



M7 Naas to Newbridge By-Pass Upgrade Scheme

Motorway Order and Environmental Impact Statement

Oral Hearing

Briefs of Evidence

May 2014

M7 Naas to Newbridge By-Pass Upgrade Scheme

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| 1 | Lead Brief | Jim Thorpe (ROD-AECOM) Joe Kelly (Kildare NRO) |
| 2 | Traffic Analysis | Philip Shiels (ROD-AECOM) |
| 3 | Planning and Policy | Michael Kenny (Kildare County Council) Simon Clear (Simon Clear and Associates) |
| 4 | Introduction to EIS (incorporating Soils and Geology, Human Beings, Resource and Waste Management and Interactions & Cumulative Impacts) | Andrew Warwick (ROD-AECOM) |
| 5 | Noise and Vibration | Jennifer Harmon (AWN Consulting) |
| 6 | Air Quality and Climate | Dr Ed Porter (AWN Consulting) |
| 7 | Landscape and Visual Impact | Richard Butler (Cunnane Stratton Reynolds) |
| 8 | Material Assets (Agricultural and Non-Agricultural Property) | John Bligh (John Bligh and Associates) |
| 9 | Hydrogeology | Cecil Shine / Conor Quinlan (Minerex Environmental Ltd) |
| 10 | Hydrology | Eoin Cullinane (ROD-AECOM) |
| 11 | Ecology | Paul Murphy (EirEco) |
| 12 | Habitats Directive Assessment Screening Report | Andrew Warwick (ROD-AECOM) |
| 13 | Archaeological, Architectural and Cultural Heritage | Faith Bailey (IAC Ltd) |

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Engineering

Brief of Evidence

By
Jim Thorpe
Roughan & O'Donovan Consulting Engineers

And
Joe Kelly
Kildare County Council

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1.0 INTRODUCTION

Slide 2 – Introduction

- 1.1 My name is Jim Thorpe and I will be addressing the background to, and need, for the the M7 Naas to Newbridge Bypass Upgrade Scheme (the “Scheme”). I am a Chartered Civil Engineer and have 27 years experience in the design of roads, railways and bridges, the past 14 years based here in Ireland. I am a Director of Roughan & O'Donovan Consulting Engineers and was Project Manager for:
- the development of the National Roads Authority Design Manual for Roads and Bridges and the subsequent updating of both the design standards and the accompanying Manual of Contract Documents for Road Works
 - the N7 Naas Road Widening and Interchanges Scheme
 - the Navan Rail Route Studies
 - Portsmouth Harbour Millennium Bridge
 - Bukit Panjang Light Rapid Transit in Singapore
 - the M4/M49 Severn Crossing Approaches
- 1.2 I have been the Project Director for the Environmental Impact Statement of the Scheme since 2011.

Slide 3 – Outline of Brief

- 1.3 I intend to start by explaining the background to the M7 Naas to Newbridge Bypass Upgrade Scheme, the alternatives that were considered to address congestion on the M7, and at J10 Newhall in particular, and then to address the potential cumulative impacts and relationship between this Scheme to the adjacent M7 Osberstown Interchange and R407 Sallins Bypass Scheme. I then propose to ask Philip Shiels to present the traffic analysis, before I return to address the need for the Scheme. Following this Joe Kelly, who led the design team, will describe the design of the proposed Scheme, before I conclude the engineering brief, and ask Michael Kenny and Simon Clear to present the scheme within the wider planning context. Andrew Warwick will then introduce the Environmental Impact Statement and the various specialists who have contributed to it.

2.0 BACKGROUND

Slide 4 – Background

- 2.1 Starting with the background to the project, the Scheme, as shown on Figure 1.1 of the EIS, extends from J11 Great Connell to J8 Johnstown, following the line of the existing M7 motorway as it bypasses Naas. In a national context the section of the M7 motorway from its junction with the M9 at Great Connell, through to Dublin and the M50, is one of the most important and busiest motorway routes in Ireland. It carries traffic from an extensive geographical area, covering origins and destinations as diverse as Waterford, Limerick and Cork, in a single corridor along this section of motorway, to and from Dublin.

Slide 5 – M7 Limerick to Naas

- 2.2 Slide 5 shows the National Primary Road network, with the M7 highlighted in blue, extending from Limerick to Naas. The section of the N7 through Naas was the first to be replaced by a Motorway bypass, under the Naas Bypass scheme in 1983. At that time the motorway was constructed with 2 lanes and a hard shoulder in each direction, with explicit provision, in the form of a wide median, to add a third lane in each direction if and when traffic flows demand. The Droichead Nua Bypass Scheme in 1994 extended this concept, including the Great Connell Interchange and a short section of M9. Over the past 15 years the M7 has been extended all the way to Limerick as a dual two lane motorway.

Slide 6 – M8 Cork to Portlaoise

- 2.3 Slide 6 highlights the M8, from Cork, which has also been developed as a dual two lane motorway, as part of the National Roads Authority's Major Inter-Urban Network improvements over the past 15 years. The M8 connects to the M7 just south of Portlaoise.

Slide 7 – M9 Waterford to Newbridge

- 2.4 Slide 7 highlights the M9 from Waterford, again developed as a dual two lane motorway and part of the National Roads Authority's Major Inter-Urban Network improvements over the past 15 years. The M9 connects to the M7 at Great Connell.

Slide 8 – N7 Maudlins to M50

- 2.5 The section of N7 from Maudlins to the M50 and Dublin, as highlighted in green on slide 8, remains an all purpose national road, but has been upgraded to a three lane dual carriageway, with hardshoulders and no right turns through the median, the one exception being the traffic lights at Newlands Cross. These lights are currently being removed and replaced with a grade separated junction. Once completed, these works will remove the last remaining traffic controlled junction between Belfast, Dublin, Cork, Limerick and Waterford.
- 2.6 South of Portlaoise the M7 and M8 both carry approximately 10,000 vehicles per day. When the flows on these two dual 2-lane motorways are combined, onto the continuing dual 2-lane motorway, the flows remain well within the 55,000 vehicles per day capacity of this road type. Additional traffic generated between Portlaoise and Great Connell results in the section of M7 approaching Great Connell currently carrying approximately 40,000 vehicles per day, still within the 55,000 design capacity of a dual 2-lane motorway. However traffic from the dual 2-lane M9 joining the M7 at Great Connell, adds a further approximately 20,000 vehicles per day, giving a total of approximately 60,000 vehicles per day north east of Great Connell. Existing traffic on this dual 2-lane section therefore exceeds capacity. Further traffic joining the M7 north east of Naas increases the flow further, to in excess of 70,000 vehicles per day between Johnstown and Kill, but at this point the cross section has increased to dual 3-lane.
- 2.7 This scheme considers the remaining 13.5 km section of dual 2-lane motorway between junctions 9 and 11 of the M7, represented by the red dot between the blue and green lines on slide 8. This short section of under-capacity motorway creates

congestion on the otherwise free flowing 255 km of motorway between Dublin and Cork, or indeed the 420 km from Belfast to Cork.

Slide 9 – Pinch Point

- 2.8 Slide 9 shows the pinch point of the section of motorway under consideration in graphical terms. The blue arrows on the left represent the two dual 2-lane motorways, the M7 and M9, and their connection at Junction 11 Great Connell. These 4 lanes in each direction merge into 2 lanes in each direction, also shown in blue, between junction 11 Great Connell and Junction 9 Maudlins. The green lines on the right represent the dual 3 lane all purpose road that commences at Junction 9, Maudlins. This dual 3-lane road has the required capacity for the traffic that it carries, but the section of dual 2-lane motorway between junctions 9 and 11 of the M7 is currently inadequate to carry the combined traffic demand from all points south and south west of Naas. The motorway network serving Limerick, Cork, Waterford and Dublin, and all point between, converges on this short 13.5 km section of dual 2-lane motorway. The result is the regular congestion that is currently experienced on this critical section of the major inter-urban network. This congestion is further exacerbated by local capacity problems at J10 Newhall, which result in traffic queuing back onto the motorway.
- 2.9 The purpose of the M7 Naas to Newbridge By-Pass Upgrade Scheme is to remove this significant bottleneck on the Major Inter Urban network, by mobilising the reserve capacity that was designed into both the Naas Bypass scheme in 1983 and the Droichead Nua Bypass Scheme in 1994, in the form of a wide median capable of accommodating a third lane in each direction. Construction of the two additional lanes, together with the upgrade of J10 Newhall, shown in red on the figure, will both relieve the current and growing congestion and address the deteriorating safety concerns that arise as a result of congestion on high speed roads.

3.0 ALTERNATIVES

Slide 10 – Alternatives

- 3.1 Before looking in more detail at the proposed scheme, I would like to briefly review both the alternatives that were considered to address the capacity constraint on the M7, and then the interaction of the proposed scheme with the adjacent M7 Osberstown Interchange and R407 Sallins Bypass Scheme. The alternatives to be considered include:
- Alternative Transport Modes;
 - Do-Nothing;
 - Demand Management;
 - Hard Shoulder Running; and the
 - Provision of Additional Traffic Lanes.

Slide 11 – Alternatives

- 3.2 As we have seen, the objective of the scheme is to address a localised capacity constraint on a short section of the overall national Major Inter-Urban road network. Consideration of alternative modes of transport, whilst very important within the

overall National Transport Authority's strategies, has limited applicability to this specific objective.

- 3.3 The Department of Transport's sustainable transport objectives are set out within the Smarter Travel policy document, and address the need for a balanced and integrated network of infrastructure for all modes. One of the key objectives is to encourage modal shift to walking and cycling, which while important both as national policy and in the detail of project delivery at a local level, is not relevant to this scheme which seeks to address a congested choke point in the major inter-urban network.
- 3.4 The objective of encouraging modal shift to public transport is relevant to the long distance network, and significant investment has been made in both rail and bus services between the major centres served by the M7, M8 and M9. However modal shift to the rail network is limited by both the disperse population of Ireland and the relatively short distances between origin and destinations, which do not achieve the economies and time savings necessary to counter balance the end point access times and costs. Typically rail freight only starts to become economic for journeys in excess of 500km, and similarly passenger travel by train rapidly becomes unattractive as the distance between the start and end point stations and the actual origin and destination points increase.
- 3.5 Buses have greater flexibility to pick up and drop off at a range of origins and destinations, but to be competitive over long distances inter-urban bus services rely on the provision of a congestion free road network.
- 3.6 The policies and strategies of the National Transport Authority recognise the importance of the road network within a multi-modal mix of transport solutions. When considering the scheme objective of addressing congestion at a choke point within the motorway network, the alternatives to be considered are therefore those that improve traffic flows through this congested pinch point on the inter urban road network.

Slide 12 – Alternatives

- 3.7 A framework of five common appraisal criteria flow down from the Department of Finance Guidelines on the Appraisal and Management of Capital Expenditure Proposals in the Public Sector, through the Department of Transport Guidelines on a Common Appraisal Framework for Transport Projects and Programmes, to the National Roads Authority Project Appraisal Guidelines. These five criteria are Economy, Safety, Environment, Accessibility & Social Inclusion, and Integration. I will therefore present the comparison of the alternatives in relation to these five headings.

Slide 13 – Do Nothing

- 3.8 Do Nothing, as the name suggests, involves accepting the existing situation, together with the future implications of taking no active measures to address the current and growing congestion. The current congestion and resulting road traffic accidents are known and have been highlighted to us in correspondence from the Gardai, as appended to this brief. Congestion on the major inter-urban network results in through traffic diverting onto the local road network. For example, traffic travelling from Dublin to Naas and Sallins currently attempts to avoid the evening queues on

the approach to the drop from 3 to 2 lanes, by leaving the motorway early and diverting through Johnstown and Naas.

- 3.9 Projected future economic growth, and the associated growth in inter-urban traffic, will further increased congestion, resulting in extended delays and more frequent road traffic accidents causing both injury and significant additional delay. The overall effect is that journey times will become un-predictable, resulting in late arrivals or requiring generous margins to be included within journey planning, similar to the situation that existed on the M50 prior to its upgrading. As congestion increases the resulting delays and loss of journey time reliability will suppress economic development, with direct consequences for levels of employment.
- 3.10 When considered under the five common appraisal headings of Economy, Safety, Environment, Accessibility & Social Inclusion and Integration, the Do Nothing alternative has a negative impact in all cases. Economic development is suppressed and safety is impaired as accident rates increase. The environmental impact of congestion on the motorway and diversion of traffic onto the local road network is a deterioration in air and water quality, noise and visual impacts. Delays on this critical section of the inter-urban network will have a negative impact on accessibility & social inclusion measures for the whole of the south and south west of the country, and in terms of integration, failure to address this pinch point undermines past investment in the rest of the network.

Slide 14 – Demand Management

- 3.11 Demand Management measures comprise a set of policies with the objective of influencing behaviour, to encourage individuals to make their trips in off-peak times, travel by a different mode or to find another way of carrying out the trip purpose, such that the trip is avoided. Potential measures can be both fiscal and non-fiscal. Non-fiscal measures that can be adopted include:
- Traffic calming;
 - Access controls and restrictions;
 - Parking management and control;
 - Public transport improvements;
 - Road space reductions;
 - Urban traffic management;
 - Traffic bans/restrictions;
 - Travel awareness campaigns.
- 3.12 Many of these measures are aimed at suppressing demand on a particular route, resulting in diversion to other more suitable routes, and can be very successful in a local context, diverting traffic off local short cuts onto more suitable bypasses. The M7 under consideration is the top level of the hierarchy of roads, and as such there is no more suitable alternative route. To reduce, rather than divert demand, these measures need to be applied in a combined manner across the zone of influence of the section of road under consideration. In the case of this critical section of the M7, that zone of influence is the whole of the south and south west of the country, requiring country wide consideration of public transport improvements and travel

awareness campaigns. As discussed earlier these measures are being rolled out by the National Transport Authority, within an overall integrated sustainable transport policy that recognises the important role of roads within the modal mix. Localised implementation of traffic calming, access controls and road space reductions on the section of the M7 under consideration, would simply accelerate the negative impacts associated with the do-nothing alternative.

3.13 Fiscal measures that can be considered include:

- Parking charges;
- Workplace parking levies;
- Fuel taxes;
- Vehicle excise duty;
- Car ownership permits;
- Public transport subsidies; and
- Road-user charging.

3.14 These measures are more specifically targeted at reducing, rather than diverting demand. Once again, in the context of this critical section of the major inter urban motorway network, such measures can only be delivered effectively on a national scale, through government policy. While such measures could have a positive impact on the environment and on safety, these benefits have to be balanced against the other appraisal criteria of economy, accessibility & social inclusion and integration. Current government policy is to stimulate economic growth and employment, rather than to suppress it; to encourage greater accessibility & social inclusion through good transport links between the capital city, Dublin port and the rest of the country, rather than expect local economies to develop in isolation; and to maximise the return on past investment by supporting projects that integrate the network.

3.15 Consequently it is concluded that the application of demand management measures, as a solution to the localised capacity constraint between junctions 9 and 11 of the M7, would be in-appropriate and counter to the overall thrust of national policy.

