

Traffic Impact Assessments (TIA) Guidelines

Department *of* Infrastructure,
Energy *and* Resources

ROADS & TRAFFIC DIVISION



Tasmania
Explore the possibilities



A FRAMEWORK FOR UNDERTAKING TRAFFIC IMPACT ASSESSMENTS



SEPTEMBER 2007



DEPARTMENT of INFRASTRUCTURE,
ENERGY *and* RESOURCES

ROADS & TRAFFIC DIVISION

This document is published on DIER's website and is intended for use by planning authorities, developers and other interested parties. DIER'S website can be found at <http://www.dier.tas.gov.au> and then by going to "Transport".

DIER WOULD BE PLEASED TO ADVISE ON ANY TRAFFIC DESIGN AND OPERATIONAL ISSUES ENCOUNTERED DURING THE PREPARATION OF A TIA AFFECTING A STATE ROAD. A MAP OF TASMANIA SHOWING STATE ROADS CAN BE FOUND AT http://www.transport.tas.gov.au/road/who_owns_the_road

Other documents available at DIER's website include:

- "Standard Brief for Professionals Services"
- "Standard Specification for Roadworks"
- "Road Hazard Management Guide"
- "Traffic Control at Work Sites – Code of Practice"

Useful contacts in DIER include:

- Infrastructure Policy and Planning
- Traffic Engineering Branch
- Land Assets Group
- Land Transport Safety Policy
- Asset Management Branch
- Asset Information Branch

Contact can be made by directing queries via e-mail to info@dier.tas.gov.au or by telephone to **1300 135 513**.

Tasmanian legislation referred to in this document is available on-line at:

<http://www.thelaw.tas.gov.au/index.w3p>

EXECUTIVE SUMMARY

This Framework for Undertaking Traffic Impact Assessments (TIA) is the Department of Infrastructure, Energy and Resource's (DIER) guide to best/good practice. It has been developed from the previous draft "Traffic Impact Assessment Guidelines" that were previously widely circulated for comment and use for some years.

The Framework has the following parts:

1. Introduction
2. Basic TIA Information Requirements
3. Preparation of a TIA
4. Other Issues
5. Useful References

In Part 1 the essential rationale of TIAs is considered. Developer responsibilities, how to start and the intent of the State Road hierarchy in terms of the functionality of roads, is discussed. The aspects of professional advice and when to seek it, provision of trip generation information, along with pre-application discussions with road and planning authorities to determine the scope and coverage of TIA's, are covered. Some examples of typical traffic impacts are defined.

Part 2 sets out the basic TIA information requirements for all proposals, as well as major proposals. Reference is made to checklists that will assist in readily identifying gaps.

In Part 3 the essential components of a TIA are defined, from informing on existing conditions, the proposed development and access arrangements, to trip generation and assignment. Traffic growth and the impact on the transport network, any road safety aspects external to the site, as well as comments on the internal layout, are noted. Changes required to street furniture, parking demand, public transport arrangements, delivery vehicle needs and access for others need to be considered. The conclusions of the TIA must then take account of these factors and recommendations that address these issues provided.

Other issues that may have relevance, such as legislative requirements, environmental impacts, construction phase aspects and future trends that may also impact on a TA conclusions are mentioned in Part 4.

Part 5 provides a list of useful references, including DIER's standard documentation, while the checklists referred to in Part 2 are included as attachments.

FOREWORD

The purpose of a Traffic Impact Assessment (TIA) is to assess the impacts of development on the transport network and identify reasonable solutions, applicable to the Tasmanian experience, to address these impacts.

With few exceptions, all developments result in changes to vehicle and/or pedestrian movements. If a development abuts an arterial road, these movements can disrupt through traffic resulting in reduced levels of safety and efficiency.

A TIA summarises the expected outcomes and identifies works or changes needed to handle the movement effects of development.

This Framework does not set out the *precise* layout or length a TIA should take for any given size and type of development. That would be impossible given the wide variety of development proposals, traffic conditions and socio-economic characteristics throughout Tasmania. A TIA may be a comprehensive study of traffic impacts of a significant development or a short statement of effect for a small proposal.

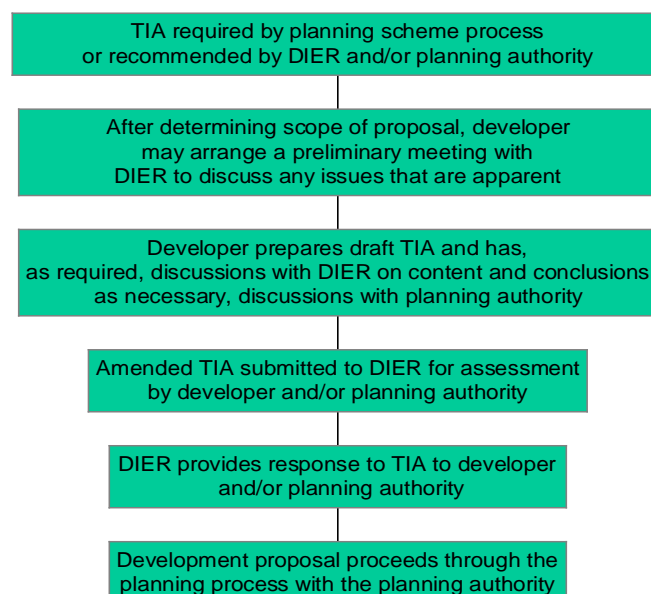
The Framework is intended to help developers prepare a TIA to assist road, planning and other authorities in assessing proposed developments. The principal objectives of the Framework are to:

- advise when a TIA should be prepared;
- identify how a TIA is to be undertaken and the issues to be addressed; and
- identify what methods and approaches should be adopted.

