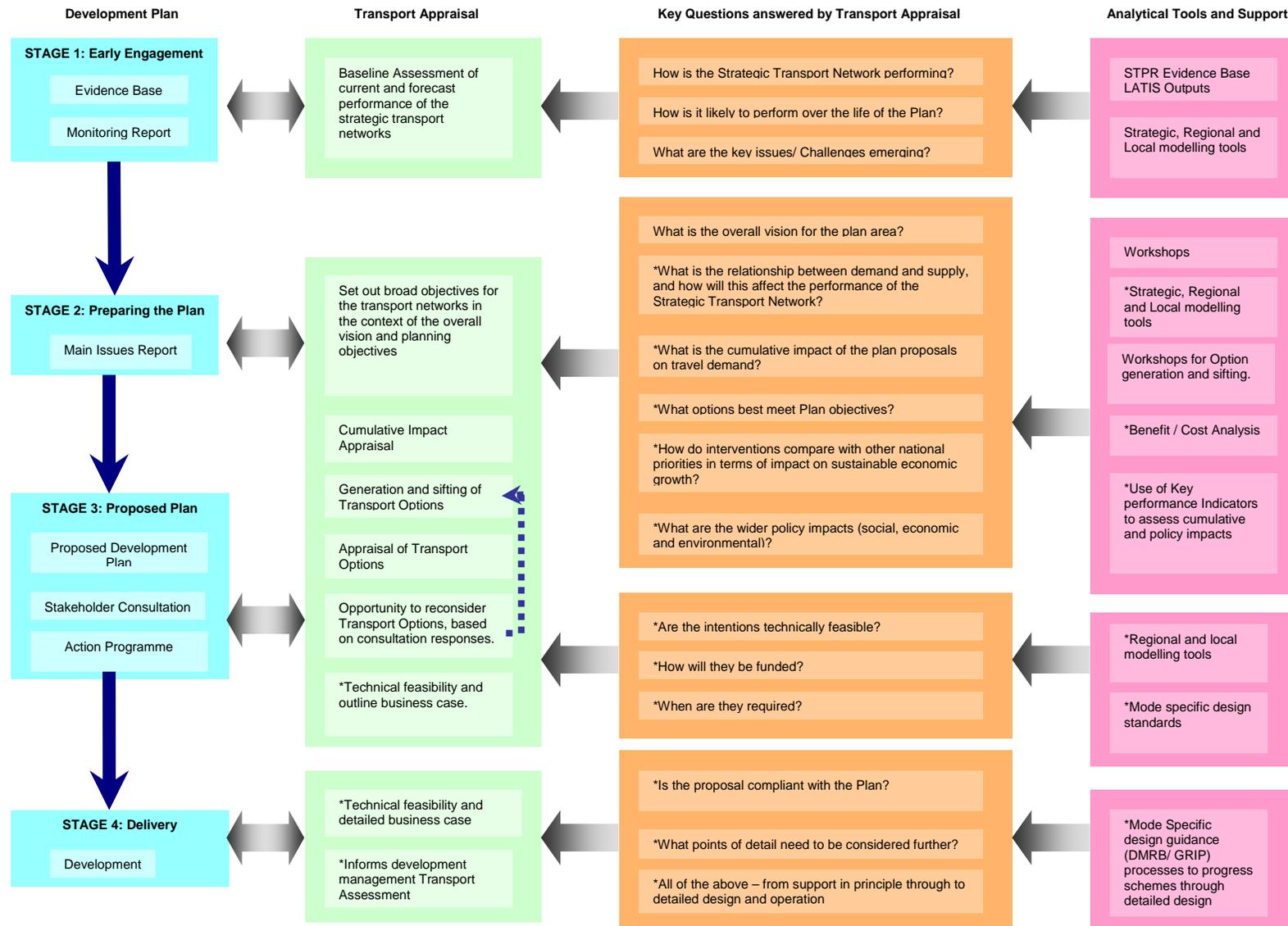
Developing the Vision and Options

31. When setting the vision and any objectives of the plan for the Main Issues Report account should be taken of the SPP, which states that the planning system should support a pattern of development which reduces the need to travel, facilitates use of sustainable travel modes and supports opportunities for active travel, and the Scottish Government's investment hierarchy for the Strategic Transport Network.

⁵ LATIS (Land Use and Transport Integration in Scotland), available at <http://www.latis.org.uk>

32. As part of the monitoring statement and Main Issues Report preparation it is important to recognise the problems and opportunities within the transport system. An understanding of cause and effect of transport problems is required, taking into account the interaction of the whole transport system and land use. For the purposes of the Transport Appraisal, transport objectives should express the transport outcomes sought for the Plan and describe how potential problems could be alleviated. These should be agreed and promote multi-modal options to address the problems and opportunities identified.
33. Transport Appraisal is objective-led and it is important that transport objectives are set to deliver the outcomes required and that they avoid expressing narrow solution based preferences that reduce the opportunity to fully consider wider options. Regional Transport Strategies and Local Transport Strategies should provide context and may provide input to this stage of Transport Appraisal.
34. Once the overall vision and objectives for the plan area are agreed a view should be reached on transport and accessibility issues resulting from land use changes. The results of this analysis brought together with other non transport factors should lead to a view on the preferred strategy and alternatives. This is likely to be an iterative process where the impact of individual and combinations of land use changes are explored and consequences understood.

Figure 1: Integration of Transport Appraisal within the Development Planning Process



*Further appraisal may be needed for Local Development Plans within a Strategic Development Plan area aligned to the increased definition and detail at this stage, following on from the appraisal for the preparation of the associated Strategic Development Plan.

Option Generation and Sifting

35. Depending on the number of different land use scenarios presented in the Main Issues Report an iterative process of analysis may be helpful to determine the best fit of land use and transport interventions in terms of plan objectives. The rationale for the preferred strategy should be demonstrably clear.
36. The Transport Appraisal should result in a clearer understanding of the implications of potential land use changes on the projected performance of the Strategic Transport Network and how the interaction of transport and land use is likely to affect the wider economic, social, safety and environmental aspirations of the plan. Planning Authorities will also gain an understanding of the extent to which current transport investment priorities will meet any identified shortfalls in performance. This process can be aided by the adoption of key performance indicators as outlined in Annex 1.
37. Transport options should be developed and appraised adopting the mode hierarchy approach of meeting demand via walking, cycling and public transport first before considering the extent to which the private car should be accommodated. The Scottish Government's investment hierarchy for the Strategic Transport Network should also be taken into account.
38. Transport Scotland should be included in all stages of this process where the Strategic Transport Networks is involved or where local networks may impact on the performance of the Strategic Transport Network. The output from this stage of the process is likely be a series of transport options that have the potential to meet the transport objectives identified earlier. Workshops can be an effective way to bring relevant stakeholders together.
39. Option sifting is an important part of the process to reduce the amount of appraisal work that is required at later stages. Option sifting seeks to eliminate those options put forward that will either not meet the objectives set or are deemed to be undeliverable due to implementation difficulties, such as feasibility, affordability and public acceptability. Sifting may require a level of qualitative appraisal as well as more technical inputs from others.
40. Detailed guidance on carrying out Transport Appraisal in Scotland, including option generation and sifting, is provided in STAG⁶.

