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Traffic and Transport Assessment Guidelines

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Traffic and Transport Assessment Guidelines

May 2014

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1. Introduction

A major challenge for land use and transportation planning is to reduce the need to travel, to improve accessibility and to achieve the use of more sustainable modes of transport that do not have adverse environmental impacts, as well as to reduce energy consumption while maintaining economic vitality.

This document updates the Traffic and Transport Assessment Guidelines which were published by the National Roads Authority in 2007. The guidelines reflect current best practice in relation to the preparation of Traffic and Transport Assessments (TTA).

It is generally accepted that Traffic and Transport Assessments need to consider the impact of the development proposals on the entire transport network. The guidelines outline the need for assessment of public transport, walking and cycling networks, rather than singularly focussing on the road network. In this way, due consideration can be given to assist more sustainable travel arising from new development.

1.1. Purpose of these Guidelines

The production of Traffic and Transport Assessment Guidelines aims to provide a framework to promote an integrated approach to development, which ensures that proposals promote more efficient use of investment in transportation infrastructure, reduce travel demand and promote road safety.

The guidelines are intended to provide guidance for developers and their agents, planning authorities and the National Roads Authority (NRA) to assist in:

- scoping and conducting studies for traffic and transport assessment in relation to future development and also development areas particularly areas in proximity to national roads,
- defining thresholds at which studies are recommended as part of a planning proposal to minimise the impact of future proposals on the national roads network,
- Contributing the provision of sustainable forms of development and better-informed planning decisions.

Throughout this document, the term planning authority is taken to cover all staff working within the local authority that performs the functions of planning authority and road authority.

In summary, this guide is intended for:

- NRA staff evaluating planning submissions;
- Local authority staff dealing with planning applications;
- Local authority staff dealing with transport planning;
- Developers and their agents involved in preparing proposals and related planning applications for new developments or the redevelopment of existing sites;
- Public transport providers and operators; and
- Local authorities as an aid in the preparation of local, urban, county, and development plans.

1.2. Statutory Role of the NRA

The National Roads Authority is responsible for securing the provision of a safe and efficient network of national roads in accordance with section 17 of the Roads Acts, 1993 to 2007.

The National Roads Authority, in partnership with local authorities, have worked to provide a high quality national road network by removing inefficiencies such as bottlenecks and congestion, thereby delivering positive benefits in terms of improved journey times, safer roads, reduced environmental impacts and more efficient energy use. Following a period of

significant road investment, the Authority is now looking towards protecting and managing this infrastructure through a series of policy, engineering and technological interventions.

The DoECLG Spatial Planning and National Roads Guidelines for Planning Authorities (2012), issued under Section 28 of the Planning and Development Act, 2000 (as amended), sets out planning policy considerations relating to development affecting national roads (including motorways, national primary and national secondary roads) outside the 50/60 kmh speed limit zones for cities, towns and villages. Planning authorities and An Bord Pleanála are required to have regard to the guidelines in the performance of their functions under the Planning Acts.

Having regard to the requirements of the Spatial Planning and National Roads Guidelines for Planning Authorities (2012), the NRA, Planning Authorities and other transport agencies such as the NTA seek to uphold the following:

- Protect the substantial investment made in transport infrastructure and services, including the upgrading of national roads and public transport;
- Ensure high standards of safety for all transport users;
- Protect the primary function of national road infrastructure in catering for strategic traffic, as defined in the DoECLG's Guidelines on Spatial Planning and National Roads and, in doing so;
- Extend the service life of the national road network, thereby deferring to the longer term the need to invest in further road improvements and the construction of new roads;
- Prioritise the reduction in congestion by improving non-car alternatives and demand management in the environs of national roads and at the point of destination;
- Protect undeveloped lands adjoining transport nodes/corridors and national roads/junctions from inappropriate development so as to cater for potential capacity and safety enhancements, and
- Ensure, where appropriate, that capacity enhancements and/or traffic management measures can be put in place to facilitate appropriate new development, together with identified funding mechanisms.

1.3. Traffic and Transport Assessment

A Traffic and Transport Assessment is a comprehensive review of all the potential transport impacts of a proposed development or re-development, with an agreed plan to mitigate any adverse consequences.

All new developments will generate trips on the existing transport network, either by car, commercial vehicle, cycling, walking or public transport. In cases where a proposed development is of a size or type that would generate significant additional trips on adjoining transport infrastructure, this additional demand may necessitate changes to the road layout or public transport service.

It is essential that the developer or promoter should provide a full and detailed assessment of how the trips to and from the development might affect the transport network. The assessment should be an impartial description of the impacts of the proposed development and should outline both its positive and negative aspects.

1.4. Area Based Transport Assessment For Forward Planning

The principle of sustainable development, as endorsed in all planning guidance issued by the DOECLG, is focused on ensuring appropriate development in appropriate locations. This

principle is key to the DOECLG's Spatial Planning and National Roads Guidelines for Planning Authorities such that development planning can assist in managing car use and limiting the need for long distance trips, thereby promoting energy efficiency and protecting the economic viability of existing urban settlements. It is this principle that for example discourages large scale out-of-town retail centres accessed by high capacity roads, and large clusters of residential development with limited access to jobs, services, public transport nodes or education.