This Framework is intended to improve the manner in which traffic forecasts for new developments are presented and assessed to:

- assist all parties to understand the traffic effects of a development;
- give accurate predictions of the traffic impacts of proposed developments;
- ensure more information is available to interested parties;
- get consistency in the format of TIA's submitted to planning and road authorities;
- improve the quality of submissions prepared by developers; and
- provide greater consistency in the requirements imposed on developers.

A TIA will typically follow the path shown below:



ABBREVIATIONS AND GLOSSARY OF TERMS

Access	Means any place, new or existing, where vehicles and/or pedestrians move between a road and land abutting a road.
Arterial Road	A road that predominantly carries traffic from one region to another, forming principal avenues of communication for traffic movements.
Austrroads	The national association of road transport and traffic authorities in Australasia. Previously known as NAASRA.
Category	Means one of the five (5) categories of State Roads.
DDA	<i>Disability and Discrimination Act 1997</i> (go to Commonwealth legislation on-line at http://www.comlaw.gov.au/).
Developer	The person (proponent or applicant) proposing to lodge or lodging a Planning Application with a Planning Authority for the development and/or use of land and/or a building.
Development	As defined in Section 3 of the <i>Land Use and Planning Approvals Act 1993</i> (LUPAA) 1997. The definition includes the subdivision of land (go to Tasmanian legislation on-line at http://www.thelaw.tas.gov.au/index.w3p).
Intersection	An intersection where two or more carriageways cross at a common level.
Junction	A place where two or more roads meet.
LUPAA	<i>Land Use and Planning Approvals Act 1993</i>
Planning Application	An application for Planning Approval for a proposed Development and/or Use of land and/or buildings.
Planning Approval	Means a planning permit issued by a Planning Authority .
Planning Authority	Means a local council established under the <i>Local Government Act 1993</i> or a combined authority established under the <i>Major Infrastructure Development Approvals Act 1999</i> (MIDAA) (go to Tasmanian legislation on-line at http://www.thelaw.tas.gov.au/index.w3p).
Planning Scheme	Means a planning scheme in operation under Section 29 of LUPAA.
RMPS	Resource Management and Planning System
R&JA	<i>Roads and Jetties Act 1935</i>

Road Authority	Means the Department of Infrastructure, Energy and Resources (DIER) for a State Road and, for other public roads, a local council.
Road Hierarchy	see also Category . DIER's road hierarchy consists of five (5) categories: Trunk Roads (Category 1), Regional Roads (Categories 2 & 3), Feeder Roads (Category 4) and Other Roads (Category 5). Lower roads in a hierarchy include residential streets.
Sight distance	The distance measured along the carriageway over which objects of defined height are visible to a driver.
State Road	Means a road that is the responsibility of DIER under the provisions of the R&JA.
Sustainable Development Use	As defined in Schedule 1 of LUPAA, with particular reference to Part 2 (h). In relation to land, includes the manner of utilising land, but does not include the undertaking of Development (see Section 3 of LUPAA).

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PART 1 – INTRODUCTION

1.1 WHY IS A TIA IMPORTANT?

The concept of sustainable development¹ recognises the impacts of motor vehicle use on the environment and the desirability of increasing the use of public transport. This recognition extends to both the natural and built environment.

Most developments attract more private transport movements rather than public. It is, therefore, necessary to address the impact of motor vehicles and road traffic affects on the environment.

All planning proposals (including subdivision applications) can generate additional traffic on adjacent roads and streets that may lead to a need for improvements to the existing infrastructure. So that the effects of proposals may be responsibly assessed, consideration of expected future traffic movements is essential; the accepted method is by undertaking a TIA.

The TIA should not be a promotional exercise undertaken on behalf of the developer. What a TIA needs to provide is an impartial and objective description of the impacts and traffic effects of a proposed development. A full and detailed assessment of how vehicle and person movements to and from a development site might affect existing road and pedestrian networks is required.

An objective consideration of the traffic impact of a proposal is vital to enable planning decisions to be based upon the principles of sustainable development.

1.2 DEVELOPER RESPONSIBILITIES

Where required by a road² or planning authority, it is the responsibility of the applicant to undertake a TIA detailing:

- the expected additional or altered traffic movements;
- the significance and impact on the existing transport network³; and
- any changes required to accommodate the additional traffic⁴.

Note that any permit issued by a planning authority may include the condition that until all works required by the road authority have been satisfactorily completed, the remainder of the permit is not effective and cannot be acted upon.

Where works to a road or a junction are required to cater for traffic generated by the proposal then it is the developer's responsibility to arrange funding and necessary approvals for the construction of the improvements (refer to Section 4.1 – STATE ROADS).

1 See Schedule 1 of LUPAA.

2 Section 52CE of the R&JA allows for variations to existing access conditions along State Roads with Limited Access status under Part IVA of the Act. With the exception of new public road junctions, new accesses are not permitted on Limited Access roads, although the R&JA does allow for variations to the terms of existing licenses; however, it must be demonstrated, in terms of both safety and operation, that any such variation will not have an adverse impact on traffic on the Limited Access road.

3 "Transport Network" refers to roads/footpaths/cycle ways and can also refer to other modes of transport.

4 "Traffic" refers not only to motor vehicles such as cars, trucks and buses but also pedestrians, cyclists and the needs of people with disabilities.

1.3 GETTING STARTED

Although not all planning schemes require it, a TIA should be undertaken to enable road and planning authorities, as well as developers, to:

- ensure that traffic issues are addressed; and
- have all necessary road and traffic improvements documented and costed; and
- expedite approval and avoid later delays;

DIER considers it essential that a TIA be an integral component of any development application affecting arterial roads in both the State and local road networks.

The TIA may also be submitted as technical evidence at a later planning appeal. The TIA is to be written in plain English, as it may be widely read by non-practitioners and the public.

There is a growing awareness that future traffic projections may be uncertain. This concern supports the need for the TIA to set out the adopted approach together with a clear statement of the assumptions that have been made.