Appraisal of Remaining Options

41. Following option sifting, the remaining transport options that could potentially meet the transport objectives set require to be appraised to the appropriate level to understand their viability. In addition to considering the contribution that different options make to the economic, social and environmental objectives of the development plan, the safety implications, and deliverability and affordability

⁶ Scottish Transport Appraisal Guidance – available through Transport Scotland's Scot-TAG information source at <http://www.transportscotland.gov.uk/reports/scottish-transport-analysis-guidance>

of potential options should also be considered in carrying out the Transport Appraisal. The STAG Technical Database provides methodology for appraising safety, the environment, the economy, accessibility and social inclusion and integration and for considering the feasibility, affordability and public acceptability of potential transport interventions. In all cases where funding is being sought from Scottish Government (including Transport Scotland) there will be a need to undertake an economic appraisal To inform the development of a robust business case.

Levels of Appraisal

42. It is appropriate to employ differing levels of appraisal depending on the type of development plan being prepared (Strategic or Local Development Plan) and the nature of the transport option being considered.

Appraisal of Strategic Development Plans

43. A Cumulative Impact Appraisal of the land uses proposed within Strategic Development Plans is needed to consider how changes in land use for the preferred spatial strategy and alternatives would affect the Strategic Transport Network. The use of strategic, regional and local modelling tools can make a significant contribution to the Cumulative Impact Appraisal. At a strategic level, Transport Scotland's LATIS service can be utilised. In some circumstances it may be possible to undertake the Cumulative Impact Appraisal without the use of a transport model. Guidance on a range of analytical approaches is provided in the Annex 1.
44. Once cumulative change in forecast demand for travel is determined, the impact on current and planned transport provision should be appraised. This should cover the lifespan of the proposed development plan and may also need to address cross boundary impacts, dependent on the scale of these impacts.
45. The approach adopted for Cumulative Impact Appraisal will vary depending on the scale of the change in transport demand, the impact of this demand on the transport network and the transport supply envisaged. Use of existing modelling tools will significantly aid the appraisal process.
46. Three levels of appraisal will be sought by Transport Scotland and will be applicable in differing circumstances as described below.

Level 1

47. A Level 1 appraisal is likely to be appropriate where:
 - where the potential demand is deemed to be unlikely to have an impact on the Strategic Transport Network; or
 - the level of demand is not significant enough to warrant any changes to the Strategic Transport Network; or

- the required interventions on or affecting the Strategic Transport Network are minimal and can be readily accommodated; or
- the required interventions on or affecting the Strategic Transport Network are contained with current national transport investment plans and are designed in sufficient detail

Level 1 can be described as a minimal level of appraisal where the consideration of potential transport interventions can be established and agreed through a qualitative approach i.e. a judgement based on existing information or professional knowledge without the need for any additional technical appraisal at this stage.

Level 2

48. A Level 2 appraisal reflects the scale of the potential impacts of either the plan scenario or transport options being considered. It is likely to be required where:
 - The scale of the intervention being considered will have regional or national consequences on the Strategic Transport Network; or
 - Significant change in land use has been previously unaccounted for in development plans and is not fed into current national transport investment plans; or
 - the failure to identify potential deliverable transport interventions could impact on the ability for development plan proposals to be realised
49. The Level 2 appraisal should identify individual and / or packages of solutions that are required to support the development plan and include consideration of realistic alternative options. The level of detail provided should mean that it is possible to:
 - Provide the rationale for the land use scenarios and further development of the transport intervention
 - Identify land that has to be safeguarded within the plan to enable new transport infrastructure to be developed
 - Demonstrate that the economic, environmental and safety issues associated with the solution have been identified and where appropriate mitigation proposed
50. A Level 2 appraisal uses modelling tools, such as a Local Authority area wide multi-modal transport model, which will facilitate the consideration of the impact of the different transport options on the surrounding road and rail networks, mode switch and potentially on cross boundary issues.

Appraisal of Local Development Plans

51. A degree of Cumulative Impact Appraisal may be needed for a Local Development Plan, aligned to the increased definition and detail at this stage, following on from a Level 2 appraisal for the preparation of the associated Strategic Development Plan. The use of modelling tools such as a Local Authority area wide multi-modal transport model may, therefore, be appropriate at this stage although it would be envisaged that the extent of the study area would be reduced.
52. Alternative approaches for a Local Development Plan Transport Appraisal include:
 - A comprehensive qualitative and quantitative appraisal approach across the plan area, using modelling tools where it is thought that there is sufficient land use change across the plan area to require appraisal of the impacts of cumulative increases in demand on the performance of the Strategic Transport Network
 - A qualitative appraisal approach supplemented by a quantitative approach where the emerging development plan is identifying potential stress points on the Strategic Transport Network or where travel demand will change significantly and current supply is known or suspected to fall short of or exceed future requirements
 - A qualitative appraisal supplemented by a quantitative approach where significant increases in demand are identified across the plan area and there are known or suspected impacts on the future performance of the Strategic Transport Network

Level 3

53. A Level 3 appraisal will be appropriate for the appraisal of Local Development Plans under the following circumstances:
 - where land use changes are accepted, but there is a need for transport interventions on or affecting the Strategic Transport Network aligned to this that are not identified in current national transport investment plans; or
 - When the need for a specific transport intervention on or affecting the Strategic Transport Network is recognised in the Strategic Development Plan but not specified or designed in enough detail to meet the spatial requirements of the Local Development Plan. In this instance it is likely that preliminary design work will be required to meet development plan requirements
54. At this level it is likely that the Transport Appraisal will require technical modelling and design work to a level of detail commensurate with the extent of change to, or affect on, the Strategic Transport Network emerging from the development plan preparation process. This is an essential part of the

development of transport options and should be identified early in the plan preparation process. The level of detail needed to prepare a Local Development Plan should permit refinement of the bullet points listed in paragraph 49 and, in addition:

- Confirm that there is an acceptable technical solution
- Identify land that has to be safeguarded within the plan to procure the solution
- Assess the deliverability of options in light of current investment priorities

Appraisal of Local Development Plans outside of Strategic Development Plan Areas

55. Outside of Strategic Development Plan areas, the level of appraisal for Local Development Plans should mean that it is possible to:
 - Provide the rationale for the land use scenarios and the transport interventions
 - Confirm that there is an acceptable technical solution
 - Identify land that has to be safeguarded within the plan to enable new transport infrastructure to be developed and procured
 - Demonstrate that the environmental and safety issues associated with the solution have been identified and mitigation proposed in addition to identification of the economic issues
 - Assess the deliverability of options in light of current investment priorities
56. A Level 2 appraisal involving the use of modelling tools such as a Local Authority area wide multi-modal transport model will be needed for Local Development Plans outside of Strategic Development Plan Areas. However, it may be more appropriate to undertake a Level 3 appraisal, where it is considered that the cumulative increases in demand on the performance of the Strategic Transport Network would not require the use of an area wide multi-modal transport model. Preliminary feasibility and design work will be required to meet development plan requirements.
57. Table 2 provides examples of the options that might arise and indicates the level of appraisal or information that Transport Scotland would need in support of the Main Issues Report in order to provide support for the strategic transport proposals within the plan. The table is set within the context of Strategic Development Plan areas. Outside of Strategic Development Plan areas, the equivalent level of appraisal or information required will be provided through the Local Development Plan.

Table 2: Type of Intervention and Recommended Level of Transport Appraisal

Type of Intervention	Desired Outcome	
	Development Plan Process	
	Strategic Development Plan	Local Development Plan
Roads Based		
New links and bypasses 0	Require to identify in the development plan and confirm deliverability through objective led appraisal with modelling (area wide) with preliminary layout design to secure line in DP.	For city regions it is expected that all requirements for new links/bypasses on the network will be identified at SDP. Further refinement is expected through the LDP.
Level of Appraisal	2	3
New Junction <i>(dual carriageways and Motorway Network)</i>	Require to identify in the development plan and confirm deliverability through objective led appraisal with modelling (area wide) with preliminary layout design.	For city regions it is expected that all requirements for new junctions on the core and motorway network will be identified at SDP. Further refinement is expected through the LDP.
Level of Appraisal	2	3
New Junction <i>(single carriageways)</i>	Require to identify and confirm principle of deliverability through appraisal.	Require to identify and confirm deliverability through appraisal – cumulative impact with localised modelling with preliminary layout design.
Level of Appraisal	2	3
Significant Junction Upgrade and Capacity Enhancements <i>(step change in jct. form e.g. at grade to grade separated) strategic e.g. additional lanes, change in type of merge</i>	Require to identify and confirm principle of deliverability through appraisal. Cumulative Impact Appraisal and preliminary layout/land take requirements.	Require to identify and confirm deliverability through appraisal – Cumulative Impact Appraisal with localised modelling and preliminary layout/land take requirements.
Level of Appraisal	1	3
Park and Ride/Park and Choose	Require to identify and confirm principle of deliverability through appraisal	Require to identify and confirm deliverability through appraisal – appraisal with localised modelling and preliminary layout/land take requirements.
Level of Appraisal	1	3
Capacity Improvements <i>(Localised – Traffic signals, jct. amendment/widening)</i>	Should identify potential need through Cumulative Impact Appraisal but no requirement to provide details.	Should identify actual need through Cumulative Impact Appraisal and confirm deliverability with localised modelling and preliminary layout/land take requirements.
Level of Appraisal	1	3

Table 2 (continued)

Type of Intervention	Desired Outcome	
	Development Plan Process	
	Strategic Development Plan	Local Development Plan
Rail Based (<i>applies equally to passenger and freight proposals</i>)		
New rail lines (<i>includes introducing passenger services to freight lines, electrification and track doubling</i>)	Require to identify at DP stage and confirm deliverability through appraisal - objective led appraisal and GRIP ⁷ .	For city regions it is expected that any requirement for a new rail halt will be identified in SDP.
Level of Appraisal	2	3
New Rail Halt	Require to identify at DP stage and confirm deliverability through appraisal according to the Network Rail Guidance on New Stations	For city regions it is expected that any requirement for a new rail halt will be identified in SDP.
Level of Appraisal	2	3
Increased Train Capacity Service Frequency/Stopping Pattern Amendments /platform extensions	Require to identify at DP stage and confirm deliverability through appraisal	Require to identify at DP stage and confirm deliverability through appraisal.
Level of Appraisal	1	3
Station Enhancements (<i>Localised car park enhancement and other improved facilities, accessibility</i>)	Potential need established at DP stage through objective led appraisal.	Should identify actual need through Cumulative Impact Appraisal and confirm deliverability.
Level of Appraisal	1	3
Park and Ride/Park and Choose	Require to identify and confirm principal of deliverability through appraisal	Require to identify and confirm deliverability through appraisal – appraisal with localised modelling and preliminary layout/land take requirements.
Level of Appraisal	1	3

⁷ Guide to Railway Investment Projects - available through Network Rail's website at <http://www.networkrail.co.uk/asp/4171.aspx>

Progression from the Main Issues Report to the proposed plan

58. It is recognised that the level of Transport Appraisal described above will require time and resources that may prove challenging within the development plan preparation timetable. Nonetheless, following the approach outlined above will shorten the time period required to actually deliver developments and transport solutions, and allow potential areas of difficulty or conflict to be fully examined before critical decisions are taken.
59. The main benefit in carrying out the Transport Appraisal as part of preparations for the Main Issues Report is reduced risk and uncertainty associated with emerging options at the proposed plan preparation stage through a more robust and transparent presentation of the issues in the Main Issues Report. It is recognised, however, that it may not always be possible to undertake and complete the Transport Appraisal at this early stage for the preparation of the initial Main Issues Report. In this case, reference should be made to the consideration of the transport options within the Main Issues Report and the Transport Appraisal to progress in tandem with plan preparation moving from the Main Issues Report to the proposed plan. It will be expected that a Transport Appraisal can be completed as part of the preparation of subsequent Main Issues Reports.
60. It may be appropriate for developers to undertake elements of the appraisal, particularly where there is a direct relationship between the land use and transport solution(s).

