An Taisce
The National Trust for Ireland

20182112-ABP-302885

An Bord Pleanala
64 Marlborough Street
Dublin 1

Sent by email to:
bord@pleanala.ie

21.12.18

ABP Reg. Ref: **302885**
App: **Galway National Roads Project Office (Galway County Council)**
For: **N6 Galway City Ring Road Motorway Scheme 2018 and Protected Road Scheme 2018**

Dear Sir/Madam,

An Taisce wishes to make the following comments on the subject Strategic Infrastructure Development ("**SID**") proposal.

1.0 THE GLOBAL CONTEXT

All development proposals need to address a development context of planetary boundaries in emission impact and resource consumption.

Global Footprint Network, an international research organization, assesses the annual date of Earth Overshoot Day – when humanity's annual demand on nature exceeds what Earth's ecosystems can renew in that year.

Humanity is currently using nature 1.7 times faster than out planet's ecosystems can regenerate.

Global Footprint Network calculates Earth Overshoot Day every year using Ecological Footprint accounting, which adds up all of people's competing demands on nature, including demand for food, timber, and fibres (cotton), absorption of carbon emissions from burning fossil fuels; and buildings, roads and other infrastructure. August 1st 2018 is the earliest Earth Overshoot Day since the world

went into ecological overshoot in the 1970s.

In addition to climate emission impact this puts into question continuing resource consumption models, including aviation growth and the material resource and manufacturing input into individual private motor vehicle ownership.

2.0 THE EIA DIRECTIVE

The Environmental Impact Assessment Report ("**EIAR**") prepared for this development and the Environmental Impact Assessment ("**EIA**") needs to be carried out shall be in accordance with Council Directive 2014/62/EU (the "**EIA Directive**").

There is a legal onus on consent bodies including An Bord Pleanala ("**the Board**") to apply the EIA Directive, to ensure that:

i). The direct and indirect impacts of the project are identified and mitigated by the applicant in the EIAR and appropriate alternatives considered.

ii). Any information deficiency by the applicant in the EIAR is remedied by an information request.

iii). That the Board consider any consent for the project as proposed by the applicant or a variation or amendment of the project, only when it can be demonstrated that the direct and indirect impacts have been identified and any significant adverse effects mitigated.

In the case of a transport-generating projects such as the subject proposal, the Board must assess the direct and indirect impacts of the project and the adequacy of the mitigation measures proposed on:

- Government Policy as defined in Smarter Travel – A Sustainable Transport Future A New Transport Policy for Ireland 2009-2020;
- Traffic generation
- Traffic congestion;
- Air pollution;
- Greenhouse Gas ("**GHG**") Emissions;
- Cumulative impact with a general rise in traffic generation
-

If adverse impacts cannot be mitigated then consent therefore cannot be allowed.

The Board in executing its function as a Competent Authority for EIA consent for this application will need to satisfy itself on its regard to the application of national and EU law including the adequacy of the information provided to it in accordance with Article 5 of the EIA Directive.

In executing Article 3 under the EIA Directive - the assessment of the factors which fall to be considered under that Article necessarily involves proper consideration in conjunction with the associate legislative requirements pertaining to those factors.

If a consent determination is being made, it needs to be proven that the mitigation measures provided by the developer and/or added by the Board:

- Are of the quantum required to mitigate the environmental impacts;
- Are clearly identified and quantified to achieve the mitigation required;
- Are subject to clear conditions allowing both local authority and third party legal enforcement if compliance is not achieved.

Since the EIA Directive came into force the Board has determined major traffic generating developments through the appeal process. More particularly since the Board was given the functions of determining Motorway schemes the Board has been responsible for assessing and conditioning the mitigation measures required under the EIA Directive.

3.0 NATIONAL POLICY

3.1 Department of the Environment, Community and Local Government 'Planning Policy Guidelines 2015'

The Department of the Environment, Community and Local Government ("**DECLG**") sets out Planning Policy Guidelines 2015 which states that:

> *"The planning process plays a very significant role in promoting patterns of development which help Ireland meet its international obligation by:*
>
> - *tackling the sources of climate change by reducing Ireland's carbon footprint;*
> - *securing less energy and travel from low carbon sources; and*
> - *adapting to the effects of climate change".*

3.2 *Department of Transport 'Smarter Travel: A Sustainable Transport Future: A New Transport Policy for Ireland 2009-2020'*

Smarter Travel Policy sets out a series of overriding policy objectives in Chapter 3, summarized as follows:

1. *Future population employment growth will predominantly take place in sustainable compact forms which reduces the need to travel for employment and services;*
2. *500,000 more people will take alternative means to commute to work to the extent hat the total share of car commuting will drop from 65% to 45%;*
3. *Alternatives such as walking, cycling and public transport will be supported and provided to the extent that these will rise to 55% of total commuter journeys to work;*
4. *The total kilometres travelled by the car fleet in 2020 will not increase significantly from current levels;*
5. *A reduction will be achieved on the 2005 figure for greenhouse gas emissions from the transport sector.*

Through the principles of induced demand, the subject proposal would undermine the achievement of Smarter Travel Policy and would be contrary to Planning Policy Guidelines 2015. An important issue related to, and generated by induced travel is the degree to which the proposed development affects land use patterns, and in particular, the opening up of lands, stimulating urban fringe development (I,.e. urban sprawl).