The methods of assessment proposed in this Framework should involve undertaking traffic projections to a minimum of 10 years beyond the opening of the development. For more complex developments, longer projections may be prudent.

1.4 STATE ROAD HIERARCHY⁵

The hierarchy reflects the importance of State Roads as transport corridors and comprises the following categories in descending order of importance:

Category 1 Roads (Trunk Roads)	The primary freight and passenger roads connecting Tasmania.
Category 2 Roads (Regional Freight Roads)	Tasmania's major regional roads for carrying heavy freight.
Category 3 Roads (Regional Access Roads)	The main access roads to Tasmania's Regions, carrying less heavy freight traffic than Regional Freight Roads.
Category 4 Roads (Feeder Roads)	Allowing safe travel between towns, major tourist destinations and industrial areas.
Category 5 Roads (Other Roads)	All remaining State Roads.

1.5 OPERATIONAL POLICY RELATED TO ROAD HIERARCHY

On a State Road any development access is to be constructed to the highest standards commensurate with road safety and capacity. Acceleration and deceleration lanes may have to be provided. All vehicles using the access must be able to turn within the site in order to both enter and leave the road in a forward direction.

Generally, all works required on a State Road that benefit or are required for a specific use or development will be at the developer's cost.

⁵ The roads included in the categories indicated for the State Road Hierarchy can change over time. For advice on current categories for State Roads, please either send an e-mail to info@dier.tas.gov.au or telephone 1300 135 513.

Category 1 Roads (Trunk Roads) – Outside urban areas any new access, or the intensified use of an existing access, will not be supported. In urban areas efforts will be made to keep access numbers to a minimum.

Category 2 Roads (Regional Freight Roads) – The main function of this category is to carry traffic, particularly freight, between major centres in a region.

Category 3 Roads (Regional Access Roads) - The principal function of this road category is that of carrying traffic between major centres within a region.

In rural areas developments requiring a new access, or intensifying the use of an existing access, are likely to be opposed. Exceptions may be made where alternative access to a lower road in the hierarchy is unavailable and the development is of State/National importance, or the access is required for an essential agricultural use.

In urban areas access numbers will, as far as possible, be limited. If alternative access to a lower road in the hierarchy is available, this should be used in preference.

Category 4 Roads (Feeder Roads) – Connect rural populations with the major roads and act as through roads distributing traffic in urban residential situations.

In rural areas it is desirable to minimise new, or increased use of existing, accesses. The principle of development constituting minor infilling where the Planning Authority approves the proposal is acceptable. Again, access via a lower road in the hierarchy is the preferred approach.

Within urban areas any access that could be arranged in a different manner leading to a reduction in the number of accesses would be supported.

Category 5 Roads (Other Roads) – Any State Road not a Category 1 – 4 Road.

Both in and outside urban areas there is no presumption against an access but any proposal will be opposed where road safety and efficiency would be threatened.

1.6 ACCESSES - PURPOSE OF CONTROL - GENERAL POLICY

Between urban areas – The principal purpose of the State Road network is to provide safe and efficient passage and avoid, wherever possible, conflict and interference caused by new accesses, or intensified use of existing accesses. The general approach is to prevent access onto major roads within rural areas for reasons of safety and efficiency. Drivers do not normally expect to encounter slowing, turning, manoeuvring or parked vehicles; or to encounter pedestrians. The unexpected nature of isolated accesses increases the hazards.

Key factors in assessing the introduction of a new junction or access along an arterial road are the increased accident risk and reduced road efficiency. It is where safety and/or efficiency issues are of concern that authorities may oppose a proposal requiring a new access (or increased use of an existing access) along these roads.

Within urban areas – To ensure that any new access is treated in a manner that minimises the resulting impact on the right of safe and efficient passage; every effort will be made to keep the number of accesses to a minimum. These are areas where, by their nature, drivers expect to encounter slowing, turning, manoeuvring or parked vehicles and to encounter pedestrians. The principle of having an access on to a major

road in these areas may be acceptable, subject to the location and design of any access being satisfactory; however, the policy of minimising access numbers remains and, where possible, the concept of amalgamating accesses should be pursued.

In all situations – An access will only be accepted where its minimum geometric layout, visibility and construction will meet all standards necessary to ensure safety for all road users. Details of the layout will depend upon the road category, the volume and speed of traffic using the road and the estimated number of vehicles expected to turn to and from the access. Access via a lower road in the hierarchy is always preferred, unless significant traffic safety issues associated with such an arrangement dictate otherwise.

1.7 PROFESSIONAL ADVICE

Many developers now first seek the assistance of specialised traffic or planning consultants to prepare a TIA but this is not the only option. For smaller proposals, a TIA may be prepared by any suitably experienced practitioner with practice in or familiar with traffic generation rates (PART 5 – USEFUL REFERENCES).

Planning officers need to be familiar with the procedures in the Framework in order to review submissions and advise the planning authority. On occasions, planning authorities may themselves employ specialist assistance to advise on complex proposals.

1.8 TRIP GENERATION INFORMATION

Data-bases are available holding trip generation information for a wide range of existing developments. This information can assist users to estimate the potential traffic generation of a proposed development. (see PART 5 – USEFUL REFERENCES)

Generally, in respect of smaller applications (see Section 2.2 – ALL PROPOSALS), the total daily (24 hour) vehicle numbers on an adjacent road near to the development site will be sufficient.

For a more complex and/or significant proposal where many vehicles, possibly including trucks, will move to and from the site, more detailed advice about traffic movements on adjacent roads near the proposed access(es) would be required.

While DIER holds some traffic information in respect of State Roads this may not be current data or near the proposed development site. Please note that it is not DIER's role to undertake any special counts at specific sites on an applicant's behalf.

