

Integrated transport assessment guidelines November 2010

Steve Abley
Paul Durdin
Abley Transportation Consultants Limited

Malcolm Douglass
Douglass Consulting Services Limited

ISBN 978-0-478-37115-4 (print)

ISBN 978-0-478-37114-7 (electronic)

ISSN 1173-3756 (print)

ISSN 1173-3764 (electronic)

NZ Transport Agency

Private Bag 6995, Wellington 6141, New Zealand

Telephone 64 4 894 5400; Facsimile 64 4 894 6100

research@nzta.govt.nz

www.nzta.govt.nz

Abley, S¹, P Durdin¹, M Douglass² (2010) Integrated transport assessment guidelines. *NZ Transport Agency research report 422*. 110pp.

1 Abley Transportation Consultants Ltd

2 Douglass Consulting Services Ltd

This publication is copyright © NZ Transport Agency 2010. Material in it may be reproduced for personal or in-house use without formal permission or charge, provided suitable acknowledgement is made to this publication and the NZ Transport Agency as the source. Requests and enquiries about the reproduction of material in this publication for any other purpose should be made to the Research Programme Manager, Programmes, Funding and Assessment, National Office, NZ Transport Agency, Private Bag 6995, Wellington 6141.

Keywords: assessment, best practice, development, development thresholds, district plan, environment, guideline, ITA, planning guidelines, practice notes, resource consent, site development, sustainability, traffic, traffic impact, traffic impact assessment, transport, transport assessment, transport impact, trip distribution, trip generation, trip rates.

An important note for the reader

The NZ Transport Agency is a Crown entity established under the Land Transport Management Act 2003. The objective of the Agency is to undertake its functions in a way that contributes to an affordable, integrated, safe, responsive and sustainable land transport system. Each year, the NZ Transport Agency invests a portion of its funds on research that contributes to this objective.

The views expressed in research reports are the outcomes of the independent research, and should not be regarded as being the opinion or responsibility of the NZ Transport Agency. The material contained in the reports should not be construed in any way as policy adopted by the NZ Transport Agency or indeed any agency of the NZ Government. The reports may, however, be used by NZ Government agencies as a reference in the development of policy.

While research reports are believed to be correct at the time of their preparation, the NZ Transport Agency and agents involved in its preparation and publication do not accept any liability for use of the research. People using the research, whether directly or indirectly, should apply and rely on their own skill and judgement. They should not rely on the contents of the research reports in isolation from other sources of advice and information. If necessary, they should seek appropriate legal or other expert advice.

Acknowledgments

The researchers acknowledge the assistance provided for this research project and sincerely thank:

- the Trips Database Bureau Inc (previously the New Zealand Trips and Parking Database Bureau Inc), which supported and facilitated development of this project
- the peer reviewers, for their critical and proactive comments as the draft reports were reviewed and amended
 - Bob Batty, Planit RW Batty and Associates Limited
 - Peter McCombs, Traffic Design Group Limited
 - Stuart Woods, MWH Limited
- the steering group members, for their critical and proactive comments as the draft report was reviewed and amended
 - Tony Brennand, Consultant, Sinclair Knight Merz Limited
 - Chris Freke, Manukau City Council
 - Bob Gibson, NZ Transport Agency
 - Steve Spence, Wellington City Council
- the review and advice provided by Grant Strachan, Ministry of Transport
- the various practitioners and decision makers that were involved in the national survey and workshops to determine the overall form and detail for the integrated transport assessment guidelines.

The researchers would like to make special mention to Ian Clark of Flow Transportation Specialist Limited, who was a contributing author on a number of sections within this research.

Contents

- Executive summary 9**
- Abstract 11**
- 1. Introduction 13**
 - 1.1 Motivation 13
 - 1.2 Background 13
 - 1.3 Purpose 14
 - 1.4 Structure..... 15
 - 1.5 Terminology 15
 - 1.6 Future research 16
- 2. Selected literature review 17**
 - 2.1 Introduction 17
 - 2.2 Australia 17
 - 2.2.1 Western Australian Planning Commission 2006..... 17
 - 2.2.2 Queensland Government Department of Main Roads 2006..... 20
 - 2.2.3 AUSTROADS 2009 23
 - 2.2.4 VicRoads 2008 24
 - 2.3 United Kingdom 24
 - 2.3.1 Department for Regional Development and the Department of the Environment 2006 24
 - 2.3.2 The Scottish Executive 2002 27
 - 2.3.3 Bedfordshire County Council 1998..... 29
 - 2.4 New Zealand..... 31
 - 2.4.1 ARTA 2007 31
 - 2.4.2 Transport impact guidelines for site development, parts I and II 32
 - 2.4.3 Transit New Zealand 2007 33
 - 2.5 Conclusions from literature review..... 33
- 3. Practitioner needs 37**
 - 3.1 New Zealand decision maker and practitioner needs..... 37
 - 3.1.1 Assessing practitioner needs 37
 - 3.1.2 The questionnaire 37
 - 3.1.3 Indications 38
 - 3.2 Survey results..... 38

4.	Scene setting.....	41
4.1	Evolution of assessing transport effects.....	41
4.2	The importance of being integrated.....	42
4.3	New Zealand legislation.....	43
4.3.1	The principal statutes.....	43
4.3.2	The RMA.....	44
4.3.3	The LTA.....	45
4.3.4	The LTMA.....	45
4.3.5	The LGA.....	45
4.3.6	Public Transport Management Act 2008.....	46
4.3.7	Government Roding Powers Act 1989.....	46
4.3.8	The LGAAA.....	46
4.4	Strategy planning documents.....	47
4.5	National policy documents.....	49
4.5.1	The NZTS.....	49
4.5.2	The Government Policy Statement on Land Transport Funding.....	49
4.5.3	The National Land Transport Programme.....	49
4.5.4	National environmental standards.....	49
4.5.5	National policy statements.....	50
4.5.6	Other related national strategies.....	50
4.6	Regional and local government policy documents.....	50
4.6.1	Regional land transport strategies.....	50
4.6.2	Regional policy statements.....	51
4.6.3	Regional growth strategies.....	51
4.6.4	District plans and strategies.....	51
4.7	Transportation policy under the RMA.....	52
4.7.1	Regional policy statements.....	52
4.7.2	Regional plans.....	52
4.7.3	District plans.....	53
4.8	Applications and approvals.....	54
4.8.1	Activities requiring resource consent.....	54
4.8.2	Plan changes and variations.....	55
4.8.3	Requirements for designations.....	56
4.9	Assessment of environmental effects.....	57

4 (cont.)	Scene setting.....	41
4.10	The planning assessment processes	58
4.10.1	Stages in the process	58
4.10.2	Benefits and costs	59
4.10.3	Report prepared on application by council or consultant	59
4.10.4	Notification.....	59
4.10.5	Consideration	60
4.10.6	Conditions of consent	60
4.10.7	Right to appeal	61
4.10.8	Environment Court changes	61
5.	Matters for consideration	62
5.1	Extent of information.....	62
5.2	Scoping discussions	63
5.3	Assessment thresholds	63
5.4	Permitted baselines.....	65
5.5	Selecting the assessment year	66
5.5.1	Rationale.....	66
5.5.2	Resource consent future year assessments	67
5.5.3	Plan change and variation future year assessments	68
5.5.4	Future year assessments for designations	68
5.6	Confidence and sensitivity testing.....	68
5.7	Expert evidence.....	69
5.8	Peer reviews	70
5.9	Conditions and monitoring.....	71
6.	Scope, process and content.....	72
6.1	Introduction	72
6.2	Scope	73
6.3	Process	74
6.4	Content.....	77
7.	Recommendations	81
8.	References	82
	Appendices.....	85

Executive summary

This research was undertaken to develop national guidelines to improve transportation assessment practices in New Zealand. It is generally acknowledged that the assessment of transportation effects in New Zealand is undertaken with variable results and quality.

The research was undertaken from 2007 to 2010 and included a literature review, a series of national practitioner workshops, and a national survey of practitioners and decision maker needs. From this information, the scope and scale of guidance was considered in conjunction with the two main existing New Zealand guides for assessing transportation effects.

Integration is a primary outcome of the New Zealand Transport Strategy vision and is a key term used in the Land Transport Management Act 2003. The transport system is considered a physical resource and therefore critical to integration issues.

The first part of the research provides an understanding of existing approaches through a literature review and existing New Zealand practice through a survey of decision maker and practitioner needs. This information has provided the basis for developing guidelines for undertaking integrated transport assessment (ITA). Specifically, this first part of the research is an extension of a literature review published by Land Transport New Zealand in 2007, and summarises eight additional references. In addition, a survey of decision maker and practitioner needs was undertaken in 2007 and 2008 that resulted in a number of topics being identified which users considered to be beneficial.

The second part of the research and the development of the assessment guidelines attempted to reconcile the sometimes conflicting needs of decision makers and practitioners. This has meant developing a uniform methodology for undertaking ITA. This continues the terminology used by the Auckland Regional Transport Authority.

The ITA guidelines were developed to improve understanding of the process for undertaking an ITA, the relevant inputs, and the fit and context of an ITA within the New Zealand regulatory structure. The research provides guidelines for undertaking an ITA, including the scope and content required for a 'simple', 'moderate', 'broad' and 'extensive' ITA. The four different ITA scopes provide practitioners with varying assessment levels of geographic and policy assessments. This provides for clarifying the appropriate depth of analysis within the selected scope as well as wider spatial and policy assessments. This enables practitioners to consider better integration between land use and transportation.

The technical assessment methodologies within ITAs can vary significantly between practitioners. This research has identified and provided four practice notes. We expect that further practice notes will be developed to assist in developing improved technical assessments and the content of ITAs as they are deemed necessary and/or prudent in the years ahead.

The four practice notes are:

- Practice note ITA 09/01: vehicle-trip generation surveys
- Practice note ITA 09/02: estimating design trip generation rates for retail activities
- Practice note ITA 09/03: some relevant case law
- Practice note ITA 09/04: discussion of the permitted baseline.

The following steps are recommended:

- Planning authorities (regional and district councils) and all transport and road controlling authorities are encouraged to adopt an ITA approach and use these guidelines for the assessment of transportation effects.
- Following publication of these ITA guidelines, the NZ Transport Agency (NZTA) should consider asking the relevant government agencies, local government bodies and professional institutions to promote the existence of these guidelines.
- The NZTA should consider promoting these ITA guidelines to practitioners and adopt the ITA guidelines as the preferred method for assessing transportation effects. The development of an ITA 'quick guide' or interactive website would assist dissemination.
- Local and regional Councils should encourage the use of these guidelines as a preferred methodology to assess transport related effects.
- Local and regional councils should develop assessment thresholds for various land uses relevant to their local communities that will make the preparation of ITAs more efficient.
- The NZTA should consider agreeing to an ongoing programme to prepare additional ITA practice notes.
- Local and regional councils should contribute to the development of this series of additional practice notes.

Abstract

This research provides a methodology for assessing the effects of a development proposal within the context of the New Zealand regulatory structure. The integrated transport assessment (ITA) guidelines are based on the varying scopes of assessment (simple, moderate, broad and extensive). The possible content for each ITA assessment type and the matters to be discussed are described, as is the process for how the ITA is to be undertaken. The practice notes were developed from 2008 to 2010, and include information on how to undertake site trip generation surveys, how to estimate design trip generation rates for retail activities, some relevant case law and a discussion of the permitted baseline.

1 Introduction

1.1 Motivation

This research has produced guidelines for undertaking the assessment of transportation effects termed an 'integrated transport assessment'. Integration, meaning the integration of land use and transport, is a key outcome within New Zealand transportation policy and legislation. The ITA guidelines have been developed to improve transportation assessment practices in New Zealand.

It is generally acknowledged that the assessment of transportation effects from developments in New Zealand is undertaken with variable quality, rigour and results. This is a problem, because it might be that resources are being over- or under-delivered, and, ultimately, decisions of lower quality are being made because of unreported or inappropriately assessed transportation effects. This research provides guidelines that build on international and New Zealand best practice and which specifically relate to New Zealand's legislation.

1.2 Background

The assessment of transport effects is a key part of good land use and transport planning. Currently, a wide variety of different methods and guidelines are used in preparing these assessments. The variety of different methods sometimes causes issues for decision makers and practitioners.

The issues for decision makers are:

- **making decisions that may not consider all effects**, which creates the possibility that developments may be approved that cause adverse or unexpected effects, or that the scale of the development may be inappropriate
- **not being able to recognise where conclusions are limited**, which has the potential that decisions may be more decisive than practicable
- **not fully understanding the effect on natural and physical resources**, which has the potential that decisions may not be totally informed in alignment with the Resource Management Act 1991 (RMA) (New Zealand Government 1991).

The issues for practitioners are:

- **over- or under-estimating resources to complete an assessment**, which could be wasteful in terms of costs and professional resources
- **mistakenly omitting information required for good decision making**, which has the potential to misinform and may, in turn, result in poor decision making and reflect poorly on the profession over time
- **limiting the growth of knowledge within the profession**, which has the potential to limit the technical and professional maturity of the profession
- **repeating already accepted work**, which could waste resources and cover old ground or earlier assessments.

The research was undertaken from 2007 to 2010 and included a literature review, a series of national practitioner workshops, and a national survey of practitioners and decision maker needs. From this

information, the scope and scale of guidance was considered in conjunction with the two main existing New Zealand guides for assessing transportation effects.

A best practice guide such as provided by this research is expected to simplify the assessment of transport effects and realise the New Zealand Transport Strategy 2008 (NZTS) vision. The NZTS vision is that 'People and freight in New Zealand have access to an affordable, integrated, safe, responsive and sustainable transport system' (Ministry of Transport (MoT) 2008a).

Over the last 10 years, a number of international best practice guides have been published to assist the assessment of transport effects. This information has benefited New Zealand. This present report has focused on New Zealand's legislative requirements, and decision maker and practitioner needs. This includes providing guidelines that deliver not only engineering but also planning guidance for the integration of sustainable transport and land use development throughout New Zealand's communities. This research project complements earlier reports and emphasises the need for a more holistic approach when integrating transportation with other planning dimensions.

As at the time of writing this guideline the RMA is currently undergoing reform. The reforms are intended to provide greater central government direction and closer alignment of legislation. When finalised the reforms may affect the way an ITA is developed and administered e.g. there maybe other national policy statements such as metropolitan urban limits and the reforms propose the concept of an Environment Protection Agency. It is unknown how far the reforms might extend so care should be taken to reference the most up to date information.

1.3 Purpose

The direction for transportation policy in New Zealand is provided by the government within two documents:

- the NZTS (MoT 2008a)
- the Government Policy Statement on Land Transport Funding (MoT 2009)

This research uses these government documents as an underlying philosophy to envision the expected transport outcomes and expands upon the two main New Zealand guides for assessing transportation effects. These are:

- *Integrated transport assessment guidelines*. (Auckland Regional Transport Authority (ARTA) 2007)
- *Transport impact guidelines for site development, parts 1 and 2* (Collins et al 2007; Weller 2007).

This research does not seek to immediately replace these New Zealand guides but rather seeks to expand these best practice guide concepts. Specifically, the ARTA (2007) guide introduces the concept of an ITA and the outcomes that are expected, such as enabling land use development and transport to be sustainable. The ARTA guide sets out when a full ITA will be required but does not include guidance for when lesser assessments will be required. In comparison, the Land Transport New Zealand¹ (LTNZ) guide (Collins et al 2007; Weller 2007) introduces the concept of varying levels of assessment depending upon the expected transportation effects, but it does not completely link these assessments to New Zealand transport legislation or technical best practice.

The purpose of this research is to provide a New Zealand methodology for how to assess transportation effects, including the scope of an assessment and appropriate linkage with New Zealand legislation. This

¹ Land Transport New Zealand is now part of the NZTA.

research recommends certain minimum information to be collected as part of an ITA, although, overall, the ITA methodology should not be overly prescriptive. Providing flexibility within the ITA will enable practitioners to provide for matters that are 'outside scope' and enable consideration of other matters that could not have been contemplated when undertaking this research project.

It is expected that all modes of transport will be considered when undertaking an ITA, including land, air and sea-based modes. Air and sea-based modes are not a focus of this report, other than an expectation that air and sea ports would be well linked to land-based networks.

The ITA guidelines are intended to be applicable to the whole of New Zealand. Other documents may exist for specific purposes and, where appropriate, this document should be read in conjunction with those other documents.

1.4 Structure

The research project is separated into three main parts; each part will be of more or less interest, depending on the reader's purpose.

- An extension of Collins et al (2007) and Weller (2007), which identify the development of best practice. This part informs the ITA guidelines.
- An explanation of the ITA process methodology that has been developed based on best international practice, best national practice and peer review. This part is the main outcome of the research.
- Practice notes to accompany the guidelines are included in appendices C-F. This part presents four practice notes and has been developed with the intention of being later supplemented with ongoing best practice notes as they are deemed necessary and/or prudent in the years ahead.

1.5 Terminology

Assessment methodologies that consider transportation effects have been given a variety of names. Some of these names have included:

- transport assessment
- transport impact assessment
- transportation assessment
- traffic impact assessment
- traffic impact study
- traffic report.

These titles are deemed to be interchangeable where they have evolved from a traffic impact focus to a transportation focus (including the avoidance of traffic effects) and include the replacement of 'transport' with 'transportation' and/or 'traffic'. Generically, these methodologies are termed 'transport assessment guidelines' (TAGs). The reports the TAGs produce are called 'transport impact assessments' (TIAs).

This report uses the term 'integrated transport assessment' (ITA) as being a particular recommended methodology for the assessment of transportation issues and effects in New Zealand. The term 'integrated' is included to clearly reflect linkage with New Zealand legislation. The term 'integrated transport assessment' was first used by the ARTA. The term has been widened in this research to encompass the following five dimensions:

- consideration of national, regional and local transport and growth strategies
- discussion on land use control policies and district plan zoning objectives
- recognition of varying thresholds for assessments both on and off the site
- greater emphasis on person-trips by all modes
- consideration of travel demand management techniques for larger sites with high trip-generating developments.

It is intended that this report would have application nationally including in the Auckland region. For these reasons the title of the document 'integrated transport assessment guidelines' has been chosen to reflect both its general application by practitioners and by all road and planning authorities.

1.6 Future research

Best practice reflects the evolution of the transportation profession. Consequently, developing best practice requires feedback from practitioners and decision makers to enable further best practice to be developed. This new knowledge is required to be peer reviewed, retained and disseminated for the betterment of New Zealand. This means outcomes can be achieved faster, with fewer resources and, hopefully, less conflict.

The main mechanism the authors have recommended for this research to be updated is the creation of best practice notes (presented in appendices C–F) that recognise that technical methodologies can have a significant impact on the assessment of transport effects. It is expected that the best practice notes will be added to, updated and disseminated frequently. It is also probable that the ITA process methodology will occasionally be updated to reflect changing legislation and or process practices.

The decision maker and practitioner needs survey indicated that further practice notes on the following subjects would be worthwhile (ordered from most useful to least useful):

- estimating diverted, pass-by and new trip proportions
- traffic surveys (transport network)
- estimating design parking rates
- calculating and applying traffic growth on adjacent streets
- parking surveys (site)
- monitoring post-opening operating conditions
- estimating trip distribution
- application of hourly, daily and seasonal factors to raw survey data
- estimating trip assignment
- establishing site mode split estimates
- calculating accessibility

2 Selected literature review

2.1 Introduction

This section summarises the structure and contents of the TAGs that have been developed in a number of countries, including New Zealand. The most constructive TAGs consulted internationally were those from Australia and the United Kingdom (UK). A number of TAGs that Weller (2007) did not include have been published since that literature review was undertaken.

Collins et al 2007, undertaken during 2005 and 2006 by Beca Infrastructure Limited, summarised the results of a literature review of relevant worldwide documents, supplemented by inputs from international experts. The report includes a comparison of best practice in New Zealand and internationally, and a qualitative assessment of the pros and cons of each approach. This assessment considers the differing statutory requirements and land use planning issues in the countries whose practices have been compared with those of New Zealand.

The other countries included in the literature search and comparisons are:

- Australia
- Hong Kong
- Singapore
- the UK
- the United States (US).

The review of TIA guidelines in other countries suggests that in some countries, such as Hong Kong and, to a lesser extent, the UK, sustainable development is a key aspect of the planning process. While the methods for preparing TIAs overseas do not appear to differ significantly from those in New Zealand, it is suggested that opportunities to improve the assessment of sustainable development are currently being lost. The integration of travel plans and access by sustainable travel modes in development planning, as promoted quite heavily in the English and Scottish guidelines, are a key element in the transport impact guidelines that were developed as part of this research.

This literature review summarises the contents of eight significant references additional to those included in Collins et al (2007) and Weller (2007).

2.2 Australia

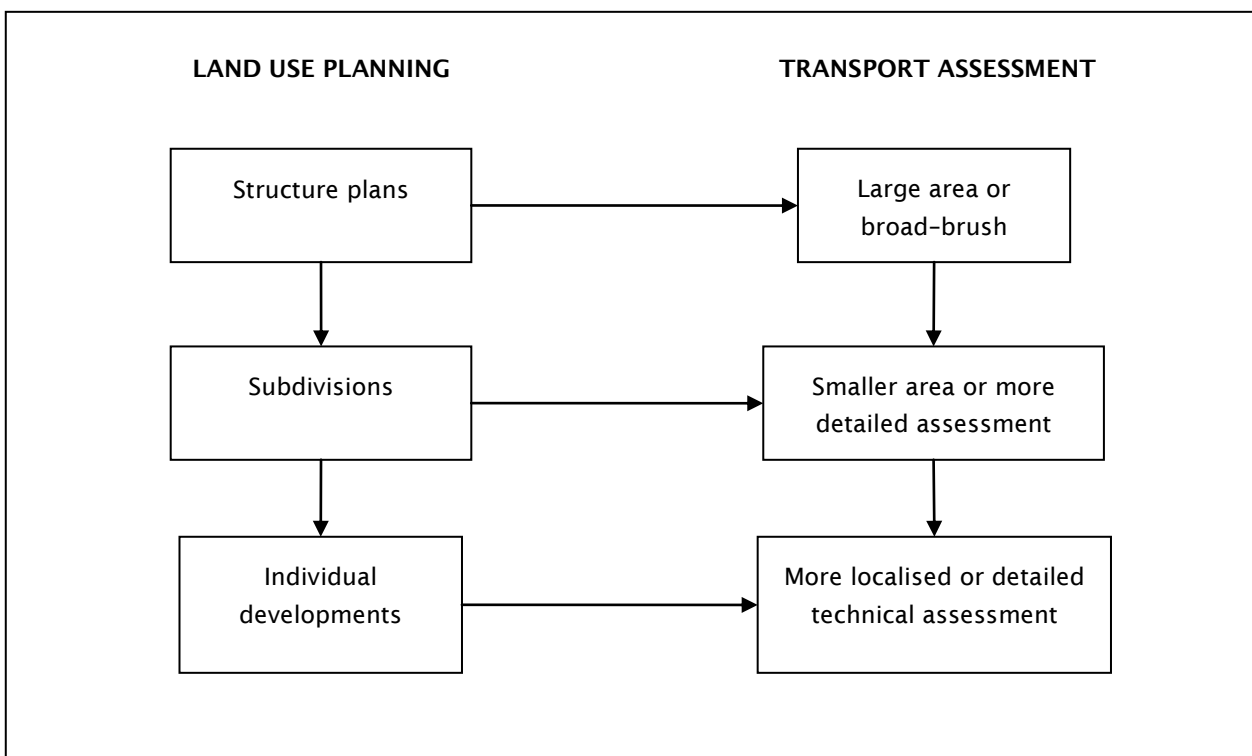
2.2.1 Western Australian Planning Commission 2006

The Department for Planning and Infrastructure (DPI), on behalf of the Western Australian Planning Commission (WAPC), has prepared guidelines for assessing the transport components of land use planning and development proposals. This guide was published following a period of consultation on a draft document. The latest version, entitled *Transport assessment guidelines for developments* (WAPC 2006), is now a version for trial and evaluation.

The guide has been divided into five volumes; the individual volumes cover different levels of land use development proposals, namely structure plans, subdivisions and individual developments.

Volume 1 is a general guidance intended primarily for use by private developers and public planning officers. It outlines the policy issues and fundamental transport information required by different levels of land use development planning. The land use/transport planning process of different levels of land use and the respective types of transport assessments required are illustrated in figure 2.1. Developers can determine whether their proposal requires a transport assessment and the level of the assessment required. On the other hand, approving authorities can use the information contained in this volume to identify the appropriateness of the assessment submitted with a development application.

Figure 2.1 The land use/transport process (WAPC 2006)



Volume 2 outlines the transport related requirements for structure plans. It also provides technical guidance on how to undertake the transport assessment for this particular level of development. The volume contains a checklist for practitioners to review whether the development has been assessed properly. The checklist is divided into the following main sections, which the WAPC recommend for a robust 'structural plans' transport assessment:

- summary
- introduction/background
- structure plan proposal (eg regional context, proposed land uses)
- existing situation (eg existing land uses, transport network within the structure plan)
- proposed internal transport networks (eg changes/additions to existing road network or proposed new road network)
- changes to external transport networks (eg road network, intersection controls)
- integration with surrounding area (eg trip attractors/generators within 800 metres)

- analysis of internal transport networks (eg assessment years, traffic generated by the structure plan)
- analysis of external transport networks (eg base flows for assessment years, total traffic flows)
- conclusions.

Volumes 3 and 4 provide guidelines on the transport assessment process for subdivisions and individual developments, respectively. The document states that ‘the level of transport assessment required is related to the level of transport impact the proposed subdivision/individual developments would be likely to have on the surrounding land use and transport networks.’ WAPC has defined three assessment levels for subdivisions/individual developments, as shown in table 2.1.

Table 2.1 Subdivision assessment levels (WAPC 2006)

Level of impact	Description of impact	Action required
Low	Less than 10 vehicle-trips* in the subdivision or development’s peak hour	No assessment
Moderate	10–100 vehicle-trips in the subdivision or development’s peak hour	Brief transport statement
High	More than 100 vehicle-trips in the subdivision or development’s peak hour	Full transport assessment

* It is normally assumed in New Zealand that a household produces one vehicle-trip in the peak hour, so this would equate to 10 households.

Volumes 3 and 4 also provide technical guidance on how to undertake the transport assessment for subdivisions/individual developments. Similarly, the volumes contain checklists for a ‘transport statement’ and a ‘transport assessment’. The subdivision/individual development ‘transport assessment’ checklist is akin to the structural plan transport assessment checklist described earlier. The ‘transport statement’ checklist contains the following main sections:

- proposed subdivision (eg proposed and existing land uses)
- vehicle access and parking (eg access arrangements)
- service vehicles (non-residential subdivisions only)
- traffic volumes and vehicle types (non-residential subdivisions only)
- traffic management on frontage streets (nearest bus/train routes, nearest bus stops/train stations)
- pedestrian access/facilities (eg existing and proposed pedestrian facilities within the subdivision)
- cycle access/facilities (eg existing and proposed cycle facilities)
- site-specific issues
- safety issues (ie issues and remedial measures should be identified).