Section 3.3 of the EIAR outlines the projects objectives under the following headings: 'economic'; 'safety'; 'environmental'; 'physical activity'; 'accessibility and social inclusion'; and 'integration'. Under 'economic' it is an object to "*encourage local, regional, national and international development*". A number of the objectives are predicated on the erroneous assumption that the subject proposal will reduce congestion and facilitate the development of sustainable transport in Galway City and its environs.

An Taisce submits that the application has failed to assess the long-term traffic generation associated with the proposal including increasing driving by current road users/residents, an inflow of new residents, more transport intensive production activity surrounding the new road network and an overall increase in car based and car dependent development. Short term benefits associated with the major road

infrastructure can often be offset overtime as generated traffic leads to renewed congestion and increased GHG emissions.

Prior to any major road infrastructure being approved, the implementation of effective alternatives needs to be prioritised. (Refer to Section 5.0 of submission)

3.2.1 Recent decisions in breach of Smarter Travel

Planning decisions have failed to comply with Government Policy of Smarter Travel since its adoption in 2009.

Multiple decisions by the Board on road schemes and traffic generating developments with significant parking provision have been granted in clear breach of Smarter Travel objectives and targets resulting in rising car use and dependence or undermining modal shift targets.

Most recently the two October 2018 decisions to grant permanent permission for 10,800 long stay car parking spaces at Dublin Airport and extension of Kildare Village *ABP-300795-18) did not state any regard to the provisions of Smarter Travel in the "Reasons and Considerations" given.

In its decision to grant the permanent DAA parking of 8th October 2018 (ABP Reg. Ref: ABP- 301458-18) the Board failed entirely to have regard to Smarter Travel in its "Reasons and Considerations".

Major projects such as those mentioned are contributing to Ireland's car dependency. The cumulative impacts of these projects are resulting in rising GHG emissions, worsening air quality and are contrary to sustainable development principles by way of induced car travel.

The Board should be aware that Smarter Travel remains the policy of the Department of transport as reiterated in a letter to An Taisce from Mr. Tom O Mahony, Secretary General on 15th June 2015 (Appendix 1).

3.3 Department of the Environment, Community and Local Government 'Spatial Development and National Roads, Guidelines for Planning Authorities, 2012'

There are significant lessons for Galway to be learned from the development and capacity increase of the Dublin M50 and Limerick City Bypass.

3.3.1 The M50

The Board in approving additional lanes on the M50 in Condition 7 of the consent sought to address the future degradation of M50 performance:

> *"A scheme of specific demand management measures for the M50 motorway corridor shall be published by the relevant roads authorities not later than three years after the M50 Motorway Upgrade Scheme has been completed."*

Responsibility for the failure to curb the mounting congestion on the M50 therefore lies with An Bord Pleanála in attaching such a condition requiring merely a scheme to produce demand management recommendations, but no implementation requirement. Legally binding conditions on demand management is required.

A condition leaving over details of demand management to be published post consent which lacks any enforcement is inappropriate. Given that the objective of such a scheme is to alleviate existing traffic congestion, it would be entirely inappropriate and counter-productive to give leeway to demand management measures.

In advance of the September 2013 deadline set by An Bord Pleanála's condition of planning approval, a working group of the National Roads Authority ("**NRA**") and four Dublin local authorities was established in early 2012 and published in June 2013. (Appendix 2)

It established that by 2011, 12% of the sections of the M50 were experiencing traffic flows in the busiest lane at peak times that exceeded safe operating capacity and recommended a range of fiscal measures including tolling on five points, and "Smarter Travel" demand management measures.

It is evident that management measures are urgently required in the M50 catchment, which will require:

- Road space use pricing with higher pricing at peak house;
- Reduction of car parking capacity in employment, retail and other locations in the M50 catchment including airport parking.

While limiting car-parking provision would encourage a modal shift, the provision of alternative modes of transport is required to support Smarter Travel including special bus services.

3.3.2 Limerick City Bypass

An Bord Pleanala granted permission for a tunnel west of Limerick City, under the River Shannon as a city Bypass and link between the M7 and M18 Limerick-Galway Road and M20 Limerick-Cork Road.

Limerick had in place a land use and transport study ("**LUTS**") providing for extensive public transport investment by Buchanan Consultants.

An Taisce argued extensively at the Oral Hearing that the construction, opening and operating of the bypass should be conditional on this major public transport investment outlined in the Buchanan LUTS being carried out.

The Board failed to attach any such condition and the benefit of the bypass in removing through traffic around Limerick City has been nullified by traffic management and public transport investment failure. This presents a serious lesson for Galway and the subject SID proposal.

4.0 APPLICANTS JUSTIFICATION FOR PROPOSAL

The justification set out by the Applicant for the proposed development can be summarized as:

- It will not be possible to implement the proposed Public Transport solutions /the Galway Transport Strategy within Galway City unless a Ring Road is first built.

- Public Transport solutions cannot work in a city the size of Galway City.

