



National Roads Authority

Preliminary Implementation Plan

for

Greater Dublin Area

and

Jack Lynch Tunnel Tolling

Version: Final for Issue

Date: June 2011

Information Note: This report is commercially sensitive and was prepared for the Department of Transport, Tourism and Sport by the National Roads Authority with the assistance of Roughan & O'Donovan AECOM Alliance and Goodbody Economic Consultants.

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Appendix A – Map of Proposed Tolling Locations (GDA and M50)

Executive Summary

The National Roads Authority has been requested by the Department of Transport, Tourism and Sport to prepare this report on possible additional tolling options to generate additional revenue from the application of tolls on radial routes in the Greater Dublin Area as well as the Jack Lynch Tunnel in Cork. This report, which has been prepared as a Preliminary Implementation Plan, follows on from the M50 Multi-Point Tolling Preliminary Implementation Plan which the National Roads Authority submitted to the Department in May 2011.

The outputs of both Preliminary Implementation Plans are a number of possible alternative tolling proposals as follows:

- M50 Multi-Point Tolling comprising three new mainline toll points and ramp tolling at Ballymun interchange;
- GDA Tolling Charges on Dublin Radial Routes comprising five new mainline toll points and ramp tolling, and
- Tolling of Jack Lynch Tunnel, Cork.

The Preliminary Implementation Plans indicate that the introduction of M50 Multi-Point Tolling would generate €32m-€60m per annum of additional net revenue (i.e. additional revenues after operating costs and taxes have been deducted). If GDA Radial Tolling was introduced in addition to M50 Multi-Point Tolling the combined net additional revenue generated is estimated to be in the region of €80m-€120m per annum. Tolling of the Jack Lynch Tunnel is forecast to generate net revenue in the region of €15m-€20m per annum.

In essence the total overall net revenue position across the three tolling scenarios outlined above would yield an additional €95m-€140m per annum, over and above the €50m per annum net revenue currently being generated from the existing eFlow operation. In addition, the Exchequer/Local Authorities would stand to gain a further €48m-€64m per annum in tax related revenues. Such payments would be over and above the current M50 eFlow tax related payments (€27m per annum).

The Preliminary Implementation Plans assume that the tolling proposals under consideration will all be operated by means of barrier-free tolling similar to the current M50 eFlow tolling arrangements. It is considered that a cap on the daily toll charge level should apply in the event of a direction being given to the National Roads Authority to progress the implementation of broader tolling in the Dublin Area. In considering a capped daily charge and also the tolling options as set out in this report regard will also have to be had to compliance with existing and emerging EU policy and legislation. If a decision is made to proceed with additional tolling consultations with the relevant European Commission Directorate should be initiated at the earliest opportunity. If daily charge caps are not permissible it may in turn impact on the feasibility of establishing area wide tolling as envisaged in the respective Preliminary Implementation Plans.

Where a decision is made to proceed only with M50 Multi-Point Tolling the estimated programme for implementation, from the date of Ministerial direction to proceed, is in the region of 24 months as this can be provided for under the existing M50 eFlow contract. Where the programme for implementation includes either of, or both, GDA Radial and Cork

Tolling, the programme for implementation increases to 36 months from the date of Ministerial direction to proceed reflecting the increased timeline required for a tender competition to procure the services.

1.0 Introduction

1.1 Background

1.1.1 In November 2010, the National Roads Authority submitted a feasibility report to the Department of Transport setting out a number of options for generating additional revenue from road tolling to support future transport investment and maintenance. This feasibility report was divided into distinct work-packages as follows:

- Work-package A: Raising tolls at existing facilities;
- Work-package B: Introducing new tolls on existing roads comprising:
 - **Work-package B1: M50 Multi-Point Tolling (M50 MPT);**
 - **Work-package B2: GDA Tolling Charges on Dublin Radial Routes;**
 - **Work-package B3: Tolling Charges on Jack Lynch Tunnel, Cork;**
 - Work-package B4: Tolling Charges on N18, N9 and N11;
- Work-package C: Introducing new toll charges on new roads.

1.1.2 Further to this report, the NRA was requested by the Department of Transport, Tourism and Sport to develop a Preliminary Implementation Plan (“PIP”) for the delivery of work-packages B1, B2 and B3.

1.1.3 This report is the PIP for work-packages B2 and B3 – Greater Dublin Area (GDA) Radial Tolling and Tolling the Jack Lynch Tunnel in Cork.

The NRA prepared a separate PIP for work-package B1 - M50 MPT which was submitted to the Department in May 2011. While two separate implementation plans were developed, were the NRA directed to proceed with any combination of the work-packages outlined above, there is a strong case to be made for creating a programme of phased delivery of such work-packages with the aim of creating a single national tolling operation with multiple toll points, as opposed to multiple operations managed by a number of providers. Such an approach would result in significant operational efficiencies and consequent cost savings. It is recognised that any decision to introduce additional tolling will be made by the Minister rather than the NRA, and that any decision will be subject to statutory procedures.

1.1.4 The main difference in terms of delivery between work-packages B2 and B3 and work-package B1 is that the inclusion of either of B2 and B3 require about 12 months longer to deliver and deploy - mainly due to the fact that the NRA would have to launch a new procurement competition/s for these work-packages, whereas the expansion of the M50 tolling system on its own (i.e. work-package B1) can be largely procured / delivered under the existing M50 eFlow service provider contractual framework. It is assumed that while M50 MPT could proceed of itself, GDA Radial tolling on the other hand would only be undertaken in conjunction with M50 MPT.

1.1.5 Jack Lynch Tunnel tolling can be progressed independent of work-packages B1 and B2, however, from an operations perspective this would not be the most efficient way to proceed. Such inefficiencies would however be overcome through planning for the integration of the Jack Lynch Tunnel toll within a single national system, be it with

the existing M50 eFlow operations or any further tolling arising through implementation of work-packages B1 and B2.

1.1.6 While all three work-packages can be considered in the context of generating much needed revenues, there are differences in relation to the background and rationale for the tolling schemes which perhaps deserve some brief comment at this point.

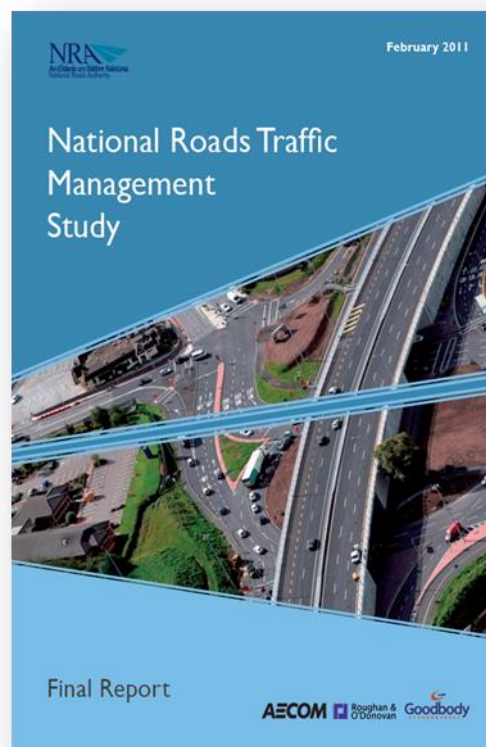
1.1.7 Multi-point Tolling on the M50 is all about modifying and expanding an existing toll road operation – and in doing so to both (i) generate additional revenue and (ii) create a more equitable tolling regime where the majority of the M50 road users will pay a toll, in contrast with the current regime where a minority of M50 road users pay the toll charge. The object of work-package B2, tolling the primary radial routes (within the proximity of the M50) into Dublin City was identified and evaluated as part of the recently published National Roads Traffic Management Study (NRTMS). This Study outlined a variety of options and tools which could potentially play a role in managing the new network within the GDA including control measure such as access control and flow management (i.e. *'managed motorways'*) as well as fiscal measures such as tolling.