Volume 5 is a technical appendix intended for use by transportation specialists. The volume contains two parts: part A and part B. Part A discusses the general traffic engineering and transport planning principles relevant to a transport assessment, and expands on the suggested methodology. For example, if one wants to identify the existing traffic flow surrounding a development, the technical appendix notes that automatic traffic counts and intersection turning movement counts should be undertaken. Accordingly, it describes how and when these surveys should be carried out. Part B contains two main sections. The first section details how the trip generation rates for different types of

development are derived. The second section provides guidance on how pedestrian/cycle networks of a development should be assessed.

2.2.2 Queensland Government Department of Main Roads 2006

The Queensland Government Department of Main Roads (QGDMR) has prepared a document entitled *Guidelines for assessment of road impacts of development for developers* (2006). This document states that 'the purpose of the Guidelines for Assessment of Road Impacts of Development is to assist industry to assess the road impacts of their development proposals.'

The significant chapters identified in section 1 of the guide include the following:

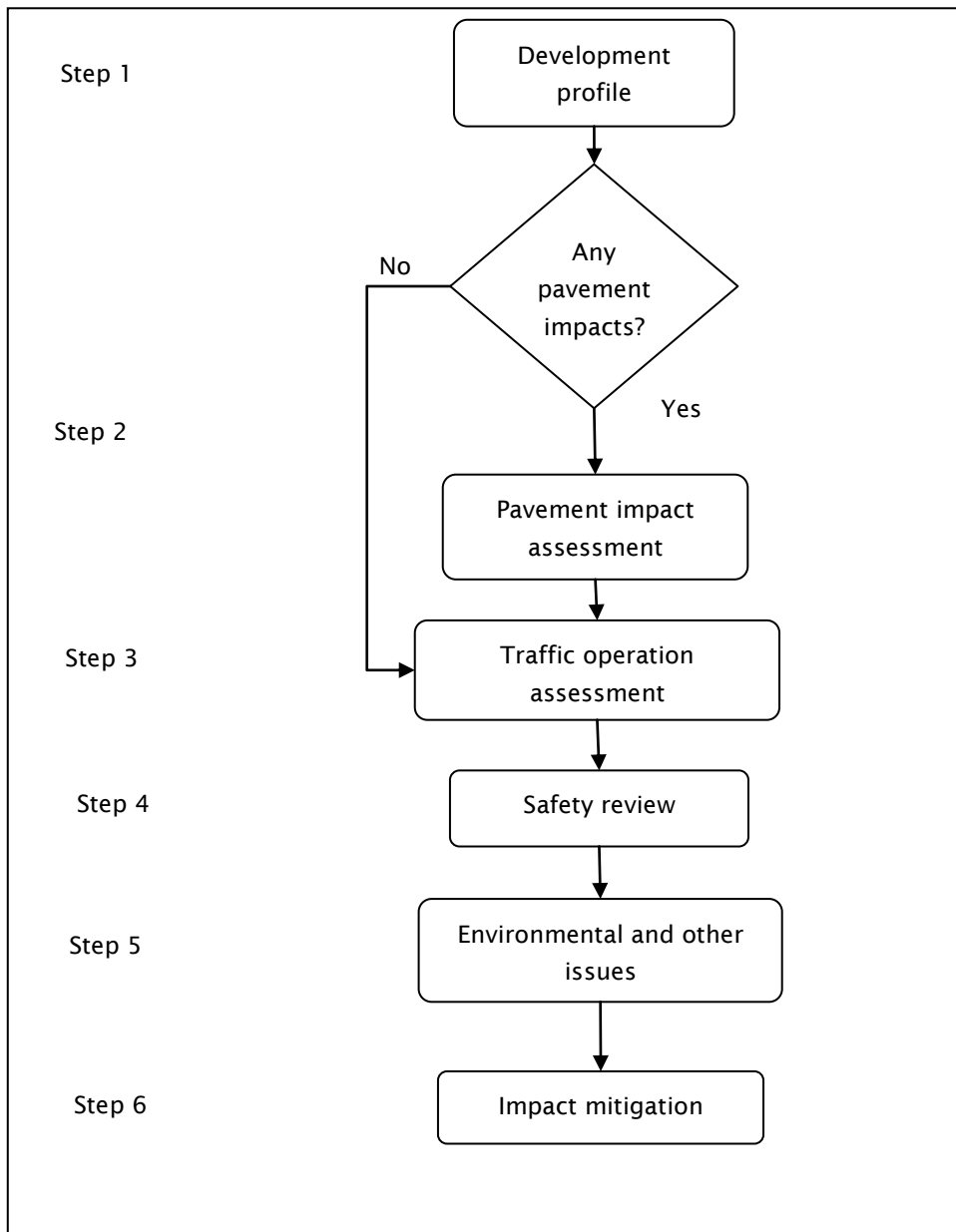
- **Underlying principles:** this chapter outlines a list of transport principles or objectives developers must achieve so that their proposals will not cause any significant impacts to the surrounding road network.
- **Scope of road impact assessment:** this chapter provides a list of transport effects that developers may want to consider when submitting their proposals. The QGDMR has categorised the transport effects into two main groups: 'development-specific impacts' (eg site access issues) and 'wider road system impacts' (eg increased network operating costs such as accelerated pavement maintenance). In addition, this chapter concludes with a flow chart illustrating the individual steps of a typical development assessment and the QGDMR's approval process.

Section 2 outlines the 'legislative processes' used by the QGDMR to assess the impacts of development proposals. The relevant legislation is effectively sections of transport-related acts which allow the Queensland State government to assess a range of impacts created by development proposals. The QGDMR has defined five stages for an assessment process, detailing timelines and responsibilities for both the developer and local/state government. The five stages are as follows:

1. application
2. information and referral
3. notification
4. decision
5. appeal.

If a proposed development has the potential to trigger significant adverse road impacts, a transport assessment has to be undertaken. Section 3 of QGDMR (2006) provides a flow chart that illustrates the steps required for a transport assessment. The flow chart is illustrated in figure 2.2.

Figure 2.2 Transport assessment process flowchart (adapted from QGDMR 2006)



Section 4 of QGDMR (2006) describes the steps required to establish the 'development profile', as shown in figure 2.2. The steps comprise:

1. development details (eg site location, size of development)
2. surrounding road network details (eg existing daily traffic volumes, traffic growth trends)
3. traffic generation of development, including vehicle-trips by type, public transport trips and pedestrian/cyclist activity
4. distribution of development traffic, including distribution of trips by vehicles, public transport and pedestrians/cyclists
5. network definition

- all the access points between the development and its surrounding road network need to be considered.
- pavement impacts/traffic operation assessments need to be considered for any section of the surrounding network where the construction or operational traffic generated by the development equals or exceeds 5% of the annual average daily traffic (AADT) on the road section, intersection movements or turning movement

6. on-site aspects (eg parking demand, servicing requirements).

Section 5 of the QGDMR report outlines a general pavement assessment process. Part 1 provides an introduction to pavement management concept. Part 2 touches on the background and theories of assessing pavement impacts. The process for assessing pavement impacts is outlined in part 3.

Section 6 outlines the traffic operation assessment process. The QGDMR states that ‘the design horizon for a traffic operation assessment should be ten years after opening of the final stage of the development.’ To ensure that the performance of the road network will not be compromised as a result of a development, the QGDMR has adopted two performance criteria:

- **Link performance criteria:** the QGDMR has employed six levels of service (LOS) to evaluate the performance of road links, where LOS A has the highest performance and LOS F has the worst.
- **Intersection performance criteria:** the QGDMR suggests that degree of saturation is the key indicator of operational performance for intersections. The degree of saturation is effectively the volume:capacity ratio. The QGDMR provides references to several design guides and modelling software packages to derive the degree of saturation of intersections taken into consideration in the transport assessment.

Section 7 outlines the safety review process to be followed in the transport assessment. This safety review process begins with a crash rate analysis of the entire road network contained in the ‘network definition’ mentioned earlier. The QGDMR suggests that a five- or 10-year period of crash data should be examined to obtain a reasonable trend. If the crash rates are not within tolerable limits then safety treatments would be required. If the development proposal will involve major works at critical locations, the QGDMR may request a safety audit to be undertaken as part of the transport assessment.

Section 8 describes environmental and other issues which the development might trigger. The ‘other issues’ include road use management, transport corridor planning, parking and access control issues that may have effects impact on the surrounding road network. The section provides several mitigation measures and references to other design guides to address these issues.

Section 9 details the last step of the transport assessment, which discusses the impact mitigation process. If intersection changes, additional road works or mitigation measures are required as a result of the development, the developer will have to meet the full cost of these works. If the required road works can be accommodated within the timing of planned road works, the developer will not have to contribute any additional costs. However, if the road works do not fit within the likely provision of future road works or will be required at an earlier date than if the development did not exist, a developer contribution may be required. This contribution may be in the form of a ‘bring forward contribution’, meaning that the developer will pay the additional costs required for the work to be completed at an earlier date.

The guide also contains a checklist covering the transport assessment steps illustrated in figure 2.2 to ensure a high quality transport assessment. Transport assessment examples for rural and urban

developments are also provided in the appendices to aid practitioners in undertaking simple transport assessments.

2.2.3 AUSTRROADS 2009

The AUSTRROADS *Guide to traffic management part 12 – traffic impacts of developments* was published in August 2009.

Section 1 sets out the aims of the guide. AUSTRROADS states that the aim of the document is to:

ensure consistency in the assessment and treatment of traffic impacts, including addressing the needs of all road users and the effect upon the broader community.

Specifically, guidance is given on how to:

- *identify the types of traffic impacts and interactions which will result from a specific land use development proposal,*
- *assess the size of those impacts,*
- *determine how those impacts need to be managed, either within existing infrastructure or through the provision of additional infrastructure, and*

report on these matters in a way that provides the road authority, town planning authority and others with an adequate understanding of the issues and the actions which need to be taken for the development to proceed. Such a report is called a Traffic Impact Assessment Report.

Section 2 of AUSTRROADS (2009) sets out the scene for traffic impact assessments. The section provides some background information on and good planning principles for four different levels of transportation planning: town planning, transport planning, road network planning and traffic planning.

Section 3 sets out several guidelines to good traffic design for developments. Part 1 provides a checklist of the design elements that practitioners should consider when preparing traffic impact assessments for developments. Part 2 outlines several important principles when designing for different transport modes. Part 3 describes the principles of designing access to a development. The types of access to a development are approach roads, driveways and intersections, internal roads, circulation areas and parking. The final part of this section provides design practices for different subdivisions.

Section 4 explains how to undertake a traffic impact assessment for a development. AUSTRROADS suggests that three levels apply for reporting of traffic impacts of a development (based on WAPC 2006):

- Where a development generates more than 100 vehicles per hour (vph), prepare a TIA report.
- If it generates less than 100vph and more than 10vph, prepare a traffic impact statement.
- If the development generates less than 10vph, no study is normally required, but it should be shown that the traffic can be accommodated on the frontage road at critical times of the day, week etc, unless this is obvious.

Section 5 states that in many instances, the full assessment of the impact of a development will require consideration of other issues. These include:

- road infrastructure and pavement impacts

- road safety impacts
- environmental and other issues.

The remainder of Section 5 provides details on the assessments available to measure these other impacts.

2.2.4 VicRoads 2008

VicRoads have developed a document entitled *Guidelines for transport impact assessment reports for major land use and development proposals* (2006). This guide was published to recognise the growing emphasis on using the road network more effectively and efficiently.

Section 1 of the guidelines introduces the bigger picture which the document supports. This is a two-staged approach to encourage and facilitate integrated transport planning and more sustainable transport outcomes related to land use development in Victoria.

Section 2 describes the policy and strategic context behind the document. It explains the relevance of traffic impact assessment reports (TIARs) with respect to the safety, amenity, affordability and service of the network.

Section 3 and Section 4 describe the use of the guidelines and outline when a TIAR is required. The TIAR guidelines apply to all forms of proposed land use development in Victoria that may affect the safety and operational efficiency of the road network. A table of types of development and thresholds for when a TIAR is required is also included.

Section 5 describes what should be included in a TIAR. This includes:

- performance objectives
- existing conditions
- proposed vehicle access arrangements
- traffic generation
- proposed parking and loading facilities
- base case (without proposed development)
- post-development analysis
- mitigation treatments.

Section 6 concludes that the requirements for a TIAR do not replace the need for a higher level of structural planning in growth areas that integrates planning for land use and the provision of transport infrastructure.

2.3 United Kingdom

2.3.1 Department for Regional Development and the Department of the Environment 2006

The UK's Department for Regional Development (DRD) and the Planning Service of the Department of the Environment (DOE) published a transport assessment guide entitled *Transport assessment guidelines for development proposals in Northern Ireland* (2006). This guide was published following a period of consultation on an earlier draft document.

Section 1 of the guide introduces the role of the government, developers and public transport operators in the transport assessment process.

In section 2, part 1 describes the purpose of transport assessment. DRD and DOE state that ‘the purpose of transport assessment is to provide information for DRD and DOE to understand how the proposed development is likely to function in transport terms’. Part 2 compares ‘transport assessment’ and ‘traffic impact assessment’. Their differences are summarised in table 2.2.

Table 2.2 Transport assessment and traffic impact assessment compared (from DRD and DOE 2006)

	TIA	Transport assessment
Modes considered	Focus on cars but others may be included	All modes considered but initial emphasis on walking, cycling and public transport
Transport implications covered	Comparison to similar developments	Accessibility and mode split analysis
Impacts considered	Road safety and traffic	Accessibility of site by all modes of transport Road safety Environment Traffic and highway impacts Rail, water and air transport
How are negative impacts addressed?	Increase road capacity and add safety features	Comprehensive assessment of access by all travel modes leading to additional walking, cycling and public transport infrastructure and service improvements Travel plans Financial incentives Additional road capacity features

Section 3 of the guide provides a summary of the transport assessment process. Part 1 describes the ‘transport assessment form’ that must be submitted by the developers in conjunction with each development proposal. The purpose of submitting a transport assessment form is to enable the planners in the public authority to decide whether a detailed transport assessment is required. Part 2 provides guidance for deciding whether a detailed transport assessment is required. For example, in terms of ‘activity’, a development that has the potential to generate ≥ 100 vph during peak periods will require a detailed transport assessment. Part 3 outlines issues and mitigation measures, which may be relevant to the development, for the developers to discuss with the public authority at an early stage of the planning process. This will enable both parties to save time later in the planning process by ensuring that all issues have been covered in the transport assessment. The final part provides methods for implementing and monitoring measures identified by a transport assessment.

Section 4 outlines three key stages of a detailed transport assessment:

- Stage 1: assessment of travel characteristics
 - **Site visits:** these are to identify the accessibility of the development by different modes.
 - **Measurement of accessibility to and from the site:** these permit calculation of the travel times by different modes.
 - **Estimating the travel generated and likely modal split:** this section covers the methods for estimating the travel generated by mode (eg using trip databases, undertaking trip surveys).
- Stage 2: influencing travel to the development

- **Location:** this includes guidelines on choosing an accessible location to promote sustainable development.
 - **Scale:** the scale of the development has the potential to influence travel behaviour. For example, larger developments can provide the opportunity to improve public transport access.
 - **Layout and design of the development:** this section touches on several layout and design methods to increase the accessibility by non-car modes. The developer should give priority to sustainable transport modes before considering access by private vehicles.
 - **Promoting access on foot:** this section outlines several tools and methods to enhance accessibility and travel by walking to the development.
 - **Promoting access on bicycle:** this section outlines several design guides and methods to enhance accessibility and travel by cycling to the development.
 - **Promoting public transport access:** this section outlines several tools and methods to enhance accessibility and travel by public transport modes.
 - **Managing car use and parking:** this section provides several methods and references to design guides to mitigate the traffic impacts generated by the development. Additionally, the section provides methods to manage the development's parking demand and accessibility.
 - **Travel plans:** this section touches on several travel plan concepts that are suitable for different types of development.
 - **Awareness raising and marketing:** this section provides several methods of raising awareness and of marketing to support the travel plan and to change individual's travel behaviour to the development.
 - **Incentives to individuals:** this section provides several incentives to influence the travel pattern of a development.
- Stage 3: appraising and mitigating impacts. The final stage involves assessing the transport impacts and proposing mitigation measures to minimise or address these. The types of transport impacts to be assessed are:
 - accessibility and integration effects with the local community
 - safety and security effects
 - environmental effects
 - highway and traffic effects
 - parking effects.

Section 5 provides information on the data available in Northern Ireland to aid practitioners in the preparation of transport assessments. This section also provides where and how to obtain this information. The available data includes:

- **Journey time and distance data:** This includes
 - traffic information (eg automatic traffic counts, turning movement counts)

- ordinance survey data: a website-based digital topographic database that provides information on the road network, location of developments, etc
- methods for deriving walking and cycling times
- methods for deriving car travel times.
- **Public transport data:** this section provides website links to several bus/rail journey planners and bus/coach statistics. The section also provides methods to derive public transport journey times.
- **General data:** this section provides website links and references to obtain the 'general data'. The general data includes information on locations of population, trip rates etc.

2.3.2 The Scottish Executive 2002

The Scottish Executive has published a guide entitled *Guide to transport assessment for development proposals in Scotland* (2002) to assist practitioners in the preparation of transport assessment.

Section 2 of the guide defines the scope and purpose of a transport assessment. The Scottish Executive emphasises that 'preparing a transport assessment is part of the process of securing planning permission.' The Scottish Executive has also compared the differences between a traffic impact assessment and a transport assessment, which are similar to the differences identified by DRD & DOE (2006) shown in table 2.2.

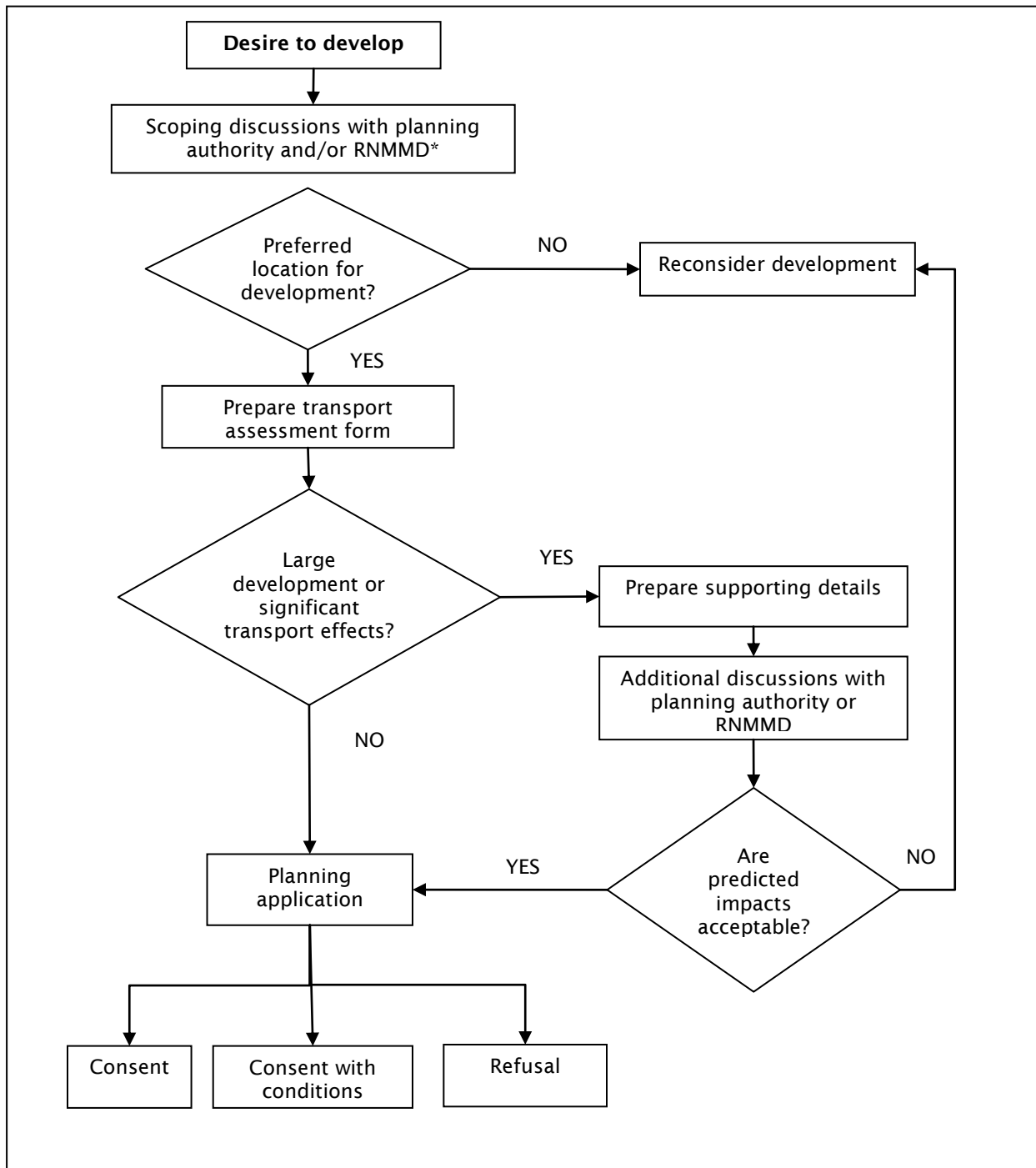
Section 3 touches on several legislative and national policies, and describes how they relate to the development of the guide. Additionally, this section also provides references to several transport planning guides that promote sustainable land use and transport planning, which transport assessments will contribute to.

Section 4 provides a list of UK technical guides that may provide useful information for presenting transport assessments. Specifically, the Scottish Executive points out that a technical guide entitled *Planning advice note 57: transport and planning* (Scottish Executive 1999) is a useful guide to 'encourage developers to set out how the transport outcomes can be influenced to ensure a satisfactory outcome that is achievable and in accordance with [the National Policy].' This section includes a brief description of environmental impact assessments, and their aim, process and role in transport assessments.

Section 5 provides an overview of the transport assessment process that is summarised in figure 2.3. A 'transport assessment form' is submitted to the planning authority as part of the process of securing planning permission. The reason for the transport assessment form is to provide information to the planning permission authorities. The transport assessment form contains three main sections:

- travel characteristics (eg the expected number of journeys per day for different modes)
- measures to influence travel to/within site (eg promotion of walking/cycling/public transport)
- transport impacts (eg issues with accessibility and safety)

Figure 2.3 The transport assessment process (adapted from the Scottish Executive 2006)



* RNMMD: Scottish Executive Road Network Management and Maintenance Division

The Scottish Executive states that a development of a smaller scale may only require a transport assessment form instead of a more detailed transport assessment.

Section 6 of the guide details the criteria that will trigger a transport assessment. The Scottish Executive (2006) also recommends that developers should consult with the public planning authority as early as possible. This will save time later in the planning process by ensuring that all transport related issues have been mitigated or addressed in the transport assessment from the outset.

It is interesting to note that DRD and DoE (2006) have also adopted the same transport process proposed by Scottish Executive.

Section 7 sets out the issues in implementing transport assessments:

- **Thresholds for transport assessment**
 - Absolute thresholds define a range of criteria that a development meets when a full transport assessment is not required (eg no more than 100 vehicle movements per day).
 - Flexible thresholds require that all development proposals will include assessments to ensure consistency.
 - Scale of transport intensity: this is based on a practitioner's estimation of transport intensity as the measure of whether a transport assessment will be needed (eg peak hour traffic generation of a development).
- **Modal share targets:** the Scottish Executive states that 'transport assessments are an appropriate vehicle to identify how mode share targets, set by individual authorities for individual developments will be met. The aim is the avoidance, or if necessary mitigation, of the adverse transport impact of development.'
- **Change of use:** it is noted that a transport assessment should be undertaken where a use requires a new consent and would result in a significant number of additional vehicle-trips.
- **Speculative development and outline applications:** this section describes several measures to evaluate a transport assessment for speculative developments and outline applications.
- **Freight:** this section provides several measures and policies to improve freight movements if a development is a major generator of freight movements.

Section 8 of the guide introduces the role of the government, developers and public transport operators in the transport assessment process.

The guide also stresses the need for monitoring a development that has been approved by the planning authority and has been built to check its 'after' transportation effects. The guide includes an appendix that provides a list of monitoring measures to ensure that the mitigation measures or estimations contained in the transport assessment have been achieved.

2.3.3 Bedfordshire County Council 1998

The Bedfordshire County Council (BCC) published a transport assessment guide entitled *Travel assessment guidelines* in 1998 as a useful working document for planning and highway authorities, developers and their consultants who have an interest in the local travel network.

Section 2 of the guide emphasises the need for shifting from the traditional TIA approach towards transport assessments that consider accessibility and travel patterns for all transport modes. In addition, the BCC points out that a transport assessment should evaluate sustainable transport by considering all other modes before private vehicles.

Section 3 details the overall purpose of a transport assessment. The BCC states that it should identify and mitigate transport implications in a manner that will achieve the aims of national, regional and local transport policies.

Section 4 outlines the fundamental principles that practitioners should consider before undertaking a transport assessment:

- **Impact:** the impact of the travel demand (the greatest change between the 'with' and 'without' development scenarios at agreed points in time) should be taken into account, not just the scale.
- **No worse off:** a clear comparison of the assessment years (eg 10 years after the opening of the full development) with and without the development in place will be required.
- **Other assessment:** the transport assessment should also integrate with other assessments such as retail impact or environmental assessment.
- **Other policy areas:** the transport assessment should be undertaken in a manner that will not compromise other policy areas (eg environmental, social, economic).
- **Actively securing developer funding:** the developer should contribute to improvements in transport infrastructure if necessary.
- **Worst case:** a number of worst case scenarios should be assessed, such as travel impact at the development's peak period or the future land use class mix that would have the greatest effect.
- **Consideration of previous uses:** the assessment will need to include the effect of the development in relation to existing travel patterns on the transport network.
- **Phasing:** some developments may be phased, and the assessment will need to consider the transport implications at each phase.
- **Parking provision:** currently, the BCC states that the parking requirements are still being revised and that maximum standards of parking provision will continue to be required for all developments.
- **Departure from guidelines:** if the developers feel that they cannot comply with the guidelines provided, they will need to consult with the planning authority and justify why a departure is required as early as possible in the planning process.

Section 5 is divided into two parts. The first touches on the level of assessment required for a development. The BCC has defined four levels of assessments, depending on the number of journeys a development generates per day. The BCC states that once the level of assessment has been identified, it is necessary to carry out a 'scoping study'. The content of the scoping study should include:

- what the assessment will address and why
- some indication of the depth of analysis to be carried out
- details of data requirements and availability
- the likely area of analysis and key locations to be considered
- the assessment methods to be adopted
- the likely period of assessment.

Section 6 sets out the main contents of a transport assessment. In brief, the contents should always include:

- past, present and future information about the site
- extensive information on existing transport networks in the vicinity of the development
- existing safety records in the vicinity of the site
- assessment and interpretation of the existing travel situation before and after development

- conclusions and recommendations.

In conjunction with section 6 of BCC (1998) is a list of appendices that contain technical methods for preparing a transport assessment and further information on the detail that would be required for the contents mentioned above.