The Proposed Plan and Draft Action Programme

61. At the stage the Transport Appraisal will have been substantially completed. This will ensure that clear ownership of the plan is held by both the Planning Authority and Transport Scotland and both parties are clear about the plan's vision and spatial strategy and the decisions necessary about strategic infrastructure investment.
62. For transport where optimum solutions cannot be delivered this should be explained and the extent of mitigation measures outlined. Qualitative and quantitative measures should be used to express the anticipated performance of the transport network, as a result of plan proposals. Where competing sites exist then there may be a need to prepare a similar level of appraisal in order to inform the final plan.
63. Where transport investment is being proposed there should be a clear indication within the action programme on when this is required and how it will be procured. There should be a clear view on how transport solutions will be delivered if they are required to support the development plan. Firm proposals expected to be delivered in the plan period should be clearly differentiated from safeguards for potential future development, which would not require such full justification. It is not appropriate to list a series of interventions without a clear commitment to their implementation; however, it is considered acceptable to reserve land for a potential future transport intervention so long as that intervention is not required to realise the plan objectives, and that this is made clear within the plan.

Supplementary Guidance

64. In circumstances where insufficient information is available to carry out the recommended Transport Appraisal during the development of the plan more detailed appraisal to be incorporated into the plan at a later date will be recommended. The form of this later appraisal may inform Supplementary Guidance and should be referred to within the plan. Evidence suggests that where issues are not addressed at the development planning stage there is a lack of clarity that results in delay at the development management stage. This delay impacts on both Planning Authorities and developers, and for this reason Transport Scotland does not generally support the case for later appraisal related to interventions affecting the Strategic Transport Network emerging from Supplementary Guidance.

Delivery: The Development Plan Action Programme and Monitoring

65. For specific measures requiring national support and funding, this is the stage at which more detailed appraisal of the business case and deliverability of interventions must be carried out. Where Government funding is being sought for interventions on the Strategic Transport Network the Scottish Ministers will need to consider the business case. If a positive robust business case is developed, this may be considered for future transport investment plans.

66. Alternative funding sources, e.g. developer contributions, can be considered where proposals are consistent with Government objectives. It is clear that transport budgets over the short and medium term will be under pressure, and individual projects will be considered in the context of other priorities. It is a key aspect of the Scottish Government's investment that resources are targeted at those interventions that contribute most to the Government's central purpose of increasing sustainable economic growth.

Developer Funding Protocols

67. Developers will be expected either to contribute to a funding framework or to deliver a discrete piece of infrastructure where infrastructure is required to support the development plan proposals, This should be made clear within the development plan and take cognisance of Planning Circular 1/2010 *Planning Agreements*.

Monitoring

68. A benchmark should be set against the appraisal supporting the development plan to demonstrate whether the initial expectation was accurate, and to identify where aspects of the spatial strategy should be reviewed.
69. Given the potential importance of this function it is recommended that appropriate key performance indicators are identified at the outset. Progress can then be demonstrated against the achievement of transport objectives, can be quantified in terms of the appraisal, and can be monitored as the development plan is implemented. Evaluation of projects in this way can also inform the planning process in relation to potential future developments.
70. Transport Scotland can assist in setting up and agreeing appropriate monitoring frameworks in relation to the Strategic Transport Network.

Statutory Processes to Delivery

71. Once the principle and funding of a transport intervention has been secured other statutory processes are required. Depending on the type and scale of intervention this can take a number of forms, including the need for primary legislation and statutory orders. Further involvement with the planning system may be necessary. If the development planning process has not been robust this can create significant delays in scheme development and can result in challenge at Public Local Inquiry.
72. Some transport interventions require significant lead times to allow for scheme development and action programmes should be realistic about the length of time it takes to deliver transport infrastructure on the ground. Full engagement with Transport Scotland in the development of action programmes will be essential to implement development plan proposals on the ground as they relate to the Strategic Transport Network.

73. In some instances it is likely that there will be a considerable gap between the completion of phased development and the full implementation of supporting transport infrastructure. The implications of phasing of development, interim arrangements for securing and agreeing network performance, and safety will require to be thoroughly discussed.

The Role of Developers within the Development Plan Process

74. Developers can often contribute at the Main Issues Report and proposed plan stage by undertaking all or part of the appraisal work required to support the development. Often, they will have worked up details on potential phasing of land uses, concept master plans, transport and financial viability appraisals all of which can usefully inform the plan process.
75. It is important that the preparation of development plans is an open and transparent process and that where possible all stakeholders can work together to recognise shared benefits. Transport Scotland welcomes the direct role of developers within the appraisal process so long as this is co-ordinated with the Planning Authority and that it is recognised that there may be occasions where the aims of developers and Planning Authorities may conflict with those of Transport Scotland.

Chapter 3: Development Management

76. This chapter explains the role of Transport Appraisal in the development management process. Planning Circular 4/2009: *Development Management Procedures* provides an overview of the new development management system. The programme for Planning Authorities to bring forward Strategic and Local Development Plans means that there will be a period of transition.
77. Responsibility for development management on the rail network lies with Network Rail. Developers must therefore consult Network Rail separately on planning applications which have an impact on rail infrastructure.
78. Transport Scotland is responsible for the safe and efficient operation of the trunk road network and ensuring that the interests of all road users are protected while at the same time supporting essential economic development. Transport Scotland's role in development management in respect of the trunk road network is outlined in Development Management and the Strategic Road Network⁸.
79. For a proposed development consistent with a development plan that has been appraised using the methodology outlined in this guidance, any significant transport issues should have already been addressed. The principle of the development should be established and should not be in question at the development management stage. Transport issues arising when the planning application is being considered should be about the operational translation of principles already established.
80. If, however, the development is a significant trip generator and is contrary to the development plan or the transport interventions have not been adequately appraised during the preparation of the development plan then Transport Scotland will recommend the following approach with regard to determining transport impact.
- In instances where the location of the proposed land use has been determined within the development plan process but a detailed review of the transport effects and access strategy has not been undertaken the appraisal required would reflect that detailed in Table 1
 - With a speculative development where the proposed land use is not in accordance with the development plan the Transport Appraisal required would reflect that provided in Figure 1
81. The level of information required to complete the Transport Appraisal linked to the Strategic Transport Network will be dependent upon the nature and scale of development and form of access/junction improvement proposed and the road category (motorway to restricted single carriageway) as set out in Table 1.