The logic put forward by the Applicant is fundamentally flawed. If extra roads needed to be built before Bus lanes could be implemented, there would be no bus lanes in cities since there is an endless demand by private car owners for road space. (Refer to Section 5.0 for Alternatives)

The N6 Galway City Transport Strategy recognised the congestion problem in Galway and the need to establish a **long-term strategy**[1] for transport to, within, and around the city. The provision of the Galway City Ring Road as proposed without any legally binding public transport/demand management conditions could not be considered a "long-term" solution. While the proposal may alleviate traffic congestion in the short-term, without the provision of high quality sustainable alternative, any such benefits would be offset overtime through generated traffic and renewed congestion.

5.0 THE ENVIRONMENTAL IMPACT ASSESSMENT REPORT

The EIA Directive requires that the EIAR contain "*a description of the reasonable alternatives studies by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment*".[2]

The alternatives considered in Chapter 4 of the EIAR include:

- 'Do-Nothing Alternative'
- 'Do Minimum Alternative'
- 'Do Something Traffic Management Alternatives'
- 'Do Something Road Based Alternatives'

The 'Do Something Traffic Management Alternatives' was based on "*all feasible measures, options and schemes identified as part of the studies for the Galway transport strategy ("**GTS**")*".[3] An Taisce considers that the options and schemes identified in the GTS are limited and submits that more public transport and walking and cycling infrastructure options could have been explored. An Taisce does not consider it appropriate that the "Do Something Traffic Management Alternatives" is predicated on a document with such limitations.

The "Do Something Road Based Alternatives" was the chosen option. An Taisce submits that this does not ensure an increase in efficiency of the transportation infrastructure in the long-term. Public transport infrastructure and walking and cycling infrastructure needs to be prioritized, followed by necessary road development where required.

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[1] EIAR Section 1.3.2.1
[2] Article 5(1)(d) of the EIA Directive, as amended by Directive 2014/52/EU
[3] EIAR Section .4.1

As noted in Section 3.2 of this submission, An Taisce submits that the short-term benefits associated with the road proposal can be offset overtime as generated traffic leads to renewed congestion. There is a clear need to examine further alternatives, particularly the development of a high quality public transport system and walking and cycling infrastructure to serve the needs to residents and business in tandem with road infrastructure where required. The major proportion of trips needs to be served by sustainable alternatives to car travel. The development of a major new road development such as that proposed would increase traffic generation through additional car dependent development opportunities and undermine the achievement of a modal shift.

6.0 CLIMATE CONSIDERATIONS

Section 15(1)(d) of the Climate Action and Low Carbon Development Act (2015) under 'Duties of Certain Bodies' states that:

> *"relevant body shall in the performance of its function have regard to a range of considerations including...(d)* ***the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the state****".* (An Taisce emphasis added)

Transport contributes approximately 20% to national GHG emissions. Congestion, air pollution and car dependent and car based sprawl is worsening.

At the same time there has been a failure to attach adequate and enforceable traffic management conditions to new roads.

These considerations would form the basis of Judicial Review proceedings on any consent granted without adverse impacts being either addressed or mitigated.

Both individually and cumulatively planning decisions have failed to mitigate continuing climate emissions, air pollution and congestion. The cost is incurred on society at large and the future.

There are mounting legal actions internationally against Governments, including in Ireland, Regional and City Authorities and consent bodies in relation to inadequate climate and air pollution action.

Having regard to the Climate Action and Low Carbon Development Act (2015), it is stated in the EIAR that "*the Climate Action and Low Carbon Development Act 2015 provides for the establishment of a national framework with the aim of achieving a*

low-carbon, climate resilient, and environmentally sustainable economy by 2050...The proposed development will facilitate the advancement of a low-carbon and more energy efficient transport system, as well as developing more efficient urban and intermodal transport solutions by removing traffic from the city centre and freeing up space for cycling and walking facilities as well as improvedbus transport". As noted throughout this submission, An Taisce submits that this approach is fundamentally flawed.

The development proposal itself does not provide for alternative transport provision. If consent is given to the subject proposal, there is no legal obligation on behalf of the developer to ensure efficient public transport in developed in tandem. The impacts of such an approach is evident in the Limerick Bypass decision referred to in Section 3.3.2 of this submission.

The board have a legal obligation to ensure that its decision satisfies the requirements of s.15(1)(d) of the Climate Action and Low Carbon Development Act (2015) insofar as mitigating GHG emissions resulting from the proposal. The approach of prioritizing major road infrastructure without any legal demand management obligations does not provide certainty that the proposed development would militate against increased greenhouse gas emissions.

Even if assumption is made that a future switch from fossil fuel to electric vehicles may reduce GHG emissions and air pollution, this does not resolve immediate or continuing impact.

Furthermore, electrification or other potential low carbon technologies do not resolve the congestion, time and resource, inefficiency and sprawl caused by continuing private car use.

7.0 APPROPRIATE ASSESSMENT ISSUE

The Appropriate Assessment screening, Natura Impact Statement and Appropriate Assessment should meet in full the requirements of recent CJEU judgments and Advocate General opinions in relation to the Habitats Directive.

CONCLUSIONS

The subject proposal has not been adequately justified. Sustainable transport alternatives considered as part of the proposal and which the proposal is predicated upon are limited. The consideration of alternatives fails to prioritise high quality public transport, which should then be followed by the consideration of required road development.