1.9 PRE-APPLICATION DISCUSSIONS

Many perceive a TIA need only be prepared for large-scale developments but a new driveway onto an arterial road can also cause problems. In contrast, some urban developments may attract a high proportion of their trips by public transport. In both these cases preparation of a TIA would be a worthwhile exercise to clarify the traffic effects of the developments.

Sometimes, a development may generate significant pedestrian movements requiring the introduction of pedestrian protection controls or crossing facilities. Without such measures potential conflicts may result in safety problems.

It is important to decide whether the traffic impacts of a proposal require talks with the road authority as well as the relevant council. All road, road safety and pedestrian issues within and outside the development site should be assessed.

Discussing the feasibility of a proposal with the road authority and the council before lodging an application may lead to major cost savings for a developer or potential developer. In some cases a preliminary TIA might indicate that, on traffic grounds, another site is more suitable or altered access arrangements are preferred. For instance, access by a lower road category so that traffic generated by a proposal will turn through an existing, appropriately designed and constructed side road junction, would be a sound approach.

1.10 SIGNIFICANT DEVELOPMENTS

Before preparing a TIA for a proposal generating significant and/or complex traffic movements (see Section 2.3 – PROPOSALS WITH SIGNIFICANT TRAFFIC IMPACT) a developer should meet road and planning authorities to agree on the:

- TIA content, including the data to be considered and/or collected;
- area of analysis; and
- methods to be used and the assessment years reflecting the proposal's size and complexity.

In some instances, it may be inappropriate for a TIA to be undertaken in isolation of the intended long-term development of an area. Pre-application discussions with the road and planning authorities will indicate whether any particular development proposal may be pre-empting the need for a larger planning exercise in an area.

1.11 DETERMINING THE TIA COVERAGE

The TIA should consider the surrounding network of roads, junctions, intersections and other transport related infrastructure where extra traffic could pose a problem. A TIA should accompany an application for subdivision approval as well as any application to construct a building or to use, or change the use of, land or buildings.

1.12 TYPICAL TRAFFIC IMPACTS

A TIA is appropriate for all development and/or use applications involving:

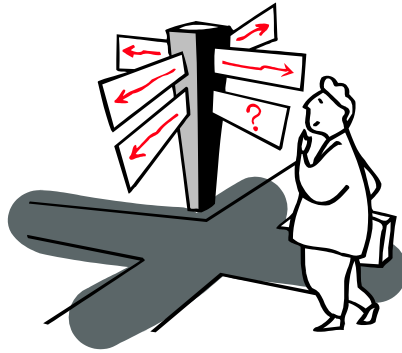
- a new side road junction, or new access⁶, to a Category 1, 2 or 3 Road; or
- a use or development with access to a Category 4 or 5 Road where the traffic will exceed 10 vehicle movements per day⁷; or
- a change in road conditions that will or may result in significant alterations to the patterns of traffic movements, e.g., area-wide traffic management scheme.

As traffic problems can often occur in peak hours, investigations should consider these periods. Daily traffic volumes also need to be considered. Other periods should be assessed if traffic and/or environmental impact at other times are of concern.

For instance, an entertainment centre near a residential area may generate significant traffic noise (no road capacity or pedestrian problems) during the evening or late at night; in such circumstances discussions should be held with the road and planning authority.

⁶ An existing access is to be considered a "New Access" where it is required to service:

- a change in use or development; or
 - an intensification of an existing use.
-



PART 2 – BASIC TIA INFORMATION REQUIREMENTS

2.1 BASIC INFORMATION REQUIRED IN A TIA

The information required in a TIA will reflect the size, complexity and type of development proposed.

2.2 ALL PROPOSALS

The following information is to be provided for all development and/or use proposals (including proposals with a significant traffic impact- see Section 2.3 – PROPOSALS WITH SIGNIFICANT TRAFFIC IMPACT). The information sought under the following dot-points assists in building up a picture of the site and the present traffic conditions on adjacent roads.

- Brief description of proposal.
- Location.
- Name of applicant and landowner (please indicate if different).
- Size of development (m²/number of units).
- What is the current use of the site and size of any existing development (m²/number of units)?
- Onto which road(s) does the site have frontage (enclose plan)?
- Where is the existing site access(es):
 - for pedestrians
 - for vehicles?
- Where is the proposed site access(es):
 - for pedestrians?
 - for vehicles?
- How many parking spaces exist on-site and how many more will be required?
- What is the speed limit on the adjacent road(s)?
- What are the current traffic volumes on the adjacent road(s)?
- What are the sight distances to and from proposed access point(s)?
- Are there trees or other obstructions at the access location(s)?
- Are there any road safety or road crash issues in the vicinity?
- Is there a significant difference in level between the site and the road at the access(es)?
- Are there any significant constraints on-site or nearby, such as bodies of water, embankments, rail lines?
- What streetlighting currently exists or is proposed?
- Are any works required? Please set out your recommendations.

2.3 PROPOSALS WITH SIGNIFICANT TRAFFIC IMPACT

A proposal with a significant traffic impact is generally a use or development that will generate high traffic turning movements by a road or access to a Category 1, 2 or 3 State Road, or;

A proposal with a significant traffic impact is a use or development where a road or access to a Category 4 or 5 State Road is proposed which will generate more than 40 vehicle movements per day⁸ (total number of vehicles entering and/or leaving the premises).

Please note that in some circumstances on high-volume roads, a proposal that generates less than 40 vehicle movements per day may create significant issues relating to traffic efficiency and safety. Depending on the circumstances, in some cases the road authority may indicate that a TIA is required.

Responses to the following prompts will ensure that a range of matters is addressed related to road and traffic issues, and assist persons assessing the proposal to identify any aspects related to traffic, vehicle and person movement that may be of concern.