For Development Plans, Strategic Development Zones (SDZ) and Local Area Plans which would impact on the national road network, planning authorities must develop an evidence-based approach to planning policy (which may require detailed transport modelling), as necessary in accordance with the requirements of DoECLG Spatial Planning and National Roads Guidelines for Planning Authorities.

The purpose of this Area Based Transport Assessment is to identify the high level impacts of proposed broad locations for development in transport terms. An Area Based Transport Assessment is therefore wider in terms of scope and can help to identify the strategic and local transport interventions required to support population and employment growth in an area. In addition, the assessment should identify and assess the deliverability of these transport interventions which will in turn inform the preparation of the future Development and Local Area Plans.

It is critical that this assessment is evidence-based including understanding of and quantification of impacts. Reference to local policy documentation alone, in the absence of a robust assessment, will not determine the acceptance or otherwise of a particular site for any use. In this regard, an Area Based Transport Assessment should include the following:

- An understanding of the area, relevant policies, its anticipated uses and the quantum/nature of transport activity (road, public transport, cycling, walking) that will be generated as a result of the proposed development;
- A quantification of the catchment of users and level of travel activity that will take place, particularly during all relevant peak periods. There needs to be a clear understanding of the peak period for each land use. (e.g. retail/leisure would typically have weekend/event peaks).
- An estimate of total person trips, and mode share at peak periods of land use zoning, with a particular emphasis on road transport. In preparing estimates of mode share, existing data for comparable sites should be used as the starting point. Any reference to policy 'targets' may be presented in the context of a future scenario that might exist – but these should not form the starting point for any assessment.
- An analysis of the transport network in the area and its operation over the expected planning horizon. Information on traffic forecasting is available from the NRA Project Appraisal Guidelines. The analysis of the transport network should consider the full extent of the network where impacts are envisaged.
- In addition, the analysis should develop an estimate of aggregate impacts on the use of the national road network, particularly in the case of uses which may draw from a national catchment and lead to aggregate increases in car-based travel.

Following this initial assessment, it will be possible to establish the most manageable impacts on the transport network and to identify requirements for more significant infrastructure upgrades, mitigation, demand management, mobility management, monitoring, funding and phasing which should be incorporated as objectives into statutory plans and linked to site development. This Area Based Transport Assessment should demonstrate how the development complies with policies presented at a local, regional and national level.

The NRA and NTA can assist the local authority in this process by data exchange and assisting with the development of assumptions. However early discussions between agencies, developers and the planning authority will save time and resources later in the planning process by ensuring that all relevant issues have been covered in the most appropriate transport assessment from the outset.

1.5. Road Safety

The Road Safety Authority's Road Safety Strategy 2013-2020 builds on existing road safety interventions, but reframes the way in which road safety is viewed and managed in the community. It addresses all elements of the road transport system in an integrated way with the aim of ensuring collision energy levels are below what would cause fatal or serious injury. It requires acceptance of shared overall responsibilities and accountability between system designers and road users and it stimulates the development of innovative interventions and new partnerships necessary to achieve ambitious long term road safety targets.

Therefore the design of development proposals must address the functionality and safety of the road needs. Two processes specifically address these design concerns: Road Safety Impact Assessment (RSIA) and Road Safety Audit (RSA).

- Road Safety Impact Assessment (RSIA) is described in the EU Directive on Road Infrastructure Safety Management (EU RISM) 2008/96/EC as a strategic comparative analysis of the impact of a new road, or for substantial modifications to an existing road, on the safety performance of the road network. (Refer to NRA standard: NRA HD 19 ' Road Safety Impact Assessment')
- Road Safety Audit (RSA) involves the evaluation of road schemes during design, construction and early operation to identify potential hazards to all road users. RSA is to be carried out on all new national road infrastructure projects and on any schemes/proposal which results in a permanent change to the layout of a national road. (Refer to NRA standard: NRA HD 19 ' Road Safety Audits')

RSIA is a separate process to Road Safety Audit (RSA). While RSA examines the safety aspects within a scheme, RSIA considers the safety impact of a scheme on the surrounding road network. RSIA and RSA both work to improve the safety performance of new roads and existing roads that require modifications due to projects or proposals. Both have consequences for the design and layout of any project. For Traffic and Transport Assessment, the appropriate and correct implementation of these instruments is essential in the preparation of planning proposals. Standards and Advice Notes on these processes are available from the NRA Design Manual for Roads and Bridges available for download from <http://nrastandards.nra.ie>

1.6. Early Discussion

As already outlined planning authorities should encourage early discussion with relevant agencies for forward planning purposes and with developers for planning development proposals at the start of preparing Traffic and Transport Assessments, Area Based Transport Assessment and the outlined road safety processes.

For planning applications, this discussion is best undertaken at the pre-planning application stage. This will enable clarification of whether the transport elements of the proposals are likely to be acceptable or whether additional analysis or measures will be required so that the development proposed will be sustainable. Throughout the process of securing planning permission, the main point of contact for the developer will be with the planning authority. However, other bodies may also need to be involved, depending on the nature, scale and location of the proposal.