The proposal contravenes Department of Transport '*Smarter Travel: A Sustainable Transport Future: A New Transport Policy for Ireland 2009-2020*' and other Government polices stated in this submission.

The proposal reinforces unsustainable car use and would perpetuate current unsustainable levels of traffic. The proposal has an individual and cumulative impact on climate, principally because of continued unsustainable private traffic generation;.

The proposal has an individual and cumulative impact on air quality, with the level of diesel particle pollution.

The proposal would result in the continued undesirable polluting surface drainage running from tyre and hydro carbon pollution into surface drainage streams and watercourses.

Please acknowledge our submission and advise us on any decision made.

Yours faithfully,

Ian Lumley

Advocacy Officer
An Taisce – The National Trust for Ireland

Doireann Ni Cheallaigh

Planning Officer
An Taisce – The National Trust for Ireland

Appendix 1

An Roinn Iompair Turasóireachta agus Spóirt
Department of Transport, Tourism and Sport

Oifig an Árd Runaí • *Office of the Secretary General*

Príomh Oifig
44 Sráid Chill Dara, Baile Átha Cliath 2, Éire.
Head Office
44 Kildare Street, Dublin 2, Ireland.
Lo-Call [redacted]
[redacted]
www.dttas.ie

15 June 2015

Mr Ian Lumley
An Taisce
The Tailors' Hall
Back Lane
Dublin 8

Dear Mr Lumley

I wish to refer to your letter dated 19 May 2015 subsequent to our meeting on 13 May where we discussed the challenges and opportunities facing the transport sector in the context of climate change, particularly the ambitious targets to 2020.

Firstly, I would like to clarify the position in relation to the Government's Smarter Travel policy. In your letter, you seek a 'reactivation' of the policy, which somewhat implies that the Department has suspended or set aside the principles underpinning Smarter Travel. I would like to take this opportunity to assure you that the Department remains fully committed to implementing the 2009 policy, which is and continues to be the key driver for delivering a sustainable transport system for Ireland in the period to 2020.

The Sustainable Transport Division of the Department have recently commenced a mid-term review of the policy and would be happy to meet with representatives of An Taisce to discuss the need, if any, for a recalibration of the actions under Smarter Travel between now and 2020.

Accordingly, I would ask that you contact Martin Diskin [redacted] or Denise Keoghan [redacted] to arrange a follow-up meeting to allow for constructive input on these issues from An Taisce.

Yours sincerely

Tom O'Mahony
Secretary General

Appendix 2

M50 Demand Management

Executive Summary

April 2014

NRA An tÚdarás um Bóithre Náisiúnta National Roads Authority

dlr Comhairle Contae County Council

Dublin City Council Comhairle Cathrach Bhaile Átha Cliath

Comhairle Contae Átha Cliath Theas South Dublin County Council

Comhairle Contae Fhine Gall Fingal County Council

M50 Demand Management
Executive Summary

Background

The M50 is the most heavily trafficked road in the country with in excess of 130,000 vehicles per day using several sections. The road was originally envisaged as a bypass route for strategic traffic around Dublin, however following the economic growth that took place during its construction, the M50 is now located within the suburbs of Dublin and provides a range of functions over and above that expected of a strategic corridor. A proposal to widen the carriageway and upgrade the junctions over most of the M50 received permission to proceed by An Bord Pleanála in 2005.

The traffic analysis undertaken for the upgrade scheme suggested that increasing demand would result in traffic flows that would significantly exceed the capacity of the upgraded M50 within its design life. As such it was recognised that future demand would need to be managed if the benefits of the upgrade were to be fully realised.

In acknowledging this, one of the conditions of the planning permission was to include the development of a scheme of demand management measures; with the condition stating the following:

> ***Condition** 7: A scheme of specific demand management measures for the M50 motorway corridor shall be published by the relevant road authorities not later than three years after the M50 Motorway Upgrade Scheme has been completed.*

In order to discharge this planning requirement the NRA convened a Steering Group (comprising the NRA, Dublin City Council, Dún Laoghaire Rathdown, Fingal and South Dublin County Councils) with a view to undertaking a study to identify a scheme of indicative Demand Management Measures for the M50. This report provides a summary of the work undertaken and describes the indicative scheme of measures identified.

However it must be stressed that no decision to implement these measures has been taken; such a decision is a matter for Government. The implementation of any scheme at a future date will be dependent on Government policy and decision, as well as being subject to the relevant statutory processes and legislation.

Traffic and Congestion on the M50

Traffic flows on the M50 have continued to grow since moving to free-flow tolling in August 2008 and the completion of the upgrade in stages between 2008 and 2010 with increases of up to 25% experienced on some sections of the M50 since 2010. As a result congestion has started to occur on sections of the M50. (This increase has occurred against a background of decreasing traffic elsewhere, with a 5% reduction in traffic on other National Primary Roads over the same period.)

Research has been carried out which shows that congestion will start to occur once hourly traffic

flow in an individual motorway lane exceeds a certain level. This level of traffic flow is termed the safe operational capacity of an individual lane. Traffic data shows that in January 2010 all lanes in all sections of the M50 (northbound and southbound) were operating within this safe operating capacity even during peak periods. However, by November 2011 some 12% of the sections of the M50 were experiencing traffic flows in the busiest lane at peak times that exceeded this level.