⁸ Development Management and the Strategic Road Network – available through Transport Scotland's Scot-TAG information source at: <http://www.transportscotland.gov.uk/reports/scottish-transport-analysis-guidance>

Other matters that will influence the appropriate level of appraisal include the roadside characteristics, the speed limit and road safety.

82. Where a proposal is clearly contrary to development plan policy, or will result in impacts on the Strategic Transport Networks that cannot be mitigated against, Transport Scotland will advise as early as possible in the planning process to avoid any abortive work.

Transport Assessment and Travel Plans

83. Transport Assessment is the process of defining transport proposals and designs based on the detailed proposals for development. It is at this stage that more accurate assessment of travel demand can be determined and proposed transport solutions can be finalised in a detailed manner. The Transport Assessment is intended to quantify the impact of development(s) and demonstrate through the application of the mode hierarchy and by employing a range of measures how those impacts can be effectively mitigated or managed. Detailed information on conducting a Transport Assessment can be found in Development Management and the Strategic Road Network⁸.
84. Mode share targets require to be agreed at the outset of transport assessment. Targets which promote modal shift are valuable in encouraging developers and operators to look innovatively at possibilities for increasing accessibility by sustainable modes. The Transport Assessment process should then, and only then, establish ways to accommodate or mitigate the impacts of residual, less sustainable transport modes in order to meet the mode share targets.
85. A Travel Plan is a detailed description of:
- how people will travel to and from a development
 - how employees, products and supplies will be transported
 - how an organisation will seek to reduce its transport needs overall
 - targets for change and arrangements for monitoring progress
 - how information on progress will be disseminated
 - how the travel plan will be promoted to staff, visitors and suppliers
86. A Travel Plan⁹ is an active process that responds to changes in circumstances and builds on past successes. Successful Travel Plans set targets for changes in travel behaviour and make provisions for them to be monitored regularly so that progress can be assessed. In this way, measures chosen to promote more

⁹ Guidance on travel plans is provided in the Transport Assessment Guidance and from the Scottish Government at: www.chooseanotherway.com. Further guidance is available in the form of the BSi National specification for Workplace Travel Plans at: <http://www.iema.net/sections/readingroom/show/18337/c188>.

sustainable travel can be adjusted for maximum effect and new measures introduced to supplement those already in place.

87. Transport Assessments and Travel Plans are inextricably linked since the Transport Assessment process is predicated on the application of the mode hierarchy detailed within the SPP i.e. reduction of the need to travel and encouragement of the use of alternative modes to the private car. The Transport Assessment process establishes the proposed mode share at the outset and the Travel Plan is, to a significant extent, the mechanism by which the mode share will be delivered. The Travel Plan, therefore, sets out a package of positive and complementary measures for the overall delivery of more sustainable travel patterns for development.
88. A travel plan is a package of measures aimed at promoting more sustainable travel choices and reducing reliance on the car, and should be encouraged for all significant travel generating developments. Development plans or Supplementary Guidance should explain when a travel plan will be required in support of an application for planning permission. In a development management context, travel plans require to be implemented to deliver the mode share targets identified within the Transport Assessment.
89. Further advice on the type/level of information that is required to support a planning application that will affect the motorway and trunk road network can be found in Development Management and the Strategic Road Network⁸.

Annex 1: Guidance and Information Sources

1. GUIDANCE

The main guidance document provides an appraisal approach that allows the inter relationships between land use and transport to be appraised and translated in a way that will assist with the selection of land use and transport options that most contribute to wider policy goals as articulated in the Government Economic Strategy and Local Authority Single Outcome Agreements.

There are a number of approaches that can be employed to achieve the above and this Annex provides both guidance on these approaches and details of the information sources available to inform and support these. This Annex provides guidance on methodologies and approaches that are relevant to undertaking Transport Appraisal. It is recognised, however, that additional methodologies may be better suited dependent upon the specific requirements of the appraisal and its intended outcomes.

Mode Hierarchy

Measures can be specific to a particular mode, or they can be more broadly applied. Planning Authorities should recognise the role of the hierarchy of modes in contributing towards their statutory duty to promote sustainable development and the roles of different modes in contributing to the achievement of wider objectives related to sustainable economic growth. It is accepted that there will be trade-offs in balancing the needs of potentially competing policy objectives.

Walking

Walking is the most sustainable mode and requires relatively little investment to make it attractive, particularly if planned and designed into a new development from the outset. Planning can encourage walking to become the prime mode for shorter journeys through arranging land uses, by utilising urban design and encouraging specific schemes, such as those developed under the Cycling, Walking and Safer Streets or Safe Routes to Schools initiatives.

Cycling

All cycling infrastructure should reflect the local surroundings and the requirements of the residents and transport users. If cycling is to be a realistic choice of travel mode, plans for on-road and segregated paths need to be incorporated at the beginning of a development and not seen as an add on at the end. Consideration needs to be given to bicycle storage and on road cycle parking at new and refurbished developments.

Public Transport

Quality and affordability of public transport - principally bus and rail - has to be taken into account if motorists are to be enticed out of their cars. A change in mode can be encouraged through, for example:

- Ensuring that new developments are well served by a range of information on modes available including cycling and walking early on
- High quality infrastructure, e.g. interchanges, quality of vehicles, waiting and cycle storage areas
- Integration of developments with walking and cycling networks, Park and Ride schemes and existing or new railway stations
- Rail infrastructure or service improvements in high demand corridors
- Bus and cycle priority measures on main public transport corridors
- Demand responsive services to fill gaps in public transport coverage e.g. public bike hire scheme

Motorised Modes

It is accepted that there will always be circumstances where cars have a role in providing for the transport needs of people or communities. Planning Authorities should consider how best to manage this demand in their area through an appropriate combination of measures to ensure that traffic from new development is balanced and contributes to the sustainability of that development.

Appraisal Approaches

As would be expected, a 'one size fits all' approach to Transport Appraisal to support development planning is inappropriate and would not reflect the differing needs of the range of areas covered (for example, from rural locations where accessibility is critical to inner city areas where consideration of network operation can be a more significant issue). What is clear is that the approach taken to developing and informing the evidence base supporting the proposed plan must be fit for purpose and reflect the complexity of the issues to be considered. To that end a number of approaches or combination of approaches may be appropriate, for example:

Workshops

As set out in the main guidance, workshops will be expected to play a key role in starting the appraisal process, defining the need and scope for further analysis and providing an initial view on the implications of particular strategies or proposals. The workshop format provides a very flexible platform for the analysis of both generic and specific issues and the value gained from each workshop very much depends on having the necessary information available and the correct experts and/or decision makers attending.