2.4 New Zealand

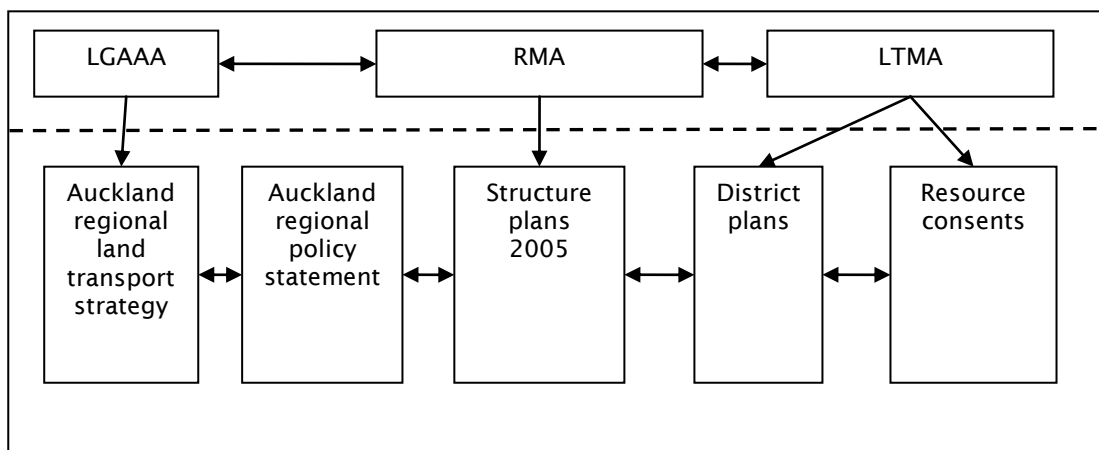
2.4.1 ARTA 2007

ARTA has published *Integrated transport assessment guidelines* as a result of Plan Change 6 to Auckland’s Regional Policy Statement (RPS). ARTA (2007) states that ‘an ITA is a comprehensive review of all the potential transport impacts from structure plan, proposed plan change, a metropolitan urban limits shift or a major trip generating activity.’

Section 1 of ARTA (2007) describes what an ITA is, why it is required, the purpose of an ITA and who should be involved in the ITA process. The ITA guidelines have been developed to ensure that all aspects of transport are considered, not just the implications for private vehicles.

Section 2 outlines the existing statutory and policy framework in New Zealand and how the role of an ITA fits into the framework, including the Local Government (Auckland) Amendment Act 2004 (New Zealand Government 2004) (LGAAA). In addition, this section of ARTA (2007) gives a brief description of the legislative requirements, policy and planning documents in New Zealand, and how they inter-relate. The inter-relationships are shown here as figure 2.4. The legislation and documents have been explored in more detail in chapter 4 of this present report.

Figure 2.4 Legislative requirements, policy and planning documents (adapted from ARTA 2007)



Section 3 details the ITA process. ARTA has adopted a flexible framework for undertaking an ITA rather than a threshold or absolute process. This will enable the most appropriate type of assessment to be carried out for any particular proposal.

The first part of section 3 outlines the ‘scoping’ of the ITA. Scoping is the initial stage in the ITA process. The stage requires developers to submit a ‘scoping form’ that gives a brief description of their development proposals to enable the planning authority to determine whether an ITA is required.

The second part of section 3 outlines the ITA structure, which should contain the following main sections:

- planning and policy framework

- travel characteristics/land use characteristics
- measures to influence travel
- appraisal of impacts
- mitigating impacts
- summary and conclusion.

The guide contains an appendix that details what information needs to be provided in the individual main sections mentioned above.

The last part of section 3 outlines the criteria that will trigger a full ITA. ARTA proposes that a full ITA will be required if:

- a proposal is put forward to extend the Metropolitan Urban Limit
- a structure plan process is undertaken for urban areas listed as high density centres within Schedule One of the Auckland RPS
- a development exceeds the appropriate designated size and scale proposed by ARTA (refer to section 3.3 of ARTA (2007) for further details)
- a plan change occurs.

The guide also contains a supplementary document which provides a list of references on how to undertake transport assessments and TIAs.

2.4.2 Transport impact guidelines for site development, parts I and II

LTNZ developed a document entitled *Transport impact guidelines for site development* in 2007 (Collins et al 2007; Weller 2007). The guidelines in this document have two purposes:

- They can be used by those carrying out TIAs to identify the scope and content of assessments according to development location, type and size.
- They can be used by those reviewing such assessments to determine that the content is appropriate to the size, location and type of development being assessed.

Section 2 describes the need for TIAs. This outlines the details of a pre-application questionnaire that a developer should consider before submitting it to the council's planning officer. This section also defines four TIA assessment levels:

- **Basic assessment:** the proposed development will have negligible transport impact.
- **Neighbourhood transport impact assessment:** the proposed development will have a minor effect on the local transport network.
- **Local area transport impact assessment:** the proposed development will have significant effect on the local transport network.
- **Wide area transport impact assessment:** the proposed development will have significant effect the wider transport network.

The ITA levels are dependent on the development thresholds. The thresholds (eg the size of the land uses, the number of dwelling units) may vary in different areas within New Zealand. The guideline states that the council will set the required level of assessment following discussion with the developer.

Section 3 touches on defining the scope of the TIAs. This section details the matters regarding existing transport conditions and the proposed development that a developer should consider before meeting with the council to define the scope for the TIA. Accordingly, the content of the TIA will be agreed on during the scope meeting.

Sections 4 to 7 detail the information required for the four TIA assessment levels. Effectively a 'wide area TIA' will require the most detailed assessment, given the degree of the transport effect generated by a development at this level.

The appendices of this document include a checklist for the four levels of TIAs and a flow chart that illustrates the process for preparing TIAs.

2.4.3 Transit New Zealand 2007

Transit New Zealand developed a document entitled *Policy planning manual for integrated planning and development of state highways, version 1²* (2007). Appendix 5C is the most relevant to this literature review.

Section 1 describes what an ITA is and why it is necessary. This section states that 'an ITA is a comprehensive review of all potential transport impacts of a proposed development.'

Section 2 provides guidelines for when an ITA is required. The guidelines included in this manual have been adapted from ARTA (2007). This section lists activities which are likely to require an ITA and guidelines for the sizes of development which will also generally require an ITA.

Section 3 of Appendix 5C outlines the process the NZTA will follow in seeking and assessing an ITA. It provides a table that includes the development stage of a proposal for a major trip generating activity and the associated NZTA process of assessment.

Sections 4 and Section 5 provide guidance for preparing ITAs and the information that should be included. The NZTA prefers that the appropriate authorities develop their own guides. A checklist for the content of the ITA is also included.

2.5 Conclusions from literature review

The 10 references mentioned in the literature review generally fall within the comparisons of overseas best practice as set out in LTNZ (2007). Table 4.1 from that report is included here as table 2.3, supplemented with the ARTA and NZTA guidelines.

These recent TAGs, in addition to emphasis on transport aspects, have reinforced the trends in content toward:

- a more integrated approach, ensuring the assessments follow and include a consideration of broader planning and policy frameworks
- the need for monitoring whether the conclusions and assessments are met in the post-development use of the site.

² At the time of writing, this document is being reviewed by the NZTA with the aim of producing an updated version.

Table 2.3 Comparison of overseas best practice sustainable development impact assessment

Content of guideline	Country					
	Australia	Hong Kong	New Zealand	Singapore	UK	US
National ^a statutory guidance document	No	Yes – part of the <i>Transport planning and design manual</i>	No	Yes – LTA guide	Yes – LTA guide Yes – Scotland and Northern Ireland only	No
Threshold for scoping TIA	Yes	Not in guidelines	Yes	Yes	Yes	Yes
Methodology guidance	Yes – checklist	Yes – checklist	Yes – checklist	Yes – checklist	England and Northern Ireland	Yes –both
Suggested study area limits	Yes	No	Yes – NZTA guidelines	No	No	Yes – land use types/ development sizes
Assessment of committed and consented developments	Yes	Yes – check that the list of developments is up to date Assess cumulative impact	Yes –to be included in scoping discussion	Generally in background growth, but nearby developments added	Local developments in addition to background growth	Local developments in addition to background growth
Background traffic growth	Assessment of historical trends	Traffic growth factor from Annual Traffic Census report and historical data	To be addressed through Traffic Impact element of ITA ^b	Generally 2–3% per annum	Obtained from national model or traffic flow data	Model data or historical trends from existing data
Trip generation data	Guide includes trip rate data	Surveys of similar developments	Trip generation from similar sites	Surveys of similar developments	Usually obtained from TRICS ^c database	ITE Trip Generation 7th edition
Multi-modal data available	Some mode split data available	According to survey data	Trip generation from similar sites	According to survey data	Multi-modal trip data available	Some local data available
Local trip effects (eg pass-by and diverted trips)	Considers the proportions of new, pass-by and diverted trips	No specific mention	Trip generation from similar sites	No specific mention	Consider pass-by and diverted trips Intra-site trips for mixed use/retail	Consider pass-by and diverted trips Intra-site trips for mixed use/retail

Table 2.3 (cont.) Comparison of overseas best practice sustainable development impact assessment

Content of guideline	Country					
	Australia	Hong Kong	New Zealand	Singapore	UK	US
Assessment years	Opening year for developments and 10 years after the opening	Future year data provided by models at five-year intervals	To be addressed through Traffic Impact element of ITA	Opening year and opening year +5 2015 if significant development	Up to 15 years after opening Five years after the application is submitted and 10 years where the development affects the strategic road network (in English draft guidance)	Generally five years after opening
Assessment of intersection impacts	Key intersections	Usually only at site access – can extend further for larger developments	Intersections should be assessed according to the level of the ITA	All intersections significantly affected	According to scope	Affected intersection should operate at an acceptable LOS
Impact mitigation at intersections by developer	Yes – provided for under section 94 legislation	Usually site access only – can extend further for larger developments	Intersections should be assessed according to the level of the ITA	Usually site access only	Yes – provided for under legislation	Depends on local conditions but see above
Assessment of safety	Yes – site access and parking; traffic calming etc for residential subdivisions	Yes – site access and pedestrian safety	Includes assessing safety through multi-criteria assessment Road safety audit of internal and external layout depending on the level of the ITA	Site access layout and pedestrian facilities	Low-level safety audit and assessment of existing road safety	Works designed to appropriate standards
Internal transport design and operation	Full assessment of standards, potential queuing effects	Parking only – generally, sites are too constrained for anything else	Internal roading arrangements (including footpaths and cycleways), service vehicle turning areas and parking arrangements	Assessment of queuing impacts	Parking, circulation, alternative modes	Parking, circulation, alternative modes

Table 2.3 (cont.) Comparison of overseas best practice sustainable development impact assessment

Content of guideline	Country					
	Australia	Hong Kong	New Zealand	Singapore	UK	US
Walking and cycling	Discussion with authority and operators about options	Integration with existing and planned future pedestrian routes	Contains list of issues to be considered when promoting walking and cycling	Crossing/ bridge to bus stop or MRT ^d station	Full consideration of walking and cycling access and integration with offsite links	LOS assessments based on delay at crossings and fully integrated on site facilities
Public transport	Consultation with operators and planning authority	Identify nearby facilities; check for capacity deficiencies; check bus bay provision is adequate	Contains list of issues to be considered when promoting public transport	Rain and bus stop distances Trip rates require adjustment if development no close to public transport node	Full consideration of public transport access Developer contributions to services and infrastructure where appropriate	LOS based on service frequencies; service changes or improvements funded by site developer with operator/ agency
Travel plans and TDM ^e	TDM measures suggested but will have to be at RCA's ^f discretion	No mention	Contains suggestions for mitigating impacts, including TDM measures	No mention	Part of national guidance and in guidelines	TDM measures suggested as means of increasing alternative mode share
Development parking	Assessment of proposed supply against standards and peak demand; assessment of layout	Analysis of parking provision and peak demand; motorcycle parking; entry/exit barrier capacity/ layout	Contains issues to consider when assessing car access and parking	Analysis of parking provision and peak demand; entry/exit barrier capacity; layout	Based on local guidelines and parking demand surveys where appropriate Layout standards available Maximum parking set in national policy	Design standards and guidelines available Parking generation document provides guidance on capacity Queuing and circulation guidelines
Servicing	Servicing design guidelines included	To be checked against parking/ servicing guidelines	Provision of service vehicle turning areas and parking arrangements	Provision and operation of servicing area	Routes and facilities to be outlined in draft English guidance	Servicing guidelines included
Construction impacts	Yes	Yes	Yes	Separate study may be required	No specific mention	Assessment of implementation schedule and impacts
Development phasing	Yes	No specific mention	Yes	No specific mention	Yes - may be linked to developer contributions	

Notes to table 2.3:

- a In the case of Hong Kong, this applies only to the Hong Kong Special Administrative Region
- b Refers reader to the UK and Australian TIA guidelines
- c TRICS = Trip Rate Information Computer System
- d MRT = Mass Rapid Transit
- e TDM = Travel Demand Management
- f RCA = road controlling authority

3 Practitioner needs

3.1 New Zealand decision maker and practitioner needs

3.1.1 Assessing practitioner needs

As part of this research project, a two-part survey of decision maker and practitioner needs was undertaken. This included:

- A postal survey of key stakeholders and decision makers with questions representing both high level and detailed matters requesting opinions on a number of aspects of transportation assessments. These ranged from the quality and level of detail currently received through to how effectively the assessments were considered to address the effects that developments may create.
- A series of national workshops were held in Auckland, Hamilton, Wellington, Christchurch and Dunedin. Practitioners were invited to give their experiences of transportation assessments. Practitioners were also asked how prescriptive a national guideline should be in general, if one were to be developed, when providing technical or methodological information.

3.1.2 The questionnaire

3.1.2.1 Respondents

Regarding the survey of decision makers, all Territorial Local Authorities (TLAs) and regional councils in New Zealand were contacted, and their transportation manager and resource consent manager were asked to complete a detailed questionnaire. Following this, two questionnaires, one for each person, were sent to each council. Thirty-three questionnaires were returned from various councils that encompass some 35% of the total population of New Zealand.

The questionnaire was divided into sections. Some key results from the questionnaire are presented below.

3.1.2.2 Current practice

- Over 90% of those surveyed have at least a partial understanding of the different types of transportation assessments required for resource consent and plan change applications.
- Eighty-five percent consider that the quality of assessed 'effects on wider networks' for resource consent and plan change applications is very poor to average (the scale is from 'very poor' to 'very good').

3.1.2.3 Information sources

- The most common source of information referenced for obtaining vehicle-trip generation data for a proposed activity is specific surveys.
- The most common source of information referenced for obtaining parking demand data for a proposed activity is district plans.
- Existing traffic flows on frontage roads are most commonly used for determining trip distribution on the road network for proposed developments. Catchment studies, including origin and destination surveys, are infrequently used.

3.1.2.4 Methodology for assessing effects

- Half of all responses indicated that vehicle-trips are not typically separated into 'new', 'diverted' and 'pass-by' trips in existing transportation assessments.
- 'Capacity' is the most commonly used analytical technique to assess effects on the road network for proposed developments for both plan change and resource consents. However, capacity was not defined and may have had a variety of numerical values not otherwise related to road type or hierarchy.
- Nearly 80% used 'level of service' to quantify effects on the road network; however, 85% of local district plans do not quantify local minimum levels of service for intersections, links and access points.

3.1.2.5 Monitoring

- Where monitoring clauses are included in the conditions of resource consent to establish the accuracy of previously estimated effects, 70% of responses indicated peak hour(s) – eg morning or evening peak hours – as the period of assessment.
- Where monitoring has been completed, 9% of responses indicated a good correlation between the quantified estimated effects and the 'after' surveys undertaken.

3.1.3 Indications

Overall, the majority of practitioners and decision makers considered it would be useful for the proposed guideline to provide approved reference sources for particular types of information. Practitioners and especially decision makers believed that transportation assessments required technical best practice guidance to improve the accuracy and consistency of the technical information.

The majority of responses indicated that guidelines owned by a government agency were desirable and a number of responses said this would be essential. About 22% considered it was not essential. No respondent indicated guidelines as 'not being necessary'. Seventy percent indicated that a general framework is desirable and 30% indicated that a general framework is essential. The questionnaire did not consider the usefulness of regional guidelines.

It was widely agreed by all the decision maker respondents that the content of the ITA guidelines should be a 'thin' framework with extensive supporting best practice guidance. This was also a common theme from the national workshops, where practitioners and more experienced practitioners did not want to be dictated to or have their ability to use engineering and planning judgement removed when developing an ITA. Consequently, these guidelines are based around a thin framework and supported by best practice notes.

3.2 Survey results

Best practice is, by definition, always evolving. It is important that best practice is recognised as being the most appropriate way to assess or undertake some element of an ITA versus some other way that may develop into best practice after peer review and development, but has not yet undergone these tests.

Clear feedback from the survey of decision makers suggested that 'accepted' technical best practice was needed to improve the accuracy and consistency of the technical information. Best practice exists in a number of technical guides; however, for ITA, a number of international best practices have simply been transferred to New Zealand without rigorous testing. It was therefore felt that guidelines supported by ITA best practice in the form of a 'practice note' would be worthwhile. Practice notes provide 'how to'

guidance, and aim to improve accuracy and consistency in the technical application of a particular component of an ITA.

Decision makers were asked to indicate their level of support for additional guidance to be provided on 13 practice notes for specific technical aspects of ITA. Respondents showed their level of support for each of the suggested practice notes by indicating if they perceived the practice note would be not useful, of some value or very useful.

A summary of the practitioners' responses for all 13 suggested practice notes is presented in table 3.1 and a summary is presented below in order of priority:

- estimating diverted, pass-by and new trip proportions
- trip generation surveys (site)
- traffic surveys (road network)
- estimating design trip generation rates
- estimating design parking rates
- calculating and applying traffic growth on adjacent streets
- parking surveys (site)
- monitoring post-opening operating conditions
- estimating trip distribution
- application of hourly, daily and seasonal factors to raw survey data
- estimating trip assignment
- establishing site mode split estimates
- calculating accessibility.

Table 3.1 Suggested practice notes response rate

Suggested practice note	Level of support for practice note			Responses (N)
	Not useful	Of some value	Very useful	
Estimating diverted, pass-by and new trip proportions	40%	0%	60%	15
Trip generation surveys (site)	11%	33%	56%	27
Traffic surveys (road network)	8%	42%	50%	26
Estimating design trip generation rates	8%	42%	50%	26
Estimating design parking rates	7%	44%	48%	27
Calculating and applying traffic growth on adjacent streets	12%	42%	46%	26
Parking surveys (site)	11%	48%	41%	27
Monitoring post-opening operating conditions	15%	44%	41%	27
Estimating trip distribution	15%	46%	38%	26
Application of hourly, daily and seasonal factors to raw survey data	8%	54%	38%	24
Estimating trip assignment	27%	38%	35%	26
Establishing site mode split estimates	20%	52%	28%	25
Calculating accessibility	31%	46%	23%	26

Other practice note topics requested by decision makers included:

- design and threshold standards about what will be provided
- natural traffic growth rates
- truck traffic generation

The first item is included as commentary within this report. The second item could be developed into a practice note, and the third reflects the needs of decision makers in a climate where technical staff resources are limited.

Two practice notes have been prepared to assist the ITA guidelines that specifically relate to this list and are included in the appendices:

- Trip generation surveys (appendix C): level of support at the ‘of some value’ and ‘very useful’ level = 89%.
- Estimating design trip generation rates (appendix D): level of support at the ‘of some value’ and ‘very useful’ level = 92%.

Two other practice notes have also been developed that are not listed above but which are topical and have been included as appendix E (case law) and appendix F (permitted baselines).

It is hoped these practice notes will be developed on a continuing basis to assist with the preparation of ITAs.

4 Scene setting

4.1 Evolution of assessing transport effects

International transportation assessment guidelines have evolved rapidly in the last 10 years. Initially, these guidelines began as 'traffic effect' reports. The coverage and practice of these assessments has widened to present a more comprehensive approach that embraces effects on and off the site, the wider network, and amenity and planning policy assessments. The evolution of ITA guidelines in New Zealand, Australia and the United Kingdom is described briefly below.

TIAs have been required for some time to identify the effects of developments on the road network. For a long time, New Zealand had no specific guidelines, but assessments were generally in accord with procedures and practice outlined by the Institution of Highways and Transportation (IHT) (IHT 1994). Other guides were used before this, occasionally including prescriptive requirements contained within some New Zealand district plans going as far back as the mid-1970s, although the IHT guide was the first widely published TAG.

More recently, many consultants have recognised the need to widen the ambit of investigations and assessments, with the resulting reports being termed 'Transport Assessments'. Coverage of the 'non-traffic' issues was often varied, and it is apparent that a number of studies were still being undertaken without sufficient regard to New Zealand's national, regional and local transportation strategies, which seek to deliver a sustainable transport system.

A principal step forward was made with publication of *Transport assessment guidelines in New Zealand* by the Auckland Regional Transport Authority (ARTA) in 2006. These guidelines were developed by reference to the best overseas practice of the (particularly the Scottish Executive (2002)), and with reference to national, regional and local policy objectives within New Zealand. The guidelines were developed in order to support a 'method' of implementation as a proposed revision to Auckland's RPS. This stated that a 'transport audit' (a term that became an 'integrated transport assessment') should be undertaken with the aim of improving land use and transportation integration. The ARTA guidelines were largely adopted by the Transit New Zealand (and subsequently the NZTA) in an appendix to the Transit New Zealand *Planning policy manual for integrated planning & development of state highways (version 1)* (2007).

Around this time, a number of guidelines emerged in Australia and the United Kingdom. The coverage and extent of these guidelines vary depending on their context. Some continue to focus on the effects on the road and traffic. Others include details on how to assess all modes of transport and ultimately provide better integration of the development proposal and the surrounding land uses. For example, Vic Roads (2006) refers to the policy and strategic context, but focuses on 'traffic impact' rather than issues of 'transport impact'. Nevertheless, it provides a useful basis when it states that TAGs should aim to:

- *Provide transparency and certainty in the assessment of land use development proposals and analysis to be undertaken by a road authority;*
- *Promote uniformity, and ensure fairness, in the consideration of larger land use development proposals by a road authority; and*
- *Facilitate early resolution of transport and access issues through the provision of timely and quality reports that reduce (but not necessarily eliminate) the need for*

discussion and negotiation between road authorities and developers, or their representatives, and reduce administration and reworking of proposals.

Collins et al (2007) discuss a methodology for four different scales of TIA. Similar to the ARTA TAG (2007), this document has provided a major building block for this research. The companion report (Weller 2007) is a summary of international literature and experience, giving insight into this growing field of TAGs. That literature review has been expanded upon in chapters 2 of this present report.

4.2 The importance of being integrated

The term 'integrated' is especially important in the New Zealand context because it is a key term used for the successful delivery of environmental outcomes.

Integration is a primary outcome of the NZTS (MoT 2008a) vision and is a key term used in the Land Transport Management Act 2003 (LTMA) (New Zealand Government 2003). The purpose of the LTMA is to '...contribute to the aim of achieving an affordable, integrated, safe, responsive and sustainable land transport system'. Within the RMA, 'integration' requires that regional (s30) and local authorities (s31) must achieve 'integrated management of the natural and physical resources' in achieving the purpose of the RMA. The purpose of the RMA, which is the cornerstone piece of New Zealand environmental legislation, is to 'promote the sustainable management of natural and physical resources' (s5(1)). The transport system is considered a physical resource and therefore critical to integration issues.

The growing understanding of the indirect and longer term interactions between transport and land use in the context of the sustainability debate, such as the contribution of transportation to global warming, is increasing the urgency of implementing integrated land use planning. This 'integrated' transport planning approach is a response to the previous 'predict and provide' transport planning approach.

The importance of integrating transportation and land use planning recognises that the two are inextricably linked, and that more efficient and effective outcomes could be achieved from managing the link better. Some connections between transport and land use are direct and immediate, eg the effects of new roads on the landscape. Other connections are more subtle and longer term, and are affected by social and economic forces from local to global scales, eg the extraordinary upward spiral of mobility and the dispersal of land use activities that has been common to many Western countries, including New Zealand, over recent decades.

Strategic studies of metropolitan and urban growth rely heavily on effective and comprehensive land use distribution and transport network studies. Urban and regional planning also endeavours to manage the social and environmental effects of roads in urban and rural communities.

Larger regional urban development issues cannot be fully mitigated by an ITA. However, policies and plans adopted from urban development strategies and regional plans must be taken into account when undertaking an ITA. ITAs are particularly relevant at the localised level when managing changes in land use to ensure the effects of such changes on the land transport network are managed correctly, eg rezoning land that will then be supported and integrated within the transport network.

New Zealand transportation policy has a range of very similar objectives and outcomes. In essence, these support use of sustainable transport modes rather than emphasising the private motor vehicle, the operation of a hierarchical road network, and integrating land use and transport. Integrating land use and transport involves support for strengthening the central city and suburban nodes as a means

of reducing trip lengths, and reducing the need for some trips and encouraging non-vehicle trips for access to land uses that attract visitors.

The challenge of achieving more sustainable development makes the integrated approach to transportation and land use planning imperative. An integrated approach to transportation has a number of dimensions including:

- integration between national transport policies and other high level central government policies, and between government and private sector initiatives
- integration of land use and transport planning at the regional and local level in areas of rapid population and economic growth, and/or where transport related problems result from existing network deficiencies
- integration between transport modes including modal choice and modal interchange.

Increasing travel demand places pressure on transport infrastructure, available funding, traffic congestion in larger urban areas and concerns regarding urban sprawl. One planning mechanism to integrate land use and transport is to assess the expected effects, while also providing for the realities of existing travel as land use patterns change over time to support more sustainable travel. This research is intended to provide a tool for practitioners so they can provide better integration.

4.3 New Zealand legislation

4.3.1 The principal statutes

The land transport framework in New Zealand includes various statutes that regulate land use and transport planning. Other than for some limited circumstances (eg heavy vehicle weight limits, local or limited access), any public road can be used for access by any permitted or consented land use activity under 'common law'. The principal statutes include:

- The RMA
- The Land Transport Act 1998 (LTA) (New Zealand Government 1998)
- The LTMA
- The Local Government Act 2002 (LGA) (New Zealand Government 2002)
- The Public Transport Management Act 2008 (New Zealand Government 2008)
- The Government Roding Powers Act 1989 (New Zealand Government 1989)
- The LGAAA.

Other related pieces legislation of less importance are as follows:

- **Historic Places Act 1993** (New Zealand Government 1993): obtaining an authority from the New Zealand Historic Places Trust to destroy or modify archaeological sites may be necessary prior to the construction of new transport infrastructure.
- **Reserves Act 1977** (New Zealand Government 1977): consents under the Reserves Act may also be necessary where land that is gazetted for a reserve is required for transport infrastructure purposes.

- **Conservation Act 1987** (New Zealand Government 1987): the Department of Conservation controls a significant area of land in New Zealand and has its own procedures for permitting 'access' to such areas.
- **Public Works Act 1981** (New Zealand Government 1981): this grants the ability for 'requiring' authorities to designate to ensure an integrated transport network.
- **Energy Efficiency and Conservation Act 2000** (New Zealand Government 2000): this aims to promote energy efficiency, energy conservation and the use of renewable sources of energy.

A number of related institutional and administrative processes flow from this legislation. Some of these statutes and their procedures may well affect the circumstances surrounding the preparation of an ITA, especially for a major project or significant change in land use. The way the ITA is initiated (eg by public agencies, private individuals and/or developers) may also affect how the ITA is developed. This legislation may also overlap with various other bylaws, regulations, rules or special orders.