Where a development could have a direct or indirect impact on the operation or safety of traffic on the National Road network, the planning authority should have regard to official policies for development management and access to national roads as outlined the DOECLG's Spatial Planning and National Roads Guidelines for Planning Authorities. These policies should also be highlighted to the developer. Early contact with the planning authority can also identify the need for discussions with other stakeholders.

2. Carrying Out a Traffic and Transport Assessment

2.1. Thresholds

This section considers the thresholds at which the production of Traffic and Transport Assessments in relation to planning applications is recommended. It is important to identify proposals that will affect National Roads and which may have other transport implications at the earliest stages of development planning and design. This will help to ensure that additional costs and delays to the developer are avoided and facilitate best practice evaluation by planning authorities, the NRA and other transport agencies.

Table 1.4 of the Traffic Management Guidelines (DoT/DoEHLG/DTO, 2003) gives the thresholds above which a Transport Assessment is automatically required. The thresholds concerned are reproduced in Table 2.1 below.

Table 2.1 Traffic Management Guidelines Thresholds For Transport Assessments

Traffic to and from the development exceeds 10% of the traffic flow on the adjoining road.
Traffic to and from the development exceeds 5% of the traffic flow on the adjoining road where congestion exists or the location is sensitive.*
Residential development in excess of 200 dwellings.
Retail and leisure development in excess of 1,000m ² .
Office, education and hospital development in excess of 2,500m ² .
Industrial development in excess of 5,000m ² .
Distribution and warehousing in excess of 10,000m ² .

* In locations that experience particularly heavy congestion and when traffic flows from a proposed development are less than 5% of the traffic flows on the adjoining road, a Transport Assessment may still be required. When in doubt, the requirement for a Transport Assessment should always be scoped with the relevant local authority.

Due to the strategic role of national roads and the need to ensure that the carrying capacity, efficiency and safety of the network is maintained, the management of development will, , require tighter control as indicated in the DOECLG's Spatial Planning and National Roads Guidelines for Planning Authorities. Where applications affect national roads a Transport Assessment should be requested if the thresholds in Table 2.2, below, are exceeded.

Table 2.2 Advisory Thresholds for Traffic and Transport Assessment Where National Roads are Affected

Vehicle Movements	100 trips in / out combined in the peak hours for the proposed development	
	Development traffic exceeds 10% of turning movements at junctions with and on National Roads.	
	Development traffic exceeds 5% of turning movements at junctions with National Roads if location has potential to become congested or sensitive.	
Size	Retail	1,000m ² Gross Floor Area.
	Leisure facilities including hotels, conference centres and cinemas.	1,000m ² Gross Floor Area.
	Business	2,500m ² Gross Floor Area.
	Industry	5,000m ² Gross Floor Area.
	Distribution and warehousing	10,000m ² Gross Floor Area.
	Hospitals and education facilities	2,500m ² Gross Floor Area.
	Stadia	1,500 person capacity.
	Community Facilities including places of worship, community centres.	1,000m ² Gross Floor Area.
	Housing	50 dwellings within urban areas with a population less than 30,000. 100 dwellings within urban areas with a population equal to or greater than 30,000.
Parking Provided	100 on-site parking spaces.	

2.2. Sub-Thresholds

In some cases, the impact of traffic volumes may not be significant and the thresholds requiring a TTA may not be exceeded. However, the type and volume of generated traffic on National Roads may be of a nature to raise concerns about effects on road safety and road infrastructure. The planning authority should consult the evaluation criteria in Table 2.3. It is recommended that if the proposed development meets two or more of these criteria, then a Transport Assessment should be requested.

Table 2.3 Sub-threshold Criteria for Traffic and Transport Assessment

Vehicle Movements	The character and total number of trips in / out combined per day are such that as to cause concern.
Location	The site is not consistent with national guidance or local plan policy or accessibility criteria contained in the Development Plan.
Other Considerations	The development is part of incremental development that will have significant transport implications.
	The development may generate traffic at peak times in a heavily trafficked/ congested area or near a junction with a main traffic route.
	The development may generate traffic, particularly heavy vehicles in a residential area.
	There are concerns over the development's potential effects on road safety.
	The development is in a tourist area with potential to cause congestion.
	The planning authority considers that the proposal will result in a material change in trips patterns or raises other significant transport implications.

2.3. Scoping

The scoping study is a very important part of the TTA process. It is a precursor to the preparation of a TTA and should be undertaken at the earliest stages of planning for development.

For a **planning application**, this phase may be the initial contact between the developer and the planning authority and, as such, the opportunity should be taken to emphasise the role of transport as both a possible asset and liability to the development. The planning authority should avail of such contact to address traffic and transport implications as an integral element of the development proposal.

The **scoping discussion** facilitates early identification of the data to be collected, the area of analysis, the methodology to be adopted and the years of assessment to be examined. Scoping discussions will also provide the opportunity for developers to enquire as to the availability of **local data** that may assist in the preparation of an assessment. This, in turn, allows an assessment of the resources required to undertake the Transport Assessment.

In **urban areas**, ways to promote non-car access to the proposed development need to be explored. Non-car access includes convenient pedestrian and cycle interconnection between existing and proposed developments and public transport facilities. The assessment should also look at the existing levels of public transport use and, where appropriate, identify measures to maximise such use.