In the majority of cases it is expected that the initial workshop would be supplemented by further work – this could be more subject, issue or location specific workshops, or more quantitative or objective analysis based on specific models or tools that reflect the particular issues to be considered.

Accessibility Analysis

Accessibility is concerned with the opportunity for people and goods to reach various locations and facilities by different modes and is an important part of the planning process. New developments can have both positive and negative impacts on accessibility, which may be intended or unintended. Good accessibility will be achieved where many people are linked to opportunities by networks of regular, reliable and affordable travel. The accessibility issues that should be assessed include:

- access to the transport system – locating access and interchange points for freight and links for pedestrian and cyclists to the wider transport network
- access to the local area – providing transport nodes or interchanges for the proposed development that will benefit other developments and the local community as a whole
- community severance – ensuring that the development does not create barriers to access within the local community

Accessibility modelling is a technique that can be used as an alternative to or alongside other tools or models to underpin policy development, compare development proposals and inform mode share targets for individual proposals. Levels of accessibility (in relation to walking, cycling and public transport) for a specific site, or relative levels of accessibility for multiple sites, can be analysed using accessibility modelling tools, such as the ‘access’ capability within the Transport Model for Scotland or specific accessibility modelling software.

Economic growth generates new demand for freight transport. Efficient freight transport is essential to the economy and quality of life in Scotland. Accessibility is critical in promoting shipment of freight and key issues in development planning and management are locating freight hubs for rail, air and shipping in the most appropriate locations while planning surface access to them to promote most appropriate mode choice to contribute to sustainable economic growth.

Modelling

Transport models can help inform the development planning and management process, not by identifying the ‘best’ outcome, but by providing an understanding of the implications of different decisions. For example, quantifying the impacts of particular land use decisions on the environment, safety, the economy or accessibility. For example, transport models can be used to inform:

- Operational analysis of public transport and road networks (traffic flows, passenger numbers, accidents, journey times, congestion, delay etc.)
- Environmental assessment, including emissions and noise impacts in specific locations or across a model area
- The implications of changes in land use or spatial strategy on the transport networks, including comparative accessibility to particular locations or services
- Cost benefit, financial and business case analysis, informing the assessment of transport economic efficiency

Transport and traffic models are tools intended to provide rational and objective assessment of current and/or network operation to inform both policy development and the assessment of proposals. Modelling is expected to inform consideration and analysis of complex issues, for example consideration of policies or proposals affecting congested transport networks, promoting mode change of people or goods or the implications for transport of land use decisions (the spatial strategy).

A transport model is a simplified representation of the transport elements of the real world. Transport models can therefore be important tools to help identify and quantify the implications of different land use decisions and to allow informed and evidence-based decision making. Different modelling approaches should be used dependent on the issues to be considered, for example:

- Traffic modelling of locations or areas can be used to consider the operational issues associated with policies or proposals, helping to identify the type and magnitude of impacts associated with each
- Transport modelling at a strategic level can take this further by capturing potential mode switch, wider route or destination choice and/or identifying suppressed demand
- Land use/transport models can be used to consider the most complex transportation issues, including the impact of land use decisions on demand for travel

The list above is a simplification to show the broad categorisation of model approaches and demonstrate that there is a range of modelling tools available to inform the planning process. The list also serves to demonstrate that transport models are significant databases in their own right and use a variety of data sources on which to base their predictions. For example, the principal data inputs to the LATIS modelling suite of TMfS and TELMoS include:

- Large national surveys i.e. 2001 Census and Travel to Work data, National Travel Survey, Scottish Household Survey and its Travel Diary and Scotland-wide rail ticket data
- National/Regional economic and geo-demographic information

- Planning data forecasts i.e. future development land allocations, as predicted by Planning Authorities
- Road network details i.e. link lengths, number of lanes, speed limits, junction lay-outs, signal timings and topography
- Public transport service data - routes, frequencies and fares.
- Origin-Destination Data - Roadside interviews (RSIs) and on-board public transport interviews –providing information on travel patterns.
- Count data – traffic counts, turning counts at junctions, public transport user counts and car park surveys.
- Travel time surveys (predominantly used for validating the traffic model).

Further advice and guidance on the LATIS modelling suite is available through Transport Scotland's *Scot-TAG* web based information source for transport analysis guidance, at:

<http://www.transportscotland.gov.uk/reports/scottish-transport-analysis-guidance>

The LATIS service is available to all Local Authorities, Regional Transport Partnerships, consultancies and other interested parties throughout Scotland for use in the assessment of strategies, policies and schemes.

2. KEY PERFORMANCE INDICATORS

Strategic Transport Network Performance Appraisal

- **Demand Indicators:** Demand analysis can be carried out through consideration of the extent of travel movement by:
 - Corridor (key movements)
 - Mode
 - Vehicle/person trips
 - Time of day and over time
 - Journey type/ purpose/ frequency
 - Distance travelled by mode
 - The number or proportion of local trips using the Strategic Transport Network
- **Supply Indicators:** Supply analysis can be carried out through consideration of:
 - Journey time reliability
 - Extent of journey time issues / delays on the road network

- Capacity issues on the rail network
- Public transport routeing and frequency
- Comparative journey time by mode

Wider Policy Appraisal

Once an understanding of both demand and supply issues is built up an assessment can be made of how this is predicted to impact on wider policy objectives, with quantitative and qualitative assessment possible. The following are quantitative measures that it is possible to extract from current modelling tools:

- **Environmental Indicators**
 - Projected emissions from road transport
- **Economic Measures**
 - Projected impact on labour market catchments (within a given journey time), wider economic benefits
- **Accessibility and Inclusion Measures:**
 - Projected positive and negative changes to access to strategic services (e.g. hospitals, areas of economic activity, centres of higher education) by road and public transport

3. DEMAND MANAGEMENT MEASURES

Demand management measures are specific interventions or strategies that are intended to result in more efficient use of transportation networks and resources. The availability of capacity and opportunity on transport networks influences the choice of transport mode and is a major contributory factor to the rising levels of car usage that are seen today. Spatial decisions in development plans should be supported by appropriate demand management measures reflecting local circumstances and objectives, and contributing towards sustainable economic growth.

Demand management measures must be developed sensitively and adapted to particular local circumstances, for example through the development of a local authority's own design standards for roads (taking account of Designing Streets) and the adoption of an appropriate roads maintenance code of practice.