The RMA is currently undergoing reform. The reforms are intended to provide greater central government direction and closer alignment of legislation. When finalised the reforms may affect the way an ITA is developed and administered e.g. there maybe other national policy statements such as metropolitan urban limits and the reforms propose the concept of an Environment Protection Agency. It is unknown how far the reforms might extend so care should be taken when considering the following statutes that may have changed.

4.3.2 The RMA

Several sections of the RMA are directly or indirectly applicable to land transport. Regional councils, for instance, have a specific responsibility to integrate infrastructure strategically with land use through objectives, policies and methods (s30(1)(gb)). Similarly, district plans have to give effect to RPSs (ss67(3)(c) and 75(3)(c)).

The RMA's purpose is to 'enable people and communities to provide for their well being and health and safety' (s5(2)), while sustaining the potential natural and physical resources, and managing the elements that affect them. Section 7(b) of the RMA requires decision makers to have regard to 'the efficient use and development of natural and physical resources', which includes the transportation network.

The RMA requires an assessment of effects under s.104 for resource consents, and a consideration of benefits and costs under s.32 for plan changes; it is these two processes that typically provide the regulatory trigger for requiring the preparation of TIAs.

ARTA (2007) states that:

The RMA is essentially about ensuring the sustainable use of resources for the foreseeable needs of the present and future generation, and also recognises the importance of indigenous rights in the mitigation process.

The RMA focuses on managing the effects of activities on the environment rather than regulating the activities themselves. The RMA adopts an approach, which assess [sic] whether the effects of an activity are likely to result in unacceptable environmental impacts.

The Resource Management Act (1991) can be problematic for transport assessment as it does not address potential future implications on the transport network from cumulative

impacts; it only has the ability to assess the effects from a simple planning applications or development proposal.

4.3.3 The LTA

The LTA includes the requirements for participating in the land transport system, eg driver licensing and driving offences. Prior to the LTMA, the LTA also included the strategic direction of land transport.

4.3.4 The LTMA

The LTMA came into force to provide the necessary legislative framework for the NZTS. The LTMA replaced large parts of the LTA. The overall purpose of the LTMA is to 'contribute to the aim of achieving an integrated, safe, responsive, and sustainable land transport system' (s3).

The LTMA requires (s66) the Minister of Transport to prepare a national land transport strategy every six years and cover a period of 30 years. Similarly, the LTMA requires (s74) that each regional council must prepare a regional land transport strategy (RLTS) every six years and cover a period of 30 years. The LTMA requires the NZTA to prepare a National Land Transport Programme (s19(3)) for funding over the following three financial years, an assessment of regionally and nationally significant activities for the following three financial years, and a financial forecast.

According to ARTA (2007):

The purpose of the Land Transport Management Act is to contribute to the aim of achieving an integrated, safe, responsive and sustainable land transport system by providing an integrated approach to land transport funding and management; an improved social and environmental responsibility in land transport funding, planning and management; and improving long-term planning and investment in land transport.

When planning, developing and operating land transport infrastructure and services the requirements of the LTMA must be taken into consideration by all parties with a land transport responsibility.

The LTMA specifically establishes Land Transport New Zealand and Transit and sets out the objectives, purpose and functions for both organisations.

4.3.5 The LGA

The LGA defines the purpose, roles and responsibilities of local government. In relation to land transport, relevant components include:

- the requirement that councils prepare a long-term council community plan (LTCCP) including provisions for transport infrastructure programmes and funding
- the ability to prepare urban growth strategies
- the ability to make bylaws
- the ability to require developer contributions complementary to financial contributions under the RMA.

Territorial authorities are also required to facilitate a process to identify the outcomes sought by the community on such matters as transport and land use; and to consult with the community about its outcomes, and the proposed programmes and projects to be included in the LTCCP.

4.3.6 Public Transport Management Act 2008

The act contributes to achieving an affordable, integrated, safe, responsive and sustainable land transport system. The relevant components are:

- co-ordinating public transport infrastructure by regional councils across local boundaries
- providing for and regulating registration of public transport services
- requiring public transport services to be provided under contract with regional councils
- helping regional councils and the NZTA to obtain the best value for money.

4.3.7 Government Roading Powers Act 1989

This Act originally constituted Transit New Zealand (Transit) (now part of the NZTA) and defined its functions and powers in relation to motorways and state highways. Particularly relevant is the NZTA's right to declare and manage access to limited access roads. Under the provisions of the Local Government Act 1974 (New Zealand Government 1974), councils also have these powers. This Act was reviewed in 2008 through the LTMA, where Transit and LTNZ were merged to form the NZTA.

4.3.8 The LGAAA

This Act made changes to transport governance, regulatory and funding proposals for the Auckland region only. It established two new entities as subsidiaries of the Auckland Regional Council – ARTA and Auckland Regional Holdings.

ARTA plans, funds and develops the Auckland regional land transport system (except state highways), in co-ordination with NZTA and ONTRACK. (Unlike all the other regions in New Zealand, the prioritising of transport-related projects in Auckland rests with both ARTA and NZTA, whereas elsewhere, this may be undertaken by regional councils.)

Auckland Regional Holdings is a statutory council-controlled investment management organisation that provides sustained funding to the Auckland Regional Council for regional infrastructure programmes, mainly transport and stormwater.

The significance of the LGAAA is that it granted the Auckland Regional Growth Strategy statutory status.

According to ARTA (2007):

The LGAAA requires local authorities to give effect, in an integrated manner, to the growth concept in the Auckland Regional Growth Strategy and to contribute to the following matters:

- *providing more certainty in assessing transport and urban form consents, designations or plan changes;*
- *managing transport and transport infrastructure, facilitating a multi-modal transport system and integrated transport management;*
- *reducing adverse effects of transport on the environment and increasing the positive interactions of transport and land use;*
- *supporting compact sustainable urban form and land use intensification;*

- *integrating transport and land use policies to reinforce urban and rural objectives of the ARPS [Auckland Regional Policy Statement], and to develop a competitive, efficient economy, high quality of life and a quality environment.*

4.4 Strategy planning documents

This section provides the setting of statutes and strategies relevant to the preparation of ITA including:

- relevant strategies, policies and agencies
- the role of RPSs and regional plans in integrating land transport planning
- how district plans can assist in managing transport infrastructure
- other strategies and policies which are relevant to preparing an ITA.

Depending on the development size, ITA studies should be multimodal in context, covering all land-based transportation systems that provide for the movement of people, goods and services, and include networks for:

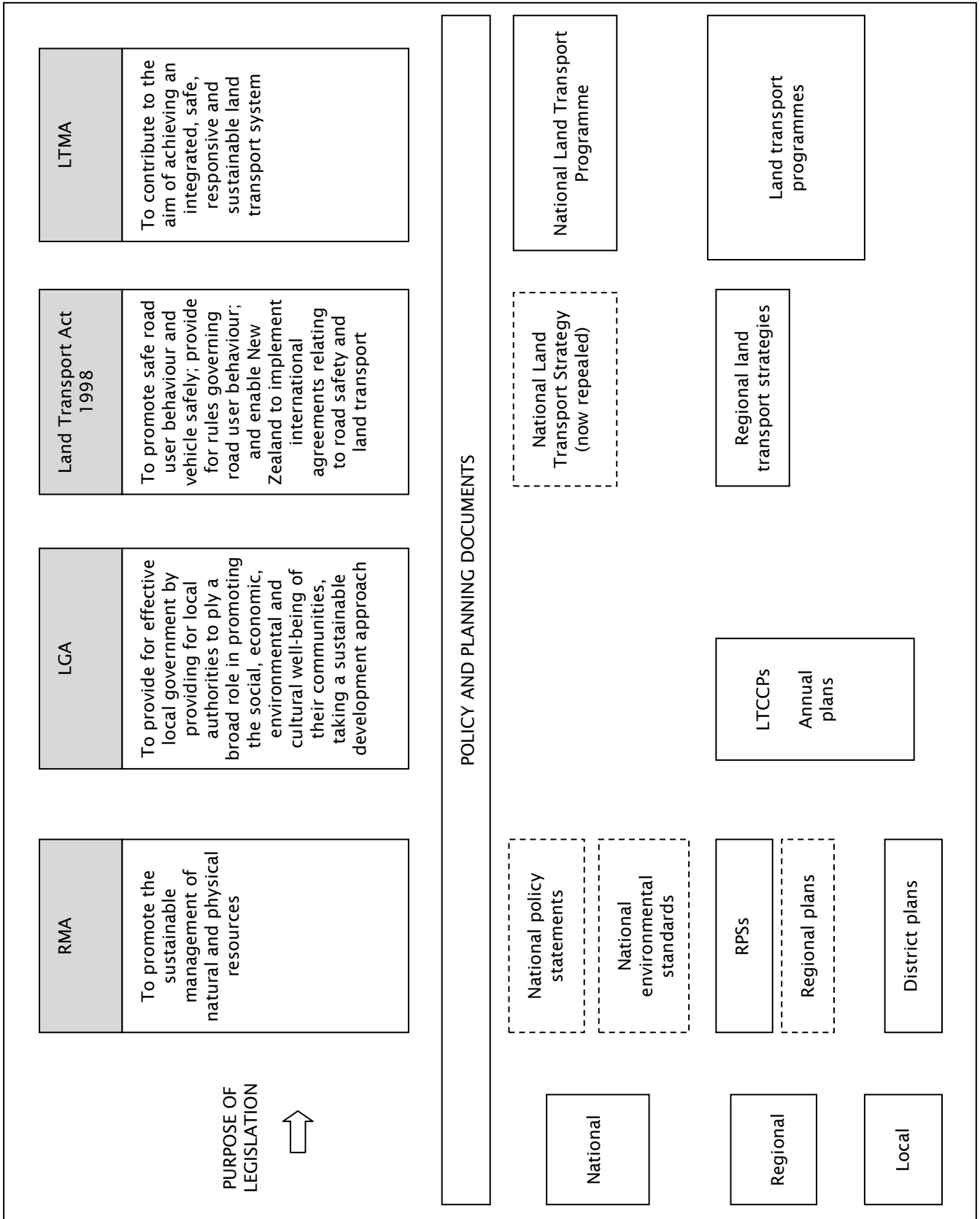
- pedestrians
- mobility or sight-impaired uses
- cyclists
- public transport
- goods vehicles
- rail
- vehicle travel on state highways, arterial and local roads.

Land transport infrastructure is a key function of central government, regional councils, local councils and other providers of land transport. Transport is of vital concern to developers and the community at large. Clear and effective relationships between organisations, strategies and policies are needed at all levels. This needs to be supported by clear and logical ITAs related to plan preparation, applications and consents for development. This is particularly important when the transport, environmental and economic implications of a proposal are considered to cross a threshold of significance.

The New Zealand planning system has evolved with a hierarchical structure of policy and regulatory documents. Ward et al (2007) includes a figurative demonstration of the interconnectedness between these documents that has been adapted in figure 4.1. Similarly, the ARTA report (2007) sets out the relationships between the different instruments and contributing agencies that have developed to serve the Auckland region (shown earlier in figure 2.4).

For an ITA to be addressed in context and in an integrated way, it is important to consider the relevant strategies or policies that have already been developed at each level in the statutory and administrative system.

Figure 4.1 Key land use and transportation legislation (adapted from Ward et al 2007)



Note: Dashed borders indicate optional planning documents.

4.5 National policy documents

4.5.1 The NZTS

The NZTS (MoT 2008a) provides a national policy framework to promote a sustainable and balanced transport system. The five key objectives are enshrined as the overarching purpose of the LTMA. In addition, four principles are included in the NZTS that include 'integration'.

4.5.2 The Government Policy Statement on Land Transport Funding

The *Government policy statement on land transport funding* (MoT 2009) details the government's desired outcomes and funding priorities for the use of the national land transport fund to support activities in the land transport sector. This policy statement covers the effects the government wishes to achieve from its investment in land transport, how it will achieve these effects through funding certain activity classes, how much funding will be provided and how this funding will be raised.

4.5.3 The National Land Transport Programme

The National Land Transport Programme (NLTP) includes approved activities or combinations of activities and those proposed for funding over the following three financial years, an assessment of regionally and nationally significant activities for the following three financial years, and a financial forecast. The NZTA may include activities and combinations of activities from regional land transport programmes, and research, education, training and other activities that the NZTA is responsible for delivering in the national land transport programme.

Regional land transport programmes must include (s16(3)(g)) a statement of transport priorities for the region for the six financial years from the start of the programme, for which funding will be sought from the national land transport fund, and a financial forecast of anticipated revenue and expenditure on activities for the 10 financial years from the start of the regional land transport programme.

4.5.4 National environmental standards

National environmental standards are regulations issued under sections 43 and 44 of the RMA and apply nationally. National environmental standards set out standards for air, water and land qualities. Eight environmental standards have been developed, with their status ranging from 'being considered' to 'in force' as regulations:

- air quality standard (in force)
- sources of human drinking water standard (in force)
- telecommunications facilities (in force)
- measurement of water takes (proposed)
- ecological flows and water levels (proposed)
- electricity transmission (proposed)
- on site wastewater systems (proposed)
- contaminated land (being considered).

4.5.5 National policy statements

National policy statements are instruments under the RMA (sections 45 to 55 of the RMA) to help local government decide how competing national benefits and local costs should be balanced. The Minister of Conservation is required to prepare a New Zealand Coastal Policy Statement (sections 56 to 58 of the RMA), but other national policy statements (prepared by the Minister for the Environment) are optional. The current work programme focuses on the following topics:

- electricity transmission (in force)
- renewable electricity generation (proposed)
- New Zealand's coastal policy statement (proposed)
- freshwater management (proposed)
- flood risk management (in progress)
- urban design (in progress).

4.5.6 Other related national strategies

The MoT launched *Getting there – on foot, by cycle* (2006) to advance walking and cycling in New Zealand by improving the environment and safety for pedestrians and cyclists

In 2005, the National Rail Strategy (MoT 2005) was released. This sets out the Government's rail policy objectives and priorities for action to 2015. The National Rail Strategy focuses on growth in two key areas: freight, especially bulk and containerised; and urban passenger transport.

In May 2008, New Zealand's domestic sea freight strategy was launched (MoT 2008b). This recognises that domestic sea freight is an important part of an integrated and resilient transport network.

The LTMA requires agencies to take the National Energy Efficiency and Conservation Strategy (Ministry for the Environment 2001) into account because transport and land use integration has implications for transport energy use.

When undertaking an ITA at a regional, district, local or site level, these strategies must be generally understood, identified and, where relevant, recognised and applied.

4.6 Regional and local government policy documents

4.6.1 Regional land transport strategies

A regional land transport strategy (RLTS) is prepared under section 73 of the LTMA. An RLTS (for regions other than Auckland) is prepared by the relevant regional transport committee for each region on behalf of the relevant regional council every six financial years and covers a period of at least 30 financial years. It enables each regional council to provide guidance on the land transport outcomes sought by the region.

At least once in every six financial years, each regional council must:

- ensure that the relevant regional transport committee prepares, on the regional council's behalf, an RLTS that covers a period of at least 30 financial years
- approve the RLTS.

ARTA (2007) describes the Auckland RLTS as follows:

The Auckland Regional Land Transport Strategy contains seven objectives, which the integrated Transport Assessments need to have regard to:

- *Assisting economic development*
- *Assisting safety and person security*
- *Improving access and mobility*
- *Protecting and promoting public health*
- *Ensuring environmental sustainability*
- *Supporting the regional growth strategy*
- *Achieving economic efficiency.*

4.6.2 Regional policy statements

A regional policy statement (RPS) is the highest level land use/natural resource use policy statement for each region prepared by the regional council. It is required by the RMA and covers a wide range of policies for natural resources and urban planning issues, including the built environment and transportation. The RPS is a guiding document that must be recognised in the RMA-related policies and plans prepared at regional and district plan levels. The content of a RPS is described in section 62(3) of the RMA. In addition, the RMA provides for regional plans to be prepared on specific issues, which may include transportation.

ARTA (2007) describes Auckland's RPS as follows:

Proposed Plan Change Six to the Auckland Regional Policy Statement (ARPS) includes a new set of strategic policies specifically on Land Use and Transport Integration (2.6.11).

Proposed Method 2.6.12.8 states that territorial authorities shall ensure that proposals for new major traffic generating activities are subject to an Integrated Transport Assessment as a specific part of the Assessment of Environmental Effects (AEE). While there is some detail as to what should be covered in the audit, Method 2.6.12.8 falls short of providing sufficient detail to assist [territorial authorities] and others in undertaking such audits.

4.6.3 Regional growth strategies

Regional growth strategies are non-statutory documents and they are now generally being developed through inter agency consultation and consensus between councils in each region. The LGAAA makes Auckland's regional growth strategy a statutory document.

4.6.4 District plans and strategies

Most councils have a range of strategy and policy documents dealing with transportation and the different components that relate to road, public transport, bicycle and pedestrian networks. Council district plans contain the approved objectives, policies, rules and standards as they apply to the council, developers and other owners' proposals that are subject to the town planning and development of the district. The content of district plans is described in section 75(2) of the RMA.

Most councils also have subdivision or various codes of practice relating to the design and construction of subdivisions. These can include the urban design principles, road widths and acceptable road layouts that are created in a new subdivision and will ultimately be the council's

responsibility. While not necessarily strategic, these codes can have very real implications for transportation outcomes.

ARTA (2007) describes district plans as follows:

The purpose of a district plan is to assist territorial authorities in carrying out their functions under the RMA. District plans must give effect to national policy statements and regional policy statements. District plans must also not be inconsistent with regional plans. In regard to matters of regional significance and matters for which the regional council has primary responsibility, Section 75(3)(c) requires that a district plan must give effect to any regional policy statement.

District plans cover issues related to the functions of territorial authorities such as:

- *Effects of land use*
- *Impacts of land use on natural hazards and the management of hazardous substances*
- *Noise*
- *Activities on the surfaces of rivers and lakes*
- *Impacts of land use on indigenous biological diversity.*

District plans also address:

- *The objective for the district*
- *Policies to implement the objectives*
- *Rules, if any, to be used to implement the policies.*

4.7 Transportation policy under the RMA

4.7.1 Regional policy statements

Under the RMA, RPSs provide a key strategic role in land transport planning because regional and district plans are required to 'give effect' to an RPS (refer to s67(3) and 75(3) of the RMA). An RPS can also influence the direction of an RLTS and related initiatives such as regional growth strategies. Additionally, an RLTS must not be inconsistent with an RPS (refer to s175(3) of the LTMA). The role of a RPS in land transport is evolving and some of the larger metropolitan regional councils are investigating the application of a more directive policy approach in these statements. Regional plans and district plans that sit below the RPS are often simply referred to as the plans.

4.7.2 Regional plans

The primary purpose of a regional plan is to enhance environmental quality, and to avoid, remedy or mitigate any adverse effects in regard to regional regulatory functions under the RMA. Some plans may have no relevance to transport, whereas others will carry significant weight when resource consents are sought for specific projects such as those dealing with erosion and sediment control or air quality.

At this time, unlike in the 1970s and 1980s, no regional council has an operative regional plan for transportation using the RMA. This is largely because the LTMA (with its provision for RLTSs) are deemed to provide sufficient statutory support. Some regions have special characteristics where a regional plan can strengthen the RPS and RLTS package. Such a regional plan would link

between the transportation strategies and regional policies for land use, urban and rural development, and the environmental outcomes expected from transport corridors.

4.7.3 District plans

District plans establish a policy and regulatory framework for land use, subdivision and associated environmental effects. Land use planning decisions, which are the prime area of city and district council responsibilities under the RMA, can assist and greatly affect the implementation of strategic transportation measures. In broad terms, land transport provisions in a district plan should:

- integrate land use and transport planning through policies and rules, land use zoning and, most usually, a road hierarchy
- give effect to the land transport provisions included in the relevant RPS
- have regard to national and regional land transport strategies
- seek to address the environmental effects of transportation on land use and the effects of land use on transportation.

The importance of applying a co-ordinated and integrated approach to the management of land transport by councils as part of their RMA and other planning activities is recognised and assisted through recent changes to both the RMA and the LGA.

ARTA (2007) also contains a useful description of district plans:

The purpose of a district plan is to assist territorial authorities in carrying out their functions under the RMA. District plans must give effect to national policy statements and regional policy statements. District plans must also not be inconsistent with regional plans, in regard to matters of regional significance and matters for which the regional council has primary responsibility. Section 75(23)(c) requires that a district plan must give effect to any regional policy statement.

District plans cover issues related to the functions of territorial authorities such as:

- *Effects of land use*
- *Impacts of land use on natural hazards and the management of hazardous substances*
- *Noise*
- *Activities on the surfaces of rivers and lakes*
- *Impacts of land use on indigenous biological diversity.*

District plans also address:

- *The objectives for the district*
- *Policies to implement the objectives*
- *Rules, if any, to be used to implement the policies.*

4.8 Applications and approvals

4.8.1 Activities requiring resource consent

The RMA sets out a clear ranking of six classes of ‘resource consent’, ‘plan changes’ and ‘designations’.

Five types of resource consent are possible (s87 of the RMA). The two main ones for transportation are land use and subdivision; the other three are coastal permits, water permits and air discharge permits. Resource consent activity types are defined in s77A(2) of the RMA and are generally described as:

- permitted activities
- controlled activities
- restricted discretionary activities
- discretionary activities
- non-complying activities
- prohibited activities.

A **permitted activity** may proceed as of right, without the need for resource consent, provided that all of the relevant rules and standards in the plans are complied with, and it is not specified as a discretionary or controlled activity.

A **controlled activity** requires a resource consent before it can be carried out. It requires resource consent because it is defined as a controlled activity or because it does not meet a particular standard. Councils determine who the ‘potentially affected parties’ may be, and those people or organisations should be approached for ‘written consent’. Written consent may be refused, whereupon either limited or full notification will follow. Controlled activities are determined under s104 and s104A of the RMA, and consent must be granted, although councils are able to impose conditions.

A **restricted discretionary activity** requires a resource consent before it can be carried out. The consent authority can exercise discretion as to whether or not to grant consent, and to impose conditions, but only in respect of matters to which it has restricted its discretion in the district plan. As with ‘controlled activities’, councils determine who the ‘potentially affected parties’ may be, and those people or organisations should be approached for written consent. Again, written consent may be refused, in which case, either limited or full notification will follow. Councils are able to decline restricted discretionary activities if significant adverse effects are likely, and/or impose conditions. Restricted discretionary activities are determined under s104 and s104C of the RMA.

A **discretionary activity** requires a resource consent before it can be carried out. A discretionary activity does not comply with a discretionary rule, in which case a council has full discretion to consider any potential effects of all aspects of the proposal. Discretionary activities are generally anticipated by the plan’s objectives and policies, provided that the environmental effects are appropriately managed. Applications must pass the tests of s104 and s104B of the RMA, and consent may be declined or approved, and conditions imposed. The need for public notification is determined on a case-by-case basis under sections 93–94 of the RMA.

A **non-complying activity** requires a resource consent before it can be carried out. A non-complying activity does not comply with a stated ‘non-complying’ rule in a plan. Non-complying activities are not anticipated by a plan’s objectives and policies, and therefore unique

circumstances generally need to be demonstrated in order for consent to be granted. Non-complying activities are determined under s104, s104B and s104D of the RMA, the latter providing for a 'threshold test' whereby councils can only grant consent if they are satisfied that either adverse effects will be no more than minor, or that the proposal is not 'contrary (repugnant) to' the plan's objectives and policies. Councils can impose conditions on any consents to such proposals. The need for public notification is determined on a case-by-case basis under sections 93-94 of the RMA.

Few **prohibited activities** are listed in plans and, by definition, no resource consent application can be made for a prohibited activity.

Resource consents for a land use activity or a subdivision consent is granted for an unlimited period of time unless otherwise specified in the consent (s123(b)). Consents must, however, be implemented within five years of being granted, unless an extended implementation period forms part of the consent or an extension of time is sought. Land use and subdivision consents run with the land, ie they are not personal property, so if property ownership changes, any consent remains in place.

In summary, the different types of resource consent activities, consents and approvals are shown in table 4.1.

Table 4.1 Resource consent activity types according to the RMA

Type of consent	Compliance	Off site effects	Policy issues	Council decision	Specific conditions
Permitted	Complies	Nil	Nil	N/A	Nil
Controlled	Restrictions specified	Minor	Minor	Yes	Minor conditions
Restricted discretionary	Detailed standard specified	Minor	Minor	Yes or no	Limited conditions
Discretionary	Meets zone compliance	Manage effects off site	Significant	Yes or no	Consider with conditions
Non-complying	Not in zone Basic policy Issues	May need off site work to be appropriately mitigated	Significant	Yes or no	Likely to be significant
Prohibited	Not allowed	May be major	Very significant	Not allowed	N/A

4.8.2 Plan changes and variations

Plan changes and variations specifically relate to alterations being made to the regional and district plans or RPSs. Changes are made to an operative plan and they may be initiated by the council or by way of a private plan change. If it involves proposed changes to zones, zone boundaries, or objectives and policies, it may contain transportation components that may warrant an appropriate ITA. A private plan change involves the same procedure but the ITA would have to be initiated by the proponent of the plan change rather than the council.

Variations (or changes) to proposed district plans can only be initiated by councils (ie you cannot have a private variation) and are proposed as a change to the plan while it is in the 'proposed' phase rather than being 'operative' as an approved plan. Plan changes are typically written for an unlimited duration unless the rules within the plan change allow for changes over time. Plan changes are provided for in the RMA in s73 to s75 and prepared as defined in schedule 1 to the RMA.

The assessment process by which an assessment of whether a plan change or variation is a more effective method for achieving the plan's objectives than the existing plan provisions or other alternatives is undertaken pursuant to s32 of the RMA. The assessment includes consideration of the costs and benefits of the plan change. ITAs would typically be prepared as part of the s32 process.

4.8.3 Requirements for designations

The designation process and the management of notices for requirements is a separate planning code with its own RMA process. Approval is provided under part 8 s166-186 of the RMA. Designations are initiated by the responsible 'network or utility operator' who must be approved by the Minister as a 'requiring authority' before they can avail themselves of the designation process.

Designations are a special process with notification by way of a notice of requirement. Designations are intended to either enable the management of a proposed public work (eg a road or a school), or a utility network (eg a power line or a sewerage proposal) or other networks administered by a 'network utility operator'. The network authority gives 'notification' to the council, who advertises, hears and makes a recommendation, while the requiring authority decides whether to confirm the requirement, with or without conditions, or decline the proposal. The council's recommendation is sent to the requiring authority (eg the NZTA) and the requiring authority then decides either to accept or reject the recommendation. Appeals may then flow to the Environment Court from any submitter for determination.

A designation lapses on the expiry of five years after the date on which it is included in the district plan, or the period (10 or 15 years) originally granted. From the point of view of ITAs and the assessment of environmental effects, this requirement and designation process is, however, subject to the same guidelines and standards as all other applications made under the RMA.

Once a designation is in place, the requiring authority then lodges an 'outline plan of works' for the detailed proposal. For example, the designation creates a future road corridor and the detailed road design is then submitted as an outline plan. Such plans must be for works in accordance with the purpose of the designation. Councils can request amendments to the outline plan, and the requiring authority can decide whether or not to accept the recommended amendments. If the requiring authority does not accept the requested amendments, then the onus for appeals to the Environment Court again rests on the local council.

Although the designation and outline plan processes replace the need for resource consents, resource consents may still be required for works undertaken outside the designated area, eg highway construction that involves the temporary use of adjoining land during the construction period. Resource consents that fall under regional council responsibilities and are typically needed for transport infrastructure (eg stormwater discharge) are also separate from the designation and outline plan processes.