The following information is to be provided in addition to that required by Section 2.2:

- What is the current traffic generation of the site (vehicle numbers and type)?
- What is the condition of the adjoining road pavement (important if the development will generate heavy vehicle use)?
- What is the actual speed of passing traffic (i.e., the speed at or below which 85% of vehicles travel)?
- Are there any pedestrian/bicycle movements in the area?
- Is there potential for pedestrian/bicycle movements in the area?
- What is the projected traffic generation of the site (including pedestrian and cycle movements) upon completion of the development at the base year⁹ (number of vehicles and vehicle type¹⁰)?
- What is the projected traffic generation of the site at the design year¹¹ (number of vehicles and vehicle type)?
- Would the development result in:
 - a new or modified access?
 - closure of existing access(es)?
- Will the traffic be split between different accesses (provide details)?
- What is the accident record on road(s) in the area of the proposal?
- What is your assessment of the traffic impact of the proposed development on roads and junctions in the surrounding road network?
- What is the expected volume of passing traffic when the development opens and in future years¹²?
- Do you consider that the existing access(es) and/or adjoining roads can cater for the traffic expected to be generated by the proposed use? If not, what improvement is required to the access(es) and/or adjoining roads?
- What is the estimated cost of recommended road/junction/other transport infrastructure improvements?

⁸ As a guide, a single dwelling/residential unit will usually generate about 10 vehicle trips per day.

⁹ First full year of operation.

¹⁰ To be expressed as either the Peak Hour or as the Activity Peak (Peak Hour is the busiest hour on the adjoining road network and the Activity Peak is the peak hourly flow to or from the development). Express volumes as the total two-way flow, i.e., in and out. Vehicle type(cars, trucks, etc) is a relevant consideration.

¹¹ Base Year plus 10 years minimum.

¹² Include % of trucks and % of semi-trailers.

- What allowance has been made for future growth in traffic generated by the proposed development?
- Identify special provisions for:
 - public transport;
 - bicycles;
 - parking (number of proposed parking spaces to be provided);
 - people with disabilities¹³;
 - installation of, improved or changed pedestrian facilities;
 - delivery vehicles;
 - emergency services;
 - waste collection services;
 - heavy freight vehicles¹⁴; and
 - streetlighting, road signs, landscaping, etc.
- Will changes be required to existing speed limits?
- What adverse impacts might there be, as a result of increased traffic movements from the development, in adjacent, sensitive or residential areas?
- Is there potential for promoting pedestrian/bicycle/public transport usage?
- Will the characteristics of the development have an adverse impact on rail line operations in the vicinity, either through traffic safety or operational issues or from the aspect of location?

2.4 CHECKLISTS

Attachment 1 contains checklists of the information required in a TIA as defined in 2.2 and 2.3 above. These checklists can be used to confirm that the information required has been provided. Please note that these lists are not exclusive of other site-specific issues that may have relevance.

¹³ Local government needs to make footpaths, etc., accessible under DDA and development must be consistent with the "Action Plan" for the area.

¹⁴ Assess turning path requirements; vehicle emissions; vehicle noise; hours of operation; and parking.



PART 3 – PREPARATION OF A TIA

3.1 TIA PRESENTATION

The TIA should:

- be clear and concise;
- contain a short non-technical summary; and
- wherever possible, include plans and illustrations.

Importantly, the bases for all assumptions must be clearly set out and detailed.

3.2 EXISTING CONDITIONS

Describe existing vehicle movements, including pedestrians, public transport and cyclists. Consider traffic safety issues and site development constraints.

In considering the vehicular and pedestrian impact of the proposed development, existing traffic volumes and turning movements at junctions and intersections are important. Appropriate traffic data (e.g., daily or hourly volumes) should be used in the assessment. If the development peak hour and the adjacent road traffic peak hour do not coincide, traffic data will be required for both time periods.

If an existing on-site use is to remain then traffic to and from that use must be included in any assessment. This allows the net traffic gain/loss from the proposed development to be determined.

Traffic safety is important. For example, if there is a particularly poor accident record, including pedestrian/vehicle conflicts, on a road likely to be affected by the proposed development, this should be recorded by the TIA.

Pedestrians, particularly children, may be affected by a proposed development, and this should be identified. For instance, a proposed development may generate traffic near a school, possibly posing a hazard to children for part of the day.

Assessment should consider possible variations and causes (e.g., if the proposed development is on a major tourist route, are there seasonal traffic/pedestrian variations?).

3.3 PROPOSED DEVELOPMENT AND ACCESS ARRANGEMENTS

The description should not only cover those aspects highlighted in Section 2 but should also give some insight into why the site is appropriate for the type of development proposed. An example could be justification for siting a commercial development in a rural area, while locating a dwelling in an urban would be a reasonable expectation.

The intended access(es) for the proposal need to be indicated, with the anticipated access arrangements defined. Any specific junction treatments that to cater for the traffic generated by the development need to be described.

Where road changes are required (or a new road needed) the TIA needs to confirm that the proposed development will minimise the creation of short cuts (sometimes called “rat-runs”) being introduced by connections to or through residential areas. This is because side roads and junctions are unlikely to have been designed for the additional traffic movements. There could also be an adverse impact on amenity and pedestrian safety.

3.4 TRIP GENERATION

The number of persons expected to use the development has to be estimated. The modal split is then determined to show how many will travel by private vehicle (e.g., car), buses, taxis and other modes of public transport, and as pedestrians and

cyclists. At commercial and industrial sites estimates of freight vehicle numbers and movements should be made. These estimates should be for all day and peak hours. Note the following:

- record the method used to estimate the numbers;
- explain the terms used (e.g., confusion can occur, for example, between one-way and two-way trips); and
- some tourism and recreational developments may generate peak traffic volumes at weekends and public holidays.

Two methods can be used to estimate trip generation, namely:

- first principles; or
- comparison with similar existing developments.

The **first principles method** makes assumptions about the development, its users and their behaviour, and is used when alternative information does not exist. An application is an unfamiliar type of development and there is a need to consider staff, customers/visitors, location and services as a basis for trip generation.