The **threshold approach** should be used to establish the area of influence of the development. In general, the study area should include all road links and associated junctions where traffic to and from the development may be expected to exceed 10% of the existing traffic movements, or 5% in congested or other sensitive locations, including junctions with national roads. Where two or more of the supplementary criteria as indicated in Table 2.3

apply in relation to any of the adjoining links or junctions, then those links and junctions should also be considered for inclusion in the study area.

On-going liaison between the developer and the planning authority will facilitate agreement as to the nature and scale of the development, including any required road network changes and/or enhancements. These discussions could be used, where appropriate, to reach agreement on funding requirements, the use of planning conditions and planning/ other legal agreements to secure the required infrastructure, including improvements, where appropriate.

There is a tendency to consider works within **the curtilage of a development** as being outside the concern of the planning authority, road authority or other public bodies. This may be acceptable in some instances, but best practice indicates that, where there is the likelihood that the public areas within a development may come under public or local authority control in the future, then the accesses and layout within the development should be addressed by the Transport Assessment. This is particularly important in relation to housing developments and industrial estates.

2.3.1. Scoping Discussions Agenda

For all traffic and transport assessments, detailed scoping discussions with local authorities at pre-planning stage need and should be undertaken. This discussion should consider as many of the areas of interest as are likely to be relevant from the list below:

- Location, size and nature of the proposed development.
- Is the development in line with National, County and Local Area Plan policy?
- The existing use(s) of the land.
- Does the development involve relocation of an existing use?
- Are there any special circumstances relevant to this proposal?
- What provisions are there for pedestrians / cyclists / public transport / disabled access?
- What is the carrying capacity of the existing transportation networks?
- What data sources, guidance is available?
- Are traffic surveys of the existing traffic conditions required?
- Potential trip / traffic generation from the site. Initial estimates can be obtained from available databases (see paragraph 3.3), from existing similar development in the locality, or from existing travel patterns if the development is relocating.
- What are the targets for mode share and how are they to be achieved?
- Are trip distribution and assignment models to be used?
- Are further traffic generation surveys required or can the TRICS database be used to estimate trip rates?
- What is the rate of traffic growth locally?
- When is the critical time period of assessment? i.e. consider the peak hour for development traffic and also the peak hour for the network – it may be necessary to assess both periods if they are different. What are the assessment years?
- When will the site become fully operational? Are there significant phases to the project?
- Are there ways to reduce car dependency? Is a mobility management plan and future travel plans required?
- Will the site attract traffic from other adjacent sites?
- Are there any adjacent developments committed or proposed that will have significant trip / traffic implications?
- What is the cumulative impact of the development within the area?
- What will be the area of impact of the proposal, i.e. which adjacent local regional and National Road routes and junctions will be affected and require capacity calculations?
- Will adjacent links or junctions become overloaded or be impacted significantly? Is a new or modified road access likely?

- What level of car parking provision is proposed?
- What sightlines/ visibility splays are available at the proposed development accesses?
- Do they comply with the requirements of the standard, *NRA TD 41-42 Geometric Design of Major/Minor Priority Junctions and Vehicular Access to National Roads*
- Are there any road safety implications?
- Is a Road Safety Impact Assessment or Road Safety Audit required? Refer to DMRD standards.
- What type of transport analysis is most suitable, i.e. what type of traffic modelling software is most appropriate to give the best understanding of the potential impacts?

2.4. Summary of Transport Assessment Methodology

Following the completion of the scoping discussions, a clear picture should emerge of the scale of assessment that is required. The figure below outlines the lifecycle of transport assessments.

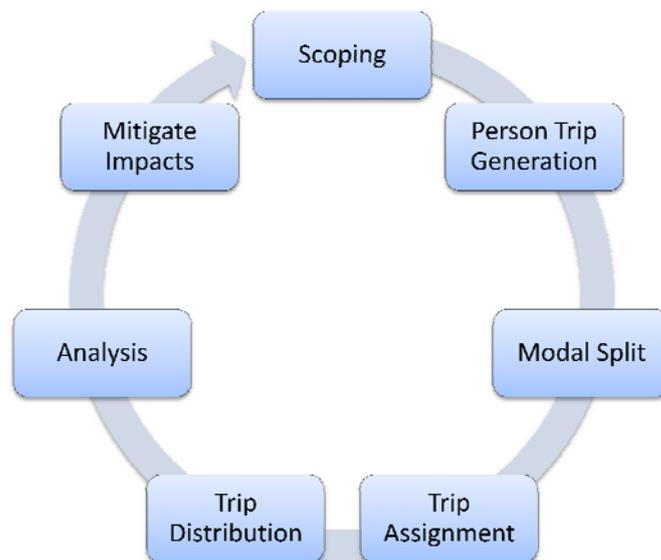


Figure 2.1: Transport Assessments lifecycle:

2.5. Analytical Techniques

The approach to the preparation of Transport Assessments should involve the use of relevant data and appropriate established analytical techniques such that the conclusions are sufficiently robust and supported by evidence. The following sections outline some of analytical techniques that can be deployed.

2.5.1 General Transport Modelling

The sophistication of transport modelling software has advanced considerably in recent years. Transport modelling can greatly assist in obtaining a better understanding of the implications of development proposals.