In summary, the different types of plan change, variation and designation applications are shown in table 4.2.

Table 4.2 Change, variation or designation (according to the RMA)

Type of consent	Entity	Off site effects	Policy issues	Council decision	Conditions
Change	Council or private	Off site effects likely Part of s32	Yes	Yes or no	New rules
Variation	Council	Off site likely Part of s32	Yes	Yes or no	New rules
Designation	Utility (notice of requirement)	Off site effects likely Negotiation	Sometimes	Provides recommendation	Conditions

4.9 Assessment of environmental effects

The RMA (s88(6) and schedule 4) requires an Assessment of Environmental Effects (AEE) to accompany an application for resource consent. Section 88(2)(b) of the RMA requires that the degree of detail in a AEE to be proportionate to the scale and significance of the effects that the proposed development may have on the environment. A similar provision that applies to private plan changes is set out in clause 22 of schedule 1 of the RMA.

The matters to be considered in an AEE are set out in the schedule 4 of the RMA. Where it is likely that the activity will result in any significant adverse effect on the environment, then applicants must describe any possible alternative locations or methods for undertaking the activity. AEEs are always undertaken alongside the work required for a plan change, variation or designation, and when undertaking the s32 analysis, it is necessary to 'consider alternatives, assessing benefits and costs'. Generally, plan changes, variations and designations will warrant both the AEE and the s32 analysis to be publicly available and to accompany the advertisement of the proposal.

Preparation of an ITA will often be required as part of the AEE to consider the physical and environmental issues associated with the proposal. Transit (2007) states the following regarding the assessment of transport effects:

The effects of a development proposal on the state highway network to be analysed in the Assessment of Environmental Effects accompanying a RMA application. Without such an analysis it is difficult to determine whether a development may generate adverse effects or the extent to which these can be avoided, remedied or mitigated.

The AEE for transportation issues fall into two broad categories:

- the effects of the development and use of land, both site-specific and in general, on transportation
- the effects of transportation on the development environment and adjacent land uses.

In assessing these issues, the following actions are necessary:

- **Focus on all potential effects including cumulative effects:** it is important to assess what the future effect will be of a proposed transportation facility or land use development including, if appropriate, the objectives, policies and rules in the district plan.
- **Consider the issues** of congestion, induced traffic, social effects, land transport noise, air quality and climate change etc.

- **Consider all proposals in the context of supporting a broader transport strategy**, eg an RLTS, any regional or district plan transport strategies, and the content of any regional growth strategy.
- **Be aware of changing public attitudes, expectations and perceptions** concerning acceptable effects and acceptable levels of transportation accessibility in relation to land transport.

An AEE should also consider the desirability of restricting the intensity of use and/or routing of traffic along certain types of road on 'amenity' grounds and not just on the roads' traffic 'capacity'. Current transportation plans, particularly at the district plan level, only use the road hierarchy classification to reflect transport function but often, they do not clearly convey the intended scale of effect upon the surrounding environment. This is particularly relevant when the road hierarchy is related to the appropriateness (or otherwise) of land uses alongside roads where they may be considered as controlled, restricted, discretionary, fully discretionary or non-complying activities regarding traffic.

Changes in character and amenity in a particular area may be very significant as a result of 'transportation effects' that are otherwise within the capacity of the road and its place in the road hierarchy, eg a local road. These aspects will be considered in the context of the district plan when determining the appropriate 'status' for land use activities fronting different types of road or determining acceptable access locations.

The issue of traffic noise and the hours of operation of traffic movements are also relatively poorly covered. At present, only the road hierarchy classification criteria of access and movement, annual average daily traffic (AADT) or typical all-day flows are used to assess the appropriateness of an activity. Additionally, changes in transport characteristics often occur with changes of land use within the same activity type. For example, an area classed as 'retail' could be a shoe shop or a supermarket, each of which has significantly different trip generating characteristics.

It is probable that new district plans will provide more guidance on the intended function of particular roads, beyond simply access and movement. ARTA's *Regional arterial road plan* (2009), for example, is one such document that provides increasing guidance on the different roles of each road, such as vehicle traffic, passenger transport, cycling, freight, safety or place functions.

4.10 The planning assessment processes

4.10.1 Stages in the process

The RMA contains a number of processes of analysis, reporting and assessment that may be generally described as:

- cost-benefit analysis (s32)
- a report prepared by a council or consultant (s42A)
- notification (s93-94)
- consideration (s104)
- conditions of consent (s108)
- right to appeal (s120)
- Environment Court changes (s293).

Each of these is described in detail in the following subsections.

4.10.2 Benefits and costs

The Ministry for the Environment's Quality Planning website (Ministry for the Environment (MfE) 2008) states:

Under section 32 of the Resource Management Act 1991 (RMA), any proposed regional and district plan, plan change (including any private plan change), variation, national environmental standard (NES) and national policy statement (NPS) must be accompanied by an evaluation that assesses both:

- *the extent to which each objective is the most appropriate way to achieve the purpose of the RMA*
- *whether the proposed policies and methods are the most appropriate way in which to achieve the objectives in terms of their efficiency and effectiveness.*

Such an evaluation must take into account:

- *the benefits and costs of the policies, rules or other methods*
- *the risk of acting or not acting if there is uncertain or insufficient information.*

The s32 evaluation should be articulated in a s32 report that accompanies the proposed plan, policy statement, plan change, variation, NES or NPS.

4.10.3 Report prepared on application by council or consultant

Under section 42A of the RMA, before a hearing, a local authority may require an officer of a local authority to prepare a report on information (document or evidence) provided on any matter regarding a proposal, or may commission a consultant or any other person employed for the purpose to do so. The report will be considered at the hearing. This report needs to be circulated five working days before the hearing to all submitters. Such a report is intended to be factually informative, and may or may not include 'recommendations' on the matter under consideration. It is not 'binding' upon the decision maker in any way and does not necessarily forecast the outcome of any subsequent hearing. A s42A report for transport may include or take the form of an ITA.

4.10.4 Notification

Section 93 of the RMA requires that a consent authority must notify an application for resource consent unless:

- it is for a controlled activity, or
- the consent authority is satisfied that the adverse effects of the activity on the environment will be no more than minor.

Most applications for a consent are not publicly notified. This occurs particularly where:

- the plan directs non-notification
- the council or consent authority considers it has written approval from all potentially affected parties
- the effects of the activity are considered by the council to be minor.

4.10.5 Consideration

According to the MfE (2008):

Section 104 of the RMA sets out the principal matters, subject to Part 2, which a council must have regard to (and other matters it must disregard) when considering an application for resource consent and any submissions received.

Matters to be considered include:

- *any actual and potential effects on the environment*
- *any relevant provisions of a national policy statement, a New Zealand coastal policy statement, and an operative and/or proposed regional policy statement or proposed plan*
- *any other matters the council considers relevant and reasonably necessary to determine the application*
- *the value of the investment of the existing consent holder when considering an application affected by s124 (exercise of resource consent while applying for new consent).*

A council may disregard an adverse effect of an activity on the environment if the plan permits an activity with that effect (s104(2)).

Section 104(3) sets out what the council must not do.

The issues associated with actual and potential affects are discussed in more detail in appendices C to F, especially appendix F.

4.10.6 Conditions of consent

According to the MfE (2008):

Section 108 of the RMA allows consent authorities to impose conditions on resource consents. Conditions are usually standards, restrictions or prohibitions listed in a consent following the written decision to grant the consent. They may include the provision of:

- *Cash [meaning financial contributions or a bond]*
- *Land*
- *Works*
- *Services*
- *A bond.*

They may, for example, relate to:

- *The design or appearance of structures*
- *Landscaping*
- *Hours of operation*
- *The layout of a site.*

4.10.7 Right to appeal

Within 15 working days of the decision being issued, anyone involved in the council hearing, including the applicant, can appeal to the Environment Court regarding the decision. The appeal can be against the whole or any part of a decision, or can be an application for a change of consent conditions or a review of consent conditions. The notice of the appeal must be in the prescribed form, and must state the reasons for the appeal and the relief sought. The appeal itself is lodged with the Environment Court and is served on the council issuing the decision, with a copy sent to the submitters.

4.10.8 Environment Court changes

Section 293 of the RMA allows the Environment Court to direct changes to be made to district plans as part of an appeal process if a reasonable case has been presented in support of the proposal. Section 293 provides an opportunity for participation by persons affected by the proposed amendment(s) to the proposal. As part of this process, the Court may specify the persons who may make submissions to the proposal, and require the council to give public notice of any change and of opportunities to make submissions.

5 Matters for consideration

5.1 Extent of information

The level of detail covered by a transport assessment and the nature of the assessment needed for a particular issue will depend on the particular circumstances of each site to a significant degree:

- The extent of the proposal to meet the statutory planning framework may include compliance with objectives and policies for land use zones and, if necessary, higher order documents and strategies.
- A preliminary assessment of a site may indicate that, even with a higher trip rate, the traffic impact of a proposal is 'less than minor', and that the operation of the access and adjacent intersections will be satisfactory. In this case, the level of trip rate analysis and ITA may be modest.
- If the preliminary assessment indicates that a proposal may have significant adverse effects, then a greater level of trip rate analysis will be required. This analysis will need to identify rates for sites in similar locations and with similar mode splits. Once reasonable trip rates have been established and the potential for adverse effects confirmed, the need for more detailed appraisal will need to be reassessed, alongside the method to be adopted for doing so.
- The degree of analysis will also depend on the level of confidence in the accuracy of available data and the sensitivity of results to changes in assumptions. Areas of significant uncertainty may be the trip rate, modal split and the trip distribution, including traffic intensity and the development's potential to attract large numbers of visitors.
- The nature of the frontage road type and its location in the road hierarchy, along with the required level of performance for the road, will also need to be considered to arrive at the design capacity to be adopted at the particular location.
- The boundary of the assessment will depend on the sensitivity of the adjacent networks to changes in travel demands. Thus while a general 'rule of thumb' may indicate that changes in flows below a certain percentage may be deemed to be insignificant, a particular area may be sensitive to smaller changes if it is operating very close to or above its theoretical capacity.
- The extent of the multi-modal assessment will vary according to circumstances. It may be reasonable for trips to and from a particular land use to be dominated by motorised vehicles, to the extent that the consideration of other modes of transport can be limited. On the other hand, alternative modes of travel will play a significant role for some sites and for some land uses, to the extent that the assessment should pay significant attention to these modes first, with traffic considerations having to fit in with the other site constraints.
- The associated level of detail of traffic analysis will also vary in accordance with the multi-modal assessment. For sites where greater emphasis is to be given to alternative modes of transport, the relevant transport authorities may be prepared to accept a relatively low level of performance for motorised traffic and the level of traffic analysis may consequently be less detailed.

Clearly, the guiding principle needs to be that the assessment should be tailored to the circumstances of the site and the sensitivity of the receiving environment.

It is important that, wherever practicable, the technical data and the methodology used within the ITA are referenced from a best practice document. It is necessary that such practices are adopted so that decision makers have confidence that the quality of information presented in the ITA is consistent, technically

sound, objective and independent. Ultimately, if those preparing, reviewing and auditing an ITA adopt best practice procedures, they can expect that fewer challenges would be referred to the Environment Court for resolution over transport matters.

5.2 Scoping discussions

Before becoming committed to detailed transportation and network matters, discussions and, if necessary, formal consultation may need to take place with regional and local councils, and NZTA officers. These discussions would include the general suitability of the site for the proposed activity and would be in the context of broad zoning policies, specific rules and any state highway or other regional and district considerations. These discussions may rule the site out of contention on grounds other than transportation, such as district plan objectives, zoning policies or general rules in the plan.

The process for scoping an ITA is shown in figure 6.3 and the key items that may need to be considered to determine the appropriate level of the ITA are included in the first column of table 6.2. These items include matters such as 'description of the proposed activity', the 'intended use for the ITA', and 'compliance with policy and other frameworks'. This information has two purposes: to explain the extent of the activity clearly to decision makers, and to help in determining the expected effects of the proposal. This information will suggest whether the proposal should proceed and if it is conceptually possible to avoid, remedy or mitigate any adverse effects. If it is considered that the proposal should proceed or is worthy of further investigation, it will also enable the scope of the ITA to be selected.

Another dimension to be contemplated at an early stage is the potential for changes in the locality that might give rise to a risk of cumulative effects creating an unsatisfactory situation for land uses and traffic in the future. It is important that the likely effects match the correct ITA scope to capture the majority of the assessed effects, so that these effects are included in the assessment process. It is wasteful if the ITA scope extends far beyond the most likely effects and also wasteful if the ITA scope does not encapsulate most effects straight away to limit any reassessment. Unfortunately, the expected effects and assessed effects are not clearly demarcated until the ITA has been undertaken. Therefore, regardless of the ITA scope initially chosen, a feedback loop is in place to confirm that the initial ITA scope is and was fit for its purpose. If the assessed effects go beyond the expected effects, the ITA will have to be extended to encapsulate the consequent transportation effects.

It might be that the organisation or person preparing the ITA has a very good idea as to the appropriate level of the ITA. Regardless, the scope should always be discussed with the appropriate decision makers to confirm it is appropriate. This might need the scope to be confirmed with a number of different decision makers depending on their role, eg the local council as the land use consent processing organisation, the local RCA as an affected party and potentially the NZTA as the RCA for state highways. It is probable that the decision maker most affected by the proposal will have the most onerous requirements for the ITA. Ideally, the ITA's scope should be agreed upon; however, if an agreement cannot be reached, the proposal and assessment of effects will be debated on their merits.

5.3 Assessment thresholds

All activities that generate trips have some degree of effect on the transport system. Typically, as the scale of the activity increases, the extent of the effect on the transport system intensifies and becomes wider.

Most district plans include a provision whereby the classification of an activity can be materially affected by the amount of traffic or parking expected to be generated by an activity. For example, the Christchurch City Plan (Christchurch City Council 2010) includes a high traffic generator rule that states 'Any activity on

a site which is not in the Central City Zone which generates more than 250 vehicle-trips per day or provides more than 25 parking spaces shall be a discretionary activity.’ The Wellington City Council District Plan (Wellington City Council 2000) states that ‘any activity or building involving the provision of more than 120 parking spaces in the suburban centre and 70 parking spaces in the central area shall be a restricted discretionary activity.’

Through their zoning provisions, district plans generally recognise different trip generating activities on roads with different hierarchies, and the intensity of the activity or the vehicle types generated by the activity. In seeking to be more definitive, some organisations quantify a minimum threshold of transportation effects by converting characteristics such as trip generation and vehicle type to the physical size of the development or the percentage of traffic flow change on the adjacent road. A variety of such thresholds are used by organisations to consider the likely effects and to decide when a transportation assessment is required and, later, the scope of the appropriate assessment.

Guidance on various threshold limits can be gained both by considering traffic and parking characteristics as set out in Douglass and McKenzie (2001) and databases such as those provided by the Trips Database Bureau (TDB). International best practice transportation assessment documents can also provide information on the likely size of an activity before an assessment is required to be undertaken. The range of these various thresholds related to the scale of different land uses drawn from the international references (see chapter 2) is shown in table 5.2.

Table 5.2 International range of thresholds for transportation assessments

Activity	Units	Range of thresholds for assessment		
		Lower	Median	Upper
Residential	Dwellings (number)	75	138	200
Specialised retail (including food)	GFA* (m ²)	500	750	1000
General retail (not including food)	GFA (m ²)	1000	1750	2500
Retail - restaurant	GFA (m ²)	800	900	1000
Commercial (offices)	GFA (m ²)	2500	3750	5000
Industrial (manufacture)	GFA (m ²)	4000	7000	10,000
Distribution and warehousing	GFA (m ²)	5000	7500	10,000
Education facilities	Students (number)	50	100	150

* GFA = gross floor area

Most New Zealand councils appear to require transport assessments at the lower level of these international lower thresholds, although the scope of the assessments may be quite limited. Some examples for when an assessment might be required in New Zealand include a block of eight townhouses that do not provide complying amounts of on site parking, or a preschool of 35 children in a residential area.

Many other such threshold factors can be used, but the ones included in table 5.2 provide a simple approach to gain an understanding of the types of values that can be used to trigger the preparation of an ITA as part of an application for resource consent. The local district plan rules will usually dictate the extent of the likely effects that can be considered by a consenting authority for an activity. However, for discretionary activities where the district plan permits any effect of an activity on the transport system to be considered, the international median drawn from table 5.2 provides a good guide when considering an appropriate threshold.

The ARTA TAG (2007) includes a number of the activities in table 5.2 and typically states thresholds midway between the international lower or upper values. Regardless, the ARTA TAG also notes the following:

Some developments may fall below the guidelines in terms of their size and scale; however the location and the current status of the surrounding network may require a full ITA due to the perceived impacts on the network. This will be assessed during the scoping discussion with the local planning authority.

Effectively, the ARTA TAG notes that exceptions will always arise when using assessment thresholds. Some of these exceptions can include major employment zones, retail areas and mixed use developments. In these areas, it is difficult to identify all the possible mixes of activities and to set fixed numerical thresholds that capture most of the expected effects. This is why the ARTA TAG recommends that in order to determine the ITA scope, professional judgement should be applied to the matters to be addressed. This view is adopted in these ITA guidelines.

Weller (2007) recommended that if thresholds were to be used, these should be set locally to suit local conditions. These ITA guidelines confirm this conclusion and it is likely that if a consenting authority was to include threshold limits, rather than basing these on the size of the activity, a rule similar to the High Traffic Generator Rule, with amendments to include for the location on the road hierarchy, trip type and vehicle type, would provide the authority with the appropriate mechanism to consider the expected effects and have the final say on the scope of an assessment.

5.4 Permitted baselines

Recently, the principle of establishing a permitted baseline has been brought before the Environment Court and has occasionally been used as the basis of an assessment. Such hypothetical assessments must be realistic and sometimes involve developing a transportation baseline for the area of the proposed development. This method should not replace normal 'practical' design processes using accepted standards and good practice, but should complement them.

The Quality Planning website (MfE 2008) provides guidance for application of the permitted baseline test:

When applying the permitted baseline, a consent authority should first ask what permitted activities would be credible (as opposed to fanciful). Points to consider:

- *Section 19 determines the point at which an activity or effect is permitted by a proposed plan as a permitted use.*
- *'Permitted by the plan' does not include controlled or restricted discretionary activities. Permitted and consented activities should be considered as part of the existing and reasonably foreseeable future environment...*

There should be a clear determination stating the reasons for applying or not applying the permitted baseline. Situations where applying the baseline may not be appropriate include:

- *where the application of the baseline would be inconsistent with Part II of the RMA*
- *where the baseline claimed by the applicant is fanciful or not credible*
- *where the application of the baseline would be inconsistent with objectives and policies in the plan.*

In determining whether the permitted baseline should be applied, the effects of the permitted baseline need to be assessed and their consistency checked with part 2 of the RMA, and the objectives and policies in the plan. If the effects are acceptable then credible development of the site would form the permitted baseline. In this case, only those effects that are generated over and above the permitted baseline can be considered as part of the grounds for approval or refusal by decision makers.

A detailed and referenced commentary on permitted baselines is included as a practice note in appendix F.

5.5 Selecting the assessment year

5.5.1 Rationale

As discussed earlier, the purpose of the RMA is to promote the sustainable management of natural and physical resources for the reasonably foreseeable needs of present and future generations. This can include avoiding, remedying or mitigating any adverse effects of proposed activities on the environment. The RMA defines the meaning of effect to include 'any temporary or permanent effect' (s3(b)) as well as 'any past, present or future effect' (s3(c)). Consequently, all transportation effects of a development are subject to a consideration of effects over time, including temporary construction, opening and future effects.

Recent case law has made it clear that effects should be assessed against the current environment and the reasonably foreseeable future state of the environment. The Quality Planning website (MfE 2008) states:

The receiving environment (beyond the subject site) is the environment upon which a proposed activity might have effects. It is permissible (and often desirable or necessary) to consider the future state of the environment upon which effects will occur, including:

- *the future state of the environment as it might be modified by the utilisation of rights to carry out permitted activities; and*
- *the environment as it might be modified by the implementation of resource consents that have been granted at the time a particular application is considered, where it appears likely that those resource consents will be implemented*

but not

- *the environment as it might be modified by the implementation of future resource consent applications (because these are too speculative).*

The 'environment' upon which effects should be assessed is therefore the existing and reasonably foreseeable future environment. In identifying the environment, a consent authority should consider the environment as it is at the time of the application. It should also consider the likelihood of change to that environment in the future, based upon the activities that could be carried out as of right and under resource consents that have been granted (where it is likely that they will be given effect to).

The future environment must be credible and not assume that all permitted uses will be developed to their full zoned potential. For example, not all residential development will be up to the density limits permitted on each individual site, as the combination of existing developments and the preferences toward lower densities will mean a lower threshold. In the case of industrial land, most sites will probably not be used to their maximum building coverage. One way of ensuring a realistic interpretation of a credible

development is to survey existing developed areas that might be similar in their development density to that ultimately proposed on the site(s) under consideration.

In terms of transportation, where a comprehensive transportation study has been undertaken on a metropolitan or area-wide basis, especially as part of an urban development or growth study, then sufficient information or suitable guidance may be available to enable network travel conditions to be predicted 20 or even 30 years ahead. However, if such longer term information has not been predicted or no information is available (the case in many areas, especially smaller communities), some practical assumptions must be made from today's knowledge as to a suitable assessment year. Where no validated and comprehensive regional transportation forecasts are available, then the assessment year should not be more than 10 years ahead, given the uncertainty of predicted development and the construction of transport infrastructure after this time.

When contemplating future travel and traffic demands, planners should consider the road network, as it may exist in the reasonably foreseeable future, modified by committed road and infrastructure projects, alongside any reasonably expected land use developments. It is a general premise that the furthest year into the future will produce the worst effects, based on increasing traffic growth and cumulative effects. This reflects the experience where network enhancements tend to follow the traffic demands placed on that network, often with a considerable lag. It follows that the future year to be considered is the most likely year when the worst mix of traffic generated by the surrounding land uses and the highest traffic flows combine, and the existing or improved network will be suffering the greatest overload or congestion.

Whichever year is chosen, the assessment will be based upon a number of assumptions and may need to test upper and lower limits to provide a perspective from which sound judgements can be made. It is important that these broad assumptions are explicitly noted and referenced. For example, in most circumstances, it will be appropriate to include publicly committed infrastructure and existing land use; these will generally be easy to reference and will, in any case, be one of the points on the graph of growth that will be assessed. Another point will be the present situation assuming no changes. In other circumstances, it might be appropriate to include uncommitted but highly influential infrastructure, such as a bypass or adjacent motorway, although these will need to be clearly identified, especially if a proposal is only feasible based on their implementation. In these circumstances, the proposal may be seen as premature and should not be approved until the major road proposals are in place.

Depending on the situation and scale of the development, an ITA will be required to consider future assessments. The specific assessment year will be related to the nature of the consent or change being sought.

5.5.2 Resource consent future year assessments

Resource consents for land use and subdivision are the most common reasons for undertaking an ITA. Land use and subdivision consents last for unlimited periods into the future and add to the permanent fabric of the urban or rural area. Such consents must be given effect within five years after the commencement date of the consent (s125(1)(a) of the RMA). However, once the development or subdivision consent is implemented, the effects are ongoing.

The resource consent or subdivision consent assessment year will depend on the circumstances and must be agreed on by all parties at the outset of the ITA. Typically, the future year for assessment will be five years from when the activity is approved. However, developments that are intended to be developed over the longer term or developments with cumulative growth characteristics should be assessed beyond the five-year threshold.

5.5.3 Plan change and variation future year assessments

Plan changes or variations are intended to have a permanent effect. Variations and council plan changes have immediate legal effect when first notified; private plan changes only have legal effect when approval by a council. An appeal may be lodged, but this is unlikely to alter the ITA unless it relates to the scale of development envisaged.

For plan changes, a much longer assessment year should be considered. Other studies may be relied upon confidently regarding a 20- or 30-year time frame. However, where that technical forecast information is not available, or if the plan change or variation has a limited area of influence, then a minimum time of 10 years may be appropriate.

Current guidance provided to communities regarding expected changes to the transport network, and which the community and government consider affordable, are signalled in various documents including the government policy statement, RLTSs, LTCCPs, the NLTP and regional plans. All these documents focus mainly on the first 10 years. It is known that at least one regional council is attempting to co-ordinate local and state highway projects within their region to identify programming and/or funding shortfalls, and are trying to rationalise, on a regional network basis, desirable enhancements that should be funded over a longer period.

Given the certainty of existing planning documents, the future assessment year(s) should be 10 years from notification of the variation or council-initiated plan change, or 10 years from the date of the expected decision on a private plan change.

5.5.4 Future year assessments for designations

Designations allow for future intentions to be indicated. The proposed designation only proceeds to a Notice of Requirement if it is supported by the utility network authority's planning and funding commitments. Under current legislation, designations are typically only for five years unless a different period was approved as part of the notice of requirement process. This statutory five-year limitation (s184(1)) is currently under review.

Given the variability of designation periods, and the variety of the scale and types of designations, it is recommended that the future year assessment be 10 years at a minimum, and a longer period where regional plans or longer term forecasts are reliably based on sound land use and transport planning projections.

5.6 Confidence and sensitivity testing

An ITA is based on a specified methodology to give a degree of confidence that the conclusions drawn from that ITA are sound. The use of assumptions, estimates and predictions all affect the certainty of the analysis and the resulting conclusions. It is therefore important that the assumptions used in an ITA are clearly identified and explicitly available for later review, confirmation and use in support of reports and any future evidence. It is also important that where certain assumptions are combined, yielding an unduly conservative result, the assumptions can be 'unravelling' for clear review and, if need be, reassessment.

The sensitivity of the result in the event of the assumed variables changing should also be tested. For example, if a certain variable changes by plus or minus 10%, does the resulting outcome change by more or less than 10%? This provides guidance to decision makers as to the relative importance of the variables affecting the outcome, the risks associated with the alternatives, and the decisions to be made.

A number of analytical techniques can be used for assessing the risk of a conclusion. These techniques may be applied to the analysis and ITA summary conclusions. It may also be useful to include a risk analysis where the likelihood of a certain event happening can be compared with the alternatives. The RMA recognises that high-risk effects (ie those with low probability but high potential impact) are able to be assessed (s3(f)) and these should also be considered within an ITA. It will, in specific cases, be appropriate to include past development clauses that cover 'after studies' where the risk of increased traffic is sufficient to warrant such a provision.

5.7 Expert evidence

All material presented to a council hearing or to the Environment Court by a witness is to establish facts or express an opinion. Only witnesses who have formal qualifications and/or proper experience may give opinion evidence, and then only within their field of expertise. Evidence given by a witness on matters relating to their profession, eg a planner or an engineer, is termed expert evidence. Evidence presented to a council hearing will not be subject to cross-examination other than by the decision makers concerned. Evidence presented to the Environment Court will be subject to cross-examination by all parties.

An ITA should often be undertaken in a manner that, if necessary, it could be used or developed into expert evidence for presentation at a council hearing or to the Environment Court. When expert evidence is presented to the Environment Court, it must be done in a manner described in the Environment Court of New Zealand Consolidated Practice Note 2006 (Environment Court of New Zealand 2006). All expert witness must abide by two principal matters:

- An expert witness has an overriding duty to assist the Environment Court impartially on relevant matters within the expert's area of expertise.
- An expert witness is not an advocate for the party who engages the witness.

