



Public Accounts Committee

Further information
requested at 8th March
sitting on motorway
maintenance contracts

Date: 26th March 2018

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Motorway Maintenance & Renewals Contracts (MMARC)

Background and Context

The decade 2001 to 2010 witnessed a major transformation of the Irish road network. In 2001 we had little more than 300km of motorway / dual carriageway; by the end of 2010 with the completion of the Major Inter-Urban (MIU) programme we exceeded 1200 km of motorway/ dual carriageway. Thus, in a decade we experienced an almost four fold increase in the length of our high speed network.

The completion of the MIU routes transformed the journey experience of road users travelling between our principal cities. However, the transformation in the network also significantly increased the challenges for delivering effective and efficient operation and maintenance of the network. Maintenance of motorways, as compared with two lane roads is considerably more complex and expensive. Having to operate in an environment with traffic speeds of 120km/h requires extensive traffic management even to undertake the most basic of activities such as cutting grass or collecting litter in the verge. Other more complex activities such as bridge repairs may entail even more extensive traffic management. Operatives engaged in traffic management on high speed roads require an increased level of training and often the cost of traffic management (which is essential to ensure the safety of both operatives and the travelling public) is greater than the cost of undertaking the maintenance activity itself.

Maintenance of Our Motorways

Following the completion of the Major Inter Urban network at the end of 2010, we had two distinct mechanisms for the delivery of maintenance on the motorway network:

- a) On 350km of Public Private Partnership (PPP) sections, operation and maintenance of the relevant motorway sections was undertaken by the concessionaires,
- b) On the remainder of the motorway network maintenance was carried out by the relevant local authorities.

Delivery of motorway maintenance by the local authorities was subject to significant disadvantages. Firstly, the inherent fragmentation of the motorway routes across local authority boundaries militated against the achievement of effective economies of scale. For example, in travelling between the M50 Red Cow Interchange in Dublin and the Dunkettle Roundabout in Cork, a road user passes through eight separate local authority areas. Overall the footprint of the motorway network extends across more than twenty local authority areas. Given such a large number of counties, it is extremely difficult to achieve an efficient maintenance and operations regime on the motorway network. This is particularly so in the case of winter maintenance. A large number of interfaces between different local authorities along a section of motorway increases the logistical difficulty of ensuring consistency of treatment and timing. Conversely, the fewer the number of interfaces the greater the reliability of winter service.

Motorway Maintenance and Renewals

There may be a perception in certain quarters that because our motorway network is new it does not require maintenance. Quite the opposite is the case. Our motorways contain many features that ensure that they are by far the safest roads on our network. Accident statistics bear out the fact that motorways are many times safer than the roads they have bypassed. Our modern roads include highly reflective lining to assist drivers, particularly in the dark; signs are more frequent and more visible due to their enhanced reflectivity and safety fencing is used extensively to protect drivers from striking hazards. However, if those roads are not maintained, if the lining is not renewed to maintain its high reflectivity, if barriers are not repaired when they are hit, and if drainage gullies are not cleaned out so as to avoid ponding of water on the carriageway, then road safety will be compromised.

Additionally, if essential renewal of pavements and bridges is not undertaken at appropriate intervals then the structure of the roads and bridges will start to degrade. Once this begins to happen and the matter is not addressed in a timely manner then the inevitable consequence is the deterioration in the physical condition of the motorway and its safety record along with a decrease in the asset value of the infrastructure.

Ensuring that capital renewals are undertaken in a timely manner is essential to ensuring that our network can continue to perform as designed. An effective combination of routine maintenance and appropriately timed asset renewals programmes is essential to ensuring that we continue to enjoy the economic benefits of our motorway network.

Motorway Operations

Unlike other roads, the management of collisions and other incidents on motorways requires the deployment of significant resources. Minor collisions necessitate the attendance of Incident Support Units from the motorway operator, often along with tow-away facilities. More significant incidents, such as an overturned heavy goods vehicle etc, demand attendance by the principal response agencies, including Gardai, fire brigade and ambulance along with traffic management and clean-up resources.

Taking the example of the M50, on average there are approximately 120 incidents on the motorway each month, requiring the support of Incident Support Units, Impact Protection vehicles and clean up resources. Local authorities are not geared up to providing the kind of resources and expertise required for such operations.

The MMarC Contracts (Motorway Maintenance and Renewals Contracts)

Background

In 2011, having considered the factors outlined above, TII engaged with the County and City Management Association on the matter of motorway maintenance and the best means of addressing the issue. TII's view was that the traditional mechanisms using local authority resources for undertaking maintenance of national roads was not the most effective or efficient means of delivering motorway maintenance. At that time there was a growing divergence in appearance between the PPP managed sections of the motorway network and those sections maintained by local authorities. While disparity in funding was a factor, more importantly the

considerations referred to previously were also material, including fragmentation of delivery, lack of relevant expertise and limited resources. Moreover, the practice in other European jurisdictions was universally that motorway maintenance was tendered and contracted.

Following discussions between TII and the CCMA it was agreed that the most appropriate approach would be for TII to initiate a process under which maintenance and operation of the motorway network would be undertaken through a number of multi-annual tendered regional contracts. With TII as client such an arrangement is provided for in Section 19(2) of the Roads Act which states:

The Authority shall, as far as possible, arrange that the functions referred to in paragraphs (a) to (c) of subsection (1) shall be performed on its behalf by the relevant road authority but, in any case where the Authority considers that it would be more convenient, more expeditious, more effective or more economical that the function concerned should be performed by it, it may decide accordingly.

These contracts would encompass all activities related to the maintenance and operation of the motorways in question, including routine maintenance, winter maintenance and incident support. In addition, the contracts would provide for cyclical renewals works so as to ensure that the essential cycle of asset renewals for pavements, bridges, drainage, lining etc were undertaken in a planned and coordinated manner. In parallel an economic study was undertaken so as to ascertain the optimum number of regional contracts to be adopted. Comparisons with the size of contracts in the UK and elsewhere indicated that a single contract for the approximately 750km of motorway in question would be appropriate. However a single contract would restrict competition when it came to re-tendering the contracts, making it very difficult for other operators to compete with the incumbent. The analysis indicated that three regional contracts would deliver the best combination of scale and competitiveness. To guarantee future competition, a decision was taken that no tenderer could win more than one contract.

MMaRC Contract Structure

Following the procurement process commenced in 2012, contracts were awarded in 2013. The three MMarC contracts cover a total length of approximately 750km of motorway and dual carriageway. A further 400km of motorway / dual carriageway is now under PPP concession.

The core work elements of the MMarC Contract, shown in Figure 1 below, are broken into (a) Lump Sum Elements and (b) Capital Renewals and Improvement Works. The Lump Sum Items comprise (i) Routine Maintenance, (ii) Incident Response and (iii) Winter Maintenance. Routine maintenance includes the typical day-to-day maintenance activities such as safety fence repair, minor pavement and bridge repairs, grass cutting and hedge trimming, litter collection, cleaning of signs and drainage cleaning.



Figure 1

Incident response involves the attendance at motorway incidents of varying severity by the motorway operator within specified maximum response times. These response times vary according to the location on the network (rural vs urban) and time of day. For more significant incidents contractors are required to assist the principal response agencies - Gardai, Fire Brigade and HSE, providing traffic management support, removing debris etc and clean-up prior to re-opening all lanes to traffic.

Winter maintenance provisions under the MMarC contracts involve full risk transfer to the contractors. Thus the lump sum element of the tender covers the full winter service delivery regardless of the severity of the winter weather. During the recent severe weather events of February/March 2018, the full cost of maintaining the motorway network in a trafficable condition was borne by the MMarC contractors. This contrasts with winter maintenance delivery on the remainder of the national road network, where the cost of response to a severe weather event must be borne by TII funded local authority resources, which is limited by the scale of local authorities' own resources. Performance levels in respect of treatment times are specified in the contracts. In addition, TII specified minimum winter fleet sizes so as to ensure sufficient certainty that the appropriate resources were available to deliver the required level of service.

In developing the MMarC contract requirements for winter service delivery, TII took the opportunity to procure the construction of four strategic salt barns co-located with motorway maintenance depots. In total, 80,000 of salt storage capacity has been constructed and the distribution of salt to local authorities is managed by the relevant MMarC contractors. The strategic storage involved allows TII to meet the targets for salt storage set in the Review Report following the severe winter events of 2009/2010. A map showing the three MMarC areas is given in Appendix A.

Capital Renewals and Improvement Works

The MMarC contracts were tendered on the basis of the lump sum element together with a schedule of rates for capital renewals and improvement works. Capital renewals cover all works not otherwise included in the lump sum element of the contracts. The types of works included under this heading are varied and include pavement overlay work, bridge rehabilitation, and safety remedial work based on Road Safety Inspection reports. A significant proportion of capital renewals activity was required given previous underinvestment in maintenance on the older sections of the motorway network.

Basis of Funding

The substantial completion of the major inter-urban motorway network (MIU) in 2010 coincided with the advent of the economic crisis. Following the McCarthy Report in 2009, significant reductions in national road maintenance funding were incurred. From a figure of €58m approximately in 2008, current account funding provided for national road maintenance was reduced to approximately €42m by 2012, Figure 2. Cuts have continued since then, such that in 2018 the level of funding received for national road maintenance is now approximately €32m. The coincidence of such substantial cuts in maintenance funding with the opening of large sections of new motorways has posed significant challenges. In order to avoid disproportionate impact on the funding of local authority maintenance of the two lane national road network, allocation of maintenance funding was determined on a per kilometre basis with an appropriate adjustment for motorways. Motorways have at least two lanes in each direction together with additional lanes at each junction. Thus a factor of two gives a conservative estimate as to the relative cost of undertaking maintenance on a section of motorway as compared with a two lane road. Thus, factoring the length of route to be incorporated in the MMarC contracts by two and deducting the length of PPP concessions from the overall length of national roads in 2012 resulted in a ratio of lane length between the MMarC and two lane network of 0.25. Therefore, approximately one quarter of the maintenance budget was allocated to funding the MMarC contracts, with the balance coming from capital funding. However, in the current year, following a cut of approximately €6m in the maintenance budget, this reduction has had to be disproportionately applied to local authority operations because of the contractual commitment associated with the MMarC contracts, the funding for which could not be reduced.

The total expenditure on lump sum activities, including for routine and capital maintenance duties defined in the contracts is approximately €20m per annum, or €27,000 per kilometre per annum. This is below the European norm for such operations.

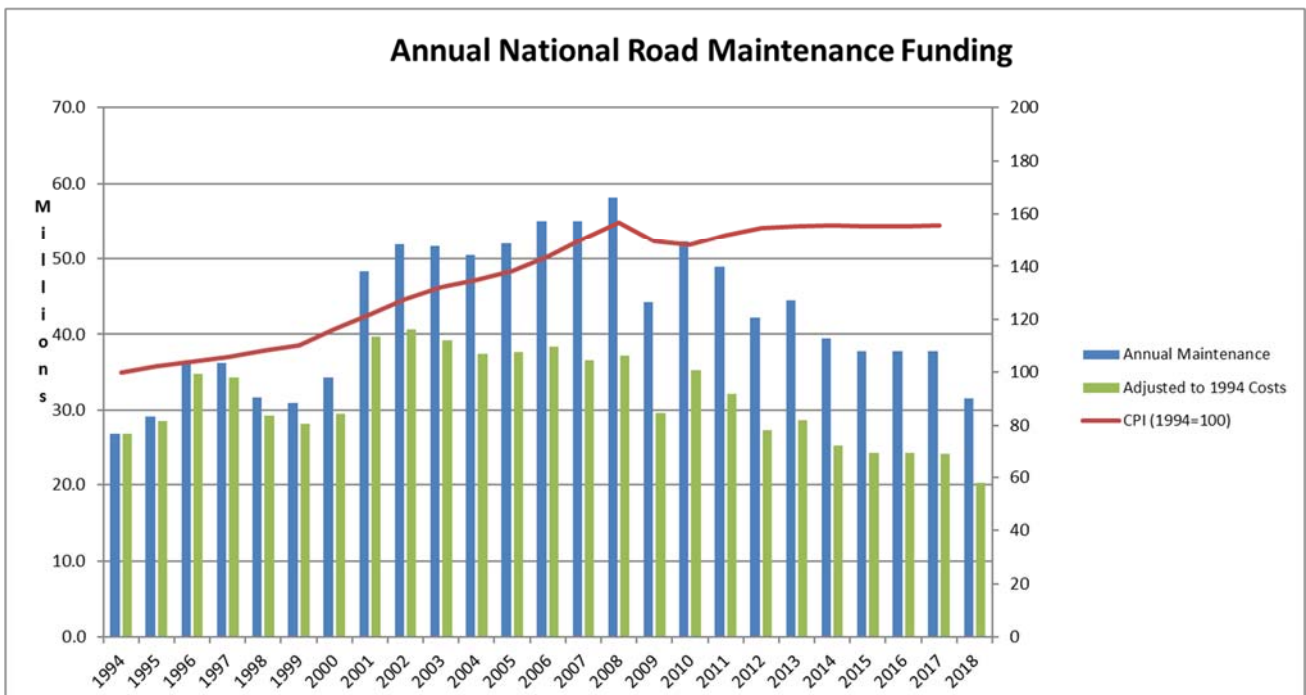


Figure. 2

Within the first generation MMarC contracts, which will be re-tendered in 2018 with new contract awards scheduled for 2019, there has been significant focus on capital renewals on the legacy of backlog of works on the older sections of the motorway network, caused by the cumulative lack of maintenance undertaken on the motorway network over a number of years. In the second generation MMarC contracts there will not be the same need for works to address legacy defects. However, during the life of the second generation MMarC contracts, significant capital re-investment will be required in motorway pavements, as the motorway pavement surfaces constructed in the previous decade reach their end of life. An indicative profile of the anticipated expenditure on motorway pavement renewals over the coming years is shown in Figure 3.

Given the anticipated change in the balance between maintenance and capital renewals works in the next generation of contracts, the ongoing reduction in maintenance funding for national roads is a cause for concern. It is hoped, however, that the objective flagged in the recently published National Development Plan regarding the necessity for investment in infrastructure maintenance will ensure that the trend of the last decade will be reversed in the coming years.

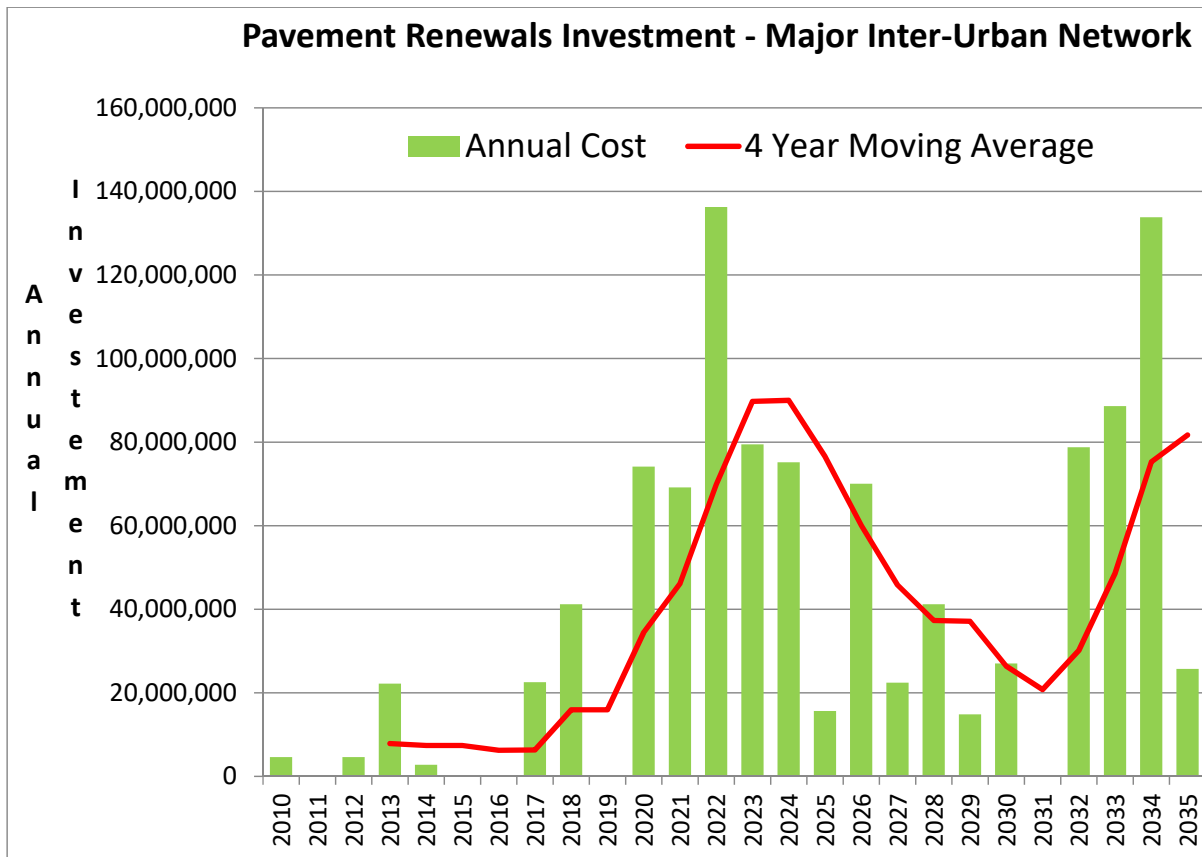


Figure 3

Winter Operations

Background

TII has been central to the provision of winter maintenance across both the national road network and the regional & local road system. Since the early 1990s TII has funded local authorities for the purchase of gritting machines and for the construction of salt storage barns. Local authority drivers have been responsible for the front line delivery of winter service on national roads and remain so on the non-motorway national road network. The local authority staff undertaking this work are charged to TII winter maintenance allocations. The gritters are typically mounted on local authority trucks, the use of which are charged to TII by each local authority. With few exceptions the equipment used by local authorities for gritting operations has been funded by TII. While the equipment was purchased for use on national roads, local authorities also use this equipment to deliver gritting operations on regional and local roads after gritting has been completed on national roads.

TII operates a network of over 100 weather stations located across the national road network. The information from the various weather stations feeds into the Road Weather Information System (RWIS) which together with Met Eireann's weather forecast input provides the predictive capacity for local authorities and motorway operators to determine whether roads need to be treated on a given night. Although the weather stations are located on national roads the data is used by local authorities to plan their treatment of regional & local roads.

Salt Purchases

Following the severe winter weather of 2009 and 2010, TII was requested by Government to take on the role of central purchaser for all salt stocks required for use on Irish roads. TII now purchases salt each summer for delivery prior to the commencement of winter, and also operates a framework whereby, if the need arises, additional salt can be quickly and efficiently procured during the winter season. In addition, TII operates a national salt management software system that helps manage the distribution of salt from the various storage depots to local authorities and for the tracking of salt usage across the country.

The *Review Report of Response to Exceptional Severe Weather Events of November/December 2010*, published by the then Department of Environment, Community and Local Government, recommended that a minimum of 180,000 tonnes of salt should be in stock at the start of each winter season and that essential additional salt storage facilities should be put in place. In the aftermath of this event TII provided funding for local authorities to bring their indoor salt storage capacity from approximately 25,000 to 75,000 tonnes. In addition, plans were commenced, in tandem with preparations for the motorway maintenance and renewals contracts, for the construction of four strategic salt barns for the national road network capable of storing 80,000 tonnes of salt. Given that commercial salt storage and management cost for 80,000 tonnes amounts to approximately €1.50m per annum, it is calculated that the savings achieved will mean that the capital cost will be recouped in seven to eight years.

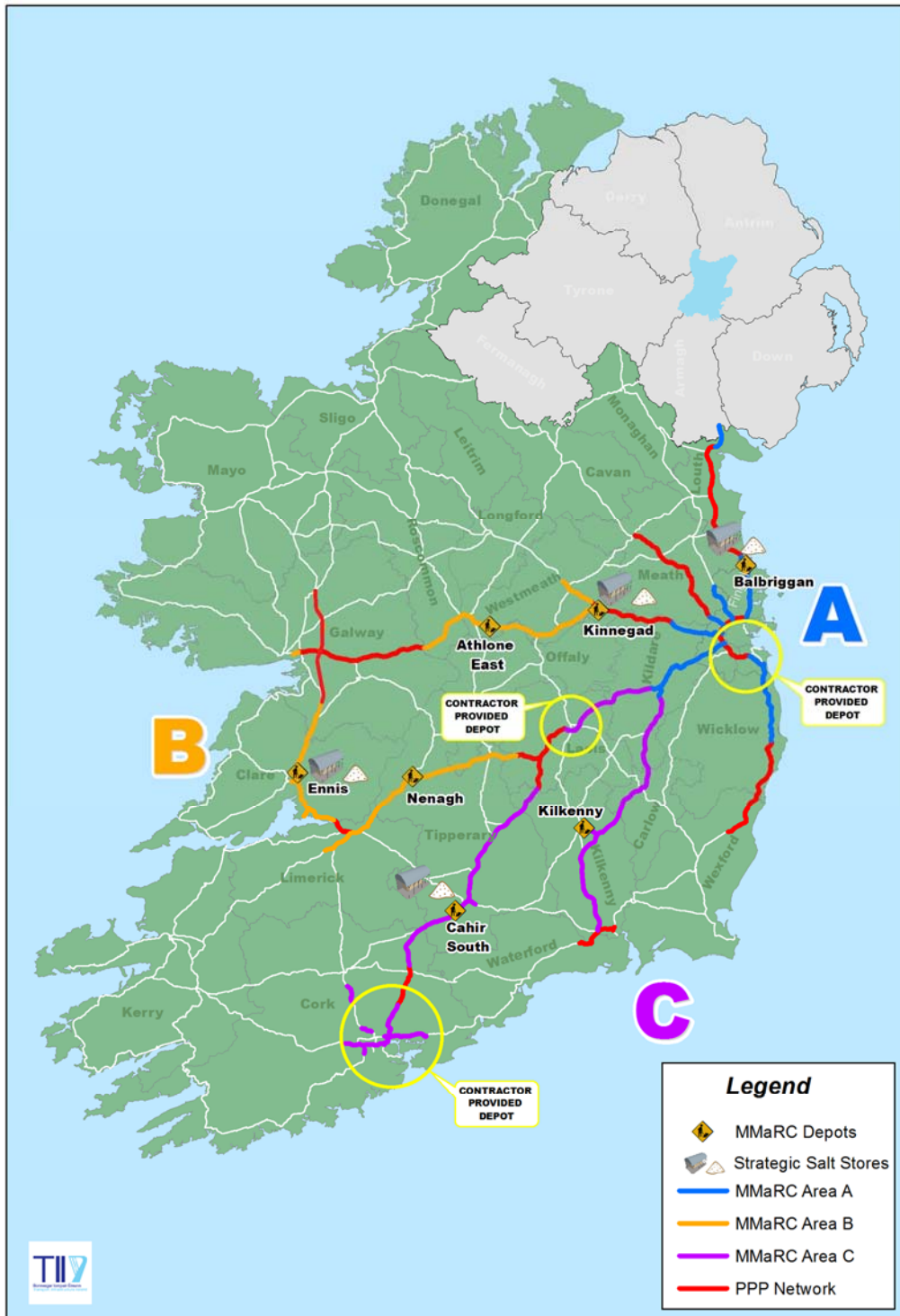
With the advent of the new motorway maintenance and renewals contracts, responsibility for the delivery of winter maintenance on the motorways passed to the MMaRC contractors. The new arrangements resulted in the replacement of 21 local authorities with 3 regional contractors, considerably reducing the number of

interfaces between different operators and thereby increasing the effectiveness of operations and minimising risks at interface locations in particular.

Moreover, it is a contractual requirement of the contracts that the MMaRC operators are required to interface with their counterparts on the PPP concessions to ensure alignment in the decision making process for gritting and for the timings of treatments. That requirement extends to the adjacent local authorities undertaking treatment on national roads that intersect with the motorway network. The new contracts also introduced a new winter fleet on the motorways amounting to more than fifty units. The existing equipment, much of it relatively new, remained with the local authorities, thus enhancing the local authorities' capabilities in delivering winter service on the non-motorway national roads and other roads.

Arising from the above, local authorities' capacity to deliver winter service has been enhanced by the operations and investments undertaken by TII over the past number of years.

Appendix A





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