Some key demand management approaches are outlined below. Clearly this is an initial list and is intended to provide a general indication of the types of measures or policies that can be used:

- **Parking strategy** - provision, management and pricing are critical in influencing mode choice by controlling the 'trip end' in terms of availability, ease of use and cost of parking. Parking policies must take account of local

priorities, for example through the development of local maximum parking standards. Any changes in car parking policies should not impact negatively on spaces allocated for disabled people, parents and children and car sharing schemes

- **Car sharing** is widely implemented and can reduce car dependence by promoting approaches whereby a driver and one or more passengers use a single car for particular journeys, generally commuting. Car sharing schemes involve varying degrees of formality and can include a database to link individuals and define journey needs (mode, partners, timings etc), define pick-up points and general advice
- **P&R strategy** is linked to the parking strategy above and influences travel behaviour by allowing commuters and others wishing to travel into city-centres to leave their car, motorcycle or bicycle in a secure parking area and transfer to another mode such as bus, rail transit system (e.g. Glasgow Underground or Edinburgh Tram) or to car-share for the remainder of their trip
- **Traffic management** encompasses the range of measures to reduce speed or traffic and improve the environment for residents and other road users. Traffic management relies on engineering, education and enforcement and includes measures such as road narrowing, speed bumps, chicanes, pedestrian build-outs etc.
- **Intelligent Transportation Systems** can promote a range of transportation improvements by using technology to, for example, improve operation of networks, reduce congestion, increase safety or make public transport options more competitive and attractive
- **Roadspace allocation** is a key way of managing demand by using the available road capacity to benefit some modes over, generally, the car. Examples of this approach are bus/cycle lanes or providing capacity for high occupancy vehicle priority
- **Promote active modes** such as walking and cycling by ensuring networks are developed and enhanced, new developments link to existing networks and associated facilities (such as easy interchange, changing/showering or cycle storage) make the use of active modes an attractive options for appropriate trips.
- **Capacity enhancements** of either the road network or in terms of public transport services or infrastructure are also ways of managing demand and can promote genuine mode choice and more efficient use of the networks in particular cases

The approach to deriving standards or developing the design of specific schemes should consider local characteristics, including issues such as:

- Accessibility analysis, particularly by non-car modes
- The wider spatial strategy as set out in the relevant development plans

- Economic development factors, in terms of levels of activity
- Levels of car ownership, use and movement patterns
- Any implications for potential re-routeing or over-spill impacts
- Availability of alternative mode choice or parking availability (on and off street)
- Need for traffic restraint
- Levels of pollution
- Levels and targets for walking and cycling
- Neighbouring authorities' policies and standards
- Potential for shared use of spaces

For implementation at a local level a zonal approach is recommended. For example:

Measures that can influence mode choice may include:

- Development of comprehensive networks for active modes
- Allocation of road space to specific modes (e.g. bus or cycle lane)
- Ensuring priority for active modes and public transport through congested areas / networks
- Appropriate use of ITS to provide information to network users (e.g. variable message signs, real time transport information or variable direction signs)

Measures that can influence route choice may include:

- Integrated transport networks offering interchange and access to support the overall vision and objectives of the development plan
- A functional roads hierarchy reflecting the principles of Designing Streets
- Charging for road use
- Restricting capacity or access to specific areas, by user class or by time of day

Measures that can influence parking can include:

- A maximum number of parking spaces being provided, underpinned where appropriate by a minimum to avoid undesirable off-site overspill parking
- On site parking charges / permits to discourage long term parking
- Parking located closer to the building for short stay, mobility impaired and late night / shift work
- Dual use car parks serving both new stores and wider town centres

- Encouragement of car-sharing by using a database and preferential parking spaces
- Establishment of car sharing or a car pool
- Complementary restrictions, i.e. on-street restrictions in the surrounding area
- Secure, covered cycle parking

Monitoring the impact or use of demand management policies or measures is important after implementation. This should take account of experience, evolving objectives and changing patterns of characteristics. A review of measures and standards should be undertaken at intervals no greater than 5 years.

4. INFORMATION SOURCES

When completing transport analysis and making choices on transport measures for travel plans various information sources will be useful. Those of particular relevance are set out below.

The Census

Origin-Destination Statistics provided by the Census attempt to analyse flows of people, for example travel to work. Such data can then be expanded on to include the method of travel and age patterns. Of particular use would be the following data sets: Standard Tables, Census Area Statistics and Special Travel Statistics. The Census website is available at:

<http://www.gro-scotland.gov.uk/grosweb/grosweb.nsf/pages/censushm>

The Scottish Household Survey

This survey of around 15,000 households per year across Scotland aims to provide accurate and up-to-date information on characteristics, attitudes and behaviour of Scottish households and individuals on a wide range of issues. Particular sections provide information on travel and transportation, for example household car availability; cycling, walking and use of public transport; travel to work and school. The survey also collects "travel diary" information. Results are available annually for the larger local authorities, and every 2 years for all authorities. These are based on interviews with a minimum of 500 or so households in each authority in each two-year period. Local authorities can obtain anonymised copies of the SHS data from COSLA, and the data are also deposited at the UK Data Archive.

The SHS's transport-related results are published in three series of statistical bulletins:

- *Household Transport* - main results for Scotland

- *Transport across Scotland* - main results for local authority areas
- *SHS Travel Diary results* - includes some figures for local authority areas

These are available from the Stationery Office Bookshop and the Scottish Executive Web site. For information or questions on Transport, contact Transport Statistics: Tel: 0131 244 8420. e-mail: shs@scotland.gsi.gov.uk

Further information is available at:

<http://www.scotland.gov.uk/Topics/Statistics/16002/4032>

Scottish Transport Statistics

This annual report looks at the trends over the last 10 years and provides information on different modes of travel (for example road, rail and air). It also provides specific statistics on related topics such as finance and injuries. Most of the figures relate to Scotland as a whole: only a few tables provide figures for local authorities. Copies are available from the Stationery Office Bookshop and it can also be found on the Scottish Government Web site at:

<http://www.scotland.gov.uk/Publications/2007/12/14120610/0>

Scottish Transport Appraisal Guidance (STAG)

The Guidance represents best practice in transport planning and the appraisal process. STAG provides a structure and methodology for reporting information to decision makers on the outcomes of transport planning and appraisal process activities.

The Guidance is supported by the STAG Technical Database, which provides detailed advice to aid practitioners in the application of the STAG process.