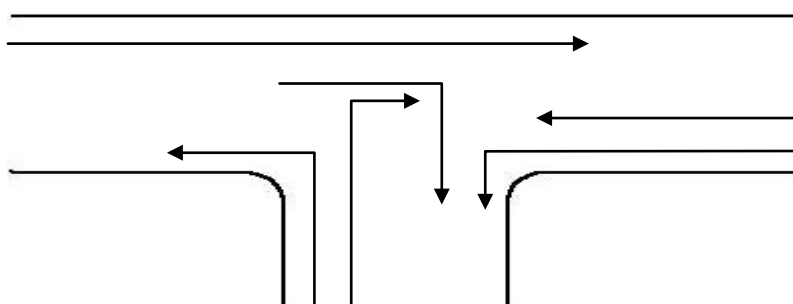
The **comparison method** compares the proposal with similar developments existing elsewhere and applying survey information from those sites to the proposed development. Interstate generation databases are available which provide information on a wide range of land uses (see PART 5 – USEFUL REFERENCES).

3.5 TRIP ASSIGNMENT

Identifying the routes and direction taken by traffic to and from the development site is essential. The trip assignment process identifies new vehicle numbers on roads and junctions (including the site entrance) near the development site.

A simple approach is to decide the direction of travel to and from the site and manually assign those volumes to existing roads, junctions and site entrances. The numbers must be added to existing and future traffic volumes on surrounding roads, i.e., the current and design year (see Section 3.6 – ASSESSMENT YEARS).

Typical trip assignment diagram



3.6 ASSESSMENT YEARS

The first assessment year is the year the development opens. Traffic implications should also be tested for the 10th year after the opening date. In some cases, such as for large staged developments, it may be necessary to specify trip generation at intervals beyond the minimum recommended. General traffic growth, including possible further local development has to be considered.

As a result of a traffic assignment it may be that, due to growth in vehicle numbers, further junction and/or road improvements are warranted during the 10-year design

period. The financial implications, and the decision whether to implement future improvements at the outset, must be considered.

3.7 TRAFFIC GROWTH

Use of various traffic growth projections (i.e., low, medium and high growth rates) is recommended in assessing future traffic volumes on the surrounding network.

DIER may be able to advise on current rates of growth on State Roads. Useful DIER contacts are indicated inside the front cover.

3.8 IMPACT ON TRANSPORT NETWORK

A TIA considers traffic changes that are likely to be brought about by the proposal, which may be undesirable (e.g., by increasing delays or accidents). Many developments occur in response to economic growth and increasing demand. For example, a new retail store may provide better facilities at a safer, more accessible location resulting in diversion of traffic from other roads.

Traffic generated by a new development can affect surrounding roads, the main impacts being noticed in access and junction performance. More complex and/or significant developments may have area-wide traffic impacts, e.g., accelerated pavement deterioration.

As well as road, access and junction improvements, there may be a need for other transport-related infrastructure, such as installation or upgrading of streetlighting or traffic signals. It may also be necessary to install road signs, traffic calming measures, pedestrian facilities, or undertake road closures and landscaping. For sites near rail lines, airports and ports, other transport infrastructure may need consideration.

3.9 ROAD SAFETY

Road crashes are rare events but their number and effect¹⁵ indicates the importance of keeping crashes to a minimum.

Consideration of safety issues depends on the size of the development and its location. A detailed analysis should be undertaken to determine whether a location being promoted for a proposal has an existing crash history¹⁶.

Road safety aspects of planning applications can include:

- ensuring the development has:
 - access designed to cater for all vehicles likely to visit the site;
 - taken account of the capacity of adjacent road(s) so that generated traffic will not affect the safety of other road users;
 - adequate off-street parking (overspill parking should not occur on adjoining residential or arterial roads); and
 - non-vehicular traffic areas, e.g., a pedestrian mall.
- internal road layout and loading/unloading areas designed to acceptable standards;
- safe, accessible car parking with clear internal circulation layout and signage; and
- safe pedestrian pathways through parking areas.

¹⁵ 1 864 reported injury incidents in 2005, with 51 killed and 372 seriously injured, costing the Tasmanian community over \$238 million.

¹⁶ Crash data can be obtained through DIER and should be requested during pre-application discussions with the road authority.

Austroroads guidelines and Australian Standards Manuals must be used in the design of, or modifications to, any access, road or junction.

3.10 INTERNAL LAYOUT

A well-designed layout can avoid problems on adjoining streets; the distance between the major road access and the first internal junction should be sufficient to avoid vehicles queuing back onto the major road. All layouts must ensure vehicles can enter and leave in a forward direction. Emergency vehicles may require special arrangements. Access for people with disabilities will also need attention.

Austroroads explain and define road width standards, corner radii, car-parking dimensions, etc. Advice is also given on matters such as road safety, the effect of landscaping on driver visibility, etc (see PART 5 – USEFUL REFERENCES).

Considerable experience has been gained in designing traffic calming devices. These principles should be built into the design of on-site traffic and pedestrian circulation systems to control vehicle speeds and should be implemented at the outset rather than being added later when problems may emerge.

Where effective bus services exist, it may be advisable not to provide for the full car-parking demand, thus encouraging the use of public transport.

3.11 STREET FURNITURE

The need for, location and design of the following and other related items should be discussed with the road and planning authorities and interested parties:

- bus shelters and seats;
- direction and other signs;
- landscaping;
- fencing;
- public telephones
- cycle racks; and
- maintenance access locations for services.

3.12 PARKING

Parking requirements are normally set out in planning scheme. Where standards are considered inappropriate there should be an agreement with the planning authority that a different approach can be used (see PART 5 – USEFUL REFERENCES).

The overall assessment of parking provisions should include:

- number of spaces (long-term v short-term);
- layout of car parking;
- time limits;
- turnover of spaces;
- spaces for people with disabilities; and
- overspill parking.