Slide 15 – Hard Shoulder Running

3.16 Hard shoulder running is a motorway capacity improvement concept that has been put in place in many countries, but has yet to be used in Ireland. The hard shoulder, which is normally reserved for break down recovery, emergency service access to road traffic incidents and traffic management during road works, is made available to all traffic at times of high traffic flows. In order to safely control the high volumes of traffic, significant investment is required in CCTV monitoring and variable message driver information signs, together with ongoing vehicle recovery, and system operating costs. Historically, hard shoulders that were only intended for occasional use, were constructed to a lower standard than the main traffic lanes. Consequently they have to be upgraded to carry the increased traffic load associated with hard shoulder running. In addition, new emergency refuges have to be constructed at interval along the motorway, to enable the emergency services to remove breakdowns and the debris from road traffic incidents from the carriageway. Experience in the UK, in particular the M42 south of Birmingham, has shown that

hard shoulder running can be effective in increasing capacity, but that it is significantly more expensive than adding additional lanes. It is therefore only appropriate where space or environmental constraints prevent widening of the carriageways. For the section of M7 under consideration, where explicit provision for future widening into the median was made in the original design, the measures required to introduce hard shoulder running would cost approximately twice as much as the proposed additional lanes.

Slide 16 – Provision of Additional Lanes

- 3.17 Three options can be considered to provide permanent additional traffic lanes. Widening into the median, as proposed, is only an option where sufficient space is available. The construction of new hard shoulders on the outer sides of the motorway requires widening of the earthworks, with the existing hard shoulders then able to be converted into permanent traffic lanes. The third option is to provide an alternative relief road within a separate corridor. Widening into the median is clearly significantly cheaper than both of the alternatives.
- 3.18 Considering the local pinch point between junctions 9 and 11 of the M7, the demand is for inter-urban traffic passing between the specific locations of those junctions. An alternative relief road would therefore only make sense if an alternative corridor could be identified between these two points. The existing motorway occupies the preferred corridor as selected prior to its construction, and subsequent development either side of this corridor only serves to confirm and further restrict the selection of this corridor.
- 3.19 Practical consideration of a potential relief road for this section of the M7 takes the form of the Leinster Orbital Route, for which the NRA have undertaken separate studies in the context of long term planning. For traffic that does not require access to Dublin, the Leinster Orbital Route would provide an alternative to the M50, with more direct connections between the M1, N2, M3, M6, M7/M8 and M9. This would provide some relief to the section of M7 under consideration. However the investment and environmental impacts associated with such a route are of a different order of magnitude to that of providing additional lanes along the existing route of the M7. The Leinster Outer Orbital cannot be delivered in a suitable timescale to address the current congestion and safety problems. The National Transport Authority's draft transport strategy 2011-2030 for the Greater Dublin Area, published in April 2014, states in relation to the Leinster Orbital Route that "*the full development of the proposal is unlikely to be required during the strategy period and, accordingly, it is recommended that an incremental approach to its delivery is adopted.*" Even so the long term provision of this alternative relief road would not address the existing illogical localised capacity constraint in the motorway network. Whilst the time has come to mobilise the additional capacity provision that was inherent in the original design of this section of the M7, consideration of the much wider implications of a Leinster Orbital Route is for another day.

Slide 17 – Provision of Additional Lanes

- 3.20 Using the common appraisal framework to compare the three practical alternatives of widening into the median, widening in the verges or the introduction of hard shoulder running, the proposal to widen into the median is found to be preferable in terms of

both economy and environment, and at least equal in terms of safety, accessibility & social inclusion and integration.

- 3.21 In terms of economy, the creation of additional permanent traffic lanes provides the same benefits whether located in the median or the verges, while hard shoulder running provides some of the benefits, but remains vulnerable to disruption and delay due to the loss of the continuous hard shoulders. In terms of construction cost, widening in to the median is significantly cheaper, as it involves neither widening of the earthworks nor the significant ongoing operational costs associated with hard shoulder running. Overall, widening into the median therefore provides the best solution in terms of economy.
- 3.22 Similarly, safety is enhanced equally by the provision of additional lanes in either the median or the verges. Hard shoulder running provides some safety improvement, but cannot be considered equal to the options that retain continuous hard shoulders for use by the emergency services and as a place of refuge.
- 3.23 The impact on the environment is minimised by widening into the median. Hard shoulder running, while reducing the total amount of construction, requires extensive works within the existing verges to install sign supports, and the construction of new emergency refuges would require localised widening of the earthworks. These works would result in significant impacts on the existing established landscaping of the motorway. Converting the existing hard shoulders into permanent traffic lanes and constructing new hard shoulders would require widening of the earthworks throughout, involving additional land take and clearance of most of the existing established landscaping. Both hard shoulder running and widening in the verges would bring the heavy lane 1 traffic closer to the adjoining properties, while widening into the median moves a proportion of the traffic further away from the existing motorway boundary.
- 3.24 In terms of accessibility & social inclusion, the provision of additional lanes has the same benefits regardless of whether in the median or verges, while hard shoulder running provides a lesser benefit in terms of journey time reliability and long term resilience. The same comparison applies to the consideration of integration with existing and planned infrastructure, where hard shoulder running on this short section of the network would introduce an inconsistency in road standards.
- 3.25 When the rankings under the five criteria are combined, widening into the median is shown to be the preferred solution.

Slide 18 – J10 Newhall Interchange Options

- 3.26 The traffic modelling that was undertaken to inform the design and economic appraisal of the proposed scheme highlighted the capacity of junction 10 Newhall as a significant contributing factor to the existing congestion and safety problems, adding to those caused by the reduced number of lanes between junctions 9 and 11. Queuing at the Newhall off ramps extends back onto the hard shoulders of motorway during peak periods, creating a significant safety hazard.
- 3.27 In response to this finding a series of potential options for upgrading of this junction were developed ranging from option 1, traffic signalisation of the existing junction, to

the proposed option 6 full relocation of the junction, with a series of options in between seeking to identify potentially workable solutions, while minimising additional land take and the associated environmental impacts. The options were tested within the traffic model, firstly to establish the effectiveness of each option, and then secondly to select the most effective solution from among those that succeeded in removing all queuing from the motorway.

- 3.28 In terms of Economy, Safety, Accessibility & Social Inclusion and Integration, the preferred solution is that which provides the best traffic functionality, and thereby the best protection of the motorway from any future queuing back onto the mainline.
- 3.29 In terms of environment, while the different configurations each impact on their immediate environs, with mitigation in place, none of the impacts were considered sufficiently adverse to override the preference under the other four criteria. On balance across the five appraisal headings, the option that provides the best traffic functionality is considered the preferred option. Philip Shiels will describe the traffic assessment of the alternative junction arrangements that led to the selection of option 6, shown in plate 5.8 of the EIS, as part of his Traffic Brief.
- 3.30 In their submissions to the Board, Brendan and Gertie Coyle (Plots 109a.101, 109b.201 and 109c.401), Harry and Maura Coyle and Mary Coyle, have all suggested the provision of a completely new junction west of the current R445. Such an option was not considered as it would require both the construction of a new bridge and a significant diversion of the R445, cutting across the surrounding lands on embankments. Furthermore, the additional cost of such an option, together with the diversion of the traffic on the R445, would not compare favourably in terms of economy, would result in more extensive and widespread environmental impacts, and does not meet the objective of maximising integration with the existing infrastructure.
- 3.31 Having considered all of the range of potentially viable alternatives, it can be concluded that the best available solution to remove the bottleneck in the major inter urban network between junctions 9-11 of the M7 is to utilise the reserve capacity that was designed into both the Naas Bypass scheme in 1983 and the Droichead Nua Bypass Scheme in 1994, by constructing a third lane in each direction within the median, while connecting the motorway directly to the R445 dual carriageway utilising the existing overbridge. This is what is proposed here as the M7 Naas to Newbridge Bypass Upgrade Scheme.

4.0 ADJACENT M7 OSBERSTOWN INTERCHANGE AND R407 SALLINS BYPASS SCHEME

Slide 19 – Adjacent Scheme

- 4.1 It may be of assistance to briefly explain the interaction between the proposed M7 Naas to Newbridge Bypass Upgrade Scheme and the adjacent M7 Osberstown Interchange and R407 Sallins Bypass Scheme, and how the cumulative impacts of the two schemes have been considered.

- 4.2 The proposed M7 Osberstown Interchange and R407 Sallins Bypass Scheme is shown in orange on slide 19. The scheme involves improvements to the local and regional road network, including their connection to the inter urban motorway network. As such it is dependent on the adequacy of the motorway network to accommodate the additional merging traffic at its point of connection, between junction 9 Maudlins and Junction 10 Newhall. The M7 Osberstown Interchange and R407 Sallins Bypass Scheme does not provide any relief to the congestion between junctions 9 and 11 on the M7, but rather will introduce some additional demand, which the M7 is currently unable to accommodate. However the implementation of the proposed M7 Naas to Newbridge Bypass Upgrade Scheme, as presented here, would make the M7 suitable to accommodate the addition of the proposed M7 Osberstown Interchange and R407 Sallins Bypass.
- 4.3 The separate application for the M7 Osberstown Interchange and R407 Sallins Bypass Scheme acknowledges its dependence on the delivery of this Scheme. However it is important to understand that removal of the choke point between junctions 9 and 11 of the M7, as proposed in this Scheme, is an entirely separate proposal addressing existing congestion and safety problems on the major inter urban network, regardless of whether or not the M7 Osberstown Interchange and R407 Sallins Bypass Scheme proceeds. In other word the two schemes are fully compatible, but this Scheme is fully independent and should be considered on its own merits. Similarly, the M7 Osberstown Interchange and R407 Sallins Bypass Scheme should be considered separately on its own merits.
- 4.4 While understanding the independence of the two schemes, it is clearly essential that the design development and environmental appraisal of this Scheme takes full account of the potential cumulative impacts that would arise in the case that both it and the separate Osberstown Interchange and R407 Sallins Bypass Scheme were to proceed.
- 4.5 The traffic modelling, engineering design and environmental impact statement for this Scheme have therefore been developed with due consideration of two possible scenarios:
- (a) The Scheme on its own, addressing the choke point in the Major Inter Urban network; and
 - (b) The Scheme and the M7 Osberstown Interchange and R407 Sallins Bypass Scheme in combination, addressing both the choke point in the Major Inter Urban network and the local and regional access objectives of the M7 Osberstown Interchange and R407 Sallins Bypass.
- 4.6 Kerry Group, who are currently developing lands adjacent to the motorway at approx Ch 10+000 have made a submission to the Board in support of the Scheme. They have asked that the programme for construction of both this Scheme and the adjacent Osberstown Interchange and R407 Sallins Bypass Scheme be un-linked in terms of their commencement. The timing of construction of both schemes is dependent on both planning approval and funding. However as explained, opening of the Osberstown Interchange cannot precede completion of this Scheme.

5.0 TRAFFIC

- 5.1 Philip Shiels will now present the Traffic brief of evidence, including the selection of the preferred junction configuration at Newhall. He will also explain the potential effect on traffic that would arise with the addition of the M7 Osberstown Interchange and R407 Sallins Bypass Scheme.

6.0 NEED FOR THE SCHEME

Slide 20 – Need for the Proposed Development

- 6.1 Before asking Joe Kelly to briefly describe the engineering details of the scheme, I would like to address the Need for the Scheme. I believe that my earlier description of the background, together with Philip's explanation of the traffic analysis, has already given a robust basis upon which to explain the need for the scheme. However, thus far, we have only looked at the scheme in a national context. The subject of the Scheme forms a core part of the Ten-T Trans European Transport Network identified in *“Regulation EU No. 1315/2013 of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the trans-European transport network and repealing Decision No. 661/2010/EU”*. Reducing congestion and improving road safety are key objectives in this Regulation which Ireland is obliged to achieve by 2030 and therefore this scheme is also required by European regulation.
- 6.2 The Ten-T regulation No. 1315/2013 addresses the integration of road, rail, port and airport infrastructure across Europe. The roads element of this network, as it applies to the UK and Ireland, is shown on this slide 20. The heavy lines represent the Core Network of high quality express routes, that must be in place and operating without congestion by 2030. With the exception of the connection from Foynes to the commencement of the M7 at Limerick, which is currently being developed, the network connecting the ports of Belfast/Larne, Dublin, Cork and Foynes is now in place, in the form of the M1, M50, M7 and M8. The core network to Rosslare is currently being addressed through committed upgrades to the N11 and N25.
- 6.3 The finer lines on the slide represent the comprehensive network that must be in place by 2050, and includes the M9 to Waterford.
- 6.4 The requirement that this network operates without congestion has been addressed over recent years, by widening of the M50, the southern section of the M1 and the section of the M7 between Rathcoole and Maudlins. The remaining bottlenecks are the traffic lights on the M7 at Newlands Cross, for which construction of a grade separated junction is underway, the Dunkettle Interchange in Cork, for which planning approval is in place, and the pinch point of 13.5 km of dual 2-lane motorway between Junctions 9 to 11 of the M7. I have appended a letter from the Department of Transport Tourism and Sport to my brief in which they confirm their support for the proposed Scheme to address this remaining bottleneck on the Ten-T network.

Slide 21 – Comments from Gardaí

- 6.5 Returning to the national and scheme specific local context, I have also appended a copy of a letter received from the Garda Chief Superintendent based in Naas on 28th February 2014, in which he states that:

"The N7 between Kill and Junction 10 Newhall Naas on the M7 motorway is now the most collision prone zone in County Kildare by a considerable margin"

- 6.6 He notes "39 traffic collisions" in the last three months of 2013, "resulting in 8 people requiring hospital treatment," highlighting that 24 of these occurred during the peak hours of 7am-9am and 4pm to 7pm, "the vast majority were rear end collisions". This type of accident is associated with traffic congestion on high speed roads with drivers approaching the queue failing to react quickly enough.
- 6.7 He goes on to note that "these collisions cause huge tailback resulting in people being late for work and appointments and will act as an extra strain on Garda Resources and other Emergency Services. It is the view of An Garda Síochána that this project is long over due and it should be progressed as soon as possible."
- 6.8 Regarding the proposed upgrade of junction 10, Newhall he comments "The creation of a new Junction 10 is necessary as the current junction cannot cope with the volume of traffic at peak times, resulting in long tailbacks on the slip roads"

Slide 22 – Safety

- 6.9 The application of national average accident rates for different types of roads within the traffic model predicts a saving of 11 fatalities, 23 serious injuries and 395 slight injuries as a result of the Scheme, which is obviously significant. However this appears to under estimate the potential numbers of accidents when compared to the recent data contained in the Garda letter. Whereas the modelled savings equate to 0.8 serious injuries per year and 13 slight injuries per year, the Garda letter records 8 people as having required hospital treatment in a three month period. The reason for the underestimate in the traffic model and why there is the potential for significantly greater accident savings is that, as a discrete choke point within an otherwise free flowing motorway network, the congestion comes as a surprise to drivers and thus, results in a greater numbers of accidents than would otherwise be predicted.

Slide 23 – Economy

- 6.10 The traffic analysis has quantified the predicted delays over the 30 year appraisal period as totalling 11 million vehicle hours. That is the equivalent of 42 vehicles sitting in traffic delays 24 hours per day for 30 years, with their engines running and generating emissions. To provide a 24 hour, seven day service requires 4 people to be employed to cover each position, so the economic impact of the traffic delays associated with the existing infrastructure deficiencies can be loosely compared to that of employing 168 people to sit in their vehicles. Clearly this level of delay, impacting road freight, public service vehicles, business and personal travel would be unacceptable, especially on such a critical section of the motorway network, connecting the whole of the south and south west of the country to the capital city and onward to Belfast, UK and Europe. In this regard I have appended letters from both Bus Éireann and the Irish Road Haulage Association, which highlight the

difficulties they experience due to delays on this section of the network and confirm their support for the Scheme. Furthermore, failure to address these delays would not be in compliance with the obligations (as discussed above) set out in EU Regulation 1315/2013, if not addressed by 2030.