In addition to testifying to the Environment Court, expert witnesses have been acknowledging the code increasing frequently at council hearings to provide commissioners with the confidence as to how the expert has prepared their evidence.

In terms of the expert's area of expertise, it is usual for a member of a professional institution to be bound by a code of ethics where the member has already agreed to only offer commentary within their area of expertise and competence.

An advocate, on the other hand, is a person who speaks on behalf of another person – advocacy is the act of arguing on behalf of a particular issue, idea or person. An expert witness can not advocate for a certain position, because this would mean the expert witness has not met their code of conduct. The Environment Court has censured witnesses that drift in their evidence towards advocacy.

When an expert witness prepares or delivers evidence in terms of the Environment Court of New Zealand Consolidated Practice Note 2006, they must:

(a) acknowledge that the expert witness has read this code of conduct and agrees to comply with it;

(b) state the witness's qualifications as an expert;

(c) describe the ambit of the evidence given and state either that the evidence is within the expert's area of expertise, or that the witness is relying on some other (identified) evidence;

(d) identify the data, information, facts, and assumptions considered in forming the witness's opinions;

- (e) state the reasons for the opinions expressed;*
- (f) state that the expert witness has not omitted to consider material facts known to the witness that might alter or detract from the opinions expressed;*
- (g) specify any literature or other material used or relied upon in support of the opinions expressed;*
- (h) describe any examinations, tests, or other investigations on which the expert witness has relied, and identify, and give details of, the qualifications of any person who carried them out; and*
- (i) if quoting from statutory instruments (including policy statements and plans), do so sparingly. A schedule of relevant quotations may be attached to the statement of evidence, or a folder produced containing relevant excerpts.*

In addition to preparing evidence, the expert witness must confer with other expert witnesses, if requested to do so, to narrow or clearly identify issues of disagreement between the witnesses. This requirement overlaps somewhat with the assistance that an appointed peer reviewer can provide.

The Association of Consulting Engineers New Zealand (ACENZ) has published two useful guides on the role of the expert witness and court procedure; these are available to ACENZ member organisations:

- *Practice note B52: the expert witness* (ACENZ 2007a)
- *Practice note B51: evidence and court procedure* (ACENZ 2007b).

5.8 Peer reviews

In terms of peer review, the Institution of Professional Engineers New Zealand (IPENZ) has published a guide to peer review (IPENZ 2003). This document notes that the peer reviewer ‘must be recognised by fellow members of the appropriate learned society as at least equal in experience and technical capability to the designer/author,’ and also notes that ‘must be independent from the author’s or designer’s own organisation and have no financial or other interest in the outcome of the review.’

The role of the peer reviewer can be varied and may include consultation with the designer or author to check regulatory compliance or acting as an expert witness. Ultimately, the role of the peer reviewer is to comment on some or all of the following (IPENZ 2003):

- *whether the completed work has met the objectives set out for it*
- *other options that could have been included in the preliminary design*
- *whether the evaluation of options is rigorous and fair*
- *the validity of the assumptions*
- *the validity of the conclusions*
- *the process towards completion of the work*
- *the validity of the recommendations*
- *the objectives set out for the work*
- *adherence to relevant regulations and codes of practice*
- *the fitness for purpose of the work.*

In addition to the content of the peer review, the process for how the peer review is carried out is also described by IPENZ (2003), which also notes such matters as conflicts of interest, professional jealousy, intellectual property and use of hindsight.

Undertaking a peer review can be very difficult, although for an ITA, it is especially important where matters such as future years, certainty and sensitivity of conclusions are being considered. It would be probable that for an ITA of a major proposal, a peer review would be a standard practice, either undertaken internally within the appropriate regulatory authority or externally via another consultant on behalf of the regulatory authority. Peer reviews are also increasing necessary when an ITA moves from being assessed against a district plan's rules to being more discretionary in nature, such as the addition of new land zoning and new rules to designations.

5.9 Conditions and monitoring

The assessment of effects and, if appropriate, granting an application for a proposal are often done hand in hand with consent conditions intended to contain or mitigate these effects. The drafting of these conditions may be simple, although the exact wording for how to monitor the expected effects is sometimes difficult. Monitoring determines if the actual effects of the proposal are within the expected effects and therefore if the proposal is operating within acceptable environmental limits.

When setting monitoring clauses for further mitigation or enforcement, these clauses must include only the matters that the applicant can control and that can be measured without ambiguity. The monitoring of transportation performance requires the use of quantifiable measures such as parking occupancy, delay, travel time, levels of service, traffic flows or the number of trips. Other possible conditions of consent are determining the one who undertakes monitoring (eg the applicant, the council or an independent professional), and who pays for this monitoring, and setting the frequency of testing.

Where the risk of increasing traffic or significant variations from those expected could occur, then a condition should be included under s128 of the RMA that would require, after a given time, a post development review of specific transport and traffic conditions to be re-examined.

6 Scope, process and content

6.1 Introduction

The expected and assessed effects will determine what needs to be included in an ITA.

The ARTA TAG (2007) determines when a full ITA will be required but does not include the scope for a lesser ITA. In comparison, the Land Transport NZ TAG (Collins et al 2007; Weller 2007) introduces the concept of varying levels of assessment depending upon the scope of the expected transportation effects. Both TAGs include a similar theme that the increasing complexity of the proposal will require increasing the scope and depth of assessment. Both TAGs are generally based on the principal effects within geographic areas.

The ITA guidelines in this report are different because they are based on two dimensions: the 'geographic' effects, which are similar to earlier New Zealand practice, and the 'policy' effects. Consequently, this research has varied the naming convention provided by Collins et al (2007) and Weller (2007) to identify the inclusion of this second dimension clearly. These current guidelines have retained the four divisions given by Collins et al and Weller, although they have changed the titles of the divisions. These are shown in table 6.1 in order of increasing scope.

Table 6.1 ITA scope definitions

ITA scope	Geographic	Policy
Simple	Expected to have an effect within the site and at the interface with the transport network.	Expected to be compliant with statutory rules
Moderate	Expected to have an effect over a small area or neighbourhood	Expected to align with local policies
Broad	Expected to have an effect over a larger area, eg part of or a whole suburb	Expected to align with local and regional policies and objectives
Extensive	Expected to have impacts over a wide area, district or region	Expected to align with regional and national policies, objectives and visions.

The consideration of geographic issues relates to the spatial distribution of the expected effects, and the area over which the effects of the proposal will be noticed or considered important.

The consideration of policy and planning issues relates to district, regional and national strategies and plans. The issues concern the interactions between transport, land use and community. Depending on the ITA's scope, an increasing range of higher order policies and strategies will need to be assessed. In terms of how to assess these documents, the following categories are suggested:

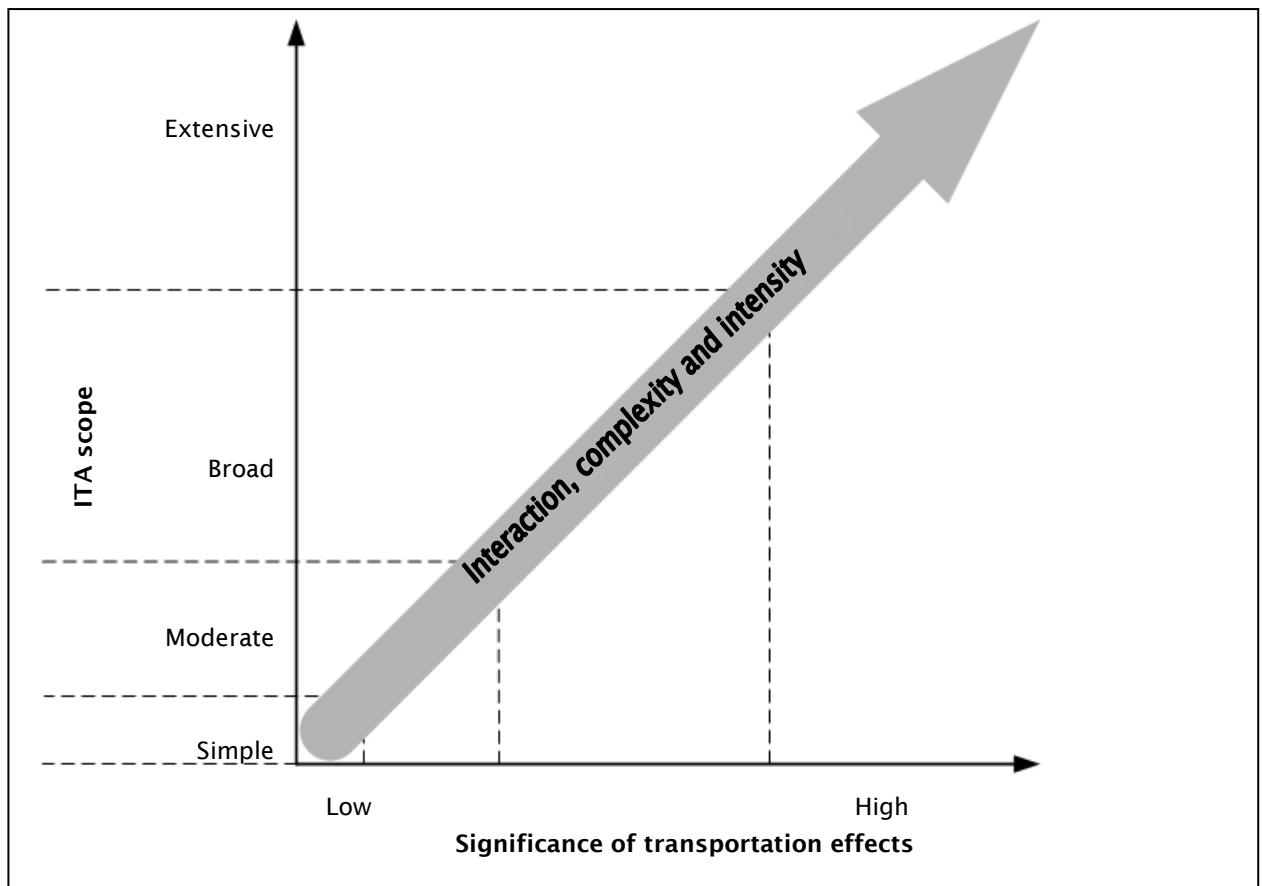
- 'Supportive' means the proposed change complies with or will achieve the relevant policy of the strategy and or plans.
- 'Partially supportive' means the proposed change does not necessarily comply with but is supportive of the relevant policy of the strategy and/or plans in one respect and not supportive in another respect.
- 'Not supportive' (or non-complying) means the proposed change does not comply with and will not achieve the relevant policy of the strategy and/or plans.

- 'Contrary' means the proposed change is opposite to the relevant policy of the strategy and/or plans to the extent of being repugnant and unacceptable.

6.2 Scope

The scope of each ITA compared to the expected environmental effects, and their resulting complexity is shown graphically in figure 6.1.

Figure 6.1 ITA scope v the significance of transportation effects, reflecting the level of complexity and intensity



Different activities have different trip generating activities and therefore different transportation effects. These effects can also vary based on a number of variables, including the hierarchy of the affected roads, the intensity of the activity, vehicle types generated by the activity, the size of the urban area, the predicted rates of urban growth, the cumulative effects and the significance of already committed developments. All these matters will need to be considered when considering the probable effects and selecting the appropriate ITA scope. Notwithstanding, it is possible that a proposal may have only very local effects, such as access arrangements, but because of the proposal location, it may need a very intensive assessment of the access proposals. In contrast, another proposal may need to assess a wider area, but less intensively. These are pertinent matters for discussion and, if possible, agreement with the relevant decision makers before undertaking the ITA.

The need for the ITA will also affect the ITA's scope. It is very difficult to be precise regarding the ITA's scope because the purpose and scale of the proposal will affect the quantity and depth of the analysis required. The policies of the district plans and regional plans or the RLTS will also have a major bearing

on the status of the proposal as an activity requiring consent. For most proposals, it will be necessary to undertake an initial appraisal of the policy issues before proceeding with an ITA. Further information about the scoping discussions is included in section 5.2.

A generic guide to the possible range of ITA scope and purposes is shown in table 6.2

Table 6.2 Generic ITA scope and purpose matrix

Activity type		ITA scope*			
		Simple	Moderate	Broad	Extensive
Resource consent activity status	Permitted	Not required			
	Controlled				
	Restricted discretionary				
	Discretionary				
	Non-complying				
	Prohibited	Not appropriate			
Plan change/variation					
Designation					
Information					

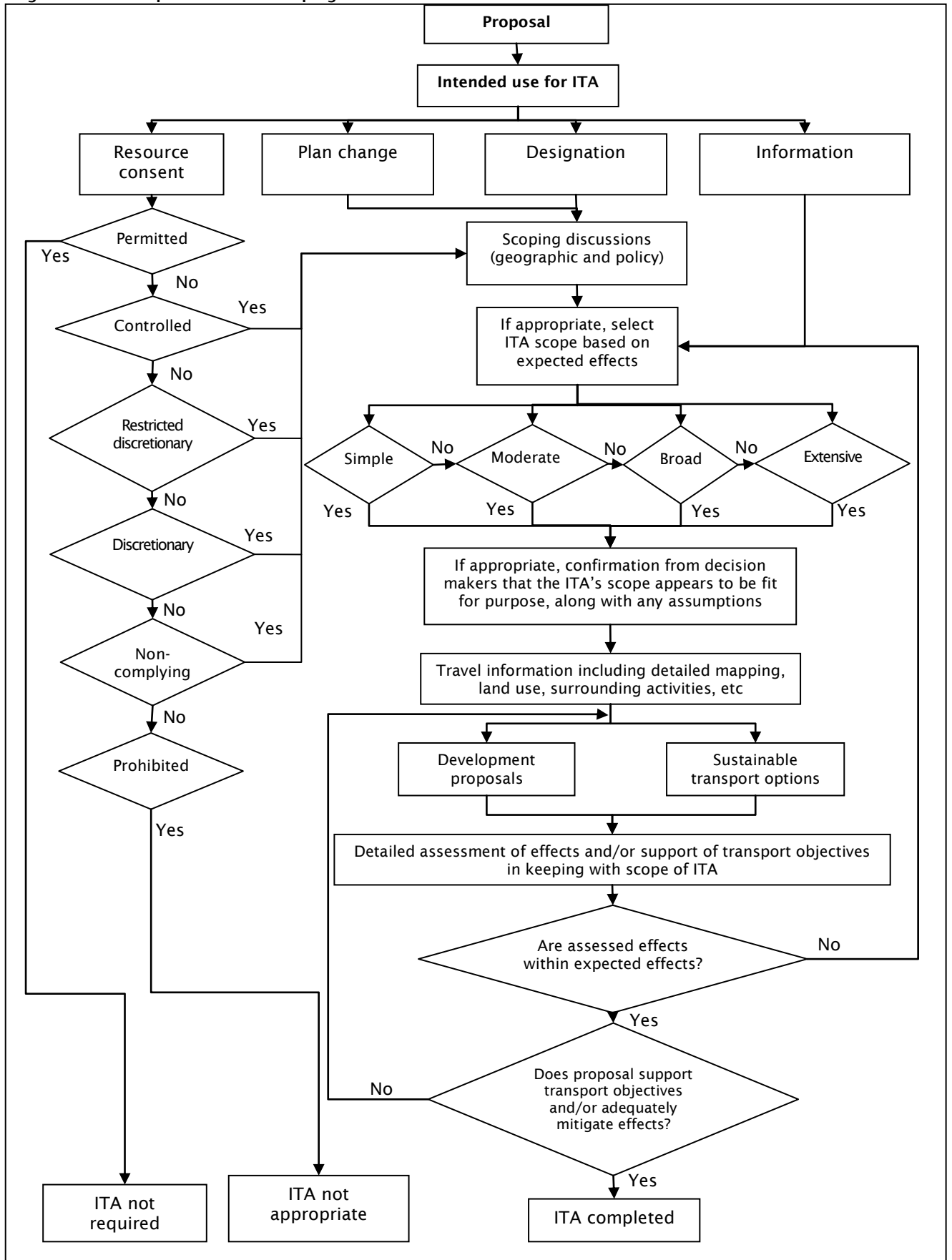
* Shading indicates the suggested degree of assessment.

6.3 Process

The process for the development of an ITA is shown in figure 6.2. The process commences with an initial proposal and, depending on both district plan objectives and policies, and on the geographic area affected, the ITA can be defined if this is required or appropriate. If an ITA is required then the ITA’s scope is discussed with the relevant decision makers and the ITA’s scope is selected based on the expected transportation effects. In terms of resources, it is often best to err on the side of a more limited ITA scope but to acknowledge that the scope may need to be increased. The alternative is to err on the side of a conservative ITA scope, although this may waste resources. These matters will also be influenced by the expected programme and by the commissioning agent.

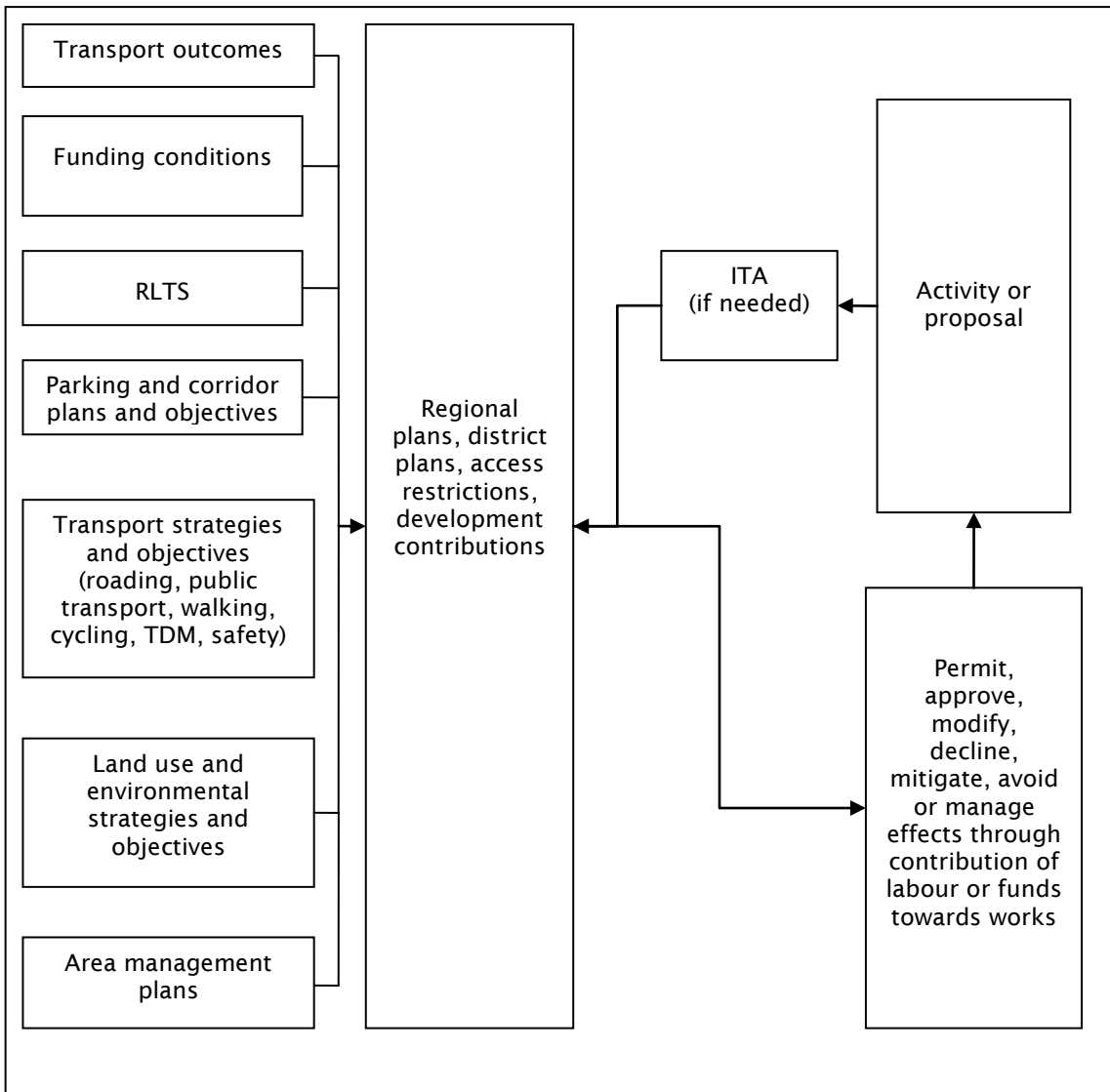
During the preparation of the ITA, the assessed effects will be determined and it will become evident if the ITA scope initially selected was appropriate. If the assessed effects are within the effects initially expected, this will determine if the effects need to be avoided, remedied or mitigated, depending on the significance of the effects. If the assessed effects are greater than the expected effects, then the initial ITA scope was too limited and needs to be widened. This will justify increasing the scope to the next or further increment level.

Figure 6.2 The process for developing an ITA



A typical development assessment process is shown in figure 6.3. Overall, the proposal should meet the relevant transport rules, policies and objectives in the various 'regulatory instruments' and 'transport outcomes'.

Figure 6.3 Assessment process for a development proposal



The planning authority has the ability to permit, approve or decline a proposal if it does not meet these requirements. However, the applicant can minimise the possibility of the proposal being declined on transportation or traffic grounds by avoiding, mitigating or managing the adverse transport effects through a combination of physical works, altering the development proposal or providing funds towards mitigating the effects created by the proposal.

The ITA may be able to rely on a significant amount of existing information and possibly also on earlier ITAs that have been tested as part of other applications.

6.4 Content

The content for a **simple** ITA may be modest, typically because small proposals will have limited impacts and hence their scope is narrow. Under these circumstances, a simple ITA would only generally require restricted assessment. It is expected that a simple ITA would consider only such impacts as access, on site provisions and/or safety issues.

A **moderate** ITA will probably have to include impacts additional to those of a simple ITA that are related to the adjacent streets, maybe including the nearest main intersections. The scope of the moderate ITA is wider than the simple assessment because the matters to be considered are likely to be more complicated. A moderate ITA may consider the land use characteristics and zoning provisions for the area in the district plan. More complicated matters to consider may arise, depending on the proposal's intensity of demand and temporal distribution effects away from the site. It could well include some local site modelling including pedestrian effects, and on site and off site vehicle traffic.

A **broad** ITA will have increasing impacts beyond those in a moderate ITA and could extend considerations to include adjacent blocks, including access from other important traffic generators nearby plus other more seemingly remote network streets and intersections. The scope of the broad ITA is wider again than the moderate ITA because of the increasing range of possible effects. This could require strategic assessment of the location, evaluation of neighbouring land uses, consideration of a range of travel modes, surveys and more extensive modelling. It may also extend to an assessment of matters such as the degree of effect on other road users (eg pedestrian crossings) or improving traffic facilities, including such matters as changing traffic signal phasing.

An **extensive** ITA has the widest consideration of issues, and could include a district or larger regional matters. Given that the spatial size of the assessment is large, it is expected that significant thought and appropriate expertise will be needed in deciding the detail of the required assessment techniques. Again, more extensive transportation modelling is likely to be needed, and the possible assumptions and associated variables might be very wide and more complex. This scale of assessment will need to consider district and regional effects in the context of longer term planning objectives.

The possible subject matter for inclusion in each ITA is shown in table 6.3; a description of each element is included in appendix A. A classification system, ranging from unlikely (or probably not required) to probable (will probably be required), is shown. The scope, relevance and depth of analysis within each of these classifications will be able to be discussed with the relevant decision makers, which is why the scope is subjective rather than absolute.

Table 6.3 The possible content for ITAs with different scopes

Matter for consideration	Scoping discussions?	ITA scope			
		Simple	Moderate	Broad	Extensive
1 Background					
Description of proposed activity	✓	Probable	Probable	Probable	Probable
Intended use for ITA	✓	Probable	Probable	Probable	Probable
Outline of discussions with RCAs and TAs*		Probable	Probable	Probable	Probable
2 Existing land data					
Location plan	✓	Likely	Probable	Probable	Probable
Site plan	✓	Probable	Probable	Probable	Probable
Existing use	✓	Likely	Probable	Probable	Probable
Existing consents		Suggested	Likely	Probable	Probable
Adjacent land use	✓	Likely	Probable	Probable	Probable
Surrounding land use		Unlikely	Suggested	Likely	Probable
3 Existing transport data					
Walking network		Suggested	Likely	Probable	Probable
Cycling network		Suggested	Likely	Probable	Probable
Public transport modes and accessibility		Suggested	Likely	Probable	Probable
Access arrangements	✓	Probable	Probable	Probable	Probable
Service accesses		Unlikely	Suggested	Likely	Probable
On site car parking		Probable	Probable	Probable	Probable
Off site car parking		Suggested	Suggested	Likely	Probable
Cycle parking		Suggested	Suggested	Likely	Probable
Roading hierarchy	✓	Probable	Probable	Probable	Probable
Traffic flows	✓	Likely	Likely	Likely	Probable
Travel times		Unlikely	Unlikely	Suggested	Likely
Congestion		Unlikely	Suggested	Likely	Probable
Crash records	✓	Likely	Probable	Probable	Probable
4 Committed environmental changes					
Walking network	✓	Probable	Probable	Probable	Probable
Cycling network	✓	Probable	Probable	Probable	Probable
Public transport modes and accessibility		Suggested	Suggested	Likely	Probable
Road network improvements	✓	Likely	Likely	Probable	Probable
Other local (partly or fully unimplemented) developments		Suggested	Suggested	Likely	Probable
Other major (partly or fully unimplemented) developments	✓	Probable	Probable	Probable	Probable
Uptake of vacant land		Unlikely	Suggested	Likely	Probable

Table 6.3 (cont.) The possible content for ITAs with different scopes

Matter for consideration	Scoping discussions?	ITA scope			
		Simple	Moderate	Broad	Extensive
5 Existing travel characteristics					
Person-trip generation		Unlikely	Suggested	Likely	Probable
Modal split		Unlikely	Suggested	Likely	Probable
Vehicle-trip generation		Unlikely	Probable	Probable	Probable
Trip type proportions		Unlikely	Probable	Probable	Probable
Trip distribution		Unlikely	Probable	Probable	Probable
Trip assignment		Unlikely	Probable	Probable	Probable
Special event trip generation		Suggested	Likely	Likely	Likely
6 Proposal details					
Site layout		Likely	Probable	Probable	Probable
Schedule of land or activity uses	✓	Probable	Probable	Probable	Probable
Operational hours		Likely	Probable	Probable	Probable
Special events		Likely	Probable	Probable	Probable
On site car parking		Likely	Probable	Probable	Probable
On site cycle parking		Likely	Probable	Probable	Probable
Drop-off area		Likely	Probable	Probable	Probable
Access		Likely	Likely	Probable	Probable
Service accesses		Likely	Likely	Probable	Probable
Internal vehicle circulation		Likely	Likely	Probable	Probable
Proposed implementation planning	✓	Unlikely	Probable	Probable	Probable
Construction management		Unlikely	Probable	Probable	Probable
7 Predicted travel data					
Adjustment of existing travel data to assessment year		Suggested	Likely	Probable	Probable
Person-trip generation	✓	Unlikely	Suggested	Likely	Probable
Modal split		Unlikely	Suggested	Likely	Probable
Vehicle-trip generation	✓	Probable	Probable	Probable	Probable
Trip type proportions		Unlikely	Probable	Probable	Probable
Trip distribution		Unlikely	Probable	Probable	Probable
Trip assignment		Unlikely	Probable	Probable	Probable
Special event trip generation	✓	Suggested	Likely	Probable	Probable
8 Appraisal of transportation effects					
Environmental	✓	Probable	Probable	Probable	Probable
Safety	✓	Probable	Probable	Probable	Probable
Accessibility	✓	Unlikely	Probable	Probable	Probable
Integration		Suggested	Likely	Probable	Probable
Economic		Suggested	Likely	Probable	Probable
Sensitivity testing		Unlikely	Suggested	Likely	Probable

Table 6.3 (cont.) The possible content for ITAs with different scopes

Matter for consideration	Scoping discussions?	ITA scope			
		Simple	Moderate	Broad	Extensive
9 Avoiding or mitigating actions					
Physical on site mitigations		Likely	Probable	Probable	Probable
Physical off site mitigations		Suggested	Likely	Probable	Probable
Encouraging public transport, walking and cycling		Unlikely	Suggested	Likely	Probable
Travel plans		Unlikely	Suggested	Likely	Probable
Special event mitigation		Unlikely	Suggested	Likely	Probable
Revised environmental effects		Unlikely	Probable	Probable	Probable
Revised safety effects		Probable	Probable	Probable	Probable
Revised accessibility effects		Unlikely	Probable	Probable	Probable
Revised integration effects		Suggested	Likely	Probable	Probable
Revised economic effects		Unlikely	Suggested	Likely	Probable
Sensitivity testing mitigations		Unlikely	Suggested	Likely	Probable
10 Compliance with policy and other frameworks					
District plan rules	✓	Probable	Probable	Likely	Unlikely
District plan objectives and policies	✓	Unlikely	Likely	Probable	Suggested
Other relevant local strategies	✓	Unlikely	Likely	Probable	Probable
RLTS	✓	Unlikely	Unlikely	Likely	Probable
Other relevant regional strategies	✓	Unlikely	Unlikely	Likely	Probable
Other relevant national strategies		Unlikely	Unlikely	Suggested	Likely
11 Discussion and conclusions					
Assessment of effects		Probable	Probable	Probable	Probable
Conclusion of effects		Probable	Probable	Probable	Probable
12 Recommendations					
Summary		Unlikely	Suggested	Likely	Probable
Proposed conditions (if any)		Suggested	Likely	Likely	Probable

* TA = territorial authority

7 Recommendations

The following recommendations arise from this research:

- Planning authorities (regional and district councils), and all transport and road controlling authorities are encouraged to adopt an ITA approach and use these guidelines for assessing transportation effects.
- Following publication of these ITA guidelines, the NZTA should consider asking the relevant government agencies; city, district, unitary and regional councils; and professional institutions to promote the existence of these guidelines
- The NZTA should consider promoting these ITA guidelines to practitioners and adopt it as the preferred method for assessing transportation effects. The development of an ITA 'quick guide' or interactive website would assist dissemination.
- Local and regional councils should encourage the use of these guidelines as a preferred methodology to assess transport related effects.
- Local and regional councils should develop assessment thresholds for various land uses that are relevant to their local communities, which will make the preparation of ITAs more efficient.
- The NZTA should consider agreeing to an ongoing programme to prepare additional ITA practice notes to be added to the initial group included in the appendices of this report.
- City, district, unitary and regional councils should contribute to the development of a series of practice notes similar to those in the appendices.

8 References

- Association of Consulting Engineers New Zealand (ACENZ) (2007a) *The expert witness. ACENZ practice note B52*. Wellington: ACENZ. 6pp.
- ACENZ (2007b) *Evidence and court procedure. ACENZ practice note B51*. Wellington: ACENZ. 5pp.
- Auckland Regional Transport Authority (ARTA) (2007) *Integrated transport assessment guidelines*. Auckland: ARTA.
- ARTA (2009) *Regional arterial road plan – February 2009*. Auckland: ARTA.
- AUSTROADS (2009) *Guide to traffic management part 12 – traffic impacts of developments*. Sydney: AUSTROADS.
- Bedfordshire County Council (1998) *Travel assessment guidelines*. Bedford, UK: Bedfordshire County Council.
- Christchurch City Council (2010) *City plan*. Accessed 19 July 2010.
<http://www.ccc.govt.nz/thecouncil/policiesreportsstrategies/districtplanning/cityplan/index.aspx>.
- Collins, Z, N Fuller and P Weller (2007) *Transport impact guidelines for site development part I. Land Transport New Zealand research report 327 Part I*. Wellington: Land Transport New Zealand.
- Department for Regional Development & Planning Service of the Department of the Environment (2006) *Transport assessment guidelines for development proposals in Northern Ireland*. Belfast, Northern Ireland: Department for Regional Development & Planning Service of the Department of the Environment.
- Douglass M, D McKenzie (2001) *Trips and parking related to land use. Volume 1: report. Transfund New Zealand research report 209*. Wellington: Transfund New Zealand. 103pp.
- Environment Court of New Zealand (2006) *Consolidated practice note 2006*. Accessed 20 July 2010.
<http://www.courts.govt.nz/courts/environment-court/legislation-and-resources/practice-notes/practice-notes>.
- Institution of Highways and Transportation (IHT) (1994) *Guidelines for traffic impact assessment*. London: Institution of Highways and Transportation.
- Institution of Professional Engineers New Zealand (IPENZ) (2003) *Practice note 02: peer review*. Accessed 20 July 2010. http://www.ipenz.org.nz/ipenz/forms/pdfs/PNO2_Peer_Review.pdf.
- Ministry for the Environment (2001) *National energy efficiency and conservation strategy*. Wellington: Ministry for the Environment.
- Ministry for the Environment (2006) *A guide to preparing a basic assessment of environmental effects*. Wellington: Ministry for the Environment. 40pp.
- Ministry for the Environment (2008) *Quality planning website*. Accessed 19 July 2010.
<http://www.qualityplanning.org.nz/>.
- Ministry of Transport (2005) *National rail strategy*. Wellington: Ministry of Transport. 31pp.
- Ministry of Transport (2006) *Getting there – on foot, by cycle*. Wellington: Ministry of Transport. 40pp.
- Ministry of Transport (2008a) *New Zealand transport strategy 2008*. Accessed 25 June 2010.
<http://www.transport.govt.nz/ourwork/Documents/NZTS2008.pdf>.

- Ministry of Transport (2008b) *Sea change*. Wellington: Ministry of Transport. 40pp.
- Ministry of Transport (2009) *Government policy statement on land transport funding*. Accessed 25 June 2010. <http://www.transport.govt.nz/news/newsevents/Documents/Final-GPS-May-09.pdf>.
- New Zealand Government (1974) Local Government Act 1974. Accessed 16 July 2010. <http://www.legislation.govt.nz/act/public/1974/0066/latest/DLM415532.html>.
- New Zealand Government (1977) Reserves Act 1977. Accessed 15 July 2010. http://www.legislation.govt.nz/act/public/1977/0066/latest/DLM444305.html?search=ts_act_Reserves+Act+1977_resel&p=1&sr=1.
- New Zealand Government (1981) Public Works Act 1981. Accessed 15 July 2010. http://www.legislation.govt.nz/act/public/1981/0035/latest/DLM45427.html?search=ts_act_Public+Works+Act+1981_resel&p=1&sr=1.
- New Zealand Government (1987) Conservation Act 1987. Accessed 15 July 2010. http://www.legislation.govt.nz/act/public/1987/0065/latest/DLM103610.html?search=ts_act_Conservation+Act+1987_resel&p=1&sr=1.
- New Zealand Government (1989) Government Roding Powers Act 1989. Accessed 15 July 2010. <http://www.legislation.govt.nz/act/public/1989/0075/latest/DLM173369.html>.
- New Zealand Government (1991) Resource Management Act 1991. Accessed 25 June 2010. http://www.legislation.govt.nz/act/public/1991/0069/latest/DLM230265.html?search=ts_act_Resource+Management+Act_noresel&p=1&sr=1.
- New Zealand Government (1993) Historic Places Act 1993. Accessed 15 July 2010. http://www.legislation.govt.nz/act/public/1993/0038/latest/DLM300511.html?search=ts_act_·%09Historic+Places+Act+1993_resel&p=1&sr=1.
- New Zealand Government (1998) *Land Transport Act 1998*. Wellington: New Zealand Government.
- New Zealand Government (2000) Energy Efficiency and Conservation Act 2000. Accessed 15 July 2010. http://www.legislation.govt.nz/act/public/2000/0014/latest/DLM54948.html?search=ts_act_·%09Energy+Efficiency+and+Conservation+Act+2000_resel&p=1&sr=1.
- New Zealand Government (2002) *Local Government Act 2002*. Wellington: New Zealand Government.
- New Zealand Government (2003a) *Land Transport Management Act 2003*. Wellington: New Zealand Government.
- New Zealand Government (2003b) Resource Management Amendment Act 2003. Accessed 29 July 2010. <http://legislation.knowledge-basket.co.nz/gpacts/reprint/text/2007/am/013am2.html>.
- New Zealand Government (2004). Local Government (Auckland) Amendment Act 2004. Accessed 9 July 2010. http://www.arh.co.nz/docs/Local_Government_Auckland_Amendment_Act_2004.pdf.
- New Zealand Government (2008) Public Transport Management Act 2008. Accessed 15 July 2010. http://www.legislation.co.nz/act/public/2008/0087/latest/DLM1179939.html?search=ts_act_employem+act_resel.
- Queensland Government Department of Main Roads (2006) *Guidelines for assessment of road impacts of development*. Brisbane: Queensland Government Department of Main Roads.
- Scottish Executive (1999) Planning advice note: PAN 57. Transport and planning. Accessed 29 July 2010. <http://www.scotland.gov.uk/Publications/1999/04/pan57>.

- Scottish Executive (2002) *Guide to transport assessment for development proposals in Scotland*. Edinburgh: Scottish Executive.
- Trips Database Bureau Inc. (2008). *New Zealand Trips and Parking Database Bureau user guide*. Christchurch: TDB Inc.
- Transit New Zealand (2007) *Planning policy manual for integrated planning & development of state highways (version 1)*. Wellington: Transit New Zealand.
- VicRoads (2006) *Guidelines for transport impact assessment reports*. Melbourne: Victoria Government Department of Main Roads.
- Ward, M, J Dixon, B Sadler and J Wilson (2007) Integrating land use and transport planning. *Land Transport New Zealand research report 333*. Wellington: Land Transport New Zealand. 116pp.
- Weller, P (2007) Transport impact guidelines for site development: literature review. *Land Transport New Zealand research report 327. Part II*. Wellington: Land Transport New Zealand. 73 pp.
- Wellington City Council (2000) Wellington city district plan. Accessed 20 July. 2010 <http://www.wellington.govt.nz/plans/district/districtplan.html>.
- Western Australian Planning Commission (2006) *Transport assessment guidelines for developments*. Perth: Western Australian Planning Commission.

Appendix A Possible ITA contents

A.1 Limitations

This appendix should be read in conjunction with section 6.4.

Not all matters will be known or appropriate. This is especially the case with plan zone changes eg changing zoning from rural to industrial. Some assumptions about trip rates, (eg car v heavy commercial vehicle split) can be assumed. However, a lot of the detail in this appendix relating to site layout, parking, hours of operation and the specific activity mix (within a broad industrial zone, this can range from large distribution centres to intensive manufacturing) may not be known. The matters covered or emphasised in an ITA for a plan change are likely to be different in scale and extent from those required to support a specific resource consent proposal.

A2 Matters for consideration

A.2.1. Background

- **Description of proposed activity:** the applicant should describe the activity, including the location, hours of operation, the scale of the development, whether the development is new or a redevelopment, employment, types of vehicles and peak trip generating hours.
- **Intended use of ITA:** the applicant should explain whether the ITA is for a resource consent, plan change, variation or designation, or for information.
- **Outline of discussions with RCAs and territorial authorities:** the applicant should make initial contact with staff of RCAs and territorial authorities to describe the proposed activity, and should outline the summary of discussions had with these organisations.

A.2.2 Existing land data

- **Location plan:** the location of the site must be given accurately, and its surrounding land uses and the local transport networks should be outlined.
- **Site plan:** site layout drawings need to be prepared. These should be scale plans of the development proposals that may show internal roading arrangements (including footpaths and cycleways), service vehicle turning areas and parking arrangements.
- **Existing use:** the applicant should provide details of the existing land uses on the site and indicate if these are in full use or partially occupied. He/she should include details of the number of existing formal and informal parking spaces.
- **Existing consents:** applicants should provide details of any existing resource consents for the site. This includes both implemented and non-implemented consents with relevant conditions.
- **Adjacent land use:** the applicant should also describe the locality of the site and adjacent land uses. This should set out the broad nature of the neighbourhood. They should draw attention to any nearby land uses that may be significant to the site, eg schools.
- **Surrounding land use:** here, the applicant should list the surrounding land uses within the study area such as parks and recreational grounds, commercial areas, education facilities and community facilities that are relevant to the scope of the ITA.

A.2.3 Existing transport data

- **Walking network:** the ITA should provide details of footways within the immediate area surrounding the site. Key origins/destinations for pedestrians travelling to/from the site should be outlined, along with a broad assessment of travel times. The applicant should list local facilities that are pertinent to the proposals (such as schools and shops in the case of a residential development) with approximate walking distances and times. The ITA should also include
 - a qualitative assessment of the routes and existing use
 - quantification of pedestrian flows at critical locations.
- **Cycling network:** the ITA should provide details of cycle facilities within the immediate area surrounding the site. Key origins/destinations of the cyclists travelling to/from the site should be outlined, along with a broad assessment of travel times. Local facilities that are pertinent to the proposals (such as schools and shops in the case of a residential development) and times should be listed. The ITA should also include
 - a qualitative assessment of the routes and existing usage
 - quantification of cycling flows at critical locations.
- **Public transport modes and accessibility:** the location of public transport stops within 400m of the site and train stations within 800m of the site should be recorded. The ITA should provide details such as the frequency and routes of services, hours of operation each day and key origins/destinations for people travelling to/from the site. The ITA should also
 - provide key origins/destinations reached within a reasonable travel time by public transport and assess spare capacity in the public transport system to ensure it has sufficient capacity to accommodate any new demand
 - assess public transport accessibility levels or accessibility score as required.
- **Access arrangements:** the ITA should provide details of the access arrangements to the site. Consider access by all modes, including any maintenance or emergency access arrangements. If appropriate, this should include a plan showing the visibility splays.
- **Service accesses:** details regarding the location of service accesses, the types of vehicles using these accesses, service routes and the frequency of use should be given.
- **On site car parking:** the number of car parking spaces should be listed, including the percentage of disabled spaces, parents' parking and taxi/coach parking, where appropriate. Nearby drop-off areas, eg for taxis or schools, should also be recorded.
- **Off site car parking:** the ITA should record any off site parking spaces that are relevant to the site or connected through existing resource consents. It should also include nearby off site parking restrictions and any parking overflow from the existing site to on street parking.
- **Cycle parking:** the ITA should provide details of the existing number of cycle parking and any complementary facilities, such as lockers and showers.
- **Roading hierarchy:** the ITA should describe the local roading network, including the road hierarchy and existing levels of service, and should briefly discuss routes to major destinations.
- **Traffic flows:** the traffic flow profiles (in AADT) of the local roading network should be indicated or investigated to establish traffic flow conditions, peak days and peak hours. This includes link

counts on the roads that access the site and turning counts if intersection capacity testing is required. If AADT traffic flows are generally consistent over a year or if seasonality is important, this should be stated. The ITA should also:

- include turning counts at critical intersections and assess the LOS at key intersections
- include mid-day inter-peak and daily traffic flows (it may be prudent to produce a traffic model of the area, against which the development impact can be assessed).
- **Travel times:** the ITA should calculate typical travel times (at peak and off-peak times) by different modes of access: walking, cycling, public transport and car. Travel time assessments are needed to determine the catchment area of a development by different modes; areas within which one can reach a development within set times or time-bands, eg 30 minutes.
- **Congestion:** the ITA should identify whether there are any existing local congestion problems, and note the congestion periods, LOS and significance.
- **Crash records:** the ITA should analyse crashes on the local roading network for the most recent five-year period. The analysis should review any trends in the crash data to determine if a specific environmental problem is causing the crashes.

A.2.4 Committed environmental changes

- **Walking network:** the ITA should outline any proposed footways that will benefit or disadvantage the development, and should include details of the opening years and key destinations served by these changes.
- **Cycling network:** the ITA should outline any proposed cycle facilities that will benefit or disadvantage the development, and should include details of opening years and key destinations served by these changes.
- **Public transport modes and accessibility:** proposed changes to the public transport network should be considered. This should include changes to capacity, regularity, journey times and destinations. The ITA should discuss any proposals for new interchanges, bus priority or other major initiatives, eg integrated ticketing, travel on demand services, mobility enhancements or fleet renewals.
- **Road network improvements:** the ITA should assess any proposed changes to the road network that may significantly alter the traffic conditions within the study area. This will include such matters as proposed roads and intersection improvements. This assessment should provide details of the expected completion dates and predicted changes in traffic conditions and traffic flows. The ITA should identify any existing or proposed landscaping, slow roads or other road network environmental changes that are pertinent.
- **Other local (partly or fully unimplemented) developments:** the ITA should assess the traffic associated with committed local developments and plan allocation sites where possible. This should include references to the relevant TIAs for these sites regarding trip generation, distribution and proposed mitigation measures.
- **Other major (partly or fully unimplemented) developments:** the ITA should identify any other committed or proposed development in the vicinity of the proposed development, and assess the potential transport impact of these developments.

- **Uptake of vacant land:** the uptake and development of vacant land in the wider network should be considered. The ITA should assess the potential transport impact of this vacant land.

A.2.5 Existing travel characteristics

- **Existing person-trip generation:** an analysis of person-trip generation should include, if relevant, traffic counts of vehicles arriving at and departing from the site. The ITA should discuss the travel patterns of existing users if the facility is relocating.
- **Existing modal split:** the ITA should give details of the existing modal split for all trips to and from the site (figures should make clear whether car trips include driver only or passenger and driver trips).
- **Existing vehicle-trip generation:** the ITA should assess the existing vehicle-trip generation from the site. This could be based on traffic counts or trip generation rates from similar sites. The description should include both the existing level of occupancy and full occupancy (if not fully occupied). This should also be undertaken for any existing consents on the site that have not been implemented.
- **Existing trip type proportions:** the ITA should assess what proportion of trips fall under the following categories
 - linked trips: trips that use more than one facility in the site
 - pass-by trips: trips that currently pass the proposed site access point but turn into the development (eg a petrol filling station)
 - diverted trips: similar to pass-by trips, these are trips that were on the network but divert to use the facility and then return to their previous route.

Existing trip distribution: traffic generated by the existing development should be distributed to the surrounding road network based on current patterns or using recognised traffic modelling techniques.

Existing trip assignment: the ITA should assign existing trips to the road network within the scope of the assessment.

Existing special event trip generation: 'special events' should be assessed, if appropriate. Examples of special events include existing store opening for retail developments, competition days for sporting venues etc.

A.2.6 Proposal details

- **Site layout:** these should be scale plans of the development proposals that show internal roading arrangements (including footpaths and cycleways), service vehicle turning areas and parking arrangements, including accesses for all modes.
- **Schedule of land or activity uses:** the ITA should provide a schedule of the proposed land uses to outline the quantum of development, eg the number of residential units or m² of GFA.
- **Operational hours:** the ITA should provide the hours of operation, if appropriate for the land use. Operational hours will be of particular interest if assessing a distribution/warehousing site or late-trading retail store or supermarket.
- **Special events:** the ITA should provide details of any special events, where appropriate, such as store openings and sporting events. These will include frequency, timing (time(s) of year, week and day) and anticipated visitor numbers.

- **Internal circulation:** a plan should show the design, alignment and location of the internal circulation network, including the road hierarchy and road dimensions. It should indicate how vehicular traffic is distributed between entry points and how travel is undertaken within the site by all modes.
- **Proposed implementation phasing:** the ITA should set out the proposed phasing of the development, and indicate the timescale for the completion of key elements of the development and when the development is expected to be fully operational.
- **Construction management:** while the detailed construction methodology may not be known at the development planning stage, this part of the ITA should include a broad assessment of the potential impacts of construction traffic. It should outline any construction operations expected to affect the operation of the roading network, and suggest mitigation or further analysis if necessary, or provide a temporary traffic management proposal.

Other matters that should be considered related to the proposal details include:

- on site car parking
- on site cycle parking
- access arrangements
- service accesses.

For details of what the ITA should cover regarding these, see the corresponding bullet points in section A.2.3.

A.2.7 Predicted travel data

- **Adjustment of existing traffic data to assessment year:** the existing traffic and trip data should be factored using historical traffic growth to the assessment year.
- **Predicted person-trip generation:** if possible, the ITA should set out the trip generation of all modes for the proposed development by land use.
- **Predicted modal split:** the ITA should estimate the mode split and assumptions used to determine the mode split.
- **Predicted vehicle and other mode trip generation:** the trips generated by the proposed development should be calculated. The ITA should include details of assumptions and generation rates on a daily basis as well as for the network peak hours and the site's peak generation hours.
- **Predicted trip type proportions:** the ITA should assess what proportion of trips fall under the following categories:
 - new trips: trips not on the network prior to opening the development
 - linked trips: trips that will use more than one facility in the new site, thus reducing the arrivals to the site as a whole but increasing the duration of trip
 - transferred trips: trips present on the network using a similar facility that will transfer to the new site, eg an employer relocating to a new site or retail trips diverting to a new store
 - pass-by trips: trips that currently pass the proposed site access point but will turn into the development, eg petrol filling stations

- diverted trips: trips that were on the network that will divert to use the new facility and then return to their previous route.
- **Predicted trip assignment:** the trips generated by the proposal should be assigned to the road network. Details of assumptions made regarding the assignment may need to be discussed with the RCA or territorial authority before the assessment is undertaken. The assessment year and LOS should be considered for key links and intersections within the geographical scope of the ITA for all modes.
- **Predicted special event trip generation:** the ITA should assess special events if appropriate.

A.2.8 Appraisal of transportation effects

- **Environmental:** the ITA should assess the environmental capacity of streets affected by the proposal and the overall environmental outcomes provided by the proposal, including increased or decreased vehicle-kilometres travelled, noise, glare, vibrations and severance.
- **Safety:** the recent accident history should be analysed for a minimum of the previous five years within the study area. Critical locations on the road network with poor accident records should be identified. This is to determine if the proposed development will exacerbate existing problems or, if proposed, whether highway mitigation works or traffic management measures will help to alleviate the problems. The accident records at a particular location should be compared with local average accident rates. Depending upon the ITA's depth, the proposed plans should be audited for safety.
- **Accessibility:** the ITA should quantify the accessibility of the site and activity. This should include integration of the proposed access and existing footpaths, cycleways and public transport stops. An important question here is whether the proposal increases or decreases accessibility and by which modes.
- **Integration:** the integration issues that should be assessed include
 - the potential for the development to influence interaction among all transport modes (motorised and non-motorised), either in isolation or in combination with other developments
 - integration of the development proposals with local, regional and national land use policies
 - bringing communities together (social inclusion)
 - separating communities as a result of cutting off existing movement paths (severance/social exclusion).
- **Economic:** the economic issues that should be assessed include
 - any larger economic objectives such as transportation that enables economic development
 - non-motorised road users' journey time
 - motorised road users' journey time reliability
 - user costs, including crash costs and vehicle operating costs
 - the construction, land, preparation, supervision, and subsequent operating and maintenance costs of development proposals (including mitigation works)

- any funding sources required for the development that are outside the applicant’s control.
- **Sensitivity testing:** sensitivity tests using higher trip rates such as the 85th percentile peak hour rates may need to be carried out to test if additional traffic can be accommodated.

A.2.9 Avoiding or mitigating actions

- **Physical on site mitigation:** the ITA should list and describe any physical on site mitigation.
- **Physical off site mitigation:** the ITA should list and describe any physical off site mitigation, and detail the approvals required to gain approval for these proposals.
- **Encouraging public transport, walking and cycling:** pedestrian/cycle networks should be analysed to identify which roads could potentially be difficult for pedestrians and cyclists to cross and where safe crossing facilities should be provided. To improve access/amenity for pedestrians, the ITA should show any proposals to do so, including pedestrian facilities within the development and pedestrian access to the site. To improve access/amenity for cyclists, the ITA should show any proposals to do so, including cyclists’ facilities within the development and cyclist access to the site.
- **Travel plans:** these should be included for the proposed development, when appropriate, along with legal instruments and enforcement matters.
- **Special event mitigation:** the ITA should propose traffic management measures to mitigate the traffic effects created by special events.

Engineering or operational solutions should be proposed if the ITA identifies that any of the following require or are likely to need mitigation:

- environmental capacity effects
- safety effects
- accessibility effects
- economic effects
- sensitivity testing.

A.2.10 Compliance with policy and other frameworks

- **District plan rules:** the applicant should check compliance with the rules, depending on the type of proposal. This review should highlight any significant rules, and outline any rules that relate to internal roads and parking provisions.
- **District plan objectives and policies:** depending on the type of proposal, the ITA should review the proposal against relevant district plan objectives and policies.
- **Other relevant local strategies:** depending on the type of proposal, the applicant should review the proposal against other relevant local strategies, especially policies adopted by the RCA and territorial authorities, eg parking strategies, or walking and cycling strategies.
- **RLTS:** depending on the type of proposal, the applicant should review the proposal against transport policies and objectives in the RLTS.

- **Other relevant regional and national strategies:** depending on the type of proposal, the applicant should review it against other relevant regional and national strategies, eg the regional plans or the NZTS.

A.2.11 Discussion, conclusions and recommendations

- **Assessment of effects:** the ITA should provide a summary of the ITA findings and key issues that needed to be addressed.
- **Conclusion of effects:** the ITA should determine whether the proposal will create adverse effects on the surrounding road network. If the proposal will generate adverse transport effects then engineering measures or other solutions need to be used to mitigate these adverse effects. The techniques used to avoid, remedy or mitigate adverse effects should be explained.
- **Recommendations:** the recommendations should be summarised. If the development was approved, the recommendations should list any conditions to be attached to the permission, eg monitoring intersection performance.

Appendix B Abbreviations and acronyms

AADT:	Annual average daily traffic volume
ACENZ:	Association of Consulting Engineers New Zealand
AEE:	Assessment of Environmental Effects
ARTA:	Auckland Regional Transport Authority
BCC:	Bedfordshire County Council
DoE:	Department of the Environment (UK)
DPI:	Department for Planning and Infrastructure (Australia)
DRD:	Department for Regional Development (UK)
GFA:	Gross floor area
IHT:	Institution of Highways and Transportation
IPENZ:	Institution of Professional Engineers New Zealand
ITA:	Integrated transport assessment
LTNZ:	Land Transport New Zealand
LGA:	Local Government Act 2002
LGAAA:	Local Government (Auckland) Amendment Act 2004
LTA:	Land Transport Act 1998
LTCCP:	Long Term Community Consultation Plan
LTMA:	Land Transport Management Act 2003
LOS:	Level of service
MfE:	Ministry for the Environment
MoT:	Ministry of Transport
NLTP:	National Land Transport Programme
NZTA:	NZ Transport Agency
NZTS:	New Zealand Transport Strategy
QGDMR:	Queensland Government Department of Main Roads
RCA:	Road controlling authority
TDB:	Trips Database Bureau Inc.
RLTS:	Regional Land Transport Strategy
RMA:	Resource Management Act 1991
RPS:	Regional Policy Statement
TAG:	Transport assessment guideline

TIA: Transportation impact assessment

TIAR: Traffic impact assessment report

Transit: Transit New Zealand

UK: United Kingdom

US: United States

WAPC: Western Australian Planning Commission

Appendix C Practice note ITA 10/01: vehicle-trip generation surveys

C1 Introduction

This practice note sets out a survey methodology for practitioners to calculate vehicle-trip generation rates for various periods of an activity based on actual observations.

C2 Survey day and period

Before undertaking a vehicle trip generation survey on site, it is important to determine the appropriate survey day and period. Potentially, two peak periods need to be investigated:

- the peak operating period of the transport network
- the peak trading period of the activity.

The peak operating period of the transport network can usually be obtained from data collected by the RCA. The peak trading period of the activity is usually determined from surveys of similar activities.

Often, it is uncertain whether an activity will have a greater effect on the operation of the transport network during the peak operating period of the transport network or during the peak trading period of the activity. The worst case scenario occurs when the peak trading period coincides with the peak operating period. Therefore, to determine the likely effect of an activity's effect on the surrounding transport network, it is recommended that practitioners should undertake trip generation surveys during both these periods. It is recommended that all vehicle-trip generation surveys should be at least two hours in duration.

C3 Vehicle-trip generation

A vehicle-trip generation survey involves counting the number of vehicle movements generated by a development. This includes counting vehicle movements entering and exiting the site, and any vehicle movements associated with the development that do not enter the site, eg those that park on the street.

This practice note provides guidance on a survey methodology for capturing on site vehicle-trip generation. It requires all vehicle access points to a development to be included within the survey. A vehicle-trip generation survey differs from a person-trip generation survey, which requires observation of travel to and from a site by all modes, including:

- vehicle drivers
- vehicle passengers (including taxi)
- motorbikes/scooters
- goods drivers
- goods passengers
- pedestrians
- cyclists

- bus passengers.

The TDB survey summary sheet (TDB 2008) provides an overview of the type of data that should be collected for a multi-modal survey.

C4 Identifying the peak hour vehicle-trip generation

After the vehicle-trip generation data has been collected, the peak hour vehicle-trip generation rate can be calculated. The following example illustrates the process for identifying the peak hour of vehicle-trip generation of an activity from a three-hour survey collected at 15-minute intervals.

The first step involves aggregating the raw 15-minute data (shown in table C1) into hourly counts. The hourly counts are presented in table C2.

Table C2 shows that the afternoon peak hour of the activity (indicated by grey highlight) occurred from 4:00pm to 5:00pm with 327 and 330 incoming and outgoing vehicles, respectively. The total peak hour vehicle-trip generation of the activity was 657 vehicle-trips (in and out).

Table C1 Vehicle-trip generation - raw data

Period starting	Vehicles	
	In	Out
3:00pm	56	47
3:15pm	72	50
3:30pm	60	53
3:45pm	71	63
4:00pm	74	89
4:15pm	82	80
4:30pm	88	81
4:45pm	81	80
5:00pm	83	79
5:15pm	72	68
5:30pm	70	69
5:45pm	69	64

Table C2 Vehicle-trip generation - hourly counts

Hourly intervals	Vehicles		
	In	Out	Total (in + out)
3:00pm-4:00pm	259	213	472
3:15pm-4:15pm	277	255	532
3:30pm-4:30pm	287	285	572
3:45pm-4:45pm	315	313	628
4:00pm-5:00pm	327	330	657
4:15pm-5:15pm	334	320	654
4:30pm-5:30pm	324	308	632
4:45pm-5:45pm	306	296	602
5:00pm-6:00pm	294	280	574

C5 Calculating the vehicle-trip generation rate

For the purpose of transportation planning, it is often necessary to convert the trip generation observed within a site into a trip generation rate to assist with an estimate for a proposed development of a similar nature but of a different size. The choice of a suitable predictor variable for calculating the trip rate varies with different land use activities and locations. GFA is the most widely used predictor variable for most land use activities. Other predictor variables are used for specific activity types eg the number of pupils or students would be a suitable predictor variable for an educational land use.

It is important to note that many other factors influence actual trip rates such as location, catchment size, competition and surrounding activities. The definition of various land use predictors can be found in section 4 of the TDB user guide (2008).

The TDB defines GFA as ‘the total internal floor area of all floors within the site building(s) excluding parking floors. Trip rates are calculated by 100m² GFA’.

Using the peak hour vehicle trips shown in table C2 (657), the peak hour vehicle-trip generation rate can be calculated by dividing the peak hour vehicle-trip generation by the GFA of the activity (equation C1).

$$T = \left(\frac{PHV}{GFA} \right) \times A \quad \text{(Equation C1)}$$

Where:

- *T* is the peak hour trip generation rate
- *PHV* is the peak hour vehicle trip count
- *GFA* is the gross floor area
- *A* is the unit of GFA (eg 100m²) used for comparison.

In this example, we assume the GFA of the activity is 5000m². Therefore, by equation C1, the trip generation rate of the activity would be 13.4 vehicle-trips per 100m² GFA per hour.

The same method can be applied to determine (peak) rates for other time periods eg half hourly rates. As noted, rates may be needed to inform the ITA for peak periods of the transport network and peak trading period of the activity.

Appendix D Practice note ITA PN 10/02: estimating design trip generation rates for retail activities

D1 Introduction

This practice note outlines guidance on how to convert the surveyed trip and parking rates for retail activities to design levels using scale factors. The scale factors include:

- hour of day (*H*), as shown in table D1 (retail land use only)
- day of week (*W*), as shown in table D2 (retail land use only)
- seasonal factor (*Y*), as shown in table D3.

Table D1 Hourly design factors for retail sites

Hour of survey (hour ending)	Scale factor		
	Weekday (non-late nights)	Weekday (late nights)	Weekend
9:00am	1.83		
10:00am	1.36		1.82
11:00am	1.16		1.28
12:00 noon	1.00		1.09
1:00pm	1.01		1.05
2:00pm	1.10		1.00
3:00pm	1.14		1.08
4:00pm	1.10		1.29
5:00pm	1.20	1.15	
6:00pm	1.50	1.36	
7:00pm		1.38	
8:00pm		1.56	

Grey shading indicates the design hour.

Table D2 Retail day of week design factors for retail sites

Day of survey	Scale factor	
	Weekday (non-late nights)	Weekday (late nights)
Monday	1.46	1.40
Tuesday	1.38	1.29
Wednesday	1.30	1.21
Thursday	1.00	1.00
Friday	1.06	1.00
Saturday	1.16	1.11
Sunday	1.42	1.41

Grey shading indicates design day

Table D3 Weekly design factors for all sites, based on grouped traffic flows from state highway counts for three types of urban areas

Week	For calendar year 1998	Site type ^a								
		Group 1 ^b			Group 2 ^c			Group 3 ^d		
		Scale factors								
		Annual average week	Third busiest week	Fifth busiest week	Annual average week	Third busiest week	Fifth busiest week	Annual average week	Third busiest week	Fifth busiest week
1	04 Jan	1.57	1.68	1.65	1.29	1.40	1.37	1.71	0.77	0.73
2	11 Jan	1.15	1.23	1.20	1.08	1.17	1.17	1.31	1.00	0.96
3	18 Jan	1.05	1.12	1.10	1.06	1.15	1.12	1.18	1.11	1.06
4	25 Jan	1.02	1.09	1.07	1.00	1.08	1.08	1.15	1.14	1.09
5	01 Feb	1.00	1.07	1.05	0.99	1.07	1.05	1.03	1.27	1.21
6	08 Feb	1.03	1.10	1.08	1.02	1.10	1.08	1.25	1.05	1.00
7	15 Feb	0.96	1.03	1.01	0.68	1.07	1.04	1.08	1.21	1.16
8	22 Feb	0.96	1.03	1.01	0.96	1.04	1.02	1.08	1.21	1.16
9	01 Mar	0.95	1.01	1.00	0.96	1.04	1.02	1.05	1.24	1.19
10	08 Mar	0.97	1.04	1.02	0.96	1.06	1.04	1.02	1.29	1.23
11	15 Mar	1.01	1.09	1.07	1.00	1.09	1.06	0.95	1.38	1.32
12	22 Mar	0.97	1.04	1.02	0.97	1.05	1.03	0.97	1.36	1.30
13	29 Mar	0.99	1.06	1.04	0.98	1.06	1.04	0.91	1.44	1.38
14	05 Apr	0.99	1.06	1.04	0.98	1.06	1.04	0.87	1.51	1.45
15	12 Apr	1.06	1.13	1.11	0.98	1.07	1.04	1.22	1.07	1.02
16	19 Apr	1.04	1.11	1.09	0.99	1.07	1.05	1.27	1.03	0.99
17	26 Apr	0.98	1.05	1.03	0.95	1.03	1.01	1.05	1.25	1.20
18	03 May	0.99	1.06	1.04	1.01	1.10	1.07	0.86	1.53	1.46
19	10 May	0.99	1.06	1.04	1.00	1.09	1.07	0.84	1.57	1.50
20	17 May	0.99	1.06	1.04	1.01	1.10	1.08	0.82	1.60	1.53
21	24 May	1.00	1.07	1.05	1.03	1.11	1.09	0.81	1.62	1.55
22	31 May	1.00	1.07	1.05	1.01	1.09	1.07	0.91	1.43	1.37
23	07 Jun	1.03	1.10	1.08	1.05	1.14	1.12	0.87	1.51	1.44
24	014 Jun	1.01	1.08	1.06	1.03	1.11	1.09	0.77	1.70	1.63
25	21 Jun	1.01	1.08	1.07	1.04	1.13	1.10	0.80	1.63	1.56
26	28 Jun	1.04	1.11	1.09	1.05	1.14	1.11	0.80	1.63	1.56
27	05 Jul	1.02	1.09	1.07	1.05	1.14	1.11	0.86	1.53	1.46
28	12 Jul	1.01	1.08	1.06	1.03	1.11	1.09	0.99	1.32	1.26
29	19 Jul	1.00	1.07	1.06	1.04	1.13	1.11	0.98	1.34	1.28
30	26 Jul	0.99	1.06	1.04	1.10	1.19	1.17	0.80	1.64	1.57
31	02 Aug	0.99	1.06	1.04	1.09	1.18	1.15	0.80	1.64	1.57

Table D3 (cont.) Weekly design factors for all sites, based on grouped traffic flows from state highway counts for three types of urban areas

Week	For calendar year 1998	Site type ^a								
		Group 1 ^b			Group 2 ^c			Group 3 ^d		
		Scale factors								
		Annual average week	Third busiest week	Fifth busiest week	Annual average week	Third busiest week	Fifth busiest week	Annual average week	Third busiest week	Fifth busiest week
32	09 Aug	0.99	1.06	1.04	1.05	1.15	1.13	0.82	1.61	1.54
33	16 Aug	1.00	1.07	1.05	1.04	1.13	1.10	0.81	1.61	1.54
34	23 Aug	0.99	1.08	1.04	1.03	1.12	1.09	0.83	1.58	1.51
35	30 Aug	1.00	1.07	1.05	1.04	1.12	1.10	0.81	1.62	1.55
36	06 Sep	0.99	1.06	1.04	1.02	1.10	1.08	0.86	1.52	1.48
37	13 Sep	0.99	1.05	1.04	1.02	1.11	1.09	0.88	1.49	1.43
38	20 Sep	0.99	1.06	1.04	1.02	1.10	1.08	0.87	1.50	1.43
39	27 Sep	0.99	1.06	1.04	1.01	1.09	1.07	0.92	1.42	1.36
40	04 Oct	0.98	10.5	1.03	0.99	1.07	1.05	1.07	1.22	1.17
41	11 Oct	0.99	10.6	1.04	0.98	1.07	1.04	1.05	1.25	1.19
42	18 Oct	0.98	1.05	1.03	1.01	1.10	1.08	0.89	1.48	1.42
43	25 Oct	1.01	1.08	1.06	0.97	1.05	1.03	1.07	1.23	1.17
44	01 Nov	1.04	1.12	1.10	1.00	1.08	1.06	1.06	1.23	1.18
45	08 Nov	0.97	1.04	1.02	0.97	1.05	1.03	0.96	1.36	1.30
46	15 Nov	0.99	1.05	1.04	0.95	1.03	1.01	1.06	1.23	1.18
47	22 Nov	0.95	1.02	1.00	0.95	1.03	1.01	1.00	1.31	1.25
48	29 Nov	0.95	1.02	1.00	0.94	1.02	1.00	1.01	1.30	1.24
49	08 Dec	0.94	1.00	0.98	0.94	1.02	1.00	0.99	1.33	1.27
50	13 Dec	0.92	0.99	0.97	0.92	0.99	0.97	1.00	1.31	1.26
51	20 Dec	0.92	0.98	0.96	0.92	1.00	0.98	1.04	1.27	1.21
52	27 Dec	1.07	1.14	1.12	0.91	0.99	0.87	1.14	0.93	0.99

Notes to table D3:

- a Grey shading indicates the design week(s) in the series.
- b Metropolitan sites not subject to holiday extremes.
- c Peripheral metropolitan and provincial centres where holiday effects are recognisable.
- d Small centres and those subject to holiday extremes (eg intense tourist activities).

For more details on the derivation of the scale factors, refer to Douglass and McKenzie (2001).

It is noted that as the hour of day and day of week factors have been based primarily on surveyed retail patterns, it is inappropriate to apply these factors to non-retail or non-visitor activities. However, the seasonal factor may be applied to other types of land uses, given that the factors were derived using continuous traffic counts. In the absence of any other information on seasonal or hourly trends, the design factors presented in this section may be used with caution and judgement.

D2 How scale factors are applied

D2.1 Example

An example of the application of scale factors is shown for a typical (fictional) example, the details of which are given in table D4.

Table D4 Details of a typical survey used for estimating design trip generation rates for retail activities

Attribute	Details
Location	Shopping Centre, High Street, Smallsville
Size and position	3240 m ² GFA, frontage to urban arterial road with 8000 vehicles per day
Dated and time of survey	Wednesday 6 May 2009 2:00–6:00pm
Peak trip generation (4:30–5:30pm)	
In	131 vehicles per hour
Out	119 vehicles per hour
Total	250 vehicles per hour
Peak parking demand (5:15pm)	
On site	115 vehicles
Off site	12 vehicles
Total	127 vehicles

The surveyed peak trip generation rate is calculated as follows using equation C1:

$$T = \left(\frac{250}{3240} \right) \times 100$$

$$= 7.7 \text{ vehicles per } 100\text{m}^2 \text{ GFA per hour.}$$

The peak parking demand rate (*P*) is calculated using equation D1:

$$P = \left(\frac{PPD}{GFA} \right) \times A \quad \text{(Equation D1)}$$

Where:

- *P* is the peak parking demand rate
- *PPD* is the peak parking demand observed in the survey
- *GFA* is the gross floor area of the site
- *A* is the unit of GFA used for comparison, eg 100m².

Applying the details in our example to equation D1 yields a peak parking rate (*P*) of 3.9 vehicles per 100m² GFA per hour.

D.2.2 Determine scale factors

The design rate is typically calculated for the 30th busiest hour in the year. This is because TDB research shows that the 30th busiest hour provides 90% parking satisfaction.

The design rates are calculated by identified the hour of day, day of week and seasonal factors. The following steps are necessary:

1. **Identify H , the hour of day factor from table D1.** If the survey has been for the time of peak survey or if the survey has been of sufficient length to isolate the peak period, use $H = 1.0$.
2. **Identify W , the day of week factor** for the survey day from table D2.
3. **Identify Y , the week of year or seasonal factor** from table D3.
4. Use the results yielded by equations C1 and D1 to **calculate the design trips (T_{30} ; equation D2) and the parking demand (P_{30} ; equation D3).**

$$T_{30} = T \times H \times W \times Y \quad \text{(Equation D2)}$$

$$P_{30} = P \times H \times W \times Y \quad \text{(Equation D3)}$$

Let us apply this process to our example. The peak activity identified from the survey was 4:30–5:30pm. Table D1 suggests a value of 1.2 for H . However, because the survey lasted for over an hour, this would suggest that $H = 1.0$. To reconcile these two values, we chose $H = 1.1$.

Our survey day was a Wednesday, so table D2 gives us $W = 1.30$.

Our survey was conducted in the second week of May. Table D3 suggests using a scale factor for a minor urban centre falling in Group 2. As we have already decided to cater for the 5th busiest week (ie the 30th highest hour), we have $Y = 1.07$.

These scaling factors and the details in table D4 give us a scaled design trip generation (T_{30}) of **11.8 vehicles per 100m² GFA per hour** and a design parking demand rate (P_{30}) of **6.0 vehicles per 100m² GFA per hour**.

Care must be taken when assessing the effects of design trip generation and parking rates. For instance, it would be incorrect to scale survey data by H when assessing effects on the peak operating period of the transport network if the survey was undertaken during the peak operating period of the transport network.

Appendix E Practice note ITA PN 10/03: Some relevant case law

Some noteworthy case decisions from the Environment Court have touched on matters related to traffic, zones and road management. These provide a case law framework which deals with transportation policy, transportation planning and environmental effects (eg noise).

Transport-related provisions in district plans have been considered by the Environment Court in a number of cases. Some of these illustrate the value of certainty in rules and provide some specific guidance on including transport provisions in plans. Cases include:

- Accommodation and Booking Agents (Queenstown) Ltd v Queenstown Lakes District Council (C10/2001)
- Borrell v Queenstown Lakes District Council (C58/2001)
- Christchurch City Council (C133/2002)
- Campbell v Southland District Council (W114/94) (the transport network as a matter of strategic importance).

A number of cases have considered the effects of proposals on state highways:

- **Progressive Enterprises Ltd and Northcote Mainstreet Inc v North Shore City Council and the National Trading Company of New Zealand Ltd (CIV 2004-404-7139)**: This case ruled that Transit New Zealand (and now, by extension, the NZTA) could be considered an affected party in relation to state highways.
- **Transit New Zealand v Southland District Council (C42/2006)** relating to intersection improvements remote from the site. The Court found, in this particular circumstance, that it was inappropriate for Transit New Zealand to seek financial contributions. This was partly because the district plan did not include provisions allowing financial contributions to be taken for this purpose.
- **Transit New Zealand v Papakura District Council (A061/06)** relating to a change to the Papakura district plan. The plan change allowed for the Hingaia structure plan area. The Court confirmed that it was reasonable for Transit New Zealand to seek contributions from developers in order to mitigate effects. It also strongly encouraged the parties to reach a financial agreement regarding the costs of the upgrade of the state highway interchange outside the RMA process.

Other significant transportation cases concerning RMA effects include:

- **Auckland Volcanic Cones Society Inc. v Transit New Zealand (A203/02, [2003] 2 NZRMA 54, 8 NZED 6)** in relation to the effects of the State Highway 20 motorway extension on the amenity, landscape and integrity of the Mount Roskill volcanic cone
- **Estate of PA Moran v Transit (W55/99)**, which confirmed the designation for the Wellington Inner City Bypass and the national importance of land transport infrastructure.
- **Te Aro Heritage Trust v New Zealand Historic Places Trust (Pouhere Taonga) (W052/03, 8 NZED 763)** concerning an archaeological authority granted under the Historic Places Act 1993 (New Zealand Government 1993) for the same project as W55/99

- **Middleton v Transit New Zealand (W21/99)**, which confirmed the designation for the Mana Esplanade reduced upgrade in Porirua, and considered the effects on local residents and businesses, particularly in relation to noise
- **R & B Mulligan Ltd and Transit New Zealand v Whangarei District Council (A96/2006)**
- **JB Farms Ltd and Transit New Zealand v Dunedin City Council (C140/2006)**.

These last two cases identified the importance of land use and transport integration in making land use decisions. They also placed considerable weight on the use of structure planning as a tool to resolve both district-wide and site-specific integration issues.

The last group of cases provides useful guidance on whether district plan provisions are inconsistent with an RPS and whether they 'have regard to' an RLTS. These include:

- Canterbury RC v Waimakariri District Council (C5/2002 1 NZRMA 108)
- St Lukes Group Ltd v Auckland City Council (A132/2001)
- Nelson Intermediate School and Others v Transit New Zealand (C35/2004 9 NZED 470).

Extensive case law references are available. Legal advice is necessary in the interpretation of particular decisions and their relevance to different circumstances. The following resources are recommended:

- Thompson Brookers *Your environment* (available through the members-only Brookers online database at www.brookersonline.co.nz).
- The environmental planning resource site (MfE 2008).

Appendix F Practice note ITA PN 10/04: discussion of the permitted baseline

Section 104(2) of the Resource Management Amendment Act 2003 (New Zealand Government 2003b) states:

When forming an opinion for the purposes of subsection (1)(a), a consent authority may disregard an adverse effect of the activity on the environment if the plan permits an activity with that effect.

This section of the RMA formally incorporates the 'permitted baseline' into legislation.

The MfE provides a definition of the permitted baseline in their publication *A guide to preparing a basic assessment of environmental effects* (MfE 2006):

The permitted baseline is a term developed through case law and refers to what is permitted to occur on the land as of right or without resource consent. Any consideration of effects is therefore in comparison to what could occur on the land as a permitted activity. This requires a good understanding of the various rules in the district or regional plan. In some instances, it is appropriate to only consider those effects that are generated over and above those which are permitted, or in other words, the permitted baseline. This is likely to be the case with simpler applications where the activity is permitted but there are only one or two minor infringements. The permitted baseline is not a mandatory test, but it is a discretion that the Council may exercise. For this reason, it should not be relied on, except in very clear cases.

Further to the MfE's definition, case law acknowledges that the permitted baseline comparison must relate to 'credible uses' and not fanciful ones.³ In terms of trip generation from a site, a credible scenario for the permitted baseline should relate to the trip generating characteristics of other similar sites and not relate to the absolute theoretical maximum that could be produced from the site. The theoretical maximum would only be appropriate if sufficient supporting evidence suggests that such development is credible. Examples of similar developments that are developed in this manner could be offered.

For example, it would be fanciful to take the maximum site coverage, as permitted by the plan, to form the permitted baseline for an application if all other developed sites with the same zoning had a significantly lower site coverage ratio.

The Quality Planning RMA Planning Resource website (MfE 2008) provides an excellent reference source for practitioners to understand resource management issues. The Quality Planning project is a partnership between the New Zealand Planning Institute, the Resource Management Law Association, Local Government New Zealand, the New Zealand Institute of Surveyors and the MfE. The MfE currently owns and administers the website, and also funds the project.

The MfE provides the following guidance (2008) on the application of the permitted baseline test:

The purpose of the permitted baseline test is to isolate and make effects of activities on the environment that are permitted by the plan, or have already been consented to irrelevant. Such effects cannot then be taken into account when

3 Smith Chilcott v Auckland City Council ([2001] 3 NZLR 473; (2001) 7 ELRNZ 126; [2001] NZRMA 503 (CA))

assessing the effects of a particular resource consent application (Queenstown Lakes District Council v Hawthorn Estate Limited (Court of Appeal, CA45/05, 12 June 2006, William Young P, Robertson and Cooper JJ). The baseline has been defined by case law as comprising the 'existing environment' and non-fanciful (credible) activities that would be permitted as of right by the plan in question.

*The Court of Appeal in Hawthorn (above) confirmed the distinction between the permitted baseline analysis and the analysis of the receiving environment. The permitted baseline, which applies to permitted activities **on the subject site**, removes the effects of those activities from consideration under sections 94A(a) and 104(1)(a) of the RMA. The receiving environment (beyond the subject site) is the environment upon which a proposed activity might have effects. It is permissible (and often desirable or necessary) to consider the future state of the environment upon which effects will occur, including:*

- the future state of the environment as it might be modified by the utilisation of rights to carry out permitted activities; **and***
- the environment as it might be modified by the implementation of resource consents that have been granted at the time a particular application is considered, where it appears likely that those resource consents will be implemented*

but not

- the environment as it might be modified by the implementation of future resource consent applications (because these are too speculative).*

The 'environment' upon which effects should be assessed is therefore the existing and reasonably foreseeable future environment. In identifying the environment, a consent authority should consider the environment as it is at the time of the application. It should also consider the likelihood of change to that environment in the future, based upon the activities that could be carried out as of right and under resource consents that have been granted (where it is likely that they will be given effect to).

*When applying the permitted baseline, a consent authority should first ask what permitted activities would be credible (as opposed to fanciful). In *Ohope Beach Development Society v Whakatane District Council* (A190/02), the Court found that the baseline comparison for the apartment complex in question included new buildings up to 100 metres square in floor area and to a height of 10metres. The Court found that such an activity on such a prominent site was so unlikely as to be fanciful.*

Points to consider:

- Section 19 determines the point at which an activity or effect is permitted by a proposed plan. Sections 94A and 94B refer to 'the plan'. This includes rules deemed to be operative pursuant to section 19 (ie rules that are past the point of challenge).*
- 'Permitted by the plan' does not include controlled or restricted discretionary activities. It is unclear whether the permitted baseline includes activities already occurring on the site as a result of existing consents. Although this issue is not entirely clear, the Environment Court in *Eyres Eco-Park v Rodney**

District Council (A147/04) suggested that existing use rights are part of the environment. Permitted and consented activities should be considered as part of the existing and reasonably foreseeable future environment (Hawthorn (above)).

There should be a clear determination in the report from the relevant council officer stating the reasons for applying or not applying the permitted baseline. It is probably mandatory to consider whether or not to apply the baseline.

Situations where applying the baseline may not be appropriate include:

- where the application of the baseline would be inconsistent with Part II of the Act (see *Kapiti Environmental Action Inc v Kapiti Coast District Council [2002] NZRMA 289*)*
- where the baseline claimed by the applicant is fanciful or not credible*
- where the application of the baseline would be inconsistent with objectives and policies in the plan.*

It is important to note that if the permitted baseline is included in the assessment of the application then the consenting authority must disregard the effects that are permitted as of right. However, in determining whether the permitted baseline should be applied, the effects of the permitted baseline need to be assessed and checked for consistency with both part 2 of the RMA and the objectives and policies in the plan. If the effects are considered to be acceptable then credible development of the site should form the permitted baseline and only those effects that are generated over and above the permitted baseline can be considered by the consent authority.

A current challenge facing consent authorities surrounding the permitted baseline test is where mitigation is required to offset the adverse effects likely to be created by permitted activity from the site. It is the opinion of the authors that mitigation can be considered as part of the permitted baseline as long as the proposed mitigation will also be consistent with the objectives and policies of the plan. For example, it may be inconsistent with the objectives and policies of the plan to consider a major traffic control device, such as traffic signals or a roundabout, as an appropriate means of mitigating effects for traffic moving into and out of a local intersection or access serving an activity that fronts an arterial road if that form of intersection would adversely affect the operation of the arterial road. By contrast, the introduction of a solid median on the arterial road to restrict right-hand turns to and from the site may be an appropriate means of mitigation, provided that the site has a second access point.