The congestion has started to occur within the last two years reflects this and has in turn resulted in more frequent incidents and collisions. In the absence of the introduction of demand management it is forecast that by 2023 some 50% of sections of the M50 will experience traffic flows in the busiest lanes that exceed the safe operating capacity, primarily during peak times, but also at other times of the day.

In summary, the assessment of existing conditions has found that a number of key sections of the M50 are already beginning to experience some form of congestion and that by 2023, much of the M50 will be operating in excess of its safe operating capacity, with congestion commonplace.

As a result demand management measures are required to:

- Address the strong levels of growth in transport demand, predominantly through managing growth in the level of discretionary traffic, such that the strategic function of the M50 can be protected;
- Manage and mitigate the safety and reliability impacts that result from congested conditions, and which also threaten the strategic function of the M50; and
- Ensure flows in excess of the safe operating capacity are not sustained on a section for any period.

In essence, these three requirements relate to the need to influence demand that may be attracted to the M50, and subsequently manage the traffic that nevertheless has chosen to use the M50. This suggests two very different forms of management, one based on giving a price signal to users which influences the generation of demand and the other based on controlling traffic flow which materialises, a distinction that has been recognised throughout the study.

Extensive work was undertaken as part of this study in investigating, developing and testing various measures aimed at managing demand on the M50 in a way that will protect its capacity over its design life. The impacts and benefits that would arise from these measures have also been identified as part of this study.

Indicative Scheme of Demand Management Measures

The study has culminated in the identification of an indicative package of demand management measures of five different types;

- Fiscal Measures
- Intelligent Transport Systems/Traffic Control
- Information
- Smarter Travel
- Network Control

Fiscal Measures: Variable Distance-based Tolling by Vehicle Type on the M50

The study has concluded that the current single point tolling system, under which only 39% of M50 users are subjected to a toll, should be replaced with a variable distance-based system. This would result in between 80% and 100% of users being subjected to a toll depending on the type of system implemented. Toll amounts would vary for different vehicle types, as is the case with the current single eFlow toll, and would vary for different times of the day to reflect the varying level of demand throughout the day.

A pure distance-based closed system, which captures 100% of users via toll points at all entry and exit points, would align best with the objective of demand management. However, with current technology the collection costs for a closed system would be higher compared to a multi point system, which could lead to tolls having to be higher to cover the cost. Therefore an indicative scheme which provides for an open system with five toll points (including the existing eFlow toll location where the toll rate would be reduced) has been put forward at this time, see Figure 1 on page iv).

The indicative scheme includes variable toll rates for different periods of the day, as shown in the Table 1 below.

Table 1 - Indicative Range of Variable Toll Rates at Individual Toll Points

Toll Type	Peak Periods (07:00-09:30 & 16:00-18:30)		Inter-peak Periods (06:00-07:00-, 09:30-16:00 & 18:30-19:30)		Off-peak Period (19:30-06:00)	
	Car	HGV >10t	Car	HGV >10t	Car	HGV >10t
Registered	€1.20-1.40	€3.60-3.90	€0.90-1.10	€2.90-3.20	€0.40-0.60	€1.00-1.20
Unregistered	€2.20-2.40	€4.60-4.90	€1.90-2.10	€3.90-4.20	€1.40-1.60	€2.00-2.20

NB: Toll rates ranges are shown at 2013 levels. At time of implementation appropriate indexation will be applied to these rates.

Under such a system a registered car user travelling the full length of the M50 would pay a total of €6.00 to€7.00 at peak times, €4.50 to€5.50 in the inter-peak period and €2.00 to €3.00 at off-peak times, compared to a single toll of €2.10 to €2.60 at present (€2.60 for video registered car users).

The study has confirmed that an indicative scheme of variable multipoint tolling, as an expansion of the M50 eFlow system using free-flow technology, is viable and will lead to an increase in the toll capture rate of M50 users which will provide better equality for all users. Such a scheme will ensure that the demand management measures are effective in protecting the full length of the M50.

Intelligent Transport Systems/Traffic Control: Variable Speed Limits

The study has examined the practicality and effectiveness of Variable Speed Limits (VSL) along the M50. The feasibility studies have identified that the section of the M50 between Junction 3 (M1) and Junction 14 (Sandyford) is most suited to the implementation of VSL, with the potential to extend it to the full length of the M50 in the future as demand on other sections increases. This would be expected to have a notable impact on journey time reliability and safety as the M50 experiences periods of near-congestion.

Intelligent Transport Systems/Traffic Control: Incident Detection

The study has included the provision of Incident Detection as a key strategy for managing demand along the M50. An appropriate incident management desk will be provided within the existing Traffic Control Centre, and lines of communication will be established between the incident room, key media outlets and the emergency services.

Information: Internet

The provision of Variable Speed Limits, Incident Detection, and tolling schemes will require a large amount of roadside detection and monitoring equipment, the data from which will be collated and monitored through the Traffic Control Centre. This information will be provided to road users via the internet, either through posting on web pages, social media or news feeds. During times of congestion, this information can be used to actively encourage potential road users to make alternative travel arrangements, and in this context will be an effective demand management tool.