1.1.8 The NRTMS Study concludes that tolling has a role to play, not only as a means of generating revenue, which is the focus of this report, but also as a means of managing the new network, particularly within the GDA. The Study concludes that:

- additional tolling is in line with EU policy as it represents a further migration towards 'User Pays' and 'Polluter Pays' principles and can complement other strategic objectives for the transport sector including encouraging mode shift to more sustainable modes, and
- tolling / user charging can provide the means for management of the network in areas prone to congestion - and in this context can reduce future capital funding requirements by deferring / eliminating the need to provide additional capacity.

1.1.9 The NRTMS Study, in addition to the work done for the previous feasibility report, has therefore been instrumental in progressing this Preliminary Implementation Plan.

1.1.10 Proposals to toll the Jack Lynch Tunnel in Cork have a much longer history. Tolling the tunnel crossing was first studied as part of the original scheme feasibility studies (circa. 1987). Since then the Cork road network has changed significantly with the completion of a southern bypass route and segments of this network are operating close to or at maximum



capacity for much of the peak periods, resulting in less than efficient movement of people and goods within the Cork region and beyond.

- 1.1.11 The introduction of tolling on the Cork road network can make a positive contribution to the traffic management challenges in the region which exist today, as well as providing a vital source of funding.

1.2 Content and Structure of this Preliminary Implementation Plan

1.2.1 *This PIP is the second one 'of it's kind' following the preparation of the initial draft for work-package B1 - M50 MPT. The reader will find this implementation plan for work-packages B2 and B3 to be quite similar to the previous PIP, largely due to the similarities in the proposed projects. We have, where possible, tried to avoid unnecessary repetition and in doing so have taken the approach of summarising certain topics and cross-referring to certain material within the previous PIP where it may not be central to this particular implementation plan. This PIP includes some of the key findings from the previous M50 MPT PIP for the purposes of providing an overview of key findings.*

1.2.2 The proposed tolling regime considered in the PIPs is assumed to be barrier-free tolling. A range of toll points and locations and a range of toll charges were modelled and assessed for both work-packages, the output of which underpins the estimates of revenues included in these reports. For reasons of efficiency and customer familiarity the proposed tolling regime (i.e. proposed business model and charging structure, as set out in this document) is similar to that which is currently in existence on the M50 and that being proposed for work-package B1 - M50 MPT.

1.2.3 This PIP is structured as follows:

- **Section 2** – sets out a description of the GDA Radial Tolling (M50 MPT is addressed in the previous PIP) and the Jack Lynch Tunnel Tolling projects including the scope and objectives;
- **Section 3** – sets out the proposed tolling regimes including, for example, preliminary locations for tolling, toll charging structure (i.e. rates and vehicle classification), the proposed business model including facility for unregistered users, systems and technology and financial impact. It also sets out the proposed operational regime including interface with existing tolling operations and the existing national interoperability model; and
- **Section 4** – covers the delivery and procurement approach – including key work-streams, approvals, timescales and budgets.

1.2.4 An M50 traffic model has been developed to understand the implications of road user charging proposals on the M50 and key radial routes feeding into it. It has been based on the traffic data collected in 2010. In respect of the Jack Lynch Tunnel the findings are based on a traffic model prepared for the Cork region updated with traffic data collected in 2010.

1.2.5 The previous report for M50 MPT covered the proposed legislative framework in some detail, including requirement for new national legislation (bye-laws) and compliance with existing and emerging EU policy and legislation which any new tolling scheme is required to comply with. Therefore, it is not proposed to repeat this

material within this report. In summary, there are basically four main sources to be considered in establishing the legal framework as follows:

- The Roads Act 1993 which establishes the Irish legal framework for charging tolls (to include the relevant sections of the Dublin Transport Authority Act 2008);
- The European Directive on the Electronic Tolling Systems (EETS);
- The Eurovignette Directive on charges to be applied to HGVs; and
- Other general EU policy on tolls and charges for all vehicles.

Within the context of the EU regulations work-packages B2 and B3 would be considered as new schemes – as opposed to M50 MPT which, subject to confirmation from the Commission, may be considered as an extension to an existing toll system and accordingly may be exempt from more recent EU requirements relating to the underlying toll charge regime. However, it is important to note that the nature and characteristics of work-package B2 (and to a lesser extent work-package B3) and the proposed integration with work-package B1 could change the Commission's view and status of work-package B1 under the EU regulations. Simply put, the M50 MPT scheme may well be considered as a subset of a new wider area charging scheme – and in this case it would have to comply with obligations (including charging HGVs based on emissions class) which it may not have to comply with were it to be not considered to be a “new tolling arrangement” or a “tolling arrangement substantially modified”. Further legal opinion will be required in this area in advance of any discussions with the European Commission as the likely scope of the broader programme becomes clear.

1.3 Key Findings of B1 & B2 / B3 Preliminary Implementation Plans

- 1.3.1 In 2010 the existing M50 eFlow operation generated revenue amounting to some €100m. When operating costs and taxes are deducted this resulted in a net revenue of approximately €50m¹. Through the introduction of M50 MPT on the M50 €32m-€60m per annum of additional net revenue would be generated (i.e. revenues after operating costs and taxes have been deducted).

If GDA Radial was introduced in addition to M50 MPT the combined net revenue generated is estimated to be in the region of €80m-€120m of additional net revenues per annum. Tolling of the Jack Lynch Tunnel is forecast to generate net revenue in the region of €15m-€20m per annum.

In essence the total overall net revenue position for all three work-packages would be an additional €95m - €140m of net revenue per annum over and above the €50m per annum net revenue currently being generated from the existing eFlow operation.

To achieve the net revenue outcomes outlined above and the assumed operational costs saving efficiencies underlying the figures could necessitate the termination of the existing M50 eFlow service provider contract the term of which runs to 2015. Invoking the termination clause would give rise to termination payments while any new operator would be obliged to observe legislation relating to the transfer of undertakings.

It should be noted that taxes (i.e. VAT and rates) deducted in arriving at these net revenue figures, while a cost to the toll operations, would however fall to be paid to the State/relevant Local Authorities. In arriving at the above net revenue figures a deduction of €48m- €64m per annum across all three work packages was provided for. Such payments would be over and above the current M50 eFlow tax related payments (calculated at €27m in 2010).

- 1.3.2 Where a decision is made to proceed only with M50 MPT the estimated programme for implementation of from the date of Ministerial direction to proceed is in the region of 24 months. Where the programme for implementation includes GDA Radial and Jack Lynch Tunnel Tolling, the timeline increases to 36 months from the date of Ministerial direction to proceed as noted previously in the original feasibility study.
- 1.3.3 The estimated global capital budget, albeit based on extremely limited information for delivery of both work-packages is approximately €22 million (inclusive of VAT). As noted in the M50 PIP the global capital budget for multi point tolling is €32m, such that the combined cost of the work packages could be in the order of €54m. The majority of this expenditure would relate to the cost of acquiring, installing and testing the roadside equipment (gantries, cameras, beacons, lasers, etc.) along with system development costs and would be expected to be incurred during the second and third years of implementation.

¹ The above calculation reflects actual operating expenditure and assumes, for comparative purposes, VAT was applicable on tolls for all of 2010. VAT was however only applicable from 1st July 2010.

1.3.4 In terms of implementing additional network tolling this PIP highlights that:

- One of the more critical decisions to be made is what work-packages are to be implemented and in this context it is noted that there is a significant difference in the revenue resulting from the work-packages B1, B2 and B3 as opposed to the work-package B1 only, due to significant increase in coverage as well as improved efficiencies of scale within the operations;
- the NRA would require to resource a dedicated delivery team - assisted by external technical, legal and financial consultants - of approximately 4 to 5 people in the following key roles: i) programme management, ii) stakeholder management, iii) interoperability management, iv) statutory processes and v) operations and finance;
- the procurement strategy requires further careful consideration with regard to the eventual migration to / delivery of a national central system, and
- the efficiency of any new system can be enhanced by supporting and coordinating legislation in the arena of motoring offences. Such an approach would be anticipated to give rise to significant savings in enforcement costs.

2.0 Project Descriptions (Scope and Objectives)²

2.1 Scope of Additional Tolling on the GDA Radial Routes and Cork Network

2.1.1 The GDA Radial Routes which is the subject of work-package B2 largely consist of motorway and high quality dual carriageway roads. The Jack Lynch Tunnel is the subject of work-package B3. More detail on the proposed locations is provided in Section 3.

- Tolling the GDA Radial Routes will involve installing 5 new toll points on the M1, N2, M4, N7 and M11 corridors, and perhaps the N81 and certain ramp tolling at strategic points, within approximately 10km of the M50 motorway ring. Note that the M3 is already tolled within this footprint at Pace on the M3 (See map at Appendix A).
- Tolling in Cork will involve deployment of a single toll point at Jack-Lynch Tunnel with the charge levied to be similar to the other city area tolls in Limerick and Waterford.
- While we have identified a requirement to implement further ramp tolling on certain sections of the network (i.e. as part of work-package B1 and B2) it is possible that other sections of the network may be identified / emerge which could also warrant this type of intervention.

2.1.2 While the M50 MPT proposals can be delivered under the existing M50 eFlow contract, were the NRA also directed to proceed with the implementation of GDA Radial / Jack Lynch Tunnel tolling this would most optimally be achieved through the termination of the existing M50 eFlow contract and the procurement of a single tolling system/s to be delivered via a publically tendered competitive process with a private sector consortium to design, build, operate and maintain the system. It is envisaged that the term of the contract would be in the region of 10 years, possibly with an option to extend the term for a further two to three years.

2.1.3 It is intended that the proposed tolling regimes will be operated on behalf of the State by a tolling contractor who would collect tolls directly from the road users for the benefit of the State. In that context, the tolling contractor would be paid a fee for supplying and operating the new tolling systems, in line with the contractual provisions, and the revenue stream would therefore be wholly passed to the NRA, on behalf of the State.

2.1.4 It is expected that the delivery of all these tolling schemes could be fully deployed within a period of 36 months from the date of approval to proceed.

2.1.5 The plan to toll the primary radial routes into Dublin assumes that work-package B1 (M50 MPT) is to be implemented and that therefore the GDA Radial Tolling will integrate technically, operationally and commercially (via the Irish system for interoperability) with the M50 MPT Tolling system.

² Section 2 of the M50 MPT PIP sets out the scope and objectives for additional tolling on the M50 motorway and as such these are not repeated here.

- 2.1.6 It is intended that the new toll points for the GDA Radials and the Jack Lynch Tunnel will use free-flow (i.e. barrier-free) tolling technology designed to detect On-Board Units (OBUs) and Licence Plate Numbers (LPNs) connected to one central ‘back-office’ for the management and processing of the tolling transactions as currently operated on the M50.
- 2.1.7 It is intended that the tolling regime will apply to all vehicles (including motorcycles which are currently toll free on the M50) using the tolled network with the exception of vehicles that are currently exempted from tolls in Ireland (e.g. ambulances) on the basis of vehicle class and emissions class for HGVs (in due course and as required).
- 2.1.8 Analysis to date indicates that the most feasible solution for the proposals under consideration will require ‘open’ tolling of the corridors in question, as opposed to ‘closed’ tolling with ‘entry’ and ‘exit’ tolling.
- 2.1.9 It will be necessary that the toll charges will be in accordance with existing and emerging EU legislation in this area. Additionally, consideration will be given to a daily and/or journey maximum charge for customers who register for electronic tolling accounts.
- 2.1.10 If cost efficient and where permissible under European regulations, the option of integrating the GDA and M50 systems for customers to avail of a wider GDA / M50 maximum daily charge will be considered. As set out earlier in paragraph 1.2.5 it is necessary that consultations commence with the relevant European Commission Directorate at the earliest opportunity to ensure that any tolling proposals being considered are in accordance with EU requirements in this regard. If caps are not permissible it may impact on the feasibility of establishing area wide tolling as envisaged.
- 2.1.11 It is intended that the new tolling arrangements will be integrated legally and technically within the national system for tolling interoperability – so that existing ‘tag’ and ‘video’ tolling customers with accounts (currently approximately 750,000 vehicles) will be able to use the new tolling facilities without any need to change. The new system will also be required to facilitate future European tag customers as required, in line with existing EETS legislation.
- 2.1.12 The business model and business rules for the new tolling regime will be similar to eFlow’s current business model and business rules in operation today on the M50, with some simplifications and amendments. It is intended that the tolling system will continue to facilitate both registered and unregistered customers with a variety of account options and convenient payment methods.
- 2.1.13 The PIPs assume that tolls will be set at a lower rate for registered customers who avail of lower cost payment methods – i.e. by registering for lower cost ‘tag’ or ‘video’ electronic tolling accounts. It is not initially intended that tolls would be variable by time of day or levels of congestion, although this functionality may be requested from system suppliers for future deployment.

2.2 Objectives for GDA and Cork Tolling Regimes

2.2.1 The previous feasibility report (November 2010) set out a number of principles reflecting the existing policy objectives which were used to assist with the development and consideration of individual work-packages. These were, in summary that:

- Tolls are most applicable on premium roads with a good level of service (motorway or high quality dual carriageway);
- Tolls should be applied in as equitable a manner as is feasible and other than in exceptional circumstances should be nominal, to the extent that they will not lead to excessive diversion onto unsuitable roads or through environmentally sensitive areas.

2.2.2 As part of preparing this PIP, we note that *the overarching objective is to collect additional toll revenues from road users on the networks and to ensure that this is done in an efficient and equitable manner*. The practical objectives to be delivered are as follows:

- The tolling regime is commercially focussed and cost effective - so that the financial benefits to the State are maximised;
- The tolling regime is equitable – by reference to other parts of the network which are tolled (e.g. in the case of Cork –by comparison to Limerick and Waterford) and in the case of the GDA by charging the majority of road users on an equal basis on all primary radial routes within the GDA;
- The tolling regime is customer focussed and relatively simple to understand by users - as this improves compliance and reduces operating costs;
- The tolling regime complies with relevant national and European policy and legislation (e.g. charging by emissions class); and
- The tolling regime is designed to facilitate network demand management requirements (e.g. variable charging by time of day).

3.0 Proposed Tolling & Operational Regime

3.1 Introduction

- 3.1.1 This section provides details on the proposed tolling regime including the locations of proposed new toll points, an outline of the toll charging structure (i.e. rates and vehicle classification) and a summary of the business model. It also provides an overview of the operating regime and summarises the systems / technology to be deployed.
- 3.1.2 This section also sets out an overview of the financial impact of the new tolling regimes, in particular, highlighting the likely additional net revenues to be collected and the scale of the likely taxes receivable by the State/Local Authorities.
- 3.1.3 The development of the proposed tolling regime was based on two main building blocks – i) the existing / proposed M50 tolling regime and ii) traffic and revenue modelling for a variety of scenarios to assess the relationship between inputs (i.e. toll location and toll charge) and the outputs (i.e. diversion rates and toll revenues).
- 3.1.4 The objective is to ensure the right balance such that the new tolling system/s will capture a high proportion of journeys on the corridors in question while minimising diversion rates.
- 3.1.5 The details on the proposed locations of the new toll points and the levels of the new toll charges provide an overall picture to assist decision makers in reviewing these proposals. These proposals are neither approved nor finalised. There is a specific statutory process to be followed before any new tolling schemes can be implemented, and subject to Ministerial direction, further detailed work would be required to prepare a Draft Toll Scheme and Explanatory Statement.
- 3.1.6 The positioning of toll points on the network requires consideration of a variety of factors including traffic levels and impacts on local traffic movements. These factors are explained in more detail within the previous M50 MPT PIP.
- 3.1.7 In addition this previous report outlined the proposal to deploy an ‘open’ system of multi-point tolls consisting of three new toll points on the M50, with additional toll points covering the slip roads at the Ballymun interchange to manage the level of diversion that would otherwise occur through the Swords area as shown below.

Identifier	Route	Location (<i>Tolls to apply in both directions each location</i>)
GDA-1	M50	Junction 4 (Ballymun) East facing slips
GDA-2	M50	Junction 4 (Ballymun) to Junction 5 (N2)
GDA-3	M50	Junction 6 (N3) to Junction 7 (N4) (<i>existing toll point</i>)
GDA-4	M50	Junction 7 (N4) to Junction 9 (N7)
GDA-5	M50	Junction 12 (Firhouse) to Junction 13 (Ballinteer)

Table 3.1 M50 MPT– Preliminary Proposed Locations

3.2 Preliminary Proposals - Locations for GDA Radial Route Toll Points

- 3.2.1 The NRTMS observed that, although spread throughout a relatively large area, the Dublin Radial Routes all perform “*relatively similar functions, namely providing strategic connectivity between different regions via the M50, and providing for car-based commuting into the City*”. It also noted that a number of common problems are prevalent on these routes (to varying degrees), as follows:
- Traffic congestion occurs on the approaches to the M50, exacerbated by high volumes of merging traffic, resulting in poor levels of service during peak periods³;
 - Largely as a result of these congested conditions, any incidents which do occur cause significant delays for road users; and
 - In the absence of management techniques, these routes will not mitigate the risk of further excessive increases in traffic demand negating the potential benefits of future capacity enhancements schemes on these routes.
- 3.2.2 These primary radial routes (i.e. M1, N2, M3, M4, N7 and M11) in conjunction with the M50 are the busiest roads in the country. Currently average daily traffic volumes, on some of these radials in the vicinity of the M50 are between 70,000 and 110,000, with the highest traffic flows on the M1, N7 and N4.
- 3.2.3 While predicting growth rates in transport demand is difficult in the current climate, it remains that any reasonable growth in demand on these routes over the period 2010 to 2025 will exacerbate existing capacity issues along the routes and resulting in additional congestion on the GDA network during peak periods.
- 3.2.4 Today these routes carry high levels of commuting traffic which can account for up to 70% of traffic during the morning Peak Period. The proportion of HGV traffic varies by route, with highest daily proportion of 10% on the N2 and the lowest at 4% on the M11.
- 3.2.5 With regard to the other national routes in the GDA, the NRTMS concluded that the N81, N32 and N31 “*provide a local distributor function*”. It will be necessary to carefully assess the merit and indeed the feasibility (given the number of accesses/egresses from the mainline in the case of the N81) of tolling these routes as part of the proposed tolling regime for the GDA.
- 3.2.6 In identifying tolling options, the same guiding principles applied as for work-package B1 (the M50 work) with the positioning of toll points to ensure that the majority of users are captured without leading to excessive diversion.
- 3.2.7 While many of the national primary routes are currently tolled (e.g. M1, M4, M7/M8 and M6) these existing toll points are located well outside the boundary of the ‘built-up’ area. Therefore these existing toll points are principally collecting tolls from those making longer distance journeys (e.g. interurban journeys), rather than the shorter commuter journeys (although there are of course longer commuting journeys as well). The exception to this is the recently introduced toll point at Pace on the M3 which perhaps best approximates the concept of a ‘nominal’ toll being levied on

³ For further details on current levels of service on the Radial Routes refer to Section 19.3.3 Network Performance of the NRTMS.

commuters travelling into the city area, as it is set at €1.30 for a passenger car so that it does not cause excessive diversion.

- 3.2.8 The work for introducing tolling onto these routes within the GDA has examined how additional and relatively low value tolls could be located on the key approaches into the ‘built-up’ area of the city, but in such a way that they complement the proposed tolling structure for the M50 and avoid significant levels of diversion leading to potentially significant environmental impact in sensitive areas.
- 3.2.9 This resulted in the emergence of a regime consisting of a toll point on each radial (route with the exception of the M3 where a toll currently exists but for which ramp tolling may merit consideration) within a radius of approximately 10 kilometres of the M50 Motorway, as per Table 3.2 below (and set out on the schematic in Figure 3.1 below and the map in Appendix A). Note that to ensure effectiveness and viability of additional toll points it may be necessary to apply tolls set at nominal levels on certain ramps (either exiting or entering the motorway in question) to discourage excessive toll avoidance or toll diversion – as in the case for toll point GDA-6.b below. Additional ramp tolls, as may be required, will be identified at later stage.

Identifier	Route	Location (<i>Tolls to apply in both directions</i>)
GDA-6.a	M1	Junction 5 (Balbriggan South) to Junction 4 (Lissenhall)
GDA-6.b	M1	Junction 4 (Lissenhall) South facing Slip Roads
GDA-7	N2	Junction 3 (Ashbourne South) to Junction 2 (St Margarets)
GDA-8	N4	Junction 2a (Celbridge) to Junction 2 (Leixlip)
GDA-9	N7	Junction 6 (Castlewarden) to Junction 5 (Athgoe)
GDA-10	M11	Wilford to Fassaroe

Table 3.2 Greater Dublin Area – Preliminary Proposed Toll Point Locations

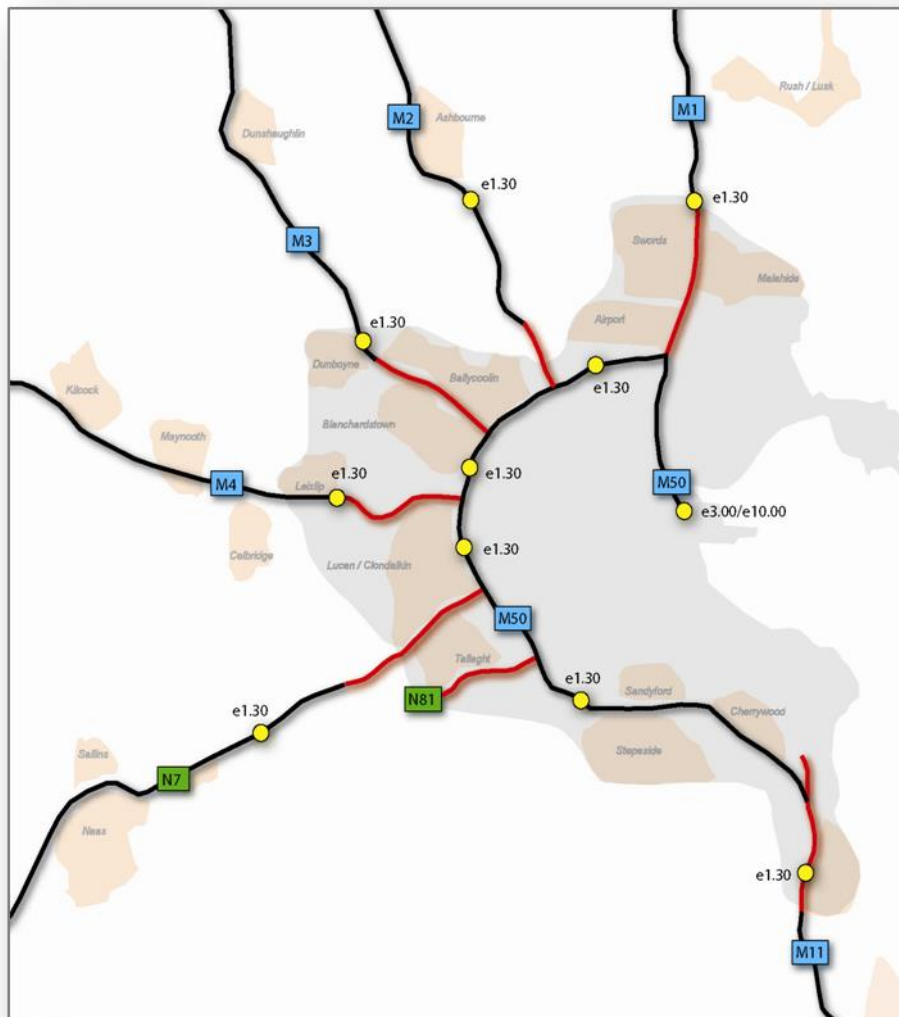


Figure 3.1 Tolling Proposals - work-package B1 (M50 MPT) and B2 (GDA Radials)

3.3 Preliminary Proposals - Location for Cork

- 3.3.1 The N25 South Ring Road, including the Jack Lynch Tunnel, links the N8, N28, N27, N71 and N22, and therefore plays an important role in facilitating “strategic connectivity for the region”. The NRTMS study identified this key corridor within the Cork area as the focus of many of the difficulties within that region.
- 3.3.2 An analysis of travel patterns demonstrates a significant reliance on the Southern Ring Road for a large number of strategically important journeys as well as local journeys. This situation arises in part as a result of the high level of development along the South Ring Road in recent years. The application of tolling on the Jack Lynch Tunnel, in addition to being a source of revenue, could mitigate further excessive increases in traffic demand which would otherwise negate the potential benefits of enhancement schemes along this corridor.

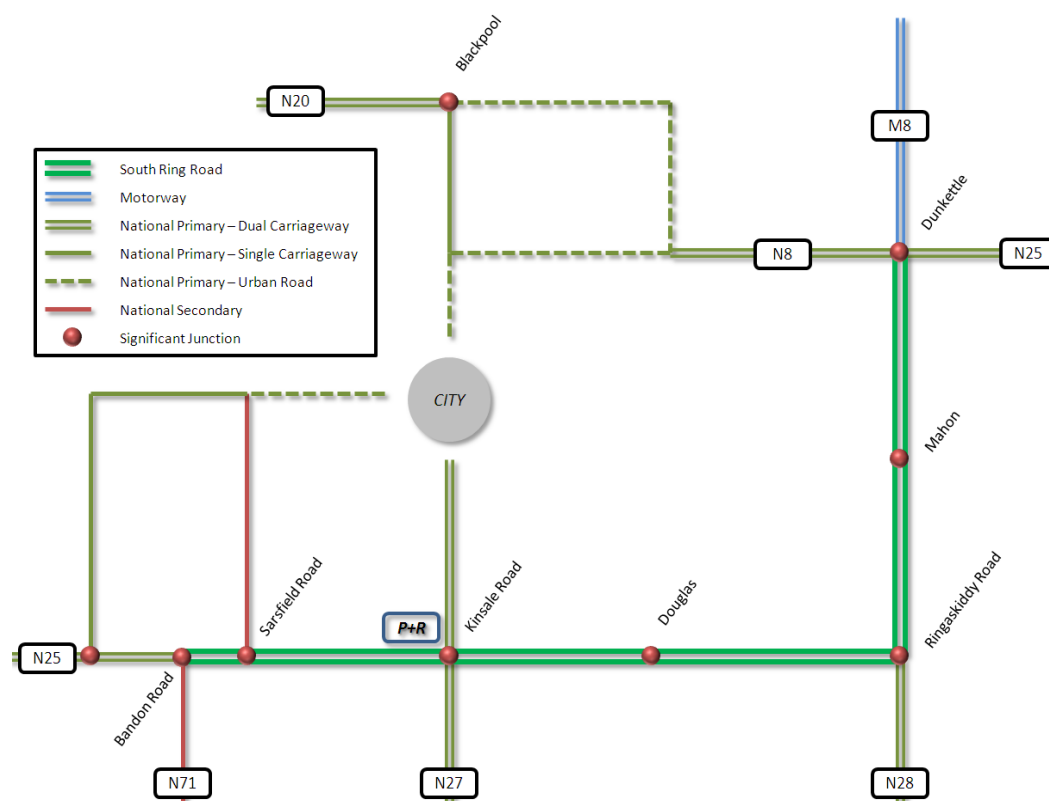


Figure 3.2: Conceptual overview of the primary network in Cork

3.3.3 The proposed toll regime consists of a single toll point in the proximity of the Jack Lynch Tunnel.

3.4 Preliminary Proposals - Toll Charging Structure

3.4.1 Firstly, as outlined in the M50 MPT Implementation Plan, the charging structure for any tolling system tends to be the main focus of customers at the outset, and can have a significant influence on the behavioural response of road users. Setting a charge “too high” could lead to higher levels of toll avoidance, and setting charges “too low”, on the other hand, would probably result in a system delivering low net revenues - as a high proportion of the revenue collected would be consumed by the operating costs.

3.4.2 Secondly, all future charging structures need to consider new policy and direction emerging from Europe. In particular the current draft ‘Eurovignette’ directive, which promotes the concept of distance-based tolling for goods vehicles, is directing Member States implementing toll schemes to provide for the inclusion of an environmental charge (e.g. to compensate for air and noise pollution) in addition to an infrastructure usage charge. It is likely that this directive will also impose restrictions with respect to charging structures which, for example, may limit our ability to introduce a discount for regular ETC users as well as introducing new EU approval procedures for new tolling schemes in Ireland.

3.4.3 Specifically this means that the toll charges are to be comprised of 1) an infrastructure charge and 2) an environmental charge for noise and emissions.

3.4.4 As set out earlier in paragraph 1.2.5, it is important that the relationship between the GDA Tolling scheme (work-package B2) and the M50 Tolling scheme (work-package B1) are actively considered in advance of any discussions with the European Commission so that the mandatory requirements and approval mechanisms are clear. Specifically we require legal clarity on our obligations in the case that GDA tolling and M50 MPT are to be delivered 'in tandem' in an integrated fashion.

3.4.5 **Work-package B2 – GDA Radial Tolling:** Detailed modelling analysis of tolling impacts has been undertaken in order to develop an outline charging structure (refer to paragraph 19.2.10 of the NRTMS Study) The toll charge was determined having regard to traffic diversion levels at various toll charges modelled at each toll location and to meet the requirements of managing the impact of the tolls on local roads, whilst maximising revenues and ensuring that collection costs are a relatively low proportion of overall revenue. In summary:

- A registered car toll charge of €1.30 has been assumed which is consistent with that being proposed for each toll point on the expanded M50 MPT scheme (including the existing toll point between Junctions 6 and 7) demonstrated to give rise to acceptable levels of diversion;
- There would be no additional toll on the M3 mainline – although ramp tolling may be required at Junction 5; and
- All other existing radial toll schemes (i.e., M1, M4) would probably remain unchanged – unless there is a need to align charges for equity purposes.

3.4.6 **Work-package B3 – Cork Jack Lynch Tunnel Tolling:** The proposed preliminary car toll charge as used to determine estimates of toll income for the Jack Lynch is €1.80 (this is comparable to the standard car toll currently applicable at toll schemes across the network). Further assessment will be required to model the impact of this charge to take account of the proposals to upgrade segments of this corridor (as mentioned earlier). The proposed toll charge should be broadly in line with the toll charge for similar city bypass routes (e.g. Limerick and Waterford).

3.4.7 In addition, it is intended that the toll charge regime for both B1 and B2 above, will be developed to incorporate the following aspects which arise due to European Directives:

- Firstly, we would intend that the proposed toll charges are composed of two parts (i.e. infrastructure charge and environmental charge) and further consideration needs to be given as to how this is applied in practice – in line with interpretation of the Eurovignette regulations in this area;
- Secondly, it is proposed that unregistered vehicles using the system/s will be subject to an administrative levy of approximately €1.00 at each toll point to cover the additional handling costs involved, and
- Thirdly, we intend to assess whether it is feasible and permissible to introduce some form of maximum daily charge for vehicles which have been registered to electronic toll accounts. It is likely that this would be introduced for the GDA

scheme only and ideally we would like to introduce an integrated maximum daily charge to cover the whole GDA scheme and including the M50 MPT scheme. This will require some further work. In the absence of an ability to apply a maximum daily cap it may not be feasible to apply tolling as extensively as is proposed in this report.

VEHICLE TYPE	GDA Radial Tolling Proposed Toll Charges per Toll Point (equivalent to M50 Multi Point Tolling Proposals)		Cork -Jack Lynch Tolling Proposed Toll Charges	
	Registered	Non Registered	Registered	Non Registered
Motorcycles	€0.60	€1.60	€0.90	€1.90
Motor Cars	€1.30	€2.30	€1.80	€2.80
Public Service Vehicles	TBC		N/A	
Maximum Daily Charge	TBC			
Commercial / Goods Vehicles up to 3 axles (10 tonne unladen)	€2.00	€3.00	€3.20	€4.20
Maximum Daily Charge	TBC		N/A	
Commercial / Goods Vehicles 4+ axles (over 10 tonne unladen)	€2.60	€3.60	€4.50	€5.50
Maximum Daily Charge	TBC		N/A	

Figure 3.3: Proposed Preliminary Toll Charges

3.5 Proposed Business Model & Rules

3.5.1 As discussed in the previous PIP for the M50 MPT, the proposed business model (summarised in Table 3.3 below) is influenced by a number of factors including the need to enhance the existing free-flow tolling business model in use on the M50 today and to establish a framework which promotes high levels of compliance in an efficient manner.

3.5.2 We are proposing to build on the existing eFlow business model with a number of simplifications and amendments as set out below. Several of these items will require discussion with the Department's Driver Vehicle Computer Services Division (DVCS). The amendments to be considered include:

- Reduction in the number of vehicle classes and corresponding charges;
- Standardisation of treatment of Public Service Vehicles across all toll roads if possible – i.e. number of seats (which requires assessment of the DVCS's vehicle driver file (NVDF) dataset);

- Charging on the basis of gross vehicle weights rather than unladen vehicle weights if possible (which requires assessment of the NVDF dataset);
- Reduction in the number of customer groups by amalgamating the tag and video customer types into one customer type;
- Vary toll charges by applying an administrative surcharge for unregistered users to be €1.00 per toll point (reflecting current eFlow arrangements);
- Maximum Daily Charge – apply a daily maximum charge for registered users;
- Penalty regime to be amended to be more in line with other traffic fixed penalty offences (i.e. less steps and lower overall penalty amount);
- Unregistered users will be billed on a monthly basis (i.e. the ‘utility model’);
- Contact channels for unregistered users to be for the most part ‘self-serve’ (e.g. retail, online and phone service auto-attendant); and
- HGV Emissions Class –system to be able to accommodate this type of charging as required – need to assess the NVDF datasets for emission class data.

	Registered Users	Unregistered Users	Toll Offenders
GDA Radial Tolling (equivalent to the M50 Multi Point Tolling) Toll Charges per Toll Point	Base Toll Charges as per classification below: <ul style="list-style-type: none"> ▪ Motorcycle – €0.60 ▪ Car - €1.30 ▪ LGV - €2.00 ▪ HGV - €2.60 	+ €1.00 surcharge per toll point <ul style="list-style-type: none"> ▪ Motorcycle – €1.60 ▪ Car - €2.30 ▪ LGV - €3.00 ▪ HGV - €3.60 	+ Fixed Penalty for non-payment with ‘discount’ for early payment;
Cork Jack Lynch Tolling Toll Charges per Toll Point	Base Toll Charges as per classification below: <ul style="list-style-type: none"> ▪ Motorcycles - €0.90 ▪ Car - €1.80 ▪ LGV - €2.80 ▪ HGV - €3.80 	+ €1.00 surcharge per toll point <ul style="list-style-type: none"> ▪ Motorbikes - €1.90 ▪ Car - €2.80 ▪ LGV - €3.80 ▪ HGV - €4.80 	+ Fixed Penalty for non-payment with ‘discount’ for early payment;
Potential Incentives	<ul style="list-style-type: none"> ▪ Discounted Tolls for Registered Users (i.e. who avail of more efficient collection methods); ▪ Maximum Daily Charge for Registered Users; 	No discounts	N/A
Classifications	<ul style="list-style-type: none"> ▪ Motorcycles; ▪ Cars; ▪ Commercial vehicles up to 3 axles (3.5 Tonnes GVW); ▪ Commercial vehicles over 3 axles (>3.5 Tonnes GVW); 		
Exemptions	As before (e.g. Garda, Defence Forces, Ambulances, Disabled Vehicles);		N/A
Payment Terms Invoice / Penalty Notice	Pre-pay (top-up) and Post-pay options with statement at month end. New cash ‘top-up’ account available – i.e. not requiring payment means;	Pre-pay and Post-pay options (by month end) For unpaid tolls a bill issued at end of month (+5 days) with €5.00 admin charge. 14 day deadline for payment.	Penalty notice issued further 14 days after bill due date with Fixed Penalty of €80; - discount to €40 if paid within 14 days.

Monthly Fee	None for e-statements; €3 for postal statements; Tag fee - €1.21 / month;	No	N/A
Contact Channel	All Channels Website IVR – auto-attendant Call Centre Retail (for cash top-up and bill payment)	Self Serve Website IVR –auto-attendant Retail (for all payments)	All Channels Website IVR – auto attendant; Call Centre Retail (cash payments)

Table 3.3. Proposed Business Model

3.6 Proposed Operating Regime

- 3.6.1 The proposed operational regime will be driven by the business model once approved the services to be provided, as well as the key interfaces to be managed for example, the requirement to integrate with the existing national interoperability model. This means that the proposed operating regime will be very similar to the proposed operating regime for M50 MPT tolling.
- 3.6.2 The structure of the operating regime will have five main components as follows: i) Roadside Toll Points, ii) technical back office, iii) commercial back office, iv) front office for managing customers and v) a retail payment network.
- 3.6.3 As before, the organisation required to manage this operation can be defined under four key roles / units as follows: i) operational management overseeing the following units; ii) financial management; iii) customer relationship management and iv) systems maintenance and support.
- 3.6.4 Additionally, significant further resources and support will be required during the mobilisation period (i.e. pre-launch and post-launch phase).
- 3.6.5 The NRA will also need to review its own resource requirements for delivery and operational management of the new tolling schemes. Once approval to proceed is given the NRA will need to resource a delivery team with the required personnel and transition quickly into delivery mode.

3.7 Technology and Systems

3.7.1 The proposal is to deploy barrier-free tolling system/s for work-packages that the NRA is directed to progress and given that technology and systems have been covered in some detail within the previous M50 MPT PIP we have not repeated the detail here.

3.8 Financial Overview (including M50 MPT)

3.8.1 The table below summarises the various net revenues across the three work-packages under consideration. To achieve GDA Radials along with M50 MPT in the most optimal manner would in turn necessitate terminating the existing M50 eFlow service provider contract, the term of which runs to 2015. Invoking the termination clause would give rise to termination payments while any new operator would be obliged to observe legislation relating to the transfer of undertakings.

The table below illustrates the incremental net revenue figures per work package over and above the current eFlow operation.

Work-package	B1		B1 & B2		B3		B1 & B2 & B3 Combined*	
<i>Description</i>	M50 Multi Point Tolling (3 new mainline toll points and Ballymun ramp tolling - €1.30 toll at all points)		M50 Multi Point Tolling & GDA Radial Tolling (further 5 new mainline toll points plus ramp tolling - €1.30 toll at all points)		Jack Lynch Tunnel (single toll point - €1.80 toll)		M50 Multi Point Tolling & GDA Radial & Cork Tolling (11 new toll locations)	
<i>Preliminary Estimates</i>	Range (€ million p.a.)		Range (€ million p.a.)		Range (€ million p.a.)		Range (€ million p.a.)	
<i>Incremental Net Toll Revenues (After Operating Costs & Taxes)</i>	€32m	€60m	€80m	€120m	€15m	€20m	€95m	€140m
<i>Incremental Taxes Receivable by State in Operating Phase</i>	€15m	€25m	€40m	€54m	€8m	€10m	€48m	€64m

*In the case of Work-packages B1 & B2 Incremental refers to revenues over and above current M50 eFlow revenues. This analysis assumes that the introduction of M50 MPT tolling involves the current eFlow toll rates being reduced.

Notes:

- Revenues are based on a variety of assumptions – many of which are interdependent and difficult to predict including for example traffic levels and class mix, compliance /evasion levels etc.;
- Revenue estimates based on 2010 traffic volumes.
- While the table notes the toll charge applicable at each point it is proposed to apply a cap on daily tolls subject to compliance with EU Directives.
- In establishing M50 MPT it is proposed to reduce the applicable toll at the existing M50 toll location.
- The toll rates referenced in the above table are the proposed registered user car toll rates. Differential tolls apply by vehicle class and user type i.e. registered and unregistered.

3.8.2 In addition to the financial benefits discussed above, there will be other economic and environmental benefits resulting from these schemes and these will be quantified as part of the project appraisal process, if approval is given to progress with these schemes. For example, measures which improve the flow of vehicles can be expected

to deliver benefits such as journey time savings, reliability improvements and environmental benefits – all of which can be evaluated as part of a scheme appraisal.

- 3.8.3 Finally it is necessary to raise a note of caution with respect to the preliminary estimates included in this PIP. Detailed traffic appraisal will be required to examine the traffic and revenue implications of the toll proposals under consideration.

4.0 Delivery / Procurement Approach for GDA Radials & Jack Lynch Tunnel

4.1 Procurement Strategy & Plan

- 4.1.1 An informed structured plan and programme is essential for successful delivery of any new tolling scheme (particularly a barrier-free operation). Experience has shown that IT projects and barrier-free tolling projects are among the most challenging to successfully deliver.
- 4.1.2 The procurement for the supply and operation of the tolling systems under consideration entails various services and supplies as follows:
- A. Design and Installation of new Toll Points, Roadside Equipment and Central Computer System;
 - B. Operation and Maintenance of new Toll Points;
 - C. Enforcement Service Contract;
 - D. Marketing / Advertising / Public Relations support in relation to the publicity, marketing and advertising requirements for the new tolling regime;
 - E. Other support contracts including for example Project Management, Technical Tolling Advisers and communications;

4.2 Implementation – Key Work-streams

- 4.2.1 There are a variety of interrelated work-streams which require to be resourced and executed to deliver work-packages B2 and B3. These are set out below:
- Legislation – preparation of required primary and secondary legislation. In particular measures that can enhance the enforcement process relating to non-payment tolls and facilitate reduced enforcement costs require to be considered;
 - Project appraisal – economic and environmental appraisal of the scheme in accordance with guidelines;
 - Statutory process management (e.g. draft Toll Scheme and Bye Laws);
 - Business Model and Business Rules (as outlined earlier in Section 3.5);
 - Systems / Technical specifications (preparation and finalisation to include concepts such as performance requirements, system robustness, redundancy and scalability and flexibility and maintenance philosophies);
 - Operational Service requirements (including the specification of key roles and functions as well as service level requirements);
 - Procurement - Tolling System – Supply (including preparation of necessary tender and contract documentation and specifications utilising material developed as per above);
 - Procurement - Tolling System - Operation and Maintenance (again including preparation of necessary tender and contract documentation and specifications utilising material developed as per above);
 - Procurement – other contracts e.g. technical advisers;

- Testing - Planning and Management;
- Mobilisation - Planning and Management(i.e. period prior to and after Go-Live);
- Interface Management (e.g. with DVCS, Enforcement Services Provider, existing toll roads, banks);
- Stakeholder Management (e.g. all of the organisations with whom there is a defined interface and also other stakeholders such as National Transport Authority, European Commission, Courts Service, Office of the Data Protection Commissioner, Motoring Organisations, Consumer bodies);
- Interoperability Management;
- Marketing, Advertising and Communications (including the preparation and execution of a marketing and communications campaign); and
- Public Relations – Significant public awareness campaign relating to new tolling proposals required.

4.3 Implementation – Plan, Programme, Resources and Budget

- 4.3.1 There is a significant amount of detailed planning and programming (i.e. planning the execution of the individual tasks in a coordinated manner) to bring a project like this to fruition. A high level project plan is set out below (Table 4.1).
- 4.3.2 In terms of resources, it is estimated that the NRA would require to resource a delivery team - assisted by external technical, legal and financial consultants - of approximately 4 to 5 people in the following key roles: i) programme management, ii) stakeholder management, iii) interoperability management, iv) statutory processes and v) operations and finance.
- 4.3.3 The overall programme from the point of approval to Go Live (i.e. the new system actually collecting toll revenue) is estimated at approximately 36 months if tolling of both or either of GDA Radials and Jack Lynch Tunnel are to be provided for.
- 4.3.4 The estimated global capital budget, albeit based on extremely limited information for delivery of these work-packages is approximately €54m (inclusive of VAT). As noted in the M50 MPT PIP the global capital budget for multi point tolling is €32m with the additional €22m being the estimate for the GDA Radials and Jack Lynch Tunnel. The majority of this expenditure would relate to the cost of acquiring, installing and testing the roadside equipment (gantries, cameras, beacons, lasers, etc.) along with system development costs and would be expected to be incurred during the second and third years of implementation.

Overall Project Plan Summary for Packages B1, B2 & B3		Status: Preliminary June 2011	
Project Description	To design and deploy a new free-flow tolling regime for M50 Multi-Point Tolling, GDA Radial Routes and in Cork to generate additional tolling revenues for investment in transport infrastructure.		
Objectives	<p>The overarching objective is to collect additional toll revenues from road users on the network and to ensure that this is done in an efficient and equitable manner – sub-objectives are:</p> <ul style="list-style-type: none"> ▪ Commercially focused and financially efficient; ▪ Customer focussed and equitable; ▪ Designed to facilitate future demand management requirements, and ▪ Fully compliant with existing and emerging EU policy and legislation. 		
Approvals & Consents	<ul style="list-style-type: none"> ▪ Ministerial Direction to proceed; ▪ Statutory Approvals process (Toll Scheme and Bye Laws) (NRA Board); ▪ Euro Commission ‘approvals’ process; ▪ NTA consultation / approvals process; ▪ NRA CEO & Board approvals for procurement and contract awards; ▪ NRA CEO and management approvals for any contractual variations, and ▪ Planning for new roadside gantries. 		
Key Work-streams	<ul style="list-style-type: none"> ▪ Legislation ▪ Project appraisal ▪ Statutory processes ▪ Interoperability Management 	<ul style="list-style-type: none"> ▪ Stakeholder Management ▪ Marketing & Communications ▪ Public Relations ▪ DoT / EU liaison 	<ul style="list-style-type: none"> ▪ Business Model & Rules ▪ System specification ▪ Operational specification ▪ Procurement ▪ Contract preparation ▪ Testing & Mobilisation
Organisation & Resources	<ul style="list-style-type: none"> ▪ Delivery Phase - NRA Internal Delivery and Mobilisation Team (new resources) - to be assisted with external resources; ▪ Operations Phase - NRA Internal Operations Team; ▪ External Consultancy Support for Delivery and Mobilisation phase (technical, legal and financial); ▪ Main Delivery Suppliers – Toll System Supplier, Toll System Operator; Marketing and Communications Provider; Enforcement Services Provider, and Banking and Merchant Services Provider. 		
Budget incl. VAT (not approved)	<ul style="list-style-type: none"> ▪ Overall Capital Cost Estimates circa €54 million. 		
Programme & Key Milestones	<p>Overall delivery programme is approximately 36 months from date of Ministerial direction to proceed.</p> <p>Key Milestones as follows:</p> <ul style="list-style-type: none"> ▪ ME 1 – Date of Direction to proceed; ▪ ME 2 – Issue Contract Notice for main Tender Packages; ▪ ME 3 – Contract Award of main Tender Packages; ▪ ME 4 – Readiness for Performance Tests; ▪ ME 5 – Readiness for Operational Tests; ▪ ME 6 – Adoption of Toll Scheme/s; ▪ ME 7 – Adoption of Bye-Laws, and ▪ ME 8 – Go Live. 		

Table 4.1 Project Plan Summary

5.0 Conclusion

The outputs of the recent Preliminary Implementation Plans, submitted to the Department of Transport, Tourism and Sport, consist of a number of possible alternative tolling proposals as follows:

- M50 Multi-Point Tolling comprising three new mainline toll points and ramp tolling at Ballymun interchange;
- GDA Tolling Charges on Dublin Radial Routes comprising five new mainline toll points and ramp tolling, and
- Tolling of Jack Lynch Tunnel, Cork.

The Preliminary Implementation Plans indicate that the introduction of M50 MPT would generate €32m-€60m per annum of additional net revenue. If GDA Radial Tolling was introduced in addition to M50 MPT the combined net additional revenue generated is estimated to be in the region of €80m-€120m per annum. Tolling of the Jack Lynch Tunnel is forecast to generate net revenue in the region of €15m-€20m per annum.

In essence the total overall net revenue position across the three tolling scenarios outlined above would yield an additional €95m-€140m per annum, over and above the €50m per annum net revenue currently being generated from the existing eFlow operation. In addition, the Exchequer/Local Authorities would stand to gain a further €48m-€64m per annum in tax related revenues. Such payments would be over and above the current M50 eFlow tax related payments (€27m per annum).

The Preliminary Implementation Plans assume that the tolling proposals under consideration will all be operated by means of barrier-free tolling similar to the current M50 eFlow tolling arrangements. It is considered that a cap on the daily toll charge level, subject to approval by the European Commission, should apply in the event of a direction being given to the National Roads Authority to progress the implementation of broader tolling in the Dublin Area.

Where a decision is made to proceed only with M50 Multi-Point Tolling the estimated programme for implementation, from the date of Ministerial direction to proceed, is in the region of 24 months as this can be provided for under the existing M50 eFlow contract. Where the programme for implementation includes either of, or both, GDA Radial and Cork Tolling, the programme for implementation increases to 36 months from the date of Ministerial direction to proceed reflecting the increased timeline required for a tender competition to procure the services.

Appendix A

Map of GDA (and M50) Tolling Proposed Locations

Preliminary Implementation Plan: Greater Dublin Area and Jack Lynch Tunnel Tolling GDA & Cork Tolling