With respect to modelling, the following resources are available

- The **National Roads Authority** maintains a National Transport Model of interurban travel by all mechanised modes of transport. It is used as the basis for strategic planning, scheme appraisal and policy evaluation, and is available for use by Government bodies,

local authorities and researchers. Requests for access should be addressed to the Strategic Planning Unit of the National Roads Authority.

- The **National Transport Authority** maintains a regional strategic transport model covering the Greater Dublin Area (i.e. the counties of Dublin, Meath, Kildare and Wicklow). The model includes all the main surface modes of travel (including travel by car, bus, rail, heavy goods vehicles and slow modes). Requests for access should be to the National Transport Authority.
- Local multi-modal transport models may be available and provide a good representation of local traffic patterns and forecasts.

Where relevant the NRA and NTA should be consulted by the planning authority prior to the development of the modeling approach.

For further information on the development of transport models please refer to the NRA Project Appraisal Guidelines – Unit 5.2 ‘Construction of Traffic Models’.

2.5.2 Traffic Modelling Software

There are various modelling software packages available to assess junction and network capacity and operation. The type of modelling proposed to be used should be discussed with the planning authority at the scoping stage. In particular the projected demand on the transport infrastructure should be clearly set out in terms of both the existing situation and the implications of additional trips generated.

Where standard software techniques are used, it is critical that the modelling assumptions and the results should be submitted electronically to allow for independent analysis. The results of traffic modelling software packages are critically dependent on the detailed assumptions that have been used. The easiest way of checking this is to have an electronic version of the model available so it can be run independently. The key modelling packages are detailed below:

- PICADY - Isolated priority junction;
- ARCADY – Isolated roundabout junction;
- LinSig/TRANSYT – Individual signalised junctions and signalised junction networks;
- VISSIM/PARAMICS - Complex junctions / network;
- SATURN/VISSUM/CUBE/EMME – Strategic network modelling;

PICADY is applied to assess priority or give-way junctions. The benefits of this modelling approach are to provide an understanding of the capacity of a simple junction in terms of queue lengths and junction operation.

ARCADY is used to appraise the operation of roundabouts. The model can identify forecast capacities, queue lengths, time delay and accident risks.

LinSig and TRANSYT modelling allows for an analysis of individual signalised junctions and also analysis of a network of signalised junctions that are located in close vicinity. The models allow for optimisation of cycle times and green times, whilst generating outputs on the likely Degree of Saturation for the various arms of junctions.

VISSIM and PARAMICS are micro simulation traffic modelling tools used in complex urban areas or non-standard junction layouts. These models capture individual driver behaviour characteristics and can model the impacts of lane changing and gap acceptance decisions to simulate complex urban transport networks. They are also particularly useful tools to assess the potential impacts associated with non standard junction operation such as concentrated bursts of traffic being released onto the mainline of national primary routes from merge slips.

SATURN, VISSUM, CUBE and EMME can be used to understand the strategic impacts of a transport or development proposal. A strategic impact could be a wider reassignment of traffic on to alternative routes on the network, a shift to a different mode of travel in order to reduce costs or a change in time of trip departure in response to network congestion. These models can vary in size covering local areas, entire towns or broad regions.



Figure 2.7 Sample screenshot of micro-simulation model

The above information provides an indication of the range and type of different software available. Alternative traffic modelling software not included in the above list may also be appropriate for use in Transport Assessments.

2.5.3 Examining Public Transport Networks

Bus and rail services to, from and in the vicinity of a proposed development site are important in providing public transport links with a variety of destinations. Passenger demand from new development can affect these networks in two main ways; by requiring new or extended services to be introduced to improve accessibility to the site; and by creating further demand on the existing network. It is good practice to undertake public transport occupancy surveys to establish the residual capacity of the public transport networks. These issues should be carefully considered as part of any transport assessment.

2.5.4 Walking and Cycling Accessibility

The use of Geographical Information Systems (GIS) to illustrate the location of a development in the local and regional context is very useful as it provides a pictorial representation of the development and so makes description easier. Catchment areas can be used to illustrate walking distances to public transport connections. Cycle catchments can illustrate the benefits of using a bicycle to access a particular development. The assessment should include an analysis of the current environment for walking and cycling and identify any barriers and opportunities to making the environment more conducive to walking and cycling. Care should

be taken to ensure the isochrones reflect actual walk time, giving due recognition to actual walking facilities rather than an “as the crow flies” assessment.