Information: Roadside Information

Similarly this information will be provided to road users via Variable Message Signs, which are currently provided throughout the Dublin Area, with approximately 35 signs provided along the M50. This will provide information that is fully up to date to road users during their journey.

Smarter Travel: Area-Based Travel Planning

The study investigated the potential for Area-Based Travel Planning in order to manage demand on the M50 and concluded that, whilst travel planning can have a significant local impact in terms of reduced traffic demand, the impact on the M50 corridor itself would be limited (1-2% demand reduction). A number of locations have been proposed:

- Sandyford/Stillorgan;
- Park West;
- City West; and
- Cherrywood;

The implementation of Area Based Travel Planning can effectively be delivered by the Local Authorities as part of their integrated land-use and transportation planning.

Network Control: National Control Centre

The Intelligent Transport Systems measures set out earlier are all based on the provision of a Traffic Control Centre to monitor road conditions, respond to incidents and provide relevant information to road users. The existing Control Centre located at the Dublin Port Tunnel toll plaza is insufficient in its current layout to meet the requirements of an increased level of management, and an expansion of that facility is currently being examined. It is envisaged that a single control centre would manage all the operational functions of the national roads network.

The indicative package of demand management measures is shown in Figure 1 below.

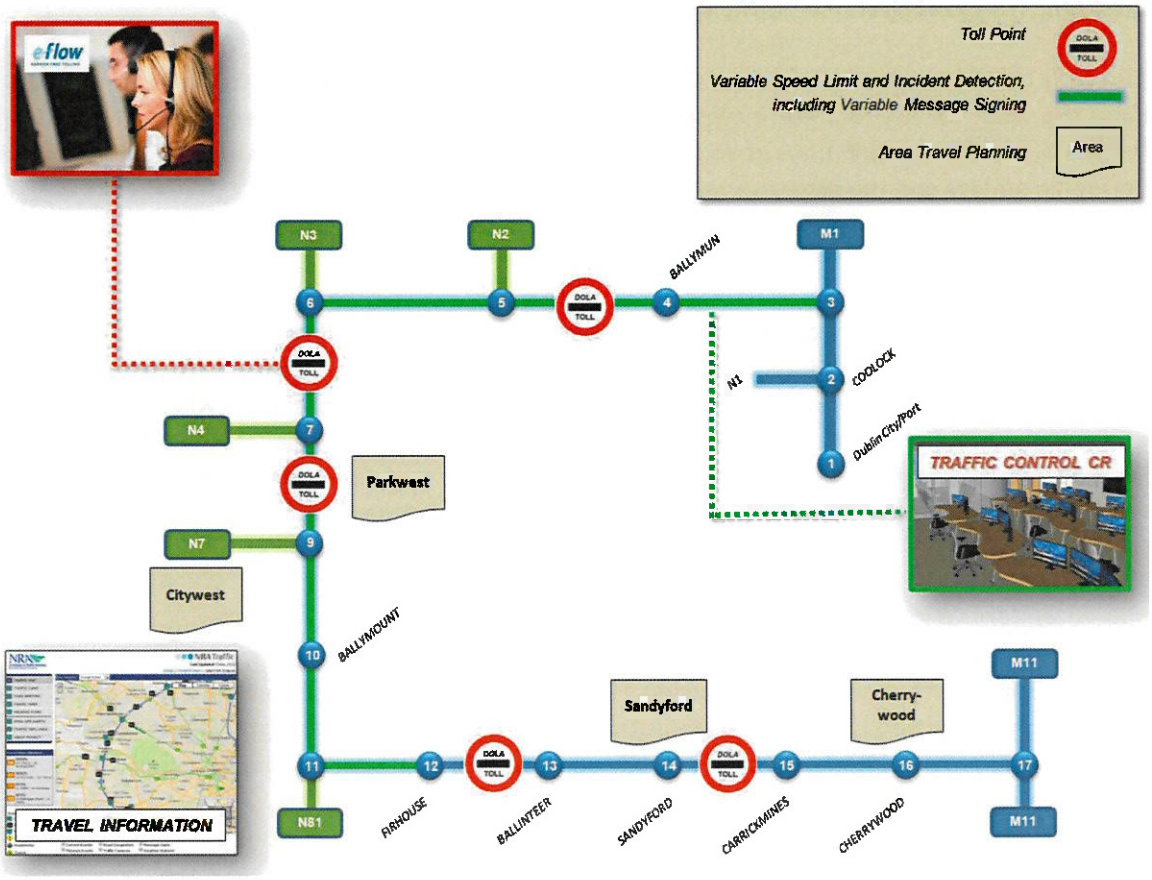

Figure 1 - Indicative Package of M50 Demand Management Measures

Benefits of the Indicative Scheme of Demand Management Measures

Fiscal: Variable Distance-based Tolling by Vehicle Type

The introduction of variable distance-based tolls will deliver considerable benefits to traffic on the M50 as a result of three key changes in traffic behaviour.