Parking projections can be obtained by comparing other similar sites or use of an existing database. It may be sufficient to record the peak parking demand at an existing site and apply that to a new development. Peak usage and future demand also need to be considered.

3.13 PUBLIC TRANSPORT

Many proposals cater well for car-borne transport but the needs of other forms of transport should also be addressed. The public transport demand of a proposal can depend upon the location, size, and type of the development and availability of public transport. There could be a requirement to:

- re-site bus stops;
- provide:
 - bus lay-bys;
 - bus shelters;
 - taxi ranks;
- re-route buses; and
- enable bus circulation paths.

Pedestrian paths to and from these facilities need to be considered, together with bus services and taxis. Upgrading or changes need to be assessed.

3.14 DELIVERY VEHICLES

Delivery/service vehicle requirements need to be considered in terms of size and the site's entry/exit points, e.g., for a retail development it is inappropriate to route these vehicles through customer car parks. Delivery vehicle turning areas shall allow entry to and exit from the development site in a forward direction.

3.15 PEDESTRIANS/CYCLISTS/ACCESS FOR PEOPLE WITH DISABILITIES

To avoid conflict with vehicles it is important to provide convenient and safe pedestrian movement, especially at junctions, accesses and through car parks,

Pedestrian facilities should match movement needs. A realistic view should be taken of pedestrians' unwillingness to divert from the most convenient line or use footbridges or underpasses when level crossing, however hazardous, is possible.

The needs of cyclists are similar to those of pedestrians. Good visibility, together with cycle paths, should be used to reduce cyclist/vehicle and cyclist/pedestrian conflicts. Such facilities may be needed en-route to the development as well as in the site itself. Secure bicycle parking will be appropriate in some developments and should be sited in a prominent and visible location.

The needs of people with disabilities are increasingly being recognised and initiatives are now aimed at improving this group's mobility. For good design practice and applicable legislative provisions, see PART 5 – USEFUL REFERENCES.

3.16 CONCLUSIONS/RECOMMENDATIONS

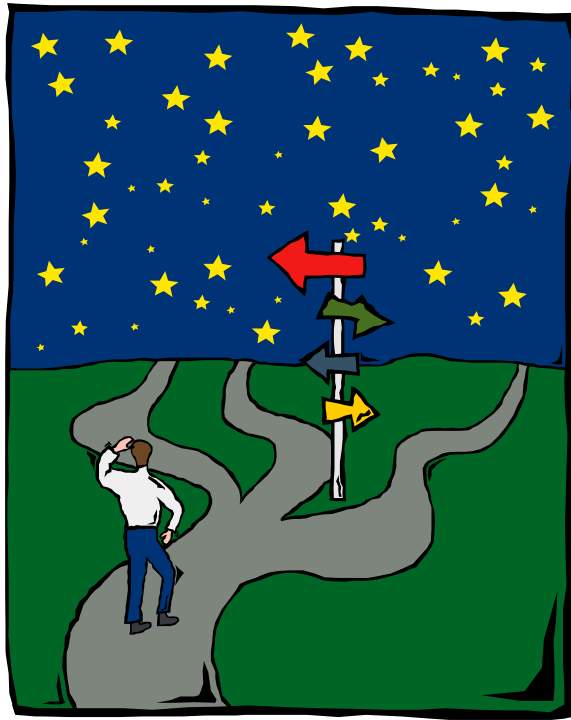
The TIA should summarise conclusions and make recommendations. It may be that:

- there will be little or no adverse impact on the transport network (no junction treatment required); or
 - alterations to minimise adverse impacts are needed; or
 - the projected development is inappropriate for the proposed site and no satisfactory mitigation measures can be recommended.
-

The recommendations should clearly list all matters that will be required to eliminate adverse impacts upon the transport network. This could involve one or more of the following:

- junction/access upgrade details,
- streetlighting,
- signage changes,
- pedestrian facilities,
- any land acquisitions, or
- any internal measures such as traffic management.

Where network upgrading is required to cater for the development, preliminary or conceptual designs should be provided in the TIA, along with broad cost estimates.



PART 4 – OTHER ISSUES

4.1 STATE ROADS

No works on or affecting a State Road can be commenced until a permit in accordance with the provisions of the R&JA has been issued by the Minister (or delegate) administering the Act.

All works within State Roads shall be designed and undertaken in accordance with the following, in order of precedence:

1. *Tasmanian Traffic Act 1925*;
2. *Tasmanian Traffic (Road Rules) Regulations 1999*;
3. Cross sections and clearances requirements of Appendix S2B of the "Design" specification of DIER's "*Standard Brief for Professional Services*" (SBPS);
4. All other requirements of the SBPS;
5. The requirements of DIER's "*Standard Specification for Roadworks*";
6. Australian Standards;
7. Austroads Framework; and
8. Relevant publications by DIER and other authorities.

4.2 ENVIRONMENTAL IMPACT

It may be necessary to consider the traffic effects impacting on the environment of the local community. The effects may include:

- noise;
- vibration;
- visual impact;
- community severance;
- pedestrian amenity;
- hazardous loads;
- air pollution;
- dust and dirt;
- ecological impacts; and
- heritage and conservation.

An appraisal should indicate the worst conditions likely to occur and their frequency. For example, 18-hour average noise levels would have little meaning to residents affected by increased truck traffic in early mornings

A TIA may be needed where a development will, or may, impact on a building, place or object of cultural or environmental significance within the planning area that:

- (a) is included on the register of the National Trust of Australia (Tasmania);
- (b) is included on the register of the National Estate;
- (c) affects any threatened species of flora or fauna;
- (d) affects any aboriginal relic; or
- (e) the planning authority considers it is in the community's interest so to do.