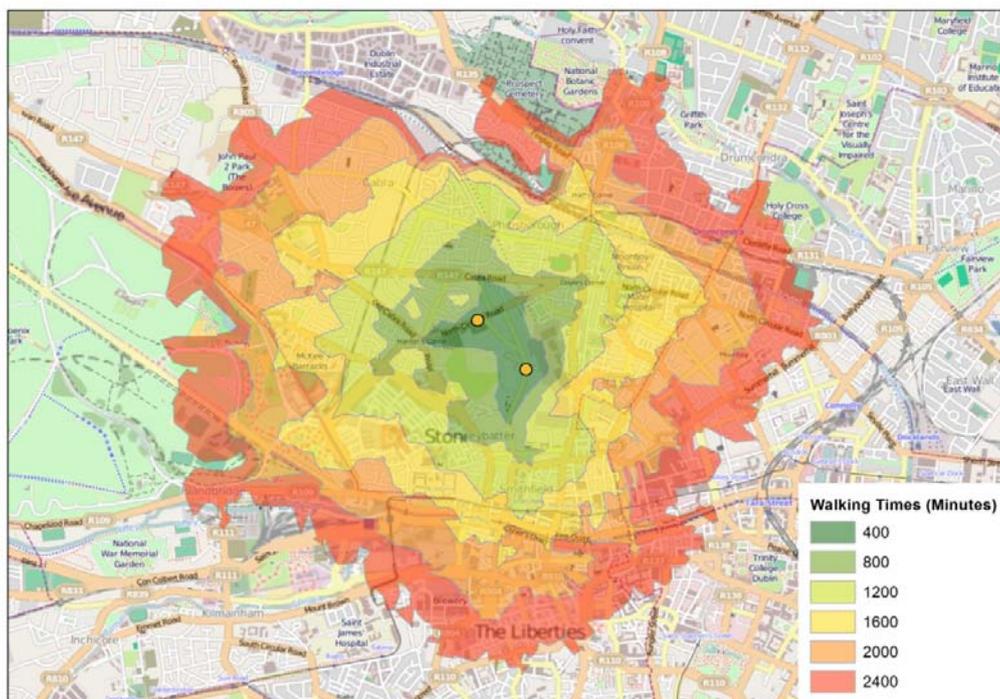


Figure 2.2: Walk time Isochrones

2.6 Useful Transport Data Sources

The collection of recent local and traffic survey data is usually required to ensure the existing situation is captured accurately. Typical surveys can include manual vehicle classified counts, journey time surveys, origin-destination surveys (via Bluetooth or automatic number plate recognition systems), axle surveys and speed surveys.

A useful reference source when scoping the requirement for survey collection is the permanent traffic monitoring units reported on the **NRA website** www.nratraffic.ie. Care is required when using this data to ensure that the dataset is complete and the monitoring units are functioning correctly. The NRA website contains downloadable Excel spreadsheets with hourly directional traffic counts and daily directional traffic counts, as well as summary graphs. These data sources can be used to identify peak periods and traffic flows in a given area. Advice on data collection and forecasting is available in the NRA’s Project Appraisal Guidelines – Unit 5.3 ‘Traffic Forecasting’.

The **Census** database of Place of Work, School or College Census of Anonymised Records (POWSCAR) is also an excellent resource for transport data.

While the **National Transport Authority** publishes a number of Reports, Analyses, Guidelines, Manuals and data-sets which are publicly available at <http://www.nationaltransport.ie/publications/statistics/reports/>.

The **Road Safety Authority** provides road safety statistics and a road traffic collision history database on its website.

3 The Traffic and Transport Assessment Report

3.1 Introduction

The detailed layout of each Traffic and Transport Assessment will differ in response to the wide range of possible developments and circumstances relating to the individual planning application. This chapter outlines the form and content that should be covered in a Traffic and Transport Assessment.

The Traffic and Transport Assessment should be written as an impartial assessment of the traffic impacts of a scheme and it should not be seen to be a “best case” promotion of the development. All impacts, whether positive or negative, should be recorded.

The level of detail to be included within the report should be sufficient to enable an experienced practitioner to be able to follow all stages of the assessment process and to reach a similar set of results and conclusions.

3.2 Format

The Traffic and Transport Assessment report should be factual, clear and concise. It should have a logical structure containing an introductory section followed by sections dealing with assumptions and analyses and ending with conclusions and recommendations.

Calculations should be bound separately in an Appendix or provided on compact disc or other electronic format, as appropriate.

Diagrams, drawings and other illustrative material should be used where possible to aid the reader in interpreting the report. The report should include clear headings and full references.

The main report text should contain the key results arising from the analyses and the reader should not be required to have to refer to calculations or computer output to obtain key information.

The Traffic and Transport Assessment should include a Non-Technical Summary. This could be considered to be an executive summary or a synopsis. The non-technical summary should enable interested parties to obtain a fair and accessible indication of the traffic and transport effects of the proposal without having to work through an extensive and complex technical document.

3.3 Content

The report should include sections under the following general headings (the scoping study will determine the need for inclusion and extent of treatment of each heading and the assumptions that were established at the scoping study should be clearly stated in the report).

- Non-Technical Summary
- Existing Conditions – Current traffic, critical links and junctions, committed transport proposals in area, other surrounding proposed development.
- Proposed Development – Size and use.
- Person Trip Generation – identifying the total person trips by all modes by peak and variation over days of week.
- Traffic Forecasting – methodology used, reason for the determination of growth rates applied
- Modal Split – allocating the persons trips to the modes of travel using an evidence based approach
- Trip Distribution – Catchment area, transfer trips, pass-by trips, combined trips.