Slide 24 – Environment

- 6.11 As discussed when considering the do-nothing alternative, failure to address congestion on the motorway leads to traffic diverting onto the local road network, with consequent adverse impacts on air and water quality, noise and visual intrusion for local communities.
- 6.12 Congestion on the motorway leads to greater numbers of traffic incidents, resulting in spillages into the drainage system and on into the local watercourses. In addition to reducing incident rates the Scheme also creates an opportunity to introduce storm water attenuation, spillage control and water quality protection measures, none of which currently exist on this section of the M7.

Slide 25 – Accessibility and Social Inclusion

- 6.13 Failure to address congestion at this local choke point within the motorway network has immediate impacts on the accessibility of the whole of the south and south west of the country, and any efforts to address areas of social isolation and deprivation. Congestion and loss of journey time reliability is a significant barrier to business, future investment and employment.

Slide 26 – Integration

- 6.14 Failure to mobilise the built in capacity for future widening, in this critical section of the national motorway network, limits the benefits of all previous investment in the major inter urban network and is counter to the requirement for integration with existing and planned infrastructure.
- 6.15 Furthermore, Regulation 1315/2013 of the European Union requires that all congestion on the Ten-T Core Network is removed prior to 2030, to ensure the free movement of goods across Europe that is fundamental to the integration of the single market.
- 6.16 Joe Kelly will describe the Scheme which has been developed to address these needs.

7.0 DESCRIPTION OF THE PROPOSED SCHEME

Slide 27 – Introduction

- 7.1 My name is Joseph Kelly and I will be presenting a description of the proposed road scheme. I graduated from University College Galway in 1986 with a BE in Civil Engineering and from University of Limerick in 2013 with a Master in Project Management. I have 23 years experience in the design, supervision and management of road construction schemes in Ireland including:
- M7 Droichead Nua and Kilcullen By Pass 1989 – 1993

- M4 Maynooth, Kilcock, Leixlip By Pass 1993 - 1994
- N7 Naas Road Improvements and Saggart Rathcoole Interchange 1996 -1999
- M7 Kildare Town By Pass 1999 - 2004
- N7 Castletown to Nenagh 2004 -2012

- 7.2 I am a Senior Executive Engineer with Kildare County Council National Roads Office and have been the Project Manager for the M7 Naas to Newbridge By Pass Upgrade scheme since 2011.

Slide 28 – Figure 4.1 of the EIS

- 7.3 Figure 4.1 of the EIS shows the Study area, which commences at the Liffey Bridge on the M7 and the Local Road Over Bridge on the M9, and extends approximately 13.5km as far as Junction 8, Johnstown, on the N7.

Slide 29 – Figure 4.2 of the EIS

- 7.4 Figure 4.2 of the EIS shows the western end of the study area, which was included to allow for consideration of the tie in arrangements with the existing alignments of both the M7 and M9. With the exception of the erection of noise barriers, no construction works is planned in this area. Temporary Traffic Control (Advance Signage) will be carried out in this area during the works.
- 7.5 Old Abbey Manor estate can be seen at the top of this figure. Its Residents Association made a submission requesting that a Noise Barrier is provided in this area. It is noted that the provision of a barrier at this location was a condition of the planning permission for the development of the estate, and is currently being addressed by Kildare County Council. Consequently this submission has been withdrawn.

Slide 30 – Figure 4.3 of the EIS

- 7.6 Figure 4.3 of the EIS shows the existing Junction 11 Great Connell interchange, where the M9 merges with the M7. Works were completed at in April 2013 to construct a Ghost Island between the two merging lanes, allowing northbound vehicles to merge more readily.
- 7.7 The local Corbally Road crosses over the interchange on an overbridge south west of the commencement of the proposed scheme. Construction of the proposed scheme will commence at Chainage 2400. Travelling northbound, the addition of a third lane in the median will permit the introduction of a lane gain for traffic merging from the M9 onto the M7. Travelling southbound the widened three lane carriageway will revert to two lanes on the M7, with the M9 diverge effecting a lane drop. From this junction northward, the introduction of a third lane in each direction within the existing wide median will provide a dual three lane motorway cross section.

Slide 31 – Figure 4.15 of the EIS

- 7.8 Figure 4.15 of the EIS shows the existing and proposed cross section with the additional lanes and a new concrete safety barrier provided in the median. Where required noise barriers will be located at the back of the verge. It is proposed to re-construct the filter drains in both verges. In general there will be no works beyond

the back of the existing verges, other than locally at the drainage outfalls, and to accommodate large directional signs.

Slide 32 – Plate 4.1 of the EIS

- 7.9 Plate 4.1 of the EIS shows the existing view looking north east from Great Connell. On the left hand side of the picture the existing 2 lane ghost island merge can be seen, between the M9 and M7 Dublin Bound. Similarly the 2 lanes of the M9 diverge towards Waterford can be seen, departing from the M7 as it continues towards Limerick. This also shows the existing wide median which was provided to accommodate the proposed additional lanes.

Slide 33 – Figure 4.3 of the EIS

- 7.10 Looking at Figure 4.3 again, a watercourse is carried under the motorway in an existing 750mm culvert at Ch 3+300. This will be unaffected by the proposed works. The carriageway between Ch 2+100 and 3+300 drains to an existing outfall labelled B, at the downstream end of this culvert. It is proposed to provide a Class 1 bypass oil and petrol separator at this outfall, which currently discharges untreated into the watercourse. All of the petrol interceptors to be provided are designed to cater for the first 10% of the flow from a five year storm. This is known as the first flush, and contains the vast majority of the contaminants that are washed off the road.
- 7.11 The pipes within the new road drainage will be over-sized to provide on line attenuation of storm flows. The pipes will be sized to attenuate both the additional volumes draining from the widened pavement and to include for a potential future 20% increase in rainfall intensity due to climate change. Flow restricting devices will be provided upstream of the outlets to the receiving watercourses, to restrict the flows to existing run off rates. A penstock/shut-off valve will be installed in the last downstream manhole before the discharge point, to facilitate the isolation of spillage events within the online attenuation storage.
- 7.12 Another watercourse passes beneath the motorway at Ch 3+350 in an existing 750mm culvert.
- 7.13 Brendan and Carol Carton (Plot No 101a.101), whose house is located adjacent to the motorway at Ch 3+180 have made a submission regarding noise impacts. This will be addressed by our noise expert Jennifer Harmon. Plot No 101a.101 is included in the Motorway Order to allow for the completion of the land acquisition process from a previous scheme.

Slide 34 – Figure 4.4 of the EIS

- 7.14 Fig 4.4 of the EIS shows the widening into the median between Ch 3+400 and 5+300. At Ch 3+800 the motorway passes beneath Lewistown Road, which is carried on an existing overbridge. The bridge will be unaffected by the proposed works.
- 7.15 The carriageway drainage between Ch 3+300 and 4+250 drain to outfall C, at Ch 4+000. This outfall will be treated and attenuated in a similar manner to outfall B, utilising a petrol interceptor, on line attenuation, and a spillage isolation penstock.

Land drainage south of the motorway is connected to the watercourse at outfall C by an existing 450mm pipe culvert at Ch 4+040.

- 7.16 From Ch 4+250 to 4+900 the carriageway drains to outfall D at Ch 4+720. An existing 750mm culvert crosses beneath the motorway at Ch 4+720. This watercourse merges with a group of watercourses immediately north of the motorway, and as a result of capacity constraints downstream of this confluence, the watercourse at outfall D backs up at times of heavy rainfall. In order to reduce the existing discharge from the motorway at this location, a pair of attenuation ponds are to be provided. These ponds are designed to provide both attenuation and water quality treatment, such that no petrol interceptor will be required at this outfall.
- 7.17 An existing farm accommodation bridge at Ch 4+900 will be unaffected by the works.
- 7.18 Annette & Ciaran Parker who live adjacent to the Grand Canal at approx Ch 4+100 have made a submission to the Board raising concerns about noise. This will be addressed by our noise expert Jennifer Harmon.

Slide 35 – Plate 4.11 of the EIS

- 7.19 Plate 4.11 of the EIS shows the typical layout of the proposed attenuation and treatment ponds. The first flush, or 10% of the 1 in 5 year storm event, which washes the road and therefore contains the most contaminants, is trapped in a planted forebay, where it is retained for vegetative treatment, and gradually infiltrates through to the lower main attenuation pond. Once this forebay has been filled, a bypass channel takes any further flow directly into the main attenuation area, which is sized to hold the runoff from a 1 in 100 year storm event.
- 7.20 Access to construct and maintain the attenuation ponds will be from the motorway, with an access track around the pond. The track and pond will be surrounded by a 2.4 metre high security fence to prevent unauthorised access.

Slide 36 – Figure 4.5 of the EIS

- 7.21 Heading further north Figure 4.5 of the EIS shows the location of the proposed median widening as it passes beneath the existing R445 overbridge, the proposed location for the new J10, which replaces the existing J10 at Newhall.

Slide 37 – Figure 4.13 of the EIS

- 7.22 Figure 4.13 of the EIS shows the proposed new Junction 10 in relation to the existing junction at Newhall. In the northbound direction, queuing currently occurs on the existing off ramp, on its approach to the undersized five arm roundabout at the top of the slip road, with queues extending back onto the hard shoulder of the motorway during the AM peak. Similarly in the evening peak, queues from the priority junction at the top of the southbound off ramp queue back onto the motorway. The configuration of the existing junction dates back to the construction of the Naas Bypass in 1983 and pre-dates the continuation of the M7 onto the Droichead Nua Bypass in 1994. At that time the M7 continued as the N7 to Newbridge, along the line of what is now the R445. As part of the Droichead Nua Bypass, in 1994, the original N7 dual carriageway was bridged over the new motorway, and became what is now the R445. With increased traffic, the original junction configuration is no

longer fit for purpose and it is proposed to replace this with a new direct connection between the motorway and the R445 dual carriageway.

- 7.23 It is proposed to construct two new roundabouts either side of the existing R445 overbridge, with connecting slip roads between these and the motorway below. The existing slip roads at Newhall will then be closed and landscaped.
- 7.24 The existing Limerick bound on slip is combined with the local road between the Bundle of Sticks roundabout and the Rathasker Road to form Due Way, resulting in a dangerous junction between the two way Rathasker Road and the one way M7 slip road. Traffic heading from the Bundle of Sticks roundabout towards the motorway does not anticipate right turning traffic crossing the motorway slip road at the Rathasker Road junction. It is therefore proposed to regularise this dangerous situation by providing a direct slip road from the R445 onto the southbound carriageway of the motorway and to separately connect Rathasker Road, Due Way and the accesses to adjoining lands with a new roundabout.
- 7.25 In the existing situation watercourses draining from both the south east and the south west are culverted beneath the R445 and the M7 respectively and merge before entering a single culvert beneath the now dis-used old N7/R445. The existing 2350mm diameter culvert beneath the motorway is to be retained without modification, while the corrugated steel culvert beneath the R445 is to be extended beneath the new northbound off slip. Downstream of the culvert beneath the R445 the watercourse is to be diverted into a new stilling pond where it meets the downstream end of the culvert beneath the motorway. The combined flows will then pass through a new up-sized culvert beneath the proposed northbound on slip.
- 7.26 Water levels in the Lewistown stream upstream of the R445 are maintained by an existing sluice gate, located on the downstream end of the R445 culvert. This sluice presents a barrier to fish passage. As an environmental enhancement measure it is proposed to create a fish ladder along the south edge of the R445, with its own backwatered culvert beneath the R445. This will be connected to the Lewistown stream by re-grading of an existing watercourse that runs along the north side of the R445. In his submission to the board, Mr E Kinirons (Plot No 111a.101) has requested removal of the existing sluice. This would result in the Lewistown stream and other watercourse becoming de-watered and would not be acceptable to the Inland Fisheries.
- 7.27 The carriageway drainage from Ch 4+900 to 7+100 drains to outfall E at Ch 6+750 on the upstream end of the culvert under the motorway. An attenuation pond is to be provided in a severed portion of land between the realigned Due Way and the new southbound on slip. This pond will be of similar design to that described earlier for outfall D and will provide attenuation, treatment and spillage control.
- 7.28 A local drain passes beneath the motorway in a 600mm pipe at Ch 7+000.
- 7.29 In accordance with the latest design standard for grade separated junctions, NRA TD22, lighting is only to be provided at the new roundabouts on the R445 and their immediate approaches. In practice this will require the R445 to be lit from the Bundle

of Stick roundabout, through the new Junction 10 roundabouts, and on the top of the slip road approaches to the new roundabouts.

- 7.30 Localised lighting of the mainline in the vicinity of junctions is no longer considered good practice. The existing high mast lighting between Ch 7+000 and Ch 8+000 associated with the existing J10 Newhall will therefore be removed. New localised lighting of the Newbridge Road over bridge will be required to avoid the creation of a dark patch between the M7 Business Park roundabout and the Bundle of Sticks roundabout.
- 7.31 Additional lands south east of Due Way have been included within the Motorway Order for temporary use as a compound during the construction of the works. This compound is anticipated to be used for the provision of site offices, welfare facilities, plant and fuel storage, and on occasions for the storage of pre-fabricated items such as pipes, signs etc. This location will therefore be the focus of a proportion of the site generated traffic. The large majority of the site traffic, however, results from the movement of bulk materials, including earthworks fill, drainage and road foundation stone, bituminous materials, and the removal of unsuitable materials. These will be delivered and collected directly from their point of use, variously distributed along the full length of the site. It is not anticipated that bulk materials will be stored or processed at the site compound.
- 7.32 Following completion of the works the site compound will be fully cleared, restored to agricultural use and made available to the current owner, subject to agreement.
- 7.33 Considering the number of the submissions that have been made to the board from the owners of land in the vicinity of the proposed interchange, I will briefly identify each of these and explain their relationship to the design.
- 7.34 Origin Enterprises, own plot numbers 106a.201, 106g.201, 106b.201, 106d.201, 106c.201 and 106e.201, which are required for the diversion of Due Way and the construction compound. They have questioned whether Due Way could be realigned further north into the area shown as containing the attenuation pond. The proposed alignment of Due Way has been selected to suit the location of the proposed roundabout at Rathasker Road, which has been located to provide safe connections to the existing accesses south and west of the roundabout.
- 7.35 The land to the south of the Rathasker Road roundabout, including plot number 104b.201, is owned by Dennison Trailers Ltd, who have written to the design team questioning whether the roundabout could be located further north east to reduce the impact on their yard. The roundabout has been deliberately located to maintain access to Dennison Trailers, to minimise the necessary realignment of Rathasker Road and in order to maintain an equitable impact on the land owners either side of the road. The suggested move to the north east would further exacerbate the impact on Origin Enterprises.
- 7.36 The lands required for the northbound off slip and fish ladder, plot numbers 103b.201 and 103a.101 are located in lands owned by Catherine Morrin. The impact on her landholding is acknowledged, but is necessary for the delivery of a safe junction arrangement.