Part of the environmental appraisal process is to consider whether attenuation measures should be introduced to offset impacts such as visual pollution or noise. Measures can include physical works, e.g., earth mounding, noise barriers, soundproofing, traffic calming and landscaping. Other measures may also be appropriate such as vehicle routing, speed limit changes, restricted opening hours, or restrictions on size and weight of vehicles.

To enable DIER to recommend approval as indicated in Section 4.1 – STATE ROADS above, the issues highlighted in this section need to be properly addressed where relevant.

4.3 CONSTRUCTION PHASE

The short-term traffic impacts during construction of new or upgraded accesses and other infrastructure needs to be considered.

In DIER's experience, this aspect is very often overlooked, with the consequence being poor publicity for the developer, along with the road and planning authority.

For those developments having an impact on traffic operation during construction, DIER will generally require the provision of an appropriate public contact plan¹⁷ to accompany the site-specific traffic control being implemented.

4.4 FUTURE TRENDS

The RMPS of Tasmania is founded on the concept of sustainable development. Greater emphasis must be placed on transport modes that are more sustainable or "environmentally friendly".

RMPS Schedule 1 requires Councils to consider the broader social, economic and environmental effects of traffic growth and greenhouse emissions arising from new development.

Historically, TIA's have been used to determine expected traffic increases and assess the effect on adjacent roads, junctions and accesses. That system followed the traditional methods of considering traffic growth forecasts and the impact of the development. The basis of assessment was the private car and the improvements needed to cater for those vehicles.

In the interests of sustainable development, policy initiatives should be pursued to promote a more integrated approach to transport planning. The result should be that TIA's would reverse the traditional approach and give greater consideration to public transport, pedestrians and cyclists at the expense of private vehicles.

DIER is working towards the principles contained in the *"National Charter of Integrated Land Use and Transport Planning"* (see PART 5 – USEFUL REFERENCES).

Further advice on the format of TIA's will be provided if, and when, any change in transport priorities becomes discernible.

¹⁷ Details of the types of issues that it is considered require addressing can be found at DIER's web-site at <http://www.transport.tas.gov.au/road/specifications> under General Specification G2 in G2.7 - Public Contact.



PART 5 – USEFUL REFERENCES

USEFUL REFERENCES

Austroroads, **Guide to Traffic Engineering Practice**

Part 3 - Traffic Studies, Austroroads, 2004.

Part 5 – Intersections at Grade, Austroroads, 2005.

Part 8 – Traffic Control Devices, Austroroads, 1988.

Part 9 – Arterial Road Traffic Management, Austroroads, 1988.

Part 10 – Local Area Traffic Management, Austroroads, 2004.

Part 11 – Parking, Austroroads, 1988.

Part 12 – Roadway Lighting, Austroroads, 2004.

Part 13 – Pedestrians, Austroroads, 1995.

Part 14 – Bicycles, Austroroads, 1999.

Australian Standards

AS1328, Parts 1 to 4, **Design for access and mobility**, 1992–2002.

AS1742, Parts 1 to 14, **Manual of Uniform Traffic Control Devices**, 1991–2002.

AS2890, Parts 1 to 3 & 5, **Parking Facilities**, 1993–2004.

Disability and Discrimination Act 1997

Go to Commonwealth legislation on-line at <http://www.comlaw.gov.au/>

National Charter of Integrated Land Use and Transport Planning, 2003.

Roads and Jetties Act 1935.

Road Hazard Management Guide (DIER).

Road Traffic Authority (RTA), NSW, **Guide to Traffic Generating Developments**, RTA, 1993.

Standard Brief for Professional Services (DIER).

Standard Specification for Roadworks (DIER).

Tasmanian State Road Hierarchy (DIER – 2006).

Traffic Act 1925.

Traffic Control at Work Sites – Code of Practice (DIER – 2004).

Traffic (Road Rules) Regulations 1999.

Transport Department, SA, **Land Use Traffic Generation Framework**, Director-General of Transport SA, 1987.



ATTACHMENTS

ATTACHMENT 1 - CHECKLISTS

(Refer to Section 2.4 - CHECKLISTS)

ALL PROPOSALS Action completed (✓)

- description of proposal?
- location (plan prepared)?
- applicant and landowners name recorded?
- size of development recorded (m²/number of units)?
- current use/size of any existing development (are all uses described)?
- record name(s) of adjoining road(s) (plan prepared)?
- existing pedestrian access(es) identified on plan?
- existing vehicle access(es) identified on plan?
- proposed pedestrians access(es) identified on plan?
- proposed vehicle access(es) identified on plan?
- number of parking spaces existing and needed?
- adjoining road speed limits recorded?
- current traffic volumes recorded?
- sight distances checked?
- any site specific access obstructions/issues?
- road accident records checked?
- level differences between site and road at access(es)?
- any significant on-site constraints?
- any streetlighting existing or proposed?

Other site-specific issues

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PROPOSALS WITH SIGNIFICANT TRAFFIC IMPACTS ONLY

To be used in connection with major traffic generating proposals (i.e., where the volume of traffic generated by the development/use will generate more than 40 vehicle movements per day - total number of vehicles entering and/or leaving the premises).

Action completed (√)

- Do any vehicles use the site now?
- Provide statement on condition of adjoining road.
- Report on the actual speed of passing traffic
- Existing or potential pedestrian/cycle movements.
- Traffic generation (1st year of operation).
- Traffic generation (10th year of operation).
- Number of existing and proposed accesses.
- Traffic entry and exit arrangements for use of proposed access(es).
- Accident record on road(s) affected by proposal.
- What road/access improvements are needed?
- Traffic volume of passing traffic in future years?
- Is the level of existing infrastructure adequate for the traffic generation?
- Estimated cost of any improvements recommended.
- Allowance made for future growth in traffic generation by development?
- Special provisions (please list).
- Is a speed limit change likely to be required?
- Environmental impacts (on-site and in neighbourhood).
- Potential for promoting other transport modes?
- Impact on rail line operations?

Other site-specific issues:

-
-
-