



**An Roinn Iompair
Turasóireachta agus Spóirt**

**Department of Transport,
Tourism and Sport**

**Investing In Our Transport Future: A Strategic Framework for Investment in
Land Transport**

Background Paper Thirteen

Analysis of Steady State Cost of Transport in Ireland

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SFILT Background Paper:

Steady State Investment Overview

1. What is a Steady State Network?

Steady state investment is the amount required to allow the physical assets relating to the transport network to continue to operate as they currently exist. For roads, buses and supporting IT systems such as the Leap Card System, it includes maintenance and like for like renewals. It does not include upgrade of the network for the purpose of delivering significantly higher levels of network performance. In the case of rail, steady state investment allows for renewal of signalling, electrification and telecommunication assets on the basis of the most appropriate technology when like for like renewal is neither practical nor possible and would be more expensive due to outdated technology.

The total steady state investment requirement is the estimated average annual cost of maintaining and renewing the physical assets relating to our national, regional and local roads, and public transport including heavy rail, Luas and buses as they are currently configured. The estimated average annual cost also makes provision for the maintenance and upkeep of IT integration initiatives such as Leap Card ITS System, Real Time Passenger Information (RTPI) Project, and the National Intermodal Journey Planner (NIJP).

In addition to Steady State costs, there are also other capital commitments which the Exchequer is obliged to meet arising from contractual agreements. The overall estimate for Steady State therefore also includes capital projects which, although considered to be enhancements of the network, have an associated capital commitment in future years which the Exchequer must make provision for. These commitments include items such as PPP payments for both existing and new PPP schemes as well as capital obligations arising from projects such as Luas Cross City.

2. What is Included in the Steady State Estimate?

A number of assumptions have been made in arriving at an estimate for steady state investment. For public transport, whilst capital investment will provide a fixed asset (such as a rail line or a bus), there is equally significant current expenditure required to ensure public

transport services operate (e.g. wages, fuel, fleet servicing/cleaning). Much of this current expenditure requirement is met through fare box revenues – however, significant current subsidies are required for Irish Rail, Dublin Bus and many Bus Éireann services. The level of “capital investment” required to facilitate public transport service provision to the present standard is somewhat independent of the level of current costs and revenues that the public transport sector raise. It is, therefore, appropriate that the Strategic Framework considers only capital investment needs for the public transport sector. It is important to note that there is a further significant and equally important requirement for current expenditure to subvent service provision where necessary. The assumptions used in arriving at steady state estimates for individual areas are set out below.

2.1 Irish Rail

In line with European Union legislation requiring Member States to separate rail infrastructure from operations, Iarnród Éireann (IE) is divided into an Infrastructure Manager (IM) part and Railway Undertaking (RU) part. The RU receives the fare box revenue along with a Public Service Obligation (PSO) payment and is operated on a commercial basis. The IM is dependent primarily on capital funding from the State. Given the commercial nature of the RU and the fact it receives *current* State funding, an assumption has been made to base the steady state investment requirement *primarily* on the Infrastructure Manager (IM) aspect of the business. Rolling Stock- which is a matter for the RU- is not included in the estimate due to the low average age of IE’s fleet. The rolling stock is expected to run until 2030. However, heavy maintenance of rolling stock, whilst a matter for the RU, is presented in the overall steady state cost. Heavy maintenance of rolling stock is required to ensure the correct and safe operation of the railway and to preserve functionality and thus provide a reliable product to the user.

In addition to Departmental capital funding, IM funding also comes from track access charges payable by the RU, some PSO funding and a portion of shareholder’s funds to cover overall annual company losses. This paper presents the total steady state cost for heavy rail along with the actual steady state capital cost to the Department, which is significantly reduced when the other elements of funding are taken into account.

2.2 Luas

Steady state costs for Luas can be separated into maintenance costs and life cycle asset renewal costs. The cost of Luas Cross City- while not a steady state cost- is also be included in the overall estimate as it involves a capital commitment which the Exchequer is obliged to meet in future years. In arriving at the actual steady state cost to the Department, an assumption has been made that maintenance costs will continue to be met by the accumulated cash reserve. This assumption is made on the basis that maintenance costs have been covered to date by the reserve and also on the basis of a projected return to an operating surplus from 2015 onwards. The steady state estimate for Luas is therefore based solely on provision for vehicle asset renewal and infrastructure asset renewal. The maintenance cost relating to infrastructure, vehicles and fare collection is presented in this paper to provide an indication of the scale of costs to be met by the cash reserve.

2.3 Buses

It is assumed that the steady state estimate for PSO buses (not commercial bus services) includes provision for asset replacement, bus refurbishment and bus station works. As noted previously, the cost of items relating to current expenditure is not included in the estimate. Public transport commercial services do not receive Exchequer funds and so are not included in the estimate.

2.4 Roads

Almost all road expenditure adds some long term value to the asset (with the exception of day to day maintenance such as road cleaning) and therefore could be considered as a capital investment. Therefore, all costs required to maintain roads to the requisite standard are considered in the steady state estimate as necessary investment expenditure. The cost of road related capital commitments such as project and toll commitments is also be included in the overall estimate as it involves a capital commitment which the Exchequer is obliged to meet in future years

For national roads, toll revenue is noted separately to the steady state estimate. For regional and local roads, the total steady state cost is presented along with the actual steady

state capital cost to the Department, which is reduced when projected local authority own resources funding is taken into account

2.5 Integration Initiatives

It is assumed that existing IT integration measures aimed at encouraging people to use public transport will require capital funding for maintenance purposes and to ensure continued high levels of performance. A figure has been included in the estimate to cover maintenance and upkeep of the Leap Card ITS System, Real Time Passenger Information System and the National Intermodal Journey Planner. Provision in the estimate has also been made for replacement of ticket machines.

3. Heavy Rail Capital Investment

3.1 Background

The identification of steady state investment requirement for heavy rail has been assisted by a parallel process in place between the Department and Iarnród Éireann (IÉ) on the appropriate level of funding for the newly designated Infrastructure Manager section of IÉ, to maintain “steady state” conditions on the railway network.

The basis for IÉ estimates of steady state requirements is derived from background work undertaken by AECOM for the 2030 Rail Network Strategy completed in 2011. The Aecom Review focuses on the period 2011-2030. The Review notes that while investment over the last number of years has “delivered significantly improved and safer infrastructure, the steady state position whereby infrastructural assets can be managed under an optimised maintenance and renewal regime has not yet been achieved”. Steady state is defined in the Review as the “position whereby infrastructural assets can be managed under an optimised maintenance and renewal regime”.

Using the Aecom Review, IÉ estimates that a total of €215m per annum is required over the period 2014-2018. See Table 1 below for a full breakdown of the costs. Track infrastructure and structures maintenance and renewal needs are estimated to be €2,896m over 20 years or approximately €145m per annum. The bulk of this expenditure relates to track maintenance and renewal. The total signalling, telecommunications and electrification

maintenance and renewal requirement estimated in the Review is €1,400m over 20 years or €70m per annum.

IE has also indicated that an on-going annual provision of €9.04m is required for Safety Management Systems and €20.9m per annum is required for signalling and control functions up to 2018. A further annual cost of €3m is identified to meet maintenance obligations along closed and abandoned lines. Furthermore, the Aecom report estimates that annual heavy maintenance cost for the IE fleet is in the range €28-€33m. Provision of €10 million has also been made for asset renewal costs associated with rail stations around the country. Therefore, the total average annual requirement identified by IE for heavy rail amounts to €291 million.

| Expenditure Category | Average Expenditure Per Annum (m) |
|---|--|
| <u>Civil Engineering Requirements- Track & Structures</u> | |
| Track | 48 |
| Bridge Renewal | 13 |
| Points & Crossings | 7 |
| Fencing | 3 |
| Level Crossings | 8 |
| Cuttings & Embankments and other structures | 3 |
| Facilities & Buildings | 10 |
| Other works (drainage, component renewal, technical programmes, asset monitoring) | 17.8 |
| Maintenance (includes labour cost of track maintenance and covers planned and unplanned maintenance works) | 33 |
| Total Annual Estimated Expenditure Requirement for Civil Engineering | 145 |
| | |
| <u>Signalling, Electrification and Telecommunication Requirements</u> | |
| Signalling (including Train Protection system) | 18 |
| Telecoms | 8.4 |
| Electrification | 4.4 |
| Maintenance Planned cycling maintenance & fault repairs (70% labour costs, 30% materials & overheads) General refurbishments & planned jobs | 30.4 8 |
| Total Annual Estimated Expenditure Requirement for Signalling, Electrification & Telecommunication | 69.2 |
| Total Infrastructure Maintenance and Renewals average annual estimated requirement | 215 |
| Other Costs | |

| | |
|---|--------------|
| Safety Management System (SMS) | 9.04 |
| Signalling & Control ¹ | 20.9 |
| Closed & Abandoned Lines | 3 |
| Station renewal costs | 10 |
| Railway Undertaking Capital Costs | |
| Heavy Maintenance for Rolling Stock | 33 |
| Total average annual estimated expenditure | €291m |

Table 1: IÉ Estimated Steady State Expenditure Requirements for Heavy Rail

3.2 Validation of Steady State Costs

Estimating future rail investment needs is fraught with difficulty as there are many different factors that must be taken into account in an estimate and many of these are subject to significant uncertainty. The estimates provided by IÉ (based on the Aecom Review), were further assessed and broadly endorsed in the “Mid-Term Review of Iarnród Éireann’s Third Railway Safety Programme” undertaken by Risk Solutions in 2012. A further review of the estimates was undertaken by Leigh Fisher/Jacobs. This Review concluded that there is evidence to substantiate the identified requirements for Civil Engineering and building maintenance and renewals related works of €145m per annum. With regard to signalling, electrification and telecommunications assets (SET), the Review takes the view that sufficient evidence was not available to validate the programme of works and more detailed analysis should be undertaken on the condition of the SET assets. For the purposes of the Infrastructure Manager Multi-Annual Contract and pending further detailed analysis, the SET estimate of €70m per annum is provisionally accepted as the steady state figure.

3.3 Funding Availability

If the steady state requirement is not available then IÉ have indicated that a “deferral” scenario can be safely implemented albeit with significant operational consequences, including slower and less reliable journey times. Such a scenario would erode over a period of time the gains made from the upgrading of the network over the 15 years of the Railway Safety Programme. Deferral is not a sustainable strategy as it commonly results in a higher

¹ €20.9m per annum is required for signalling and control functions up to 2018. The signalling and control department is responsible for the management, control and supervision of IM Train Control operations as follows- Central Traffic Control (63 staff), Signalling Control (96 staff), Level Crossing Control (205 staff), Emergency Response (60 staff) and Train Performance Reporting (42 staff)

investment requirement eventually. While savings are made in the short term by deferring renewals in favour of maintenance, the ultimate cost over the lifetime of the asset is significantly higher.

Funding for the Infrastructure Manager (IM) in 2014 is expected to fall short of the steady state requirement by around €60 million². It is unlikely that the funding shortfall will be bridged in the foreseeable future. A decision will therefore have to be made between prioritising investment on the basis of route performance and importance to transport needs, or continuing to fund the current network resulting in deteriorating operational performance across all routes.

In addition to Departmental capital funding, IM funding also comes from track access charges payable by the RU, some PSO funding and bank borrowings to cover projected losses of the IM. While the €291m represents the total steady state cost of heavy rail, the actual annual steady state capital cost relating to funding required from the Department is significantly reduced when the other elements of funding are taken into account. It is assumed that the fleet heavy maintenance cost of €33m is to be covered by the Railway Undertaking. The total Steady State Cost of heavy rail to the Department is reduced further when track access charges and bank borrowings to cover the projected losses of the IM are taken into account. The cost to the Department in 2014 is the funding allocation of €125m (€115m capital funds and €10m current funds from PSO allocation) plus the shortfall in funding, which for 2014 amounts to €70m. A steady state requirement of €195m is therefore assumed annually for subsequent years on the basis that funding from track access charges is unlikely to vary significantly in future years. However, it is important to note that the capital cost to the Department is dependent on the ability of the Railway Undertaking to meet heavy maintenance costs in future years from a combination of PSO funding and own resources. Furthermore, using bank borrowings to cover the losses borne by the Infrastructure Manager is not sustainable in the long term.

The multi-annual contract setting out the funding for the Infrastructure Manager is currently being finalised. It is expected that the IM contract will be finalised with actual figures for

² This shortfall does not include the figure for station renewal which, although not included in IM contract estimates *is* included in steady state estimates for this work.

2014 and indicative figures to be used for the remaining four years, pending a detailed assessment of the 2015-2018 requirements.

3.4 Future Railway Policy

In determining the medium to long term investment for the rail network it will be essential to develop a railway policy consistent with available funding, transport needs and commercial realities. If funding does not match network requirements, decisions must be taken to close certain lines or allocate the money on a priority basis with best performing routes receiving the bulk of investment and allowing operational performance for lower priority lines to decline to preserve safety. The review of the IM Contract in 2014 along with the SFILT presents an opportunity to set out the need for a new policy framework dealing with key questions such as:

- Is the scale of estimated expenditure required to maintain a steady state appropriate, relative to the current and future envisaged role of rail transport in Ireland?
- What is the rationale for protecting certain parts of the network over others if operating within significantly lower expenditure limits than envisaged under steady state estimates for the foreseeable future?

4. Light Rail- Luas

4.1 Background

Steady state costs for Luas can be separated into maintenance costs and life cycle asset renewal costs. The cost of Luas Cross City- while not a steady state cost- is also be included in the overall estimate as it involves a capital commitment which must be met in future years.

The surplus between Luas revenue and operating costs achieved in years past (2005-2010) went into a sinking fund. The accumulated cash in this fund is intended to cover future overhaul and refurbishment costs. To date, maintenance costs have been met by the accumulated cash reserves. The RPA has been experiencing deficits between revenue and operating costs since 2011 and is forecast to have an operating deficit in 2014. This is largely

due to increased operating costs due to the opening of three new extensions to the Luas Network since 2009. While passenger volumes have increased, they have not improved to the extent that these additional costs can be met by increase ticket revenue. This has resulted in the RPA using some of the accumulated cash reserve which was intended for necessary maintenance work. The RPA expect that a return to profitability will occur in 2015.³ Pending this, a fares increase has been granted to generate increased revenue with the balance of the shortfall being met from the accumulated cash reserves. The RPA held short term cash deposits at 31 December 2011 of €66.1m (€88.9m in 2010). The accumulated cash reserve is the only identified source of funding the maintenance of the network and is only to be drawn down from to meet operating deficits in extreme circumstances.

In arriving at the actual steady state cost to the Department, an assumption has been made that maintenance costs will continue to be met by the accumulated cash reserve. This assumption has been made on the basis of how maintenance costs have been covered to date by the reserve and also on the basis of a likely return to an operating surplus from 2015 onwards. However, the annual projected costs relating to infrastructure maintenance, vehicle maintenance and fare collection are presented in Table 2 below in order to present the full range of steady state costs relating to Luas.

Table 2 sets out the projected annual costs from 2014 up to 2030. Provision for life cycle asset renewal is made in the steady state estimate. This includes vehicle asset renewal and infrastructure asset renewal. From 2014-2016, an average annual requirement €62 million per annum is anticipated for Luas. From 2017-2030, it is also anticipated that €62 million is required on average each year to meet the cost of vehicle and infrastructure asset renewals. It is worth noting that a requirement of €50m for vehicle asset renewals is anticipated in 2025.

³ National Transport Authority: Consideration of application from the RPA to increase monthly and annual tickets for 2014

| Forecast Year | Vehicle Asset Renewals | Infrastructure Asset Renewals | Luas Cross City Commitment | Infrastructure Maintenance Cost (Vehicle, maintenance, Fare Collection maintenance) | Annual Total Costs |
|---------------|------------------------|-------------------------------|----------------------------|---|--------------------|
| | € million | € million | € million | € million | € million |
| 2014 | 2.80 | 2.15 | 27.00 | 20.996 | 52.94 |
| 2015 | 1.04 | 0.94 | 49.00 | 21.387 | 72.37 |
| 2016 | 0 | 0.74 | 95.00 | 22.235 | 117.98 |
| 2017 | 0 | 0.84 | 80.00 | 22.249 | 103.09 |
| 2018 | 1.64 | 4.73 | 27.00 | 24.801 | 58.17 |
| 2019 | 8.94 | 5.78 | N/A | 25.248 | 39.97 |
| 2020 | 6.54 | 5.68 | N/A | 25.561 | 37.78 |
| 2021 | 2.04 | 2.07 | N/A | 26.199 | 30.31 |
| 2022 | 0.34 | 4.23 | N/A | 27.23 | 31.80 |
| 2023 | 0.83 | 2.80 | N/A | 27.304 | 30.94 |
| 2024 | 7.72 | 5.72 | N/A | 27.876 | 41.31 |
| 2025 | 50.10 | 5.00 | N/A | 28.365 | 83.47 |
| 2026 | 15.14 | 4.61 | N/A | 28.795 | 48.54 |
| 2027 | 7.69 | 3.90 | N/A | 29.519 | 41.11 |
| 2028 | 2.09 | 4.12 | N/A | 30.708 | 36.91 |
| 2029 | 0.00 | 4.27 | N/A | 30.79 | 35.06 |
| 2030 | 25.81 | 4.12 | N/A | 31.207 | 61.13 |
| Total | €133 | €61 | €278 | €450 | €923 |

Table 2: Luas Steady State and Capital Commitment Estimates

5. Buses

3.1 Background

Steady state costs for the bus companies on the PSO services can be separated into general maintenance costs and asset renewal/refurbishment costs. As noted in Section 2, an assumption has been made that the cost of general light maintenance will be met by a combination of fare box and own resources in Dublin Bus and Bus Éireann. General light maintenance costs are therefore not included in the estimated steady state investment requirement for buses. However, the bus fleet requires extensive refurbishment mid-life to

maintain the useful life of the vehicles and therefore, the cost of bus fleet refurbishment *is* included in the steady state estimate.

A rolling replacement bus programme has been in place in Bus Éireann and Dublin Bus in recent years. Maintaining a low fleet age profile has a number of advantages including environmental benefits, reduced cost of maintenance per kilometre, greater levels of accessibility for wheelchair users and enhanced reliability. The average age of the Dublin Bus fleet in 2013 was approximately 7 years⁴ which is considered to be within industry norms. In the case of Bus Éireann, the average age of the fleet at the end of 2012 was 5.7⁵. It is estimated that the replacement bus programme will replace up to 80 and 60 buses per year for Dublin Bus and Bus Éireann respectively.

In relation to the steady state funding for the bus companies on the PSO services, it is estimated that an annual spend of €61m is required to:

- maintain an acceptable average age of the Dublin Bus and Bus Éireann fleets through a replacement programme
- undertake mid-life refurbishment of the bus fleet to protect the useful life of the vehicles
- upgrade and maintain bus station facilities to meet legislative building requirements, including accessibility requirements, rewiring, power supplies, safety accesses and replacement of life-expired components
- provide and maintain bus stops and shelters

It is assumed that other items such as depot renewals, equipment renewals and control centre renewals will be funded through fare revenue and PSO subsidy. Table 3 below sets out the breakdown of the €61m:

⁴ National Transport Authority: Proposal to Directly Award a Public Bus Services Contract to Dublin Bus in 2014

⁵ National Transport Authority: Proposal to Directly Award a Public Bus Services Contract to Bus Éireann in 2014

| | (€ Million) |
|--------------------------------------|-------------|
| Dublin Bus Replacement Buses | 26 |
| Bus Éireann Replacement Buses | 20 |
| Bus Fleet Refurbishment | 3 |
| Bus stops and shelters | 4 |
| Bus Stations * | 8 |
| Total | 61 |

Table 3: Dublin Bus and Bus Éireann Steady State Estimates

*The cost of bus stations will reduce post-2019 to an estimated €6m for continuous renewal works to preserve the asset value of the stations

6. Roads

6.1. National Roads

6.1.1 Background

The cost of maintenance and renewal works on the national road network, so as to preserve the full functionality of the roads is estimated to be in the order of 0.5-1% per annum of the initial cost⁶. The replacement cost of the network is estimated to be in the order of €30 billion. Table 4 below sets out a breakdown of steady state requirements for national roads and other capital commitments up to 2023. The table includes the cost of pavement works, signs and lines, works required under the EU Safety Directive, Bridge Remedial Works and costs associated with programme support and the Regional Design Offices. Routine maintenance is covered under the steady state estimate and provision is also made for small works projects and network management.⁷

⁶ Department of Transport, Tourism and Sport: Report on Proposed Capital Investment Programme 2012-2016 (Appendix 1)

⁷ Network management deals with network operations for NTR, Dublin Port Tunnel, M50 E Flow operations, Jack Lynch Tunnel, ITS, Winter monitoring.

In addition to the steady state costs of the network, there is also the issue of capital budget commitments to take into account. This requires provision to be made for schemes at closeout and construction and also for the second tranche of PPP projects.

Finally, the capital cost of PPP Operational Payments, M50 Availability Payments and Variable Operation Payments must also be added to the steady state cost estimate. Post 2016, there is an increase in new scheme PPP availability payments as the N7/N11, N17/N18, N11 Gorey Enniscorthy and N25 Availability Payments fall due. Annual payments for the new PPP schemes are €66m in 2016 and rise significantly in 2017 to €107m and further in later years to €119m. Existing PPP operational payments start to reduce post-2017 with annual toll payments in the range of €28m to €41m. Both M50 Availability Payments and Variable Operation Payments increase slightly post-2017.

An estimated €585m is required annually between 2014-2016 to meet steady state and capital commitment costs. Post-2016, it is estimated that the amount required annual to maintain the steady state and meet capital commitments relating to our national roads is €573m.

There is no provision in the figures for land relating to the Galway bypass, motorway service areas and new design and build or PPP major projects.

Toll revenue which accrues directly to the NRA will offset some of the steady state costs. This revenue is projected to amount to around €104m per annum.

6.1.2 Efficiency Measures- National Roads

Ireland has a uniquely extensive road network. There are approximately 99,000 kilometres of road in the network which represents two and a half times the EU average in terms of kilometres per head of population. The maintenance and improvement of this extensive network of roads places a substantial financial burden on local authorities and on the Exchequer. It is accepted, therefore, that available funding needs to be spent as effectively as possible and that there needs to be a continuing focus on achieving efficiencies where possible.

At present available budgets are very far short of what is required to protect the considerable asset value of the road network and efficiency measures, while valuable, cannot obviate the need for substantial investment in future years if the road network is to be maintained even close to a steady state level.

In this context, the NRA exercises a strong management and oversight role in relation to national roads and has robust measurement, monitoring and management systems in place. A key factor in ensuring cost efficiency is the almost universal use of competitive tendering for contracts under most of the Authority's activities. The Authority actively seeks to promote increased efficiency on an on-going basis and recent initiatives taken by the Authority include:

- Local authorities being asked to bid for elements of maintenance funding subject to meeting performance criteria.
- The deployment of a comprehensive asset management system (dTims) with a view to optimising expenditure on pavement renewal.
- As part of its research programme the use of recycled and low energy paving materials and processes.

| Expenditure | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|--|------|------|------|------|------|------|------|------|------|------|
| | (€m) | (€m) | (€m) | (€m) | (€m) | (€m) | (€m) | (€m) | (€m) | (€m) |
| Steady State Expenditure | | | | | | | | | | |
| Pavement works | 140 | 140 | 140 | 140 | 140 | 140 | 140 | 140 | 140 | 140 |
| Signs & Lines | 5 | 5 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| EU Safety Directive | 7 | 7 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Programme Support/RDOs | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 |
| Bridges Remedial/Renewal | 8 | 8 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Network management | 142 | 142 | 145 | 141 | 144 | 147 | 96 | 84 | 84 | 84 |
| Made up of: | | | | | | | | | | |
| Network Operations (NTR) | 53 | 54 | 55 | 57 | 58 | 59 | 12 | 0 | 0 | 0 |
| Network Operations (DPT) | 18 | 18 | 19 | 19 | 20 | 22 | 22 | 22 | 22 | 22 |
| Network operations (M50 eflow) | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| Network Operations (ITS, Emergency Control, Winter Monitoring, Jack Lynch Tunnel Operations, Motorway Maintenance and Renewal Contracts) | 40 | 38 | 39 | 35 | 35 | 35 | 31 | 31 | 31 | 31 |
| Routine Maintenance | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| Small Works Projects | 17 | 13 | 12 | 12 | 4 | 4 | 4 | 4 | 4 | 19 |
| (Safety improvement, RSI inspections, minor realignment works, bridges, pavement works) | | | | | | | | | | |
| Total Steady State | 380 | 376 | 398 | 394 | 389 | 392 | 341 | 329 | 329 | 344 |

| Other Capital Commitments | | | | | | | | | | |
|---|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Major Projects Capital Commitments Total | 111 | 98 | 75 | 133 | 25 | 14 | 6 | 3 | 0 | 0 |
| Made up of: | | | | | | | | | | |
| Schemes at closeout | 19 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Schemes at Construction excl. PPP2 schemes | 43 | 18 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Schemes at planning & design (incl land for N4/N5) | 18 | 27 | 29 | 26 | 14 | 7 | 3 | 3 | 0 | 0 |
| PPP2 N7/N11 | 5 | 25 | 4 | 3 | 2 | 1 | 0 | 0 | 0 | 0 |
| PPP2 N17/N18/N11/N25 | 27 | 26 | 25 | 104 | 9 | 6 | 5 | 0 | 0 | 0 |
| Total Payments | 93 | 108 | 115 | 161 | 184 | 186 | 193 | 198 | 194 | 194 |
| Made up of: | | | | | | | | | | |
| PPP Operational Payments | 59 | 58 | 59 | 56 | 35 | 36 | 38 | 41 | 32 | 28 |
| M50 Availability Payments | 25 | 26 | 26 | 27 | 27 | 27 | 28 | 29 | 29 | 30 |
| Variable Operational Payments | 9 | 10 | 12 | 12 | 14 | 15 | 16 | 16 | 17 | 18 |
| New PPP Availability Payments | 0 | 15 | 19 | 66 | 107 | 108 | 111 | 113 | 116 | 119 |
| Total Capital Commitment Requirement | 204 | 206 | 190 | 294 | 209 | 200 | 199 | 201 | 194 | 194 |
| Total of Steady State and Capital Commitment | 584 | 582 | 588 | 688 | 598 | 592 | 540 | 530 | 523 | 538 |
| (Projected Toll Revenue ex VAT 2013 prices) | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 | 104 |

Table 4: National Roads Steady State Estimates

6.2 Regional and Local Roads

6.2.1 Background

In order to protect the road network, it is necessary to carry out the following works on an annual basis:

1. Provide a surface seal (usually surface dressing) on at least 5% of the road network (this corresponds to approximately 4,700 km).
2. Strengthen at least 5% of the road network (approximately 4,700 km).
3. General maintenance and repairs. This includes matters such as drainage, bridge rehabilitation works, cleaning/replacing signs, renewing road markings and repairing crash barrier in the case of rural authorities and additional costs such as public lighting energy costs and traffic signal maintenance in the case of urban authorities

The basis for estimating the annual cost of preserving the existing Regional and Local Roads network is as follows:

- On average, a rural road needs to be surface dressed every 10 years, An urban road will require a more expensive type of surface treatment at a similar interval
- On average, a road needs to be strengthened/overlaid every 20 years
- A road which is strengthened in a particular year no longer requires surface dressing for a further 10 years. So if a road is strengthened in year 1 then it will require surface dressing in year 10, strengthening in year 20, surface dressing in year 30 and so on.

In recent years, the surface dressing target of 4,700 km has not been achieved. Nor has the pavement strengthening target of 4,700 km been achieved. From about 2000 to 2008 these targets would have been broadly achieved. Despite this the 2005 Pavement Condition Survey showed at that time there was a backlog of work to be carried out on the regional and local road network. The total cost of the backlog of work identified in 2005 was estimated at approximately €2.7 billion. This overall backlog is unlikely to have reduced in the intervening years given the significant reduction in regional and local road expenditure since 2009 and a number of severe weather events

The current estimate of the cost of maintaining the network is in the order of €550 million to €600 million per annum for regional and local roads, including local authority expenditure. This does not include any provision for the aforementioned backlog of work. The estimate is based on Table 5 below. The table shows the lengths of road contained in the different categories (rural, urban, regional and local) and estimates the annual cost of maintaining a “steady state condition” in terms of road pavement condition. The costs are broken into 3 main headings:

1. Surface resealing works
2. Pavement rehabilitation works
3. General maintenance and repairs including drainage and bridge repairs.

It is believed that the estimate of costs is conservative and if anything, underestimates the cost of maintaining the network. The reason for this statement is that many of the rural regional and local roads are legacy roads which never had the benefit of a designed pavement and consequently they may not last for 20 years (as assumed). In addition, while urban roads may have pavements which are appropriately designed they are often subjected to road opening works by utilities and such works inevitably reduce the life of the pavement.

6.2.2 Efficiency Measures- Regional and Local Roads

An exercise was undertaken by the Department to compare grants provided to local authorities against the output per kilometre between 2004 and 2008. The Department found that unit rates for surface dressing could vary significantly between different local authorities. While there are valid reasons for variation in costs such as the condition of the road pavement, additional works associated with urban areas and the impact of traffic levels on the pavement surface, this exercise has been used to establish a cost range for different types of works in differing circumstances in order to achieve better value for money in the future. In 2010, all local authorities were issued with a new Memorandum on Grants for Regional and Local Roads which specifies the maximum permitted rates that will apply for regional and local roads. The maximum unit rate for surface dressing for regional

roads is €5.20/m² and €4.20/ m² for local roads. The Department now has measures in place to recoup any expenditure on surface dressing works where these rates are exceeded.

A range of other initiatives have been undertaken in recent years to achieve greater efficiency in the maintenance of regional and local roads. Examples include:

- Setting maximum unit rates for surface dressing on regional and local roads.
- Promoting more effective work practices, for example the use of velocity patching machines to improve the quality of repairs.
- A pilot Community Involvement Scheme to attract local community support to tackle necessary work on less trafficked local roads.
- Production of best practice guidelines.
- Promoting a computer based pavement management system which will operate as a local authority shared service and will facilitate improved decision making on the maintenance and rehabilitation of roads through better record keeping and a co-ordinated approach to road opening licences.

6.2.3 Key Policy Issues Relating to Regional and Local Roads

Notwithstanding that an estimated €550-600 million is required per annum to maintain the regional and local roads, it is worth noting that arrangements regarding how these roads are funded may be subject to change in the near future following finalisation of the decision on where the local property tax (LPT) proceeds will accrue (i.e the Exchequer or to Local Authorities). A possible scenario may arise whereby local authorities are assigned full autonomy regarding expenditure on regional and local roads. Local authorities currently provide a significant level of own resources expenditure to fund the maintenance of regional and local roads, providing 31% of the total expenditure on average over the last 5 years. The extent of maintenance of the network will be impacted on by future levels of local authority own resources contributions.

6.2.4 Socio-Economics Impacts of Road Maintenance

Finally, it is worth noting that a recent report⁸ considered the wider socio-economic impacts of road maintenance and concluded that spending £1 on road maintenance results in £1.50 benefit to the wider Scottish economy and society. The assessment was undertaken to determine the impacts of reducing roads maintenance spending across the Scottish road network. A number of spending scenarios were tested over a 20-year period. It was found that spending on road maintenance clearly delivers economic and social benefits to Scotland. The study also identified an array of impacts which are difficult to quantify but are thought to be of equal significance to users and so have a wider effect on society.

A note from the World Bank⁹ also points to the impacts of postponing road maintenance. It is stated that *“If road defects are repaired promptly, the cost is usually modest. If defects are neglected, an entire road section may fail completely, requiring full reconstruction at three times or more the cost, on average of maintenance costs. The South African National Road Agency (SANRAL) estimates the repair costs rise to six times the maintenance costs after three years of neglect and to 18 times after five years of neglect”*.

⁸ Final Report: National Roads Maintenance Review Scotland. July 2012

⁹ Transport Note: World Bank, Why Road Maintenance is Important and How to Get it Done

Table 5: Cost Estimate for Regional and Local Roads

| Category | Road Length | %RI | %RM | RI rate | RM rate | Avg Width | Routine Maintenance | RI Cost | RM cost | Routine Maint. Cost | Total |
|--------------|-------------|-------|-------|------------------|------------------|-----------|---------------------|-------------|------------|---------------------------|-------------|
| Rural | metres | works | works | €/m ² | €/m ² | | €/km | € | € | € | € |
| Regional | 12,370,523 | 5 | 5 | 25 | 5 | 6.03 | 2000 | 93,242,817 | 18,648,563 | 24,741,046 | 136,632,426 |
| LP | 23,254,428 | 5 | 5 | 19 | 4 | 4.44 | 1500 | 98,087,178 | 20,649,932 | 34,881,642 | 153,618,753 |
| LS | 32,560,550 | 5 | 5 | 15 | 4 | 3.56 | 1000 | 86,936,667 | 23,183,111 | 32,560,550 | 142,680,328 |
| LT | 20,955,934 | 5 | 5 | 13 | 4 | 3 | 1000 | 40,864,071 | 12,573,560 | 20,955,934 | 74,393,566 |
| sub-total 1 | 89,141,435 | | | | | | | 319,130,734 | 75,055,167 | 113,139,172 | 507,325,073 |
| Urban | | | | | | | | | | | |
| Regional | 749,706 | 5 | 5 | 50 | 10 | 7 | 4000 | 13,119,863 | 2,623,973 | 2,998,826 | 18,742,662 |
| Local | 3,701,099 | 5 | 5 | 40 | 10 | 5 | 2000 | 37,010,990 | 9,252,747 | 7,402,198 | 53,665,935 |
| sub total 2 | 4,450,805 | | | | | | | 50,130,853 | 11,876,720 | 10,401,024 | 72,408,597 |
| | | | | | | | | | | | |
| Total | 93,592,240 | | | | | | | 369,261,587 | 86,931,888 | 123,540,196 ¹⁰ | 579,733,670 |
| | | | | | | | | | | | |

¹⁰ There are approximately 19,000 bridges on the regional and local road network and it is estimated that bridge maintenance & rehabilitation works would account for about €35 million per annum from the total of €123.5 million for routine maintenance.

7. Integration Initiatives

There are a number of integration projects currently in place, which will incur future capital costs. These projects are aimed at encouraging people to use public transport. The projects involved are Leap Card, Real Time Passenger Information and the National Intermodal Journey Planner. Small levels of capital investment will be required annually to ensure the ongoing functionality of these systems and also to cover the replacement of ticket machines. An annual requirement of €15m is included in Table 6 below for integration initiatives.

8. Conclusion

Estimated Steady State Investment Costs for 2014-2016 and post 2016 are set out in Table 6 below. The table sets out the total average annual costs alongside the steady state cost attributable to the Department of Transport, Tourism and Sport when revenues such as tolls and local authority own resources are included for roads, and track access charges and PSO funding are included for heavy rail. The total average steady state cost for the transport network is estimated to be €1.6 billion for the period 2014-2016 and also €1.6 billion for the post-2016 period. However, when additional sources of funding are included, the steady state cost to the Department drops to €1.3 billion for 2014-2016 and to €1.2 billion for the post-2016 period.

| Area of Expenditure | Total Average Annual Steady State Cost 2014-2016 (€m) | Steady State Cost Attributable to DTTaS 2014-2016 (€m) | Total Average Annual Steady State Cost Post-2016 (m) (€m) | Steady State Cost Attributable to DTTaS Post-2016 (€m) |
|--------------------------------|---|--|---|--|
| Roads | | | | |
| National Roads | 585 | 481 ¹ | 573* | 469 ¹ |
| Regional and Local Roads | 580 | 480 ² | 580** | 480 ² |
| Heavy Rail | 291 | 195 ³ | 291 | 195 ³ |
| Luas | 81 | 60 ⁴ | 49 | 21 ⁴ |
| Buses | 61 | 61 | 61 | 61 |
| Integration Initiatives | 15 | 15 | 15 | 15 |
| Total | €1.6 billion | €1.3 billion | €1.6 billion | €1.2 billion |

Table 6: Overall Steady State Estimates, 2014-2016 and Post-2016

Notes:

1. Toll revenue accruing directly to the NRA projected to be €104m per annum (2013 costs) is offset against the total average annual steady state costs for national roads
2. Local authority own resources projected *direct* contribution €100m to maintenance of regional and local roads is offset against the total average annual steady state costs for regional & local roads. This amount is not guaranteed and may increase or decrease depending on available funding.
3. Total average annual steady state cost assumes that fleet heavy maintenance of €33m is a matter for the Railway Undertaking. The figure of €195m also assumes funding from track access charges and bank borrowings to cover the apportionment of losses borne by the Infrastructure Manager.
4. The steady state cost of Luas to the Department of Transport, Tourism & Sport is offset against the cost of maintenance, the cost of which is assumed to be met in the future by the accumulated cash reserve