- **Reassignment**, where M50 users change their routing to avoid tolls. For such users, the perceived additional travel cost associated with using longer routes is less than the cost of the toll;
- **Mode switching**, where M50 users change to an alternative mode of travel mode due to the increased cost associated with travelling by private car. Such changes include switching to bus or rail for longer trips, or to walking or cycling for shorter trips;
- **Demand changes**, which describe decisions to travel to alternative (lower travel cost) destinations, to link trips together in order to reduce overall travel costs, or decisions not to make a trip at all.

As a result of these changes in travel behaviour the transport model developed for the study forecast a reduction in traffic flows along the M50 of the order of 20%. Approximately half of this reduction is as a result of mode switching and demand changes, with the other half arising from reassignment / re-routing onto the non-motorway road network.

The traffic modelling also shows that the increase in traffic on other roads as a result of

reassignment of traffic from the M50 is relatively diluted and could be managed through supporting measures such as traffic management measures, online improvements and junction improvements.

With this level of reduction in demand by 2023 only 20% of the sections of the M50 will experience traffic flows in the busiest lanes that exceed the safe operating capacity during peak times, whereas 50% of the sections will experience congestion without the measures. This will lead to traffic flows and conditions similar to conditions experienced in 2011, with a significant reduction in the number of incidents, better journey times, as well as an increase in the reliability of journey times compared to the do-nothing scenario.

To address the remaining sections on which flows still exceed the safe operating capacity, control measures, in particular Variable Speed Limits, will assist in managing the traffic by reducing the likelihood of incidents occurring and improving the level of service provided by the M50. The inclusion of control measures in the Demand Management Strategy reduces the reliance on fiscal measures and avoids the need for higher toll rates on these sections to manage demand. In addition, the business benefits to commercial traffic would be significant, with a reduction in journey time variability and greater ability for just-in-time haulage, in addition to reductions in journey times during peak periods.

In summary the assessment demonstrates that the impact of the M50 variable distance-based toll scheme will be positive in terms of reducing demand, congestion and incidents, and thus improving reliability and safety, on the M50. The consequential increases in traffic on other roads will require the consideration of some targeted traffic management measures in the final scheme to mitigate these impacts. Such measures would seek to reduce toll avoidance through sensitive areas, or improve safety and/or capacity on those roads which receive additional traffic.

Intelligent Transport Systems/Traffic Control: Incident Detection

The detection and management of incidents will reduce the safety risks associated with knock-on incidents following a collision, and provide ample warning to other road users of potential disruption so that they can take this into account when planning journeys. This will lead to improvements in journey time reliability. The introduction of Variable Speed Limits has been shown to reduce total annual incidents and the benefits derived from this reduction accrue from monetary saving associated with reducing the number of fatal or serious injuries, as well as time savings experienced by other road users who would otherwise be delayed by incidents, whether these are collisions or mechanical breakdowns.

Information: Internet Travel Information and Roadside Information (Variable Message Signs)

The existing Variable Message Signs on the M50 would be used as part of the measures and would be complimented by broader web-based information tools. The concept is that users will be able to develop a knowledge of historic and current network conditions either:

- Pre-trip, through the use of the travel information website;
- Pre-trip through the dissemination of travel bulletins using SMS or Twitter alerts; or
- In-trip, using the Variable Message Signs.

Variable Message signs are a safe means of providing in-trip information to road users, who will

have restrictions on their access to web-based information whilst driving. It is noted that this infrastructure is already in place throughout much of the M50 and the main approach roads. The result of the measures proposed here will be that road users will have full information on the condition of the M50, and can plan their trip accordingly.

Smarter Travel: Area Based Travel Planning

Analysis of similar schemes elsewhere highlight that significant impacts are observed particularly in the increase of car sharing against single occupant car trips, and in journey time reductions. The key qualitative successes of similar schemes have included;

- Launching car sharing websites and incentivising these using travel vouchers and financial rewards;
- Increased cycling and public transport use promoted via travel plan bulletins, posters, websites and other local media outlets;
- Designation of car-sharing bays at workplaces;
- The setting up of new travel related forums for businesses and interested parties at locations around the country to discuss and tackle common travel issues using a co-ordinated approach with shared risks and benefits; and
- Improved bus services at many sites brought about by direct contact with public transport operators and improved communication between parties.

Network Control: Traffic Control Centre

The Intelligent Transport Systems measures set out earlier are all based on the provision of an expanded traffic control centre facility that would manage all the operational functions of the national roads network. The incident management and response function of the Traffic Control Centre will deal with live incidents on the M50.

Key Stakeholders

During the study the Steering Group discussed the study with the Department of Transport, Tourism and Sport (DTTAS), the National Transport Authority (NTA) and the Strategic Policy Committee (SPC) of the four Local Authorities. The purpose of the discussions was as follows:

- To provide information on the work being undertaken and the measures that were emerging from the studies;
- To ensure that the work was fully compatible with other policies and plans being developed at government level; and
- To identify the legal and institutional framework that would be necessary to implement the measures included in the emerging proposals.

Specifically presentations of the emerging package of measures, followed by questions and answer sessions, were made to the SPC's on the following dates:

- 11th June 2013, Dún Laoghaire Rathdown County Council;
- 12th June 2013, Dublin City Council;
- 1st July 2013, Fingal County Council; and
- 5th September 2013, South Dublin County Council

In general, with the exception of some specific local issues, there was a lot of commonality in the questions asked and the views expressed by the SPC members. The key issues raised / comments made were:

- A degree of acceptance that the problem would occur in the future, but not that it was occurring yet;
- Strong opposition to the proposed fiscal measures (tolling), with little or no support for increased tolls along the M50, particularly in view of the current economic climate;
- Objection to the imposition of fixed toll rate throughout the day;
- It was felt that the proposed tolling was being taken as a way of generating revenue rather than managing demand;
- Concern about the impact of traffic diverting onto the local road network;
- Some acceptance that it would be fairer for more users to be tolled, although the current eFlow toll was still viewed as a toll for using the bridge across the Liffey rather than a toll for using the M50;
- Recognition that a lot of valuable work had been undertaken in the study;
- Almost unanimous support for all the non-fiscal measures.

Discussions with DTTAS suggested that some modifications to the existing traffic signage regulations would be necessary for the implementation of the Variable Speed Limits, although this could be incorporated into an ongoing exercise to review the existing regulations.

Of particular note was that the SPC consultations raised the potential for a distributed pricing scheme with tolls varying across the day based on the traffic demand. The study team took time to consider the feedback from the various consultations and as a consequence reviewed the fiscal proposals. As a result a significant change was made to the proposed measures, with variable tolls for different times of the day being introduced to reflect the varying level of demand.

Implementation

The timescale for the implementation of the scheme of indicative measures, subject to various governmental approval and statutory procedures, is outlined below.

Table 2 - Planning and Implementation Period from Decision to Proceed with any of the Measures

Measure	Year 1	Year 2	Year 3	Year 4	Year 5
Variable Speed Limits	Planning	Implementation			
Incident Management System			Implementation		
Distance Based Tolling	Planning	Implementation			
Smarter Travel Planning	Planning	Implementation			

It is estimated that a period of 12-15 months would be sufficient to progress the necessary preliminary works and statutory procedures outlined above. Following this, and given the limited infrastructure requirement, the construction and testing stage is expected to take a further 12-15 months.

If at a future date a decision is taken to implement a distance-based toll scheme, a further more detailed study would be needed to determine whether to implement an open multi-point tolling system similar to this indicative scheme or to adopt a closed tolling system which would charge

for distance of the M50 used based on entry and exit points.

Any future toll scheme would draw on the information prepared as part of this study, and would require a period of approximately three years for consultation (including an approval process from the necessary bodies, namely, the Minister for Transport, Tourism and Sport, the NTA and the European Commission) and implementation. The scheme would be also subject to the statutory process set out in the Roads Act which requires approval by the NRA Board. The scheme would also consider the mitigation of impacts that would be necessary on local roads that might result from the tolling proposals.

Conclusions

This study has been undertaken by the Steering Group to comply with the conditions imposed by An Bord Pleanála as set out below.

> ***Condition 7:*** *A scheme of specific demand management measures for the M50 motorway corridor shall be published by the relevant road authorities not later than three years after the M50 Motorway Upgrade Scheme has been completed.*
>
> ***Reason:*** *To protect the traffic capacity provided by the M50 Motorway Upgrade Scheme over its design life.*

In response the Steering Group investigated a wide range of possible alternatives and developed an indicative scheme of specific demand management measures for the M50, covering the M50 between Junction 3 (M1) and Junction 17 (M11). The various elements of the indicative scheme are set out in Table 3 below;

Table 3 - Summary of Elements of Indicative Scheme of Demand Management Measures

Category	Measures Taken Forward
Fiscal Measures	Distance-Based Tolling Variable tolling Tolling by Vehicle Type
Intelligent Transport Systems/Traffic Control	Variable Speed Limits Incident Detection
Information	Internet Roadside Information
Smarter Travel	Area-Based Travel Planning
Control	National Traffic Control Centre

The assessment of the fiscal measures has been based on an indicative five toll point open system, which provides a coverage rate of greater than 80% of trips. This has been derived to demonstrate the benefits and impacts of such a solution as a proxy for a pure distance based closed charging system, which would capture 100% of users via toll points at all entry and exit points.

With current technology the collection costs associated with a closed system would be higher compared to a five point system, which could lead to tolls having to be higher to cover the cost. Therefore, the five toll point open system has been put forward at this time.

However, it is worth noting that the cost of closed system tolling is anticipated to reduce as technology develops and improves in the future and as large-volume transaction systems become more cost-effective. As such any future development of a variable distance-based toll system on the M50 should consider the option of implementing a closed system or of providing a higher number of toll points in an open system. Ultimately any multi-point tolling scheme will have the potential to evolve to a closed system which would be able to better protect the traffic capacity of the M50 in the longer term.

The study showed clearly that fiscal measures had by far the most significant impact on managing future demand on the M50. In this regard it is important to note that in the absence of the introduction of the fiscal measures identified (i.e. variable distance-based tolling) it is unlikely to be possible to protect the traffic capacity provided by the M50 Motorway Upgrade Scheme over its design life.

This study demonstrates the feasibility of the indicative demand management measures which can provide a basis for the development of a detailed scheme for implementation.