Detailed guidance on carrying out Transport Appraisal in accordance with STAG is available through Transport Scotland's *Scot-TAG* web based information source for transport analysis guidance, at:

<http://www.transportscotland.gov.uk/stag/home>

Land use and Transport Integration in Scotland (LATIS)

LATIS is a service provided by Transport Scotland which incorporates an integrated modelling suite of the Transport Model for Scotland (TMfS), a multi-modal transport demand and assignment model, and the Transport and Economic Land Use Model of Scotland (TELMoS). In addition to the modelling suite, the service provides guidance, consultation and an extensive data set of both transport and land use data within Scotland. The modelling suite has the capability to forecast the transport and land use changes and patterns throughout Scotland resulting from major infrastructure and/or policy initiatives.

The model outputs can be used to assess different road and public transport infrastructure schemes or policy initiatives and include: Operational analysis; Environmental and Congestion analysis; Land use and Accessibility analysis; Economic, Financial and Accident analysis; and Subarea analysis.

Data, guidance, application forms to use the service and models and key contacts can be found on the LATIS website at :

www.latis.org.uk

Further advice and guidance on the LATIS modelling suite is available through Transport Scotland's *Scot-TAG* web based information source for transport analysis guidance, at:

<http://www.transportscotland.gov.uk/reports/scottish-transport-analysis-guidance/LATIS>

TRICS Database

This is a database containing site and development information for some 1,800 development sites in the UK. In each of these developments traffic entering and exiting is recorded, and from this information trip rate calculations are carried out, which can be used to estimate traffic flows for a variety of development types. This is becoming increasingly useful as it focuses less on traffic and more on multi-modal transport. The TRICS database can be accessed at:

www.trics.org

Scottish Roads Traffic Database (SRTDb)

This is a database for the collection, validation, storage and dissemination of traffic count data for the trunk road network and limited parts of the non-trunk network. The SRTDb is operated and maintained by Transport Scotland's Road Network Maintenance and Management Division. There are over 1300 traffic count sites in the system at present, with more likely as additional non-trunk sites are brought into the system. Data is collected via manual classified counts and automatic traffic counters located (mainly) throughout the trunk road network.

Access to the data is via the SRTDb Intranet site. Whilst this Intranet site can be accessed remotely from outwith the Scottish Government, there are restrictions on who can be accommodated. In the first instance users should contact SRTDb.

Contacts at SRTDb are:

- Stuart Hay for automatic count data.
Tel: 0141 244 7403
Email: stuart.hay@transportscotland.gsi.gov.uk

- David Brown for manual count data.
Tel: 0141 272 7404
Email: david.brown@transportscotland.gsi.gov.uk

Local Travel Information

In the preparation of Regional and Local Transport Strategies travel surveys will be undertaken by local authorities. They may be for the whole area or site specific. Collating and monitoring details of travel plans may also provide good base line data. Such information also enables comparisons to be made between sites in an area dependent on local circumstances. These are a valuable source of local information which can be utilised.

Travel Plan Measures and Implementation

Further guidance on travel plan methodology and measures that can be initiated are provided in “Choosing Another Way” (Scottish Government 2008) and “The Essential Guide to Travel Planning” (Department for Transport 2008), and can be obtained from the Scottish Government or DfT at:

www.chooseanotherway.com

www.dft.gov.uk/pgr/sustainable/travelplans/work/essentialguide.pdf.

A method for measuring the effectiveness of travel plans, the “UK Standard Assessment Method for Travel Plan Impacts” has been developed by TRICS and can be found at:

www.trics.org

Deriving Walk and Cycle Times

Geographical information systems (GIS) 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:

- Care should be taken to include all paths and shortcuts in the calculation as well as all roads in the network
- 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

Further information on cycling, including the National Cycle Network, can be obtained from Sustrans Scotland or Cycling Scotland at:

<http://www.sustrans.org.uk/default.asp?sID=1090515197515>

www.cyclingscotland.org

Deriving Car Drive Times

A number of mapping websites and 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 Assessments 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.

Public Transport Networks

There are various paper-based data sources available providing information on public transport networks. In Scotland, the Traffic Commissioners and the relevant local authority, 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 of public transport routes can be obtained from websites such as Traveline Scotland or Doe's Directory, at:

www.travelinescotland.com or www.barrydoe.plus.com

Deriving Public Transport Journey Times

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)
- The time to walk from the bus stop to reach a destination

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 exist 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.

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 urban 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

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. Bus and Coach Statistics are produced annually by the Scottish Government and can be accessed at:

<http://www.scotland.gov.uk/Topics/Statistics/Browse/Transport-Travel/TablesPublications/BusCoachStatistics>).

The data may contribute to the assessment by providing background information.

Other Organisations

Local authorities are not alone in collecting data on travel characteristics. Other agencies may be of assistance on more detailed aspects of travel, for example: neighbouring authorities, rail and bus operators, port authorities, Civil Aviation Authority, local businesses, walking and cycling groups, disability groups.

Research Documents

Research completed at both a national and local level will provide useful information as will case studies where similar work has been undertaken elsewhere.

Annex 2: Definitions

Cumulative Impact Appraisal

A Transport Appraisal of the spacial strategy within a plan which takes into account the effect of all the plan allocations and interventions on the Strategic Transport Network as opposed to appraising sites on an individual basis.

Transport Scotland

Transport Scotland is an Agency of the Scottish Government and is responsible for the safe and efficient management of Scotland's trunk roads and rail networks.

[This definition will be updated following publication of the new Transport Scotland Framework].

Transport Appraisal

Transport Appraisal, carried out when development plans are being prepared, is intended to provide an understanding of the implications of land use changes on the Strategic Transport Network. It should identify where transport interventions may be required to support and mitigate the effects of the land use changes and the form and nature of these interventions.

Transport Assessment

Transport Assessment is the process of establishing transport proposals and designs based on the detailed proposals for development and is carried out by the applicant in support of a planning application. Transport Assessment is intended to quantify the impact of a development based upon its person-trip generating potential and demonstrate how these impacts can be effectively mitigated or managed through measures that will enable a more sustainable and environmentally efficient development proposal. Guidance on Transport Assessment is provided in the "Guide to Transport Assessment for Development Proposals in Scotland".

The Strategic Transport Network

The Strategic Transport Network comprises Scotland's motorways, trunk roads and rail network.

Planning Authority / Authorities

Planning Authority / Authorities are the local planning authority / authorities and strategic development planning authority / authorities.

Further copies of this document are available, on request, in audio and large print formats and in community languages (Urdu; Bengali; Gaelic; Hindi; Punjabi; Cantonese; Arabic; Polish).

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