- Trip Assignment – Turning movements at site entrance and at critical junctions in area.
- Assessment – Analytical assessment of the impact of the development proposals on the transport network should be presented.
- Road Impact – Analysis of junction capacity, including queue lengths and reserve capacity at base year, year of opening, year of opening plus 5 years and year of opening plus 15 years. Alternative designs for critical junctions should be detailed where necessary.
- Cumulative Impacts - Analysis of all committed developments in the area.
- Road Safety – Historical data, effect of development. Road Safety Impact Assessment (RSIA) and Road safety audit will be required for any proposed changes to the road layout in some circumstances.
- Environmental Impact – Including measures to mitigate impact.
- Internal Layout – Circulation, pedestrian routes, visibility and road width, traffic management and speed control measures.
- Parking – Numbers, special needs percentage, layout, and service areas.
- Public Transport – Provision, access from site.
- Pedestrians / Cyclists – Accessing the site, routes through the site and cycle parking.
- Accessibility and Integration – Access to local area, community severance.
- Access for People with Disabilities – Any specific provisions.
- Mitigation – Range of solutions to reducing transport impact of the proposal.

Further explanation of expected content under some of the above headings is set out below:

Person Trip Generation

Achieving an accurate estimate of the anticipated level of development trips for all modes of travel is required. The trip generation methodology will depend on the land uses proposed and the information available for interrogation.

Traffic volumes on the existing network are typically greatest during the weekday morning and evening peaks, although for some land uses the weekend periods are particularly relevant. The assessment will need to identify the development trip impacts during the peak periods for the local network.

An anticipated trip rate profile can be obtained from databases such as the TRICS (Trip Rate Information Computer System) database, although it must be demonstrated that the survey sites selected are compatible with Irish conditions. Alternatively, a trip generation survey of a similar site or Census data can be used to estimate trip rates.

Traffic Forecasting

The assessment should incorporate an analysis of the road network traffic flows for the base year, opening year and forecast scenarios. The required modelling scenarios are summarised as follows:

- Base Year.
- Opening Year (With / Without Development).
- Opening Year + 5 Year Forecast (With / Without Development).
- Opening Year + 15 Year Forecast (With / Without Development).

Growth rates should be applied to the base network traffic flows to allow for a reflective analysis of the future year scenarios. This will account for general traffic growth within the area, which will increase the amount of traffic on the base network. In the first instance, the

National Roads Authority Growth Rates should be applied. These are set out in the Project Appraisal Guidelines – Unit 5.3 ‘Traffic Forecasting’ <http://www.nra.ie/policy-publications/>.

Alternatively, traffic growth forecasts available from other sources, such as a regional multi-modal transport models, may be used. In this case, all local forecasts should be compared to the appropriate NRA growth forecasts.

Where growth rates have not been applied to the base flows, evidence will need to be incorporated in the Transport Assessment to demonstrate the robustness of the approach adopted.

Network flow diagrams should be present as part of the assessment report as a visual aid to enable the reader to discern traffic flows on the network for the various modelled scenarios.

Modal Split

A modal split analysis should be undertaken as part of the assessment. The analysis will assist in understanding the anticipated trip profile associated with the proposed development.

A baseline modal split analysis through the interrogation of the latest Census data for the area concerned should be undertaken. The Census data (POWCAR) is reflective of existing journey patterns and is the preferred approach to be adopted in assessments.

The study area interrogated in the modal split analysis should be carefully considered and ultimately reflect the development proposals, ensuring a reflective modal split is derived. If a development of comparable characteristics is situated in the vicinity of the proposed site, it is recommended that Journey to Work data for that area should be established. It must be demonstrated how future modal split targets are to be achieved.

The outputs from the modal split analysis will inform the core elements of the Transport Assessment, including:

- Trip generation.
- Trip distribution and assignment.
- Parking provision.

Trip Assignment and Distribution

The trip assignment will identify where trips are coming from and going to. Trip distribution assigns these trips to links or junctions along the road network.

The preferred approach to identifying a comparable distribution for similar land uses is to use the CSO Place of Work, School and College - Census of Anonymised Records (POWSCAR) data, or other surveys specific to the type of development proposed.

Certain land uses such as education and health facilities are likely to have recent travel survey results for staff, visitors, pupils, etc. These outputs can be reviewed to identify where people are currently travelling to and from.

When preparing a Transport Assessment for land uses such as food stores, it may be applicable to acknowledge that a proportion of trips will already be present on the surrounding road network. For instance, a ‘pass-by’ trip is made by traffic already using the road network and enters a site as an intermediate stop on the way to/from another destination. The trip may not be necessarily generated by the proposed land use and thus is not a new trip to the network.

When a Transport Assessment proposes to assign a proportion of trips as ‘pass-by’, sufficient evidence will need to be presented to justify the discounting of development trips.

Cumulative Impacts

Traffic and Transport Assessment should consider all committed developments within the vicinity of the site. This includes sites which have previously been granted planning permission but which are yet to become operational as well as any planning applications that have been submitted but have yet to be determined.

The scoping discussions will identify and agree committed developments for inclusion. Reasonable judgement should be applied in determining the extent of influence that proposed developments may have. This will ultimately be dependent on the nature of the transport network and the size of the proposed development.

The assessment should also consider the potential impact of developments from a neighbouring local authority. Potential cross boundary movements may impact upon the operation of the local transport network and should, therefore, also be included within an assessment, where appropriate.

Parking

Parking provision within the proposed site may be required for various modes of transport. Sufficient parking provision is required to ensure the site can accommodate trips generated by the proposal and should also be indicative of the proposals location, thus minimising the potential for overflow/ oversupply of parking

The outputs from the trip generation, distribution and multi modal analysis will identify the modes by which people are likely to travel to the proposed site. Using this information, an appropriate amount of parking provision can be identified.

Care is required to ensure that the proposal does not generate an over-provision of parking. When determining a suitable car parking provision, emphasis should be placed on promoting sustainable travel, having particular regard to the modal split analysis undertaken. Parking analysis should be demonstrated to be consistent with trip generation analysis.

Targets can be identified within an accompanying Mobility Management Plan or Workplace Travel Plan to gradually reduce the amount of onsite car parking provision over a period of time, to promote sustainable modes. In addition, where car travel is necessary, the provision of dedicated car sharing bays should also be considered.

Consideration should also be afforded to the provision of electric vehicle charging points within strategic sites. This will serve to promote electric vehicles as a viable and sustainable mode of travel, and can result in wider benefits to the area, including noise and air quality.

Servicing Arrangements

The impacts of servicing arrangements for the proposed development should be outlined in the assessment. Specifically, the assessment should detail:

- Hours of servicing.
- Anticipated amount of servicing vehicles per week.
- Type of vehicle envisaged to service the site.
- Servicing provision

Servicing vehicles should be accommodated satisfactorily both entering and exiting the proposed development. A swept path analysis should be incorporated to illustrate that servicing vehicles will be able to safely manoeuvre through the proposed development egress/access and also within the internal layout.

Construction

A full assessment of the construction phase should be included in the assessment, detailing the levels of construction traffic generated and the routes likely to be subject to construction traffic impacts.

A Construction Management Plan is generally required to accompany a planning application where the construction phase may impact upon the operation of the adjacent road network. The Transport Assessment should be coherent with the plan, whilst also identifying any necessary mitigation measures that may be deemed necessary to alleviate the construction impact on the adjacent road and transport networks.

Transport Infrastructure

A Traffic and Transport Assessment should consider and assess all potential impacts on transport infrastructure (road cycling, walking public transport), based on construction proposals and demand forecasts. The development impact upon any committed transport schemes should also be appraised.

Design details should be incorporated where a proposal may have a direct impact upon transport infrastructure, for example bus or cycle lanes.

Mitigation

Mitigation measures may be required as part of the emerging planning application or area which is being planned for. Where agreements are necessary with third parties to include mitigation measures with the proposed development, full details of these should be incorporated in the Transport Assessment.

Where mitigation measures are to be secured by a legal agreement or planning obligation, full details of the delivery mechanism should be included.

The assessment should set out the range of demand management measures that have been assessed.

A Mobility Management Plan or Workplace Travel Plan should be developed and proposals to ensure that they constitute proactive methods of influencing travel behaviour and a shift to more sustainable travel modes, such as walking, cycling and public transport, should be outlined. Details on these processes are available from the NTA at <http://www.nationaltransport.ie>.

Where the Transport Assessment concludes that the impacts of a proposed development do not need to be mitigated, comprehensive reasons should be outlined.

Summary

The concluding section should provide an overview of the Transport Assessment and its findings of the development impacts upon the surrounding transport infrastructure.

Glossary of Terms

Area Based Transport Assessment: identifies the high level impacts of proposed broad locations for development in transport terms. These assessments can help to identify the strategic and local transport interventions required to support population and employment growth in an area.

Combined Trip: A trip with two or more purposes to the same destination, or with two or more destinations within one development.

Congested: A junction or link is considered to be congested when traffic flows are at 85% of the estimated capacity of the junction or link.

Capacity Calculations: Standardised methods of estimating traffic capacity on links and at junctions.

Cumulative Impact: The impact associated with all committed development

Generated Trips: Additional trips made as a result of the presence of a development.

Incremental or Piecemeal Development: Repeated, apparently uncoordinated, small-scale development on the same or adjacent sites.

Mode: Method of travel, whether by foot, cycle, private car, public transport etc.

Mode Share: The split between different modes of transport.

Mobility Management Plan/Workplace Travel Plan: A development management tool that brings together transportation requirements, employers, staff and site management issues in a coordinated manner.

Pass-by Rate: Proportion of traffic generated by a development estimated to be existing traffic on the network passing by and visiting development.

Peak Time / Activity Peak: Time of day at which the transport demands are greatest.

Phased Development: Planned coordinated development over a single large site or over a development area.

Road Network: The existing and proposed public and private roads within the study area.

Sub-threshold: Levels below the defined threshold at which a Transport Assessment is required

Scoping Study: A preliminary evaluation of a proposal to identify the possible nature and extent of the impact that the proposal may have on trip generation and also on the existing and planned transport infrastructure.

Traffic Growth: The normal expected growth in traffic over time.

Trip: One movement, in or out of the study area by foot, cycle or vehicle.

Trip Assignment: The final estimated flows of traffic for each direction of travel at each junction and along each link within the study area.

Trip Distribution / Directional Split: The estimated directional distribution of the estimated traffic at each junction in the study area.

Thresholds: Minimum levels at which Transport Assessments are to be conducted.

Transport Infrastructure: All facilities relevant to road, rail, sea and air transport.

TRICS: A database containing empirically obtained trip generation data for a wide range of different types of developments.

Trip Generation Survey: a survey of trips accessing / leaving a specific site that can be used to calculate trip generation rates.



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