- 7.37 The lands required for the northbound on slip between the R445 and the M7, plot numbers 107b.201 and 107c.201, are owned by Fintan Flood. He has raised concerns about the safety of the existing Newhall Cross junction on the R445 and the increased traffic through the junction arising from the proposed scheme. Traffic leaving the motorway and heading for the Rathangan Road will be signed to turn right onto the R445 and join the Rathangan Road at the Bundle of Sticks Roundabout. However the potential for some additional traffic to use the local road between Newhall Cross and the Rathangan Road is recognised. The upgrade of this junction is a condition of planning permission procured by Mr. Flood for development of the surrounding lands that are in his ownership. Its upgrade is also being considered separately by Kildare County Council.
- 7.38 The most significant impact of the scheme is that upon the Coyle family, different members of which own all of the lands between the motorway, the R445 and the Rathangan Road, including plots 109a.201 and 109b.201. This family has been impacted by the successive development of the Naas to Newbridge dual carriageway, the Naas Bypass, the Droichead Nua Bypass and now the M7 Naas to Newbridge Bypass Upgrade Scheme. The specific lands required for the current scheme are those associated with the construction of the new southbound off slip from the M7 onto the R445. Whilst every effort is being made to mitigate the noise and visual impacts upon their properties that arise from the current proposal, the cumulative impacts of the succession of schemes upon this family unit are acknowledged. Unfortunately this further impact upon their properties is necessary to provide a safe junction arrangement. Our noise, landscape and air quality specialists will respond the specific concerns raised in their submission, but at this point I want acknowledge our understanding that this schemes comes in a succession of schemes that have impacted this family.
- 7.39 They have also raised a concern about local flooding into their property from the R445. I confirm that this will be addressed and connected to the drainage system for the Scheme.
- 7.40 The National Transport Authority have requested that due consideration is given to the provision for cyclists, bus stops and pedestrian access to the bus stop in the detailed design of the new interchange. The existing bus stops on the R445 will not be directly affected by the scheme. Various options exist for the future delivery of route K15 of the Greater Dublin Area Cycle Network Plan between Naas and Newbridge. A commitment has been given to and accepted by the NTA to liaise with them in the delivery of these details should the scheme be granted planning approval, and the relevant correspondence is appended.

Slide 38 – Figure 4.6 of the EIS

- 7.41 Figure 4.6 of the EIS shows the widening into the median between Ch 7+100 and 8+900. At Ch 7+400 the motorway passes beneath Rathagan Road, which is carried on an existing overbridge and will be unaffected by the proposed works.
- 7.42 A watercourse passes beneath the motorway at Ch 7+760 in an existing 900mm diameter culvert. The carriageway between Ch 7+100 and 8+000 drains to outfall F at this culvert. An attenuation pond is to be provided at this location. This pond will

be of similar design to that described earlier for outfall D and will provide attenuation, treatment and spillage control.

- 7.43 The land required for the attenuation pond is owned by Mr Edward Kinirons (Plot no 111a.101) who has made a submission to the Board expressing concern about maintenance access to the pond, and suggesting that the Scheme drainage design should make allowance for other adjacent development. I confirm that access for both construction and maintenance of the pond will be taken from the motorway mainline. The Scheme does not and is not required to make provision for other potential development of adjoining lands.
- 7.44 An existing 750mm pipe carries another watercourse beneath the motorway at Ch7+890.
- 7.45 From Ch 8+000 to 8+575 the carriageway drains to outfall G, located at ch8+575. Then from Ch 8+575 to 9+200 the carriageway drains to outfall H at Ch 8+875. Both of these outfalls will be treated and attenuated in a similar manner to outfall B, utilising a petrol interceptor, on line attenuation and a spillage isolation penstock.
- 7.46 At Ch 8+450 the motorway passes beneath the R409 Caragh Road which is also carried on an existing overbridge and will be unaffected by the proposed works.
- 7.47 Orla and Trevor Nuzum who live adjacent to the motorway at Ch 8+700 have made a submission to the board regarding the noise mitigation to be provided. This will be addressed by our noise expert Jennifer Harmon.

Slide 39 – Figure 4.7 of the EIS

- 7.48 Fig 4.7 of the EIS shows the widening into the median between ch8+900 and 10+700. This section of the motorway crosses four watercourses. At Ch 9+750 and 10+200 the watercourses are carried in existing 750mm pipes, while at Ch 10+350 and 10+525 they are carried in existing 900mm pipes.
- 7.49 From Ch 9+200 to 9+800 the carriageway drains to outfall I at the downstream end of the culvert at Ch 9+750. Then from Ch 9+800 to 10+350 the carriageway drains to outfall J at the downstream end of the culvert at 10+200. The carriageway between Ch 10+350 and 11+000 drains to outfall K at the downstream end of the culvert at 10+525. All three of these outfalls and will be treated and attenuated as described earlier at outfall B, utilising a petrol interceptor, on line attenuation and a spillage isolation penstock.
- 7.50 At Ch 10+350 the motorway passes beneath an existing farm accommodation road bridge which will be unaffected by the proposed works.

Slide 40 - Figure 4.8 of the EIS

- 7.51 The widening into the median between Ch 10+700 and 12+500 is shown in Fig 4.8 of the EIS. The motorway crosses two watercourse either side of the Grand Canal in a pair of existing 2750mm corrugated steel culverts at Ch 11+140 and 11+ 175. Between these culverts the motorway passes over the Grand Canal at Ch 11+160 on an existing underbridge. None of these existing structures will be unaffected by the proposed works.

- 7.52 From Ch 11+000 to 12+250 the carriageway drains to outfall L at Ch 11+500. An attenuation pond is to be provided of similar design to that described earlier for outfall D, providing attenuation, treatment and spillage control.
- 7.53 The lands required for attenuation pond north of the M7, plot numbers 113d.101 and 113b.101 are owned by Mr John Kehoe and the lands effected by the wayleave WA1 to WA2 are owned by Mr John Kehoe his son Gerard Kehoe. Mr Kehoe who has raised concerns about flooding and noise in the vicinity of his property, the details of the wayleave and the positioning of the pond. The provision of the attenuation pond will prevent the motorway from contributing to the flooding issues in the wider catchment, and will improve the existing situation where the motorway discharges to the watercourse without any attenuation. The concerns about the wayleave have been addressed through subsequent discussion. The location of the pond is dictated by its association with the existing outfall and the need to provide access from the mainline without compromising the provision of the adjacent noise barrier. I confirm that the pond will be fenced, as described earlier, and that access for both construction and maintenance will be from the motorway mainline. The matter of noise will be addressed by our noise expert Jennifer Harmon.
- 7.54 Two submission was made by residents of Osberstown Cottages located on the northern side of the motorway at Ch 11+600, from Joe and Karen Evans, who made a formal submission to the Board and Brendan and Patricia Kennedy who subsequently wrote to the design team. These submissions raise concerns regarding safety and the positioning of the attenuation pond in the vicinity of their residences. Again I confirm that the pond will be securely fenced to prevent unauthorised access and the boundary between Osberstown Cottages and Mr Kehoe lands will be secured.
- 7.55 The R407 Clane Road crosses the motorway on an existing overbridge at Ch 11+700, which will be unaffected by the works.

Slide 41 – Figure 4.9 of the EIS

- 7.56 Fig 4.9 of the EIS shows the widening into the median between Ch 12+500 and 14+200.
- 7.57 A watercourse passes under the motorway in a pair of existing 1200mm pipes at Ch 13+040.
- 7.58 At Ch 13+080 the motorway passes beneath an existing farm accommodation overbridge which will be unaffected by the proposed works.
- 7.59 The motorway crosses a watercourse in an existing 750mm pipe at Ch 13+100. The carriageway between Ch 12+250 and 13+600 drains to outfall M at the downstream end of this culvert. This outfall will be treated and attenuated as described earlier at outfall B, utilising a petrol interceptor, on line attenuation and a spillage isolation penstock.
- 7.60 At Ch 13+900 the R445 Dublin Road connects to the M7/N7 at Junction 9 Maudlins. The existing overbridge and will be unaffected by the proposed works.

- 7.61 Between Ch 13+600 and 14+750 the carriageway drains to outfall N via the existing attenuation pond located at Ch 13+730, discharging into a watercourse at Ch 13+600.

Slide 42 – Figure 4.10 of the EIS

- 7.62 Fig 4.10 of the EIS shows the tie-in to the dual 3-lane N7 between Ch 14+200 and 15+200.
- 7.63 In addition to the three mainline lanes in each direction an auxiliary lane will be provided in each direction between the on and off ramps of Junction 9 Maudlins and Junction 8 Johnstown.
- 7.64 At Ch 14+600 the motorway passes beneath an existing footbridge which will be unaffected by the proposed works.
- 7.65 The whole of the existing road surface will be replaced with a low noise surface throughout the scheme, and noise barriers will be provided wherever required to mitigate existing noise levels at adjacent properties to meet current noise mitigation objectives.
- 7.66 The existing boundary fences throughout the scheme will be inspected and repaired or upgraded where necessary to prevent mammal access to the motorway.
- 7.67 I confirm that the lands outlined in red and coloured blue and outlined in red and coloured grey as contained in the Kildare County Council M7 Naas Newbridge Bypass Upgrade Motorway Scheme 2013, and as identified by the various Plot numbers, are necessary and required for the purposes of the scheme, namely the widening of approximately 13 km of Motorway from two to three lanes and upgrade of the existing Junction 10 Newhall. In relation to the Coyles, who make a submission about the proportionality of the acquisition of their lands, I can confirm that all efforts were made to keep the land acquisition at a minimum and indeed land is only being acquired from one of the Coyle families and this land is required and necessary and indeed essential for the safe operation of the upgrade of Newhall Interchange.

Slide 43 – Construction Traffic

- 7.68 The submissions from the Coyles raise particular concerns regarding the volumes of construction traffic. Table 4.8 of the EIS summarises the material quantities to be brought into and taken from the site. An error on the quantity of capping required for the new interchange has been corrected in Errata No. 1 as presented at the commencement of the hearing. The revised table as shown in slide 43 indicates the order of 150,000 truck movements in total. The initial 12 month of construction will require the most intensive movement of materials, when the construction of the new Junction 10 will run concurrently with the mainline works between there are Great Connell. During this period approximately 350 truck movements can be expected each day. This represents a 0.1% increase in overall traffic levels on the motorway, but a 7% increase in heavy commercial vehicle traffic.
- 7.69 Possible sources of material include Drennanstown at Rathangan, Allen Quarry at Kilmeague, Belgard Quarry, Dorans Pit at Blessington and Behan Quarry at

Rathcoole. Material coming from Belgard Quarry and Behan Quarry will arrive at the site along the motorway mainline. However material from Drennanstown, Allen Quarry and Dorans Pit will arrive at the existing J10 Newhall. Conservatively assuming that up to half of the construction vehicle movements use the R445 It is estimated that up to 150 additional trucks per day could use the R445 during this peak period of construction. The impact of this additional truck traffic has been recognised and although it is temporary in nature it has been agreed to provide additional noise barriers between the Coyles property and the R445.

7.70 I will now hand back to Jim Thorpe to conclude the Engineering evidence.

8.0 CONCLUSION

Slides 44-46 – Conclusion

8.1 In conclusion I would like to highlight the key benefits of the proposed scheme, which are

- to address congestion at a bottleneck in the National Motorway Network
- delivery of a vital element of Ireland's compliance with the Ten -T EU regulation 1315/2013
- to release the full potential of previous economic, environmental and social investment in the motorway network by releasing the final bottleneck
- improved journey time reliability for both private and public transport between Dublin and the whole of the south and south west of the country
- removal of the economic and social consequences of delays equivalent to 168 people being employed to sit in traffic for the next 30 years
- addressing the safety problems associated with queuing traffic on a high speed road, saving 11 fatalities, 23 serious injuries and 305 minor injuries
- reducing a growing demand upon the emergency services
- improving the quality of surface water run off into the River Liffey catchment
- attenuating the potential flooding effects of climate change
- reducing noise pollution to existing receptors
- providing for fish movements upstream of the current impassable sluice on Ladytown Stream
- and preventing mammal access to the motorway

8.2 This scheme also facilitates the potential addition of the M7 Osberstown and R407 Sallins Bypass Scheme, a local and regional road improvement that is currently unable to proceed due to the level of congestion on this adjoining section of motorway.

8.3 I will now ask Michael Kenny and Simon Clear to address the scheme within the wider planning context.

ANNEX 1:

Referenced Correspondence from:

- **Department of Transport Tourism and Sport**
- **An Garda Síochána**
- **Bus Éireann**
- **Irish Road Haulage Association**
- **National Transport Authority**



An Roinn Iompair
Turasóireachta agus Spóirt

Department of Transport,
Tourism and Sport

Príomh Oifig
44 Sráid Chill Dara, Baile Átha Cliath 2, Éire.
Head Office
44 Kildare Street, Dublin 2, Ireland.

Lo-Call 0761-001 601 +353-1-670 7444
www.dttas.ie

Mr David O'Grady
A/Senior Engineer
Kildare National Roads Office
Maudlins
Dublin Road
Naas
County Kildare

20th May 2014

Your Ref: NRO-700-12.8

**Re: NRO-700 – M7 Naas to Newbridge Bypass Upgrade Motorway
Scheme Motorway Order Application (Ref No. PL09.MA0012 and
PL09.HA0045)**

Dear David,

I refer to your letter dated 13th May 2014 in respect of the above scheme.

I can confirm that this scheme is on a core corridor of the TEN-T network and that the Department is aware that the existing section of road represents a "bottleneck" on the Dublin to Cork Route. This restricted section which runs from Junction 9 to Junction 11 has at present two traffic lanes in each direction and the Department fully accepts that for capacity and safety reasons the number of lanes in each direction needs to be increased to three. The original design in 1978 envisaged that such future widening could be accommodated within the central median. The Department also accepts that the interchange at Newhall requires upgrading in order to meet the current and future traffic requirements.

I can confirm that the Department supports this project to upgrade this section of the M7 Motorway.

Yours Sincerely

Dominic Mullaney
Principal Adviser
Roads Division

An Garda Síochána

Oifig An Ard Cheannfort
An Garda Síochána
Nás Na Ríogh
Co. Cill Dara

Tel / Telefón: 045 – 884311

Please quote the following ref. number:



Chief Superintendents Office
An Garda Síochána
Naas
Co. Kildare

Láithreán Greasáin / Web site: www.garda.ie
Ríomphoist / E-mail: Naas_DV@garda.ie

Luiagh an Uimhir thagartha seo a leanas le do thoil:

Date 28th February 2014

KD20.3/14

TB23670/14

Mr. Joseph Kelly
Project Manager,
Kildare County Council National Roads Office
Block B, Maudlins Office
Naas,
Co Kildare

AN GARDA SÍOCHÁNA
CHIEF SUPERINTENDENT'S
OFFICE

U / MAR 2014

NAAS
DIVISION OF KILDARE

RE Kildare County Council - Notice to Non Prescribed Bodies - Environmental Impact Statement

Dear Mr. Kelly,

Further to your correspondence of 6th January 2014 to the Commissioner, I wish to report that the N7 between Kill and Junction 10 Newhall Naas on the M7 motorway is now the most collision prone zone in County Kildare by a considerable margin.

Between 1/10/2013 and 31/12/2013 there has been 39 traffic collisions resulting in 8 people requiring hospital treatment. I have no doubt that many more who did not immediately attend hospital suffered pains and aches in the days following these collisions and probably sought medical attention.

Between 7 am and 9 am there was 11 traffic collisions

Between 4 pm and 7 pm there was 13 traffic collisions. The vast majority were rear end collisions.

Mission Statement (Raiteas Misin)
"Working with Communities to Protect and Serve"
Ag obair le Pobail chun iad a chosaint agus chun freastal orthu"

| | |
|------------------------|-----------------|
| KILDARE COUNTY COUNCIL | |
| National Roads Office | |
| 10 MAR 2014 | |
| FILE NO. | LETTER NO. 243A |

The above two segments are peak time traffic and these collisions cause huge tailback resulting in people being late for work and appointments and will act as an extra strain on Garda Resources and other Emergency Services.

It is the view of An Garda Síochána that this project is long over due and it should be progressed as soon as possible.

It is believed that when the Newlands Cross Project is completed in the near future that it will only result in even longer traffic queues on the N7 in the evening on the South Bound side and more traffic collisions. I believe when the 3 lanes are in operation from Junction 9 to 11 there will be a massive improvement in traffic flow at peak times and a significant reduction in traffic collisions.

With the economy now starting to pick up the volume of traffic on the N7/M7 is increasing and this is adding to the volume of collisions. The creation of a new Junction 10 is necessary as the current junction cannot cope with the volume of traffic at peak times, resulting in long tailbacks on the slip roads and traffic congestion on all roads leading to the current Bundle of Sticks roundabout. The traffic collisions on the M7 between Junction 11 and 12 between the same 3 month period (1/10/2013 to 31/12/2013) and there was only one collision recorded. It is believed that when the 3 lanes are constructed between Junction 9 and 11 there will be a massive improvement which can only be good for Road Safety, Traffic Management and the economy in general as the N7/M7 is the second busiest route in the State after the M50 and the N7/M7 is the main route for commercial activity between Dublin and the South of Ireland.

It is highly recommended that this project start as soon as possible.

Yours faithfully,

 Chief Superintendent
(M.A. Byrnes)

Mission Statement (Raiteas Misin)
"Working with Communities to Protect and Serve"
Ag obair le Pobail chun iad a chosaint agus chun freastal orthu"



**Mr David O'Grady
A/Senior Engineer
National Roads Office
Kildare County Council
Block B, Maudlins
Naas,
County Kildare**

20th May, 2014

Re: Proposed Upgrade Works on M7 – Junction 9 to Junction 11 – Additional Lane South Bound.

Dear Mr O'Grady,

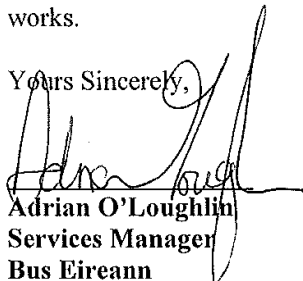
I refer to proposed Upgrade Works referenced above and welcome the opportunity to make representations on this matter.

Bus Éireann's Expressway and Commuter Services offer a sensible and cost-effective alternative to driving into and from Dublin city Centre from all major towns and cities both in the Greater Dublin Area and Nationwide. However, the high volume of traffic along the M7 between Junction 9 Naas and Junction 11 Newbridge, particularly at peak travelling periods, is impacting our ability to provide a reliable and consistent timetabled service to our passengers.

I understand the purpose of the scheme proposed is to widen the current two lane operation between Junction 9 & Junction 11 southbound and this will certainly help alleviate the traffic congestion currently being encountered by our services.

In view of the above, I wish to put on the record our full support for the proposed upgrade works.

Yours Sincerely,


**Adrian O'Loughlin
Services Manager
Bus Éireann
Broadstone**

www.buseireann.ie



Suite 6, Gowna Plaza, Bracetown Business Park, Clonee, Co. Meath

Mr David O'Grady
National Roads Office
Kildare County Council
Block B, Maudlins
Naas
County Kildare

20th of May 2014

Dear Mr O'Grady

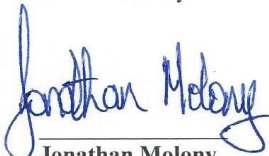
I wish to take this opportunity to make representation to you on the matter of the M7 Naas to Newbridge bypass upgrade which I understand is currently at the stage of oral hearings and associated planning requirements.

The Irish Road Haulage Association, as the Government recognised representative body for licensed road haulage operators in Ireland, wishes to lend its full support to the project and the many benefits which will accrue to the industry and the collective economy as a result of this proposed development.

I understand that the scheme will widen the network to three lanes from junction 9 Naas to junction 11 Newbridge and this proposed development is to be welcomed. At present, licensed road haulage operators are experiencing considerable delays due to the sheer volume of traffic on the route and the proposed upgrade will significantly address this difficulty. Not only will the upgrade improve journey times but it will also improve road safety as a result of the revised infrastructure which will be better placed to cope with the consistently high volume of traffic on the route on a daily basis.

In summary, I wish to clearly pledge the full support of the IRHA to the proposed upgrade project on the M7 Naas to Newbridge bypass and my members are hopeful that the relevant construction works will commence as soon as possible without any unnecessary delays.

Yours sincerely



Jonathan Molony
National Secretary

Tel: +353 (01) 801 3380 Fax: +353 (01) 825 3080 e-mail: info@irha.ie web: www.irha.ie



Mr Hugh Creegan
Director of Transport Investment and
taxi Regulation
National Transport Authority
Dún Scéine
Harcourt Lane
Dublin 2

Our Ref: NRO-700-10.25
Your Ref:

30th April 2014

**Re: NRO-700 – M7 Naas to Newbridge Bypass Upgrade-Motorway Order
Application (Ref No. PL09.MA0012 and PL09.HA0045) and NTA Submission**

Dear Hugh,

I refer to the above scheme and to your letter to An Bord Pleanála dated 20th February 2014 highlighting no objection in principle to the scheme and suggesting items that are addressed at the detailed design stage.

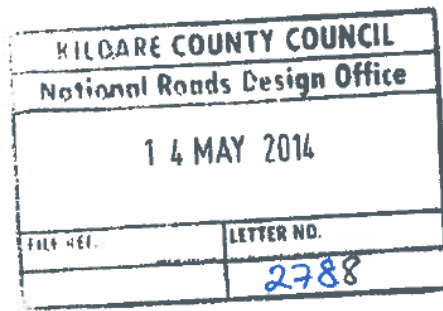
The items raised in your letter to be addressed at detailed design stage include:
-Cycle facilities at the proposed Newhall Interchange and that appropriate facilities are included to allow safe cycle usage, and
-A review and provision of bus and pedestrian facilities in the vicinity of the proposed Newhall Interchange.

I confirm that should the scheme receive a successful outcome from the statutory process, as requested, Kildare County Council and their designers will liaise with the National Transport Authority at detailed design stage to address, to the satisfaction of the Authority, all issues raised in your submission.

Should this be satisfactory, I would appreciate if you could reply and acknowledge that this is acceptable to the Authority.

Yours sincerely,


David O'Grady
A/Senior Engineer



Harcourt Lane, Dublin 2

Dún Scéine, Baile Átha Cliath 2

tel: 01 879 8300

fax: 01 879 8333

email: info@nationaltransport.ie

web: www.nationaltransport.ie

David O'Grady,
A/Senior Engineer
Kildare National Roads Office,
Kildare County Council
Block B,
Maudlins,
Naas,
Co. Kildare.

12th May 2014

Re: NRO-700 – M7 Naas to Newbridge Bypass Upgrade Motorway Order Application (Reference No. PL09.MA0012 & PL09.HA0045).

Dear David,

I acknowledge receipt of your letter dated 30th April regarding the above matter. (Your Ref: NRO-700-10.25).

I confirm that the arrangement set out in your letter is satisfactory to us and I look forward to liaising with you at the detailed design stage of the project.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Hugh Creegan', written over a horizontal line.

Hugh Creegan,
Director of Transport Investment and Taxi Regulation.



M7 Naas to Newbridge By-Pass Upgrade Scheme

Motorway Order and Environmental Impact Statement

Oral Hearing

Traffic Analysis

Brief of Evidence

By
Philip Shiels
AECOM

May 2014

1.0 INTRODUCTION

Slide 2

Qualifications & Experience

- 1.1 My name is Philip Shiels. I am a Chartered Engineer and Principal Consultant with AECOM consultant engineers. I hold a Bachelor of Engineering degree from Edinburgh Napier University in Civil and Transportation Engineering and a Diploma in Civil Engineering from the Dublin Institute of Technology.
- 1.2 I have been actively engaged in traffic, transportation and economic assessment work for 8 years throughout Ireland. I have been appraisal team leader on a number of highway infrastructure projects, including:
- N5 Westport to Turlough Road Project;
 - N3 Butlers Bridge to Belturbet; and
 - Limerick Northern Distributor Road.
- 1.3 I appear on behalf of the Roughan and O'Donovan – AECOM Alliance as a traffic witness covering traffic analysis at this Hearing.

Scope and Nature of Evidence

- 1.4 The evidence I am presenting relates to the traffic analysis undertaken for the proposed M7 Naas to Newbridge By-Pass Upgrade Scheme. As part of my Brief of Evidence I will discuss the following topics:
- Existing traffic conditions;
 - The traffic modelling process;
 - The traffic forecasting process;
 - The selection of the preferred option of upgrading the Newhall Interchange;
 - The impact of the proposed scheme;
 - The benefits of the proposed scheme ; and
 - The cumulative impact of the M7 Osberstown Interchange and R407 Sallins Bypass Scheme.

2.0 EXISTING CONDITIONS

Slide 3

Road Capacity & Level of Service

- 2.1 The carriageway types which make up a road network are chosen on the basis of capacity and level of service. The capacity of a road link is the ability of that section of road to carry the maximum number of vehicles in a safe manner at an appropriate level of service.
- 2.2 Level of service is a technical concept which describe the travel experience in terms of operating speed, the ability to overtake traffic safely, traffic congestion, overall safety and driver and passenger comfort. In Ireland, the capacity of a road link is

determined in accordance with the principles defined in the US Highway Capacity Manual. Six levels of service are described in the manual for various types of road cross section, from A (best) to F (worst).

- 2.3 The target minimum Level of Service for national primary roads is Level of Service D which in speed terms equates to an average speed of 80kph. In the case of the Major Inter Urban road network which the M7 forms part of, the minimum Level of Service target is Level of Service C, which equates to an average speed of 105kph.
- 2.4 The 13.5km section of the M7 motorway between the Maudlins and M7/M9 Interchanges is one of the busiest sections of motorway on the Irish national road network outside of Dublin. In 2013 this section of the M7 motorway carried on average over 60,000 vehicles per day, approximately 8% of which was classed as Heavy Commercial Vehicles.
- 2.5 This section of the M7 was originally designed as a wide 2 lane motorway. The capacity of such a cross section operating at level of service D is approximately 55,500 AADT, which under current traffic levels is well exceeded. At present this section of the M7 motorway is currently operating at a Level of Service E, with average speed below 80kph during peak periods.

Slide 4

M7 Traffic Flow Profile

- 2.6 Slide 4 shows the weekday profile of traffic on the M7 Naas Bypass section of the M7 during March 2014. The profile shows the high levels of traffic in the eastbound direction during the morning peak period and in the westbound direction during the evening peak period. Traffic levels of up to 3,400 vehicles per hour were recorded during these peak periods.
- 2.7 The safe operating capacity of one motorway lane is approximately 1,600 vehicles per hour, with the transition into flow breakdown occurring as low as 1,500 vehicles. Flow breakdown describes the transition from free flowing traffic conditions to congested traffic.
- 2.8 As a result of traffic merging onto the M7 and traffic diverging to access the various junctions on the M7, the utilisation of the 2 lanes on the M7 mainline carriageway is unbalanced. A higher proportion of traffic utilises the offside lane (overtaking lane) to avoid the slower traffic in the nearside lane and to avoid traffic accessing or queuing to access the motorway junctions.

Slide 5

- 2.9 Slide 5 shows the weekday profile of traffic in the offside lane of the M7 Naas Bypass section of the M7 during March 2014. During the morning peak period flows on the eastbound carriageway offside lane can exceed 2,200 vehicles per hour. Flows of over 2,000 vehicles per hour were recorded during the PM peak in the offside lane. Both of these flows exceed the safe operating capacity.
- 2.10 Simple traffic manoeuvres such as traffic merging, diverging or switching lanes on the M7 during these periods of congestion leads to vehicles breaking suddenly. This

has serious safety impacts for road users and also disrupts the flow of traffic, leading to delays and driver frustration.

Slide 6

- 2.11 Slide 6 shows a photograph of the congestion on the westbound carriageway of the M7 during the evening peak. The photo is taken from the Maudlins Interchange looking east towards Dublin. Due to high traffic flows and the reduction in capacity from 3 lanes on the N7 to 2 lanes on the M7, queuing as far back as the Johnstown Interchange and at times beyond is common.
- 2.12 Average speeds on the M7 between the Maudlins Interchange and the M7/M9 Interchange in the westbound direction drop below 70kph but can vary depending on the level of traffic and weather conditions.
- 2.13 Congestion on the eastbound carriageway during the morning peak also occurs. Flows in the offside lane exceed 2,200 vehicles per hour with average speeds generally below 80kph between the M7/M9 and Maudlins Interchanges.

Slide 7

Newhall Interchange

- 2.14 The Newhall Interchange is one of the main access points for traffic accessing Naas and Newbridge via the M7 motorway. Traffic utilising the interchange currently experiences significant delays and queuing during both the morning and evening peak periods due to the limited capacity of the interchange and high traffic flows.
- 2.15 On the eastbound off ramp of the Newhall Interchange, queues of over 450m have been observed during peak hours with queuing extending beyond the off ramp and vehicles having to use the M7 mainline carriageway hard shoulder to queue. This impacts upon the flow of traffic on the M7 mainline and raises serious safety concerns. Slide 7 shows the queue of traffic trying to access the eastbound off ramp of the Newhall Interchange in the morning peak.
- 2.16 The same is also true on the westbound off ramp of the Newhall Interchange, where queues of over 400m have been observed, once again this leads to traffic using the M7 mainline carriageway hard shoulder.

Accident Data

- 2.17 Based on the recorded number of accidents on the M7 between 2002 and 2011, this section of the M7 has an accident rate that is 42% higher than the national average accident rate for a 2 lane motorway. Over the period 2002 to 2011 there were 5 fatalities and 5 serious injuries, a number of which were attributed to rear end shunt accidents.

3.0 TRAFFIC MODELLING

Slide 8

Aims and Objectives of the Traffic Modelling Process

- 3.1 The aim of the traffic modelling process was to establish existing traffic patterns and traffic flows on the road network and to derive forecast traffic flows for the proposed scheme.
- 3.2 The traffic forecasts are used to inform the assessment of journey time savings, road safety benefits and environmental impacts resulting from the proposed scheme. These outputs then inform the economic assessment of the scheme.
- 3.3 The traffic forecasting outputs are also required to inform the selection of the most appropriate design of the scheme primarily the pavement structure and junction layouts.

Guidelines for the Traffic Modelling Process

- 3.4 All elements of the traffic modelling process have been undertaken in accordance with the National Roads Authority (NRA) Project Appraisal Guidelines 2011. The Project Appraisal Guidelines provide detailed guidance on the development of traffic models and the forecasting of future traffic levels for the appraisal of road infrastructure projects.

Slide 9

Traffic Model Study Area

- 3.5 The study area for the traffic model is shown in Plate 6.6 of the EIS. The study area is extensive and was selected to include all possible routes that may be impacted upon by the upgrading of the M7.

Methodology

- 3.6 The National Roads Authority (NRA) National Traffic Model was used as the starting point for the development of the local area models for the proposed scheme. The NRA National Traffic Model provided the basic road network, zone structure and trip matrices required to initiate the development of the local area models.
- 3.7 Additional network coding and traffic data collection was required in order to develop a local area model which incorporated a more detailed road network and zoning structure than what is provided in the NRA National Traffic Model.

Data Collection

- 3.8 Junction Turning Count surveys were undertaken by video for the period 07:00 – 19:00 (12hrs) at a number of important junctions in order to establish current volumes of flow and turning movements. These surveys were undertaken at 10 junctions in February 2012.
- 3.9 Automatic Traffic Count surveys were also carried out at 11 locations. These surveys collected traffic data for a full 7 day period in February 2012.

- 3.10 Origin-Destination (O-D) Bluetooth surveys were also undertaken to collate three days of traffic patterns. O-D Bluetooth surveys were commissioned to establish the distribution of traffic between 6 key points in the study area and were carried out in April 2012. The Bluetooth devices pick up unique identification numbers of individual electronic items that use Bluetooth (mobile phones, laptops, satellite navigation systems and hands free systems) and tracked their movements between the 6 survey points.
- 3.11 Journey time information was also collated in order to ensure that the travel time on existing roads was properly reflected within the base models, thereby ensuring that a robust assignment of traffic could be undertaken. The O-D Bluetooth surveys which also provide journey time data were supplemented with manual journey time surveys undertaken along 7 key routes within the study area.
- 3.12 The location of all traffic surveys collected as part of this project is illustrated in Plates 6.1 to 6.5 of the EIS. 2012 Base Year trip matrices were developed to represent the following periods:
- AM Peak Hour (08:00 – 09:00);
 - Average Inter Peak Hour (12:00 – 14:00); and
 - PM Peak Hour (17:00 – 18:00).

All traffic surveys were carried out in accordance with the guidance set out in the NRA Project Appraisal Guidelines.

Model Calibration/Validation

- 3.13 The calibration and validation of the local area models was undertaken with reference to the methodology set out in NRA Project Appraisal Guidelines *Unit 5.2 Construction of Traffic Models*, which provides guidance on both the calibration and validation process.
- 3.14 The local area models satisfied both the calibration and validation criteria of the NRA Project Appraisal Guidelines in terms of the following:
- Individual traffic flows; and
 - Journey Times.
- 3.15 The Geoffrey E. Heavers (GEH) statistic is used to assess individual traffic flows and is a measure of comparability that takes account of not only the difference between observed and modelled flow, but also the significance of this difference with respect to the size of the observed flow.
- 3.16 A GEH statistic of less than 5 is required for 85% of all observed and modelled flow comparisons. All base year local area models have a GEH statistic of less than 5 for over 85% of compared flows in both the calibration and validation assessments.
- 3.17 Journey time validation demonstrates that the difference between modelled and observed journey times were within 15%, for 85% of links, during both the AM, Inter and PM peak hours, as required by the NRA Project Appraisal Guidelines.

- 3.18 As part of the calibration and validation processes, a series of sense checks were also carried out to confirm that the models were replicating the correct routing of vehicles between various origin and destination zones and that the correct level of through traffic was modelled in urban areas such as Naas and Newbridge.
- 3.19 The calibration and validation of the assignment model has demonstrated that the level of fit between modelled and observed data is good. These processes confirmed the quality of the trip matrices and that the model replicated individual link flows and existing journey times. The calibration and validation results therefore confirm that the model is an appropriate assignment tool and can adequately represent expected route choice and traffic behaviour, resulting from the construction of the proposed route.

4.0 TRAFFIC FORECASTING

Future Modelled Years

- 4.1 The modelled opening year for the proposed M7 Naas to Newbridge By-Pass Upgrade Scheme is 2015. To inform the design of the scheme traffic forecasts were required 15 years beyond the opening of the scheme, therefore the design year traffic flows were forecast for 2030.

Traffic Growth

- 4.2 The process for forecasting traffic growth for the local area models is set out in NRA Project Appraisal Guidelines (PAG) *Unit 5.3 Traffic Forecasting*.
- 4.3 This PAG Unit provides guidance on the calculation of growth rates for three future scenarios, namely, NRA High, Medium and Low growth. Growth rates vary throughout the country and take account of forecast population, employment and car ownership changes at Electoral District (ED) level. Electoral Districts are the smallest legally defined administrative areas of the state.
- 4.4 The NRA medium growth scenario is the central forecast and is consistent with the M0F1 Central Statistics Office (CSO) growth projections. The medium growth scenario is used to inform the design of the scheme, while the High and Low growth scenarios are used only for the purposes of sensitivity analysis. The future traffic flows provided in the EIS are based on the NRA medium growth scenario.

Slide 10

Allocation of Future Growth

- 4.5 The allocation of future traffic growth in the traffic models is based on a study of land use zonings provided in the following documentation:
- Naas Local Area Plan 2011 – 2017 (Naas Town Council);
 - Kildare County Development Plan 2011 – 2017; and
 - Sallins Local Area Plan.

- 4.6 The area of Naas known as the North Western Quadrant is a key area of future traffic growth accounting for the generation of over 50% of additional future traffic in Naas. Slide 10 shows the land use zonings from the Naas Local Area Plan.

Estimation of Annual Average Daily Traffic

- 4.7 The Annual Average Daily Traffic (AADT) on the proposed scheme and parallel routes was estimated by applying expansion factors to modelled AM, Inter and PM peak hour traffic flows. In order to do this a relationship was developed based on regression analysis of permanent NRA counters and a number of temporary ATC counters in the study area. The equation which was validated using observed AADT is as follows:

$$(3.2 * AM) + (6.5 * IP) + (3.2 * PM) = AADT$$

Annual Average Daily Traffic

- 4.8 AADT levels have been derived for a number of locations as shown on Plates 6.8 to 6.10 of the EIS. Table 6.4 of the EIS provides the forecast AADT at each of these locations for the 2013 Base Year and 2030 Design Year, with and without the scheme in place.

5.0 M7 MAINLINE CARRIAGEWAY IMPACTS

- 5.1 Traffic models were initially constructed to assess the existing and future capacity issues on the M7 mainline carriageway between the M7/M9 and Maudlins Interchanges and to assess potential upgrade options to alleviate such issues. The impact of not upgrading the road (Do-Minimum Scenario) and impact of upgrading the road (Do-Something Scenario) are outlined below.

Predicted Impacts (Do-Minimum Scenario)

- 5.2 In the Design Year (2030) Do-Minimum scenario traffic on the M7 is forecast to increase by between 15%-21% over base year levels. Increased congestion on the M7 leads to traffic utilising the local road network via Kill and Johnstown to access Naas and Sallins.
- 5.3 At present the M7 mainline carriageway between the M7/M9 and Maudlins Interchanges is heavily congested during both the morning (eastbound) and evening (westbound) peak periods. The capacity issues on this section of the M7 create a choke point on a key section of the Major Inter Urban network. With traffic levels forecast to increase, the existing issues will be further exacerbated, leading to increased journey times, further reduced journey time reliability, driver frustration and safety concerns.

Proposed Upgrade

- 5.4 The proposed upgrading of M7 mainline carriageway from two lanes to three lanes between the M7/M9 and Maudlins Interchanges (Do-Something Scenario) was identified as the preferred option for resolving the existing and forecast issues on the M7.

Predicted Impacts (Do-Something Scenario)

- 5.5 Traffic flows on the M7 are forecast to increase to over 68,000 AADT in 2030 with the proposed scheme in place. The increase in capacity associated with the upgrading of the M7 mainline carriageway from two lanes to three lanes will cater for these predicted levels of traffic and significantly reduce congestion on this section of the M7 motorway.

Slide 11

- 5.6 Traffic using the local road network to avoid congestion on the M7 will transfer back onto the M7 as a result of the increased capacity. Slide 11 shows the local routes where traffic will transfer from with the proposed scheme in place. Red indicates a reduction in traffic and green an increase, relative to the Do-Minimum scenario.
- 5.7 Reduced congestion will lead to improved journey times, improved journey time reliability and reduce the likelihood and severity of accidents on the M7.

6.0 NEWHALL INTERCHANGE

- 6.1 The traffic models used to assess the existing and forecast M7 mainline carriageway capacity issues were also used alongside detailed micro-simulation models to assess the capacity issues associated with the Newhall Interchange.

Existing Issues

- 6.2 The Newhall Interchange is one of the main access points for traffic accessing Naas and Newbridge via the M7 motorway. Traffic utilising the interchange currently experiences significant delays and queuing during both the morning and evening peak periods due to the limited capacity of the interchange and high traffic flows.
- 6.3 During peak periods, traffic on the eastbound and westbound off ramps of the interchange can queue back onto the M7 mainline hard shoulders, contributing to flow breakdown on the M7 mainline carriageway and raising safety concerns.
- 6.4 With traffic levels forecast to grow the existing issues will be further exacerbated as a result of the increased congestion. This will lead to increased journey times, driver frustration and safety concerns.

Proposed Upgrade

- 6.5 A total of 8 alternative options for upgrading the Newhall Interchange were considered. A process of identifying an option that best meets the objectives of the scheme was undertaken. Each of the options was assessed against the requirement to provide a safe solution that had sufficient capacity, minimised land take and maximised use of existing infrastructure.

Slide 12

- 6.6 The assessment process utilised micro-simulation modelling to inform the selection of the preferred option. Slide 12 shows a selection of the options that were considered. These options are also presented in Plates 5.2 to 5.8 of the EIS.

- 6.7 There are congestion issues on the surrounding regional and local road network which are not addressed by the proposed scheme. The focus of the assessment was on identifying a junction arrangement that removes queuing from the national motorway network.
- 6.8 Two of the options that were considered, sought to maximise the capacity of the existing infrastructure, though traffic management works such as banned turns, the use of traffic signals and utilising the existing width of the M7 off ramps. In both Options traffic continued to queue back onto the motorway, as such they were ruled out.
- 6.9 Further options sought to maximise the retention of the Newhall Interchange in its current location, limiting the new works to closure of either one of the off ramps and it's relocation to a new connection with the R445 dual carriageway. However these options did not have a sufficient effect on removing conflicting traffic movements to do more than reduce the impact of queuing on the particular ramp that was re-located and therefore were also ruled out.
- 6.10 The other options which focused on the closure and relocation of the existing Newhall on and off ramps to connect with the R445 dual carriageway had the most impact in reducing queuing onto the M7 mainline carriageway. It was found that to reduce the potential for traffic queuing back onto the M7 mainline both now and into the future it would be best to close and relocate all four ramps of the interchange.

Slide 13

- 6.11 The preferred option for the Newhall Interchange upgrade will see the closure of all existing on/off ramps and the construction of a new dumbbell interchange with the existing R445 2 lane dual carriageway (Newbridge Road). The proposed new upgrade will involve the construction of two new roundabouts on the R445, one either side of the existing motorway overbridge. Dedicated slips will be provided at western roundabout to remove the conflict between Naas and Newbridge traffic.

Predicted Impacts (Do-Something Scenario)

- 6.12 It is anticipated that an additional 8% of traffic may utilise the Newhall Interchange when compared to the 2030 Do-Minimum scenario. This is as a result of the additional capacity and improved connectivity to the M7.
- 6.13 The additional capacity associated with the proposed upgrade of the Newhall Interchange will alleviate the existing safety issues regarding traffic queuing back onto the M7 mainline carriageway.
- 6.14 It should be noted that while the upgrading of the Newhall Interchange resolves the safety issues associated with queuing back onto the M7 mainline carriageway it does not resolve the capacity problem on the M7 mainline carriageway. As such the widening of the M7 mainline carriageway is still required regardless of the upgrading of the Newhall Interchange.

7.0 OVERALL SCHEME BENEFITS

Slide 14

Journey Time Benefits

- 7.1 The additional capacity of the M7 Naas to Newbridge Bypass Upgrade Scheme will reduce congestion and improve journey times on the M7 between the Johnstown and M7/M9 Interchanges. When compared to the 2030 Do-Minimum scenario average journey time savings of 6mins per vehicle will be achieved along the full length of the scheme.
- 7.2 When compared to the 2030 Do-Minimum scenario the proposed scheme reduces the total daily delay in the study area for all vehicles during the modelled time periods by approximately 1006 hours or 42 days, as well improving average speeds across the network.

Journey Time Reliability

- 7.3 The increase in capacity and reduction in congestion will improve journey time reliability along the corridor both for private and public transport users. Improved journey time reliability will allow commuters, business users and freight operators to plan their journeys efficiently and maximise their time.

Safety Benefits

- 7.4 The proposed scheme will be of a higher safety standard and will contribute to a reduction in accidents both on the M7 and on other roads in the vicinity of the M7.
- 7.5 The Cost Benefit Analysis (CBA) model developed to assess the economic impact of the scheme predicted a significant reduction in the total number of accidents over the 30 year CBA appraisal period. This equates to a reduction of 108 accidents, categorised by the following casualties:
- 11 Fatalities
 - 23 Serious Injuries
 - 395 Slight Injuries

Scheme Benefits Summary

- 7.6 In summary the additional capacity associated with the proposed scheme leads to a reduction in congestion on the M7 between the Johnstown Interchange and M7/M9 Interchanges, reducing journey times and improving journey time reliability. The relocation of the Newhall Interchange also reduces congestion and significantly improves the existing safety issues associated with traffic queuing back onto the M7 mainline carriageway.

8.0 M7 OSBERSTOWN INTERCHANGE & R407 SALLINS BYPASS SCHEME

- 8.1 The separate but adjacent M7 Osberstown Interchange and R407 Sallins Bypass Scheme comprises of a new motorway interchange on the M7 located approximately

halfway between the Newhall and Maudlins Interchanges and also includes for a proposed western bypass (R407) of Sallins and associated local road connections.

Cumulative Impacts

- 8.2 In order to assess the cumulative impacts of the M7 Naas to Newbridge By-Pass Upgrade Scheme and the M7 Osberstown Interchange and R407 Sallins Bypass Scheme, additional traffic models were constructed.
- 8.3 The traffic models developed to assess the M7 Naas to Newbridge By-Pass Upgrade Scheme as previously described earlier were updated to include the infrastructure associated with the proposed M7 Osberstown Interchange & R407 Sallins Bypass Scheme. This approach provided a consistency to both projects in terms of their traffic impacts and allowed the impacts of one scheme to be assessed upon the other.
- 8.4 Overall the cumulative impacts of both schemes is an increase in traffic on the M7 mainline carriageway between the M7/M9 and Maudlins Interchanges as a quantity of traffic which previously used the Newhall and Maudlins Interchanges to access areas of Naas and Sallins remains on the M7 and access these areas via the Osberstown Interchange. This then leads to a reduction in traffic through both the Newhall and Maudlins Interchanges.

Impact upon the Need for M7 Naas to Newbridge Bypass Upgrade Scheme

- 8.5 The proposed M7 Osberstown Interchange and R407 Sallins Bypass scheme raises a number of questions in relation to the M7 Naas to Newbridge By-Pass Upgrade Scheme which need to be addressed, these are:
- (i) Phasing - Can the M7 Osberstown Interchange and R407 Sallins Bypass scheme be opened prior to the M7 Naas to Newbridge By-Pass Upgrade Scheme?; and
 - (ii) Newhall Interchange - Is there a need for an upgrade of the existing Newhall Interchange if the M7 Osberstown Interchange and R407 Sallins Bypass scheme is delivered?

M7 Mainline Upgrade

- 8.6 As previously discussed the existing M7 mainline carriageway between the M7/M9 and Maudlins Interchanges currently experiences significant congestion and delays during peak periods and operates at a Level of Service E.
- 8.7 The introduction of the proposed M7 Osberstown Interchange and R407 Sallins Bypass Scheme prior to the proposed widening of the M7 mainline would increase demand on the M7 mainline by between 8-10% and would lead to increased congestion and subsequent delays to vehicles on the M7 during peak periods.
- 8.8 As such the opening of the M7 Osberstown Interchange and R407 Sallins Bypass scheme is dependent on the completion of the widening works of the proposed scheme. The M7 Osberstown Interchange and R407 Sallins Bypass scheme may be constructed at the same time as the proposed scheme but not opened until the widening works on the M7 are complete.

Newhall Interchange Upgrade

- 8.9 As outlined above the proposed M7 Osberstown Interchange and R407 Sallins Bypass Scheme will reduce the overall demand of traffic through both the Maudlins and Newhall Interchange, particularly on the west facing ramps of the Newhall Interchange. To assess the capacity and operation of the existing Newhall Interchange with the M7 Osberstown Interchange and R407 Sallins Bypass Scheme in place, additional micro-simulation models of the road network were developed.
- 8.10 A summary of the micro-simulation assessment demonstrated that:
- The existing Newhall Interchange is currently operating at capacity (2012 flows). Significant queuing occurs on both of the M7 off ramps during peak periods which impacts upon traffic on the M7 mainline carriageway leading to serious safety concerns;
 - In the absence of the proposed upgrade of the Newhall Interchange, but with the introduction of the proposed M7 Osberstown Interchange and R407 Sallins Bypass queuing on the existing M7 eastbound off ramp would reduce both in 2015 and 2030, but significant queuing would still occur which impacts upon the M7 mainline. This queuing is due to the limited capacity of the M7 Business Park Roundabout and the high right turn demand from the M7 overbridge to the M7 eastbound on-ramp; and
 - Similarly in the absence of the proposed upgrade of the Newhall Interchange, but with the introduction of the proposed M7 Osberstown Interchange and R407 Sallins Bypass, queuing on the existing M7 westbound off ramp would reduce, but queuing back onto the M7 mainline still occurs
- 8.11 The micro-simulation assessment demonstrated that although the overall demand through the Newhall Interchange would reduce if the M7 Osberstown Interchange and R407 Sallins Bypass Scheme were to proceed, significant queuing during peak periods would still occur on both of the existing Newhall off ramps in the absence of the proposed Newhall Interchange upgrade.

Summary

- 8.12 The proposed M7 Osberstown Interchange and R407 Sallins Bypass Scheme will increase traffic on the M7 between the Newhall and Maudlins Interchanges but will reduce the level of traffic through both Interchanges. It has been demonstrated that both elements of the M7 Naas to Newbridge Bypass Upgrade Scheme are required regardless of the impact of the M7 Osberstown Interchange and R407 Sallins Bypass Scheme.

9.0 SPECIFIC SUBMISSIONS

- 9.1 A submission by Maguire & Associates on behalf of Brendan and Gertie Coyle contained a report by Trafficwise Ltd which raised a number of concerns in relation to the traffic assessment that was undertaken.
- 9.2 The main area of concern raised by Trafficwise is that forecast traffic flows on the R445 Newbridge Road to the front and M7 mainline carriageway to the back of the

Coyle's property are significantly underestimated. The Trafficwise Report suggests that as a result, the Noise and Vibration, Air Quality and Human Being impacts are also underestimated, as they are directly linked to the level of traffic.

- 9.3 My examination of the Trafficwise report has identified a number of incorrect assumptions and omissions in their assessment of the traffic volumes on the road network in the vicinity of the Coyle's property. A note which sets out my examination and responses to the Trafficwise was produced and provided to Maguire & Associate prior to this hearing. This note, which demonstrates that the forecast levels of traffic are not underestimated and have been correctly calculated and assessed in line with the relevant guidance is provided as an Appendix to this brief of evidence.

| | | | |
|--------------|--|---------|---------------------------------|
| Project: | M7 Naas to Newbridge By-Pass Upgrade Scheme | Job No: | 60241946 |
| Subject: | Response to Trafficwise Report | | |
| Prepared by: | Philip Shiels | Date: | 13th May 2014 |
| Checked by: | Shane Dunny | Date: | 13th May 2014 |
| Approved by: | Jim Thorpe | Date: | 13th May 2014 |

1.0 Introduction

This Technical Note outlines the response to the issues raised by Trafficwise Ltd. in their report which forms part of the submission to An Bord Pleanála (ABP) by Brendan Coyle and Gertrude Coyle. Trafficwise examined the Traffic Chapter of the M7 Naas to Newbridge By-Pass Upgrade Scheme Environmental Impact Statement (EIS) and have raised several concerns in relation to assessment of the traffic impacts.

The main area of concern raised by Trafficwise in relation to the traffic assessment is that traffic flows both on the R445 Newbridge Road to the front and on the M7 mainline to the back of Brendan and Gertrude Coyle's property are significantly underestimated. Thus it is implied by Trafficwise that the impacts of Noise, Vibration, Air Quality and Human Beings are as such underestimated as they are directly linked to the level of traffic in the vicinity of the Coyle's property.

Another area of concern raised by Trafficwise is that the level of detail included in the EIS traffic chapter is not sufficient for an experienced practitioner to be able to follow all stages of the traffic assessment and infer a similar set of results.

2.0 Response to Issues Raised

2.1 Trafficwise Report - Introduction

Section 2.1.2

Section 2.1.2 of the Trafficwise report makes reference to the NRA Traffic and Transportation Assessment (TTA) Guidelines, which advise reference to the Institute of Highways and Transportation (IHT) Guidelines for Traffic Impact Assessment (1994) for detailed descriptions of the use, scope, purpose and implementation of traffic impact assessments and transport assessments and related measures.

Both the NRA TTA guidelines and IHT guidelines provide guidance on assessing the impacts of proposed developments (i.e. retail parks, shopping centres, residential developments etc), as is outlined in the introduction to both documents.

These documents are not applicable to the project appraisal process for major infrastructure schemes, which are covered under the NRA Project Appraisal Guidelines (2011). These guidelines are available on the NRA website <http://www.nra.ie/policy-publications/project-appraisal-guideli/> and are referenced in the EIS report.

Throughout their report, Trafficwise make several references to the NRA Project Appraisal Guidelines, therefore it is clear that Trafficwise are both familiar with and aware of the implementation of the Project Appraisal Guidelines in terms of appraising and assessing major infrastructure projects.

Sections 2.1.3 & 2.1.4

Sections 2.1.3 and 2.1.4 of the Trafficwise report state that the level of detail provided in the EIS traffic chapter does not reflect the requirements of the NRA TTA and IHT guidelines. As outlined above the NRA TTA and IHT guidelines are not applicable to the assessment of the proposed scheme.

The data required to identify and assess the main effects which the proposed road development is likely to have on the environment, is contained in the traffic chapter of the EIS (Chapter 6). It is not necessary or appropriate for the EIS to contain every piece of information that an expert may have used in their analysis, provided the data contained in the EIS is sufficient to identify and assess the main effects which the proposed road development is likely to have on the environment, as is the case here. In this regard there is no substance to the Trafficwise criticism of the level of detail provided in the EIS.

The underlying background information and detailed description of the traffic model which informed the data contained in the EIS is contained in a separate Traffic Modelling Report (TMR). For completeness and to respond in full to the Trafficwise contentions, the TMR is provided as an annex to this note for your reference. The TMR is a report required under the NRA Project Appraisal Guidelines, the structure and contents of which are outlined in NRA *PAG Unit 5.6 Reporting*.

2.2 Trafficwise Report – Data Collection

Sections 2.2.1 to 2.2.5

Sections 2.2.1 to 2.2.5 of the Trafficwise report discuss the fact that the traffic surveys used to develop the baseline assessment of the traffic model were carried out in February. The Trafficwise report raises concerns that February is not a 'neutral' month for data collection and therefore the level of traffic may be underestimated.

All traffic surveys used in the assessment were undertaken in accordance with the NRA Project Appraisal Guidelines. Sections 4.5 to 4.7 of NRA *PAG Unit 16.1 Estimating AADT on National Roads* outline what months of the year are considered to be neutral months and state that February is a neutral month.

The assessment of scheme impacts and proposed mitigation measures is based on Annual Average Daily Traffic (AADT) levels. Traffic data from any month can be expanded up to AADT based on existing long term traffic data; in this case the NRA traffic counters on the M7 and M9 were used to assess the relationship between February traffic data and AADT.

The process for generating such expansion factors is outlined in section 5.22 of NRA *PAG Unit 16.1 Estimating AADT on National Roads*. The details of the application and validation of this process are presented in the Traffic Modelling Report, included in Annex 1 of this note.

Section 2.2.4

Section 2.2.4 of the Trafficwise report makes reference to NRA *PAG Unit 16.2 Expansion of Short Periods Traffic Counts*. This document is not relevant to the assessment of the proposed scheme as outlined in the overview section of the PAG Unit, which states that:

"The Generic Expansion Factor Method can be used for short period counts where nearby data is not available, and where the collection of localised period counts is not justified. This would normally be the case where data is required for high level studies only, and where outputs will not be used as the

basis for Project Appraisal or any form of local capital investment. For all other applications, please refer to PAG Unit 16.1: Estimating AADT on National Roads”

2.3 Trafficwise Report – Report Results

Sections 2.3.1 to 2.3.8

Sections 2.3.1 to 2.3.8 of the Trafficwise report question the use of the NRA medium traffic growth scenario in the EIS and why the scheme is not assessed using the NRA low or high growth scenarios.

The NRA medium traffic growth scenario is the central growth scenario used in the design and appraisal of all NRA infrastructure schemes. The low and high growth scenarios are only used as sensitivity scenarios to the medium growth scenario and for the purposes of economic appraisal.

2.4 Trafficwise Report – Base Traffic Model and Traffic Flow Forecasts

Section 2.4.2

The Trafficwise report states that the equation used to expanded peak hour traffic flows to AADT cannot be verified as that background methodology to its generation is not included in the EIS.

The derivation and validation of the peak hour expansion factors included in the EIS is detailed in Section 5.4 of the Traffic Modelling Report included in Annex 1 of this note.

Section 2.4.3

Section 2.4.3 of the Trafficwise report makes reference to NRA *PAG Unit 16.2 Expansion of Short Periods Traffic Counts*. As previously outlined this PAG Unit is not relevant to this scheme as outlined in the overview section of this document.

NRA *PAG Unit 16.1 Estimating AADT on National Roads* is the relevant document used to inform the derivation of AADT in the context of this and similar schemes where background traffic count data is available. This background traffic count data is available on the NRA website at <http://www.nra.ie/network-monitoring-and-management/traffic-data/>

Section 2.4.5

Section 2.4.5 of the Trafficwise report makes further reference to NRA *PAG Unit 16.2 Expansion of Short Periods Traffic Counts*. Again as stated previously this document is not relevant to this scheme as outlined in the overview section of the PAG Unit. Instead NRA *PAG Unit 16.1 Estimating AADT on National Roads* is the relevant document and the document used to estimate AADT for the proposed scheme.

Section 2.4.6

Trafficwise outline that there is insufficient information provided in the EIS to enable the reader to follow and check each step of the traffic modelling process. As previously outlined the Traffic Chapter of the EIS contains, as required, the data needed to identify and assess the main effects which the proposed road development is likely to have on the environment.

The underlying background information and detailed description of how the traffic model was developed, calibrated, validated and used to inform the data and assessment of the scheme as set out in the EIS is contained in the Traffic Modelling Report (TMR) which, for completeness, is provided to Trafficwise.

Sections 2.4.7 to 2.4.9

Trafficwise have undertaken a manual reassignment exercise to try and estimate the change in the level of traffic on the R445 Newbridge Road to the front of the Coyle's property and on the M7 mainline to the back of the Coyle's property, with the proposed scheme in place. The exercise was based on the 12hr traffic surveys carried out in 2012 and provided by Kildare County Council to Trafficwise when requested. These were also used in the development of the 2012 base year traffic models as indicated in the TMR report.

The findings of the Trafficwise exercise suggest that the levels of traffic outlined in the EIS traffic chapter both to the front and back of the Coyle's property are significantly underestimated and that this would therefore indicate that the Noise and Vibration, Air Quality and Human Beings assessment are also underestimated. This assertion by Trafficwise is incorrect and is discussed in the following paragraphs.

The Trafficwise manual reassignment exercise makes general assumptions about the distribution of traffic and does not take into account the rerouting of vehicles due to congestion in the network particularly at peak times.

A traffic model is required in order to estimate the reassignment effects of any complex road upgrade. A traffic model will estimate the propensity for traffic to divert onto alternative routes when faced with congestion, using established mathematical algorithms to assign traffic to the appropriate routes taking into account the impact of congestion and the associated time and cost delays.

Notwithstanding the inaccuracies inherent in a manual exercise, a detailed review of the exercise undertaken by Trafficwise (as provided in Appendix A of their report) has been carried out by AECOM. The detailed review has highlighted a number of significant inconsistencies and omissions in the Trafficwise assessment, showing that the results produced are incorrect. For example:-

R445 Newbridge Road (Naas to Newbridge Direction)

- 1) Traffic travelling from the existing M7 westbound off ramp to Newbridge (**2647** vehicles in the 12hr survey) currently utilise the R445 Newbridge Road to the front of the property in question. This traffic will now transfer to the proposed M7 westbound off ramp and not pass along the R445 Newbridge Road to the front of the property. This significant reduction of 2647 vehicles in traffic to the front of the Coyle's property has not been taken into account as part of the exercise by Trafficwise (i.e. the exercise assumes that these vehicles still use the R445 to the front of the property).
- 2) Traffic travelling from the existing M7 eastbound off ramp to Newbridge (**782** vehicles – 22% of 3553 vehicles in the 12hr survey) currently utilise the R445 Newbridge Road to the front of the property in question. This traffic will now transfer to the proposed M7 eastbound off ramp and not pass along the R445 Newbridge Road to the front of the property. This quantum of traffic has not been taken into account as part of the exercise by Trafficwise (i.e. the exercise assumes that all 3553 vehicle currently turning right from the M7 eastbound off ramp are destined for Naas which will not be the case in the future).
- 3) Traffic travelling from Naas to the Due Way Road located off the M7 westbound on slip (**177** vehicles - 5% of the 3540 vehicles in the 12hr survey) will remain on the local road. In the Trafficwise exercise all vehicles are assumed to use the R445 to the front of the property in question.

Based on the above review the amount of traffic overestimated by Trafficwise on the R445 Newbridge Road in their manual reassignment exercise is **3606** vehicles in the westbound direction equivalent to 28% of the estimated total traffic along this route in the westbound direction.

R445 Newbridge Road (Newbridge to Naas Direction)

- 4) Traffic travelling from the existing M7 eastbound off ramp to Naas (2771 vehicle – 78% of 3553 vehicles in the 12hr survey) does not at present utilise the R445 Newbridge Road to the front of the property in question. This traffic will now transfer to the proposed M7 eastbound off ramp and pass along the R445 Newbridge Road to the front of the property.

The Trafficwise exercise assumes that all 3553 vehicles will now utilise the R445 to the front of the property. This is not the case, as outlined in point 2 above. Based on this issue the amount of traffic overestimated by Trafficwise on the R445 Newbridge Road is **782** vehicles in the eastbound direction equivalent to 7% of traffic in the eastbound direction.

The basic single iteration manual reassignment exercise undertaken by Trafficwise (which does not take account of congestion effects and the propensity for traffic to redistribute) has overestimated the 12hr traffic levels on the R445 in front of the property in question, in total by **4388** vehicles.

As previously outlined the manual exercise makes simple assumptions about the distribution of traffic and does not take into account the rerouting of vehicles due to congestion in the network at peak times that the traffic model has been developed to assess. While it is acknowledged that the manual reassignment of traffic cannot fully reflect the complexity of a congested network, a number of oversights and omissions have been made in the simplified approach presented by Trafficwise, which significantly and incorrectly increase the level of traffic on the R445 to the front of the Coyle's property with the proposed scheme in place.

Section 2.4.10

The Trafficwise report indicates that the traffic flow to the back of the Coyle's property **with the proposed scheme in place**, of, 56,850 AADT on the M7 in 2015 (Link 7 Table 6.3 of the EIS traffic chapter), is not, but should be, the same as the traffic flow on Link 4. Trafficwise appear to have read the table incorrectly.

The AADT on both Link 4 and Link 7 is 58,250 with the scheme in place. They have incorrectly referenced the flow on Link 7 **without the scheme in place** (i.e. the Do-Minimum Scenario) instead of the flow on link 7 with the scheme in place. Therefore the flow of traffic on the M7 mainline to the back of the Coyle's property is consistent with the level of traffic on the M7 to the east of the existing Newhall Interchange.

Section 2.4.11

The Trafficwise report questions the increase in traffic (14,050 vehicles) on the M7 to the rear of the Coyle's property. The Trafficwise manual reassignment exercise calculated that an additional 6,600 vehicles would pass to the back of the Coyle's property as a result of the closure of the M7 westbound off ramp of the Newhall Interchange and question the basis for the level of additional traffic.

The additional 14,050 vehicles on the M7 at this location, is a two way increase in traffic on the M7, eastbound and westbound, which takes into account not only the impact of the closure of the

M7 westbound off ramp but the closure of the M7 eastbound on ramp and increase in M7 mainline flow associated with the increase in capacity of the M7.

Traffic which utilised the existing M7 eastbound on ramp of the Newhall Interchange to access the M7 towards Dublin will reroute to the new M7 eastbound on ramp and use the M7 to the back of the Coyle's property. The Trafficwise assessment failed to take into account the change in traffic levels in the eastbound carriageway of the M7 with the proposed scheme in place which is accounted for in the 14,050 vehicles.

Section 2.4.12

The Trafficwise report states that the 2013 AADT on the M7 is 61,798 AADT based on the data from the NRA traffic counter on the M7. The estimated AADT for 2013 from the NRA traffic counter does not include data for January and February 2013 as the counter was only operational and recording traffic data from March 2013.

As outlined in the Trafficwise report, January and February are 2 of the 3 lowest months for traffic flows. Using the data between March 2013 and February 2014, a full 12 month estimate of AADT on the M7 to the back of the Coyle's property would be approximately 60,900 AADT.

Section 2.4.13

The Trafficwise report outlines that current traffic levels on the M7 of 60,900 AADT, are below the forecast 2015 levels presented in the EIS of 58,250 AADT. The Trafficwise report goes on to suggest that this may be as a result of using data from February 2012 and indicate that the forecast AADT levels presented in the EIS on the M7 might be less than reasonably expected.

Traffic levels are linked to the health of the economy and levels have recently risen on a number of radial national routes connecting to the M50 as the level of unemployment decreases and the economy starts to recover. Over an extended period there are both short term rises and falls in traffic growth levels linked to the economy, as recent history has shown.

The design of the scheme is based on forecast flows in 2030. As such there are likely to be both short term rises and falls in traffic growth over this period. Therefore, recent traffic growth levels should not be taken as a prediction of what will occur over an extended period of time.

3.0 Conclusions

The Trafficwise report has used guidance documents which are not applicable to the appraisal of this scheme to challenge the level of information provided, the data collection process undertaken and the assessment of data presented in the traffic chapter of the EIS. The incorrect contention by Trafficwise regarding the guidance documents used is surprising given their obvious knowledge of the NRA PAG's which they reference in their submission.

The traffic assessment in the EIS has been carried out in accordance with the NRA Project Appraisal Guidelines, which are the relevant guidance documents for a scheme of this nature. Furthermore, the EIS contains, as required, the data required to identify and assess the main effects which the proposed road development is likely to have on the environment.

Notwithstanding the inappropriate approach undertaken by Trafficwise, the manual reassignment exercise they have completed contains a number of significant inconsistencies and omissions, which result in an overestimate of traffic on the R445 to the front of the property. These results have been used by Trafficwise to question the validity and applicability of the traffic, air, noise

and human beings impact assessments in the EIS. Whereas in fact, it is the Trafficwise approach and resulting assessment that are flawed, thus leading to conclusions that are not valid.

One of the key reasons for developing a traffic model is so that the effects of congestion can be taken into consideration and that traffic can reroute to find the route with the least travel cost (time and distance). None of this can be accounted for in a manual reassignment exercise. Therefore, even allowing for the inconsistencies and omissions in the Trafficwise approach, a direct comparison between the traffic model forecasts and the manual reassignment numbers is not appropriate since you are not comparing like with like and you are trying to compare a situation where routing choice exists to a situation where routing choice is not permitted.

In addition Trafficwise suggest that because current traffic levels on the M7 are marginally higher than those predicted for 2015, that long term traffic forecast for both the R445 and M7 have been underestimated. While traffic levels have risen recently, the EIS assessment is based on traffic forecasts that are based on statistical long term trends. These trends have been compiled on the basis of CSO data which is adopted in the National Traffic Model produced by the NRA and are included in their guidelines. It would not be unusual that short term rises and falls in traffic will occur from time to time above and below the uniform growth trend line over an extended period.

In accordance with the NRA Project Appraisal Guidelines, AECOM have developed and validated a traffic modelling tool to forecast future traffic levels on the M7 mainline carriageway and through the Newhall Interchange. The Traffic Modelling Report has provided the required background information to inform the data contained in the EIS. The data in the EIS has been used to assess and identify the main effects that the proposed road development is likely to have on the environment.

M7 Naas to Newbridge By-Pass Upgrade Scheme

Motorway Order and Environmental Impact Statement

Oral Hearing

Planning & Policy Context

Brief of Evidence

By
Michael Kenny of Kildare County Council

May 2014

1.0 INTRODUCTION

- 1.1 My name is Michael Kenny and I am employed as Senior Planner in the Planning Department of Kildare County Council and am currently A/Director of Services Planning
- 1.2 I hold a BA degree in Geography and a Masters degree in Regional and Urban Planning, both from University College Dublin. I am a member of the Irish Planning Institute and have over thirty years experience of planning practice in Irish local authorities, including Cork Corporation (as it was), South Dublin County Council and Kildare County Council.
- 1.3 I have been employed as a Senior Planner for Kildare County Council since October 2008 and am responsible for the Development Management and Forward Planning functions of the Planning Department. This included the preparation of the Kildare County Development Plan 2011 – 2017.

2.0 INVOLVEMENT WITH THE SCHEME

- 2.1 As Senior Planner for Kildare County Council, I reviewed Chapter 2 (Planning and Policy Context) of the EIS for the proposed scheme, which was prepared by Simon Clear & Associates, Planning and Development Consultants.
- 2.2 Simon Clear will take this oral hearing through the national, regional and local planning context for the proposed scheme, as more fully set out in Chapter 2 of the EIS, looking at land use, local planning issues, socio-economic and cumulative effects. Simon Clear will also deal with and provide a response to any submissions received by An Bord Pleanála in relation to the proposed scheme which concern planning policy.

3.0 CONFORMITY OF THE PROPOSED SCHEME WITH COUNTY AND LOCAL PLANNING POLICIES

- 3.1 I confirm that I agree with the considerations and conclusions set out in Chapter 2 (Planning and Policy Context) of the EIS in relation to the proposed scheme being in compliance with county and local planning policies and confirm that the proposed scheme is an objective of the Kildare County Development Plan 2011 – 2017 and the Naas Town Development Plan 2011 – 2017.
- 3.2 In particular, I confirm that:
- (a) The proposed scheme is in conformity with the provisions of:
 - (i) the Planning and Development Acts 2000- 2014;

- (ii) the Kildare County Development Plan 2011 – 2017; and
- (iii) the Naas Town Development Plan 2011 – 2017.
- (b) The proposed scheme is in accordance with the proper planning and sustainable development of the area.
- (c) The proposed scheme does not materially affect any extant/live planning permission granted or pending at the location of the proposed scheme.

4.0 NECESSITY OF LANDS FOR THE PROPOSED SCHEME

- 4.1 I can also confirm that the lands outlined in red and coloured blue and outlined in red and coloured grey and contained in the Kildare County Council M7 Naas Newbridge Bypass Upgrade Motorway Scheme 2013 are necessary and required for the purposes of the scheme namely the widening of approximately 13 km of Motorway from two to three lanes and upgrade of the existing Junction 10, Naas South (Newhall).



M7 Naas to Newbridge By-Pass Upgrade Scheme

Motorway Order and Environmental Impact Statement

Oral Hearing

Planning & Policy, Landuse & Socio Economics

Brief of Evidence

By
Simon Clear

May 2014

1.0 INTRODUCTION

- 1.1 I am a qualified Town Planner with over 35 years professional planning experience, particularly in the area of development assessment and appraisal. I am a Corporate Member of the Irish Planning Institute. I have held planning posts with the State Planning Authority of South Australia, Kildare County Council, Dun Laoghaire Corporation, Dublin County Council and An Bord Pleanala. I have been a planning consultant since 1999.
- 1.2 As a Senior Inspector with An Bord Pleanala from 1988 to 1999 I encountered proposals for the entire range and scale of housing, industrial, business, infrastructure and other developments. I have since been in private practice.
- 1.3 I have considerable experience in handling public hearings and dealing with planning and development issues at the highest level. I have previously acted as Chairman of the Oral Hearing conducted by the Department of Enterprise into the Bord Gais, Gas Pipeline to the West project and have been engaged in previous motorway order and strategic infrastructure oral hearings, most recently in the Dunkettle interchange Upgrade Scheme 2012.

2.0 INVOLVEMENT WITH THE PROJECT

- 2.1 Based on my experience as a practitioner in the Irish planning system as described above, I was requested by Roughan O'Donovan Consulting Engineers to provide peer review and planning expertise in the preparation of the Chapters relating to Planning and Policy, Need for the Proposed Road Development; and the non-technical Description of the Proposed Road Development prior to the completion and submission of the EIS along with the Motorway Order. In addition, for the purposes of this oral hearing I have prepared this brief dealing with strategic national, regional and local planning context for the proposed development and to look at land use, local planning issues, socio-economics and cumulative effects.

3.0 OVERVIEW OF THE SCHEME

- 3.1 The motorway system allows much faster journey times between Ireland, the United Kingdom and mainland Europe. The Cork – Dublin – Belfast motorway is a European priority axis (No 13) as part of the Trans-European Transport Network (TEN-T). It is part of an improving transport network, along with rail and sea crossings, developing a 1,500km route for goods and passengers to the south-east England ports and onwards into Europe.

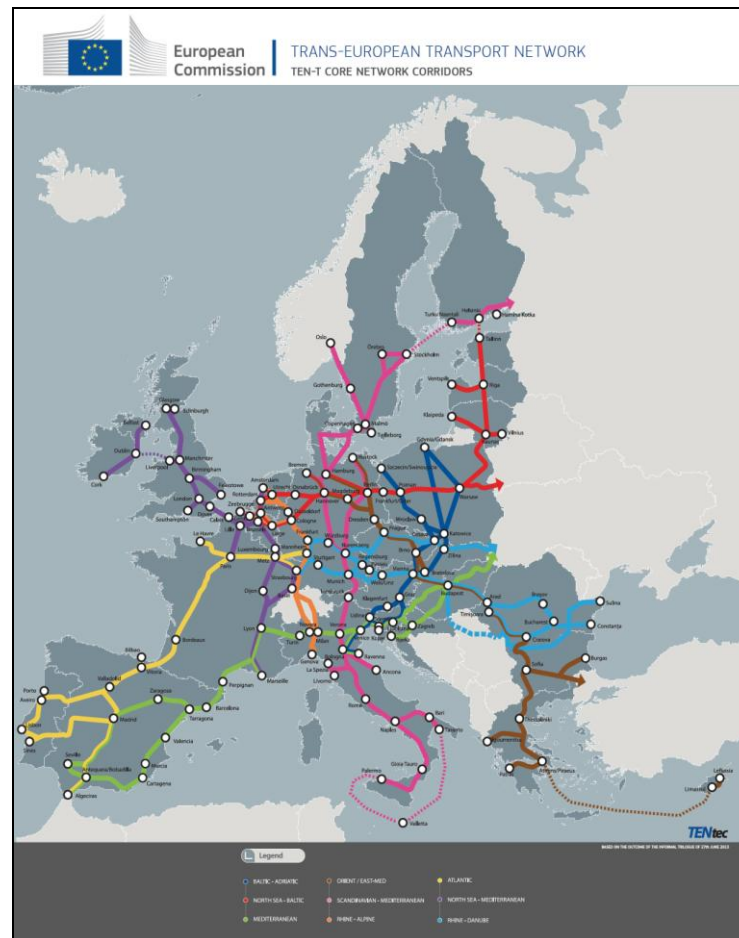


Plate 2.1 TEN-T Core Network Corridors

- 3.2 As part of the axis improvement, individual upgrading schemes are being introduced to target the most significant congestion, safety and environmental issues along the length of the road link.¹ The TEN-T core network is to be completed by 2030².
- 3.3 The national motorway system is the primary conduit for transportation of goods and services to large indigenous and foreign markets and facilitates the movement of goods, services and labour between national gateways and major employment centres. Motorways also are very important public transport corridors for public bus and coach services.
- 3.4 The scheme proposed in the Motorway Order application is submitted as continued fulfilment of the delivery of infrastructure identified in national, regional and local planning strategies and policies and in Government initiatives such as Transport 21 and Smarter Travel, with allocated funding for the planning procurement stage in the National Development Plan investment programme as amended in 2010.
- 3.5 The completion of the N8/M8 Dublin to Cork motorway in May 2010 has resulted in the provision of continuous and uninterrupted dual carriageway or motorway links between Dublin and Cork other than at the existing signalised Dunkettle Interchange

¹ TEN-T Priority Axes and Projects 2005, European Commission, Energy and Transport DG.

² EU Directive 2008/96/EC on Road Infrastructure Safety Management provides new legal requirements for the safety management of the Trans-European Road Network (TERN).

in Cork and the signalised Newlands Cross junction in Dublin. In Limerick the Shannon Tunnel has been completed. These developments on the arterial motorway network have enhanced connectivity between Dublin and the three southern gateways.

- 3.6 The pressure of traffic northeast of the merge at the N7/N9 interchange now requires an upgrade of that section of motorway extending from Greatconnell to Maudlins at Naas north. The section of motorway from Maudlins to Newhall (Naas By-pass) was opened to traffic in 1983 and no alterations to the carriageway capacity have been provided in the intervening 30 years. This section of motorway has now exceeded its predicted design life and requires improvement through capacity enhancement utilising the generous central median reserve as was envisaged in the original design.
- 3.7 With the increase in capacity and traffic movement on other parts of the motorway system, the restrictions in capacity that are evident on the subject section of motorway indicate a justification for works to provide for an improvement of capacity.
- 3.8 In the original design of this section of dual-carriageway, the grassed central reservation was reserved for future capacity enhancement purposes accommodating additional lanes. It is intended that the proposed development will be carried out substantially by use of this central reservation area along the main motorway carriageway alignment.
- 3.9 The NRA has adopted a 20-year design horizon for national roads, as a basis for traffic capacity requirements.³ The sections of national road under consideration in this proposal have reached the capacity horizon and require review.
- 3.10 The proposed Newhall Junction upgrade will facilitate cyclists and pedestrian access. Cycling and pedestrian access will also be significantly improved under the scheme.

4.0 STRATEGIC PLANNING CONTEXT

- 4.1 It is intended in this submission to refer to a number of key guidance documents and strategies that have direct support for, or bearing upon the proposed development.
- 4.2 The Planning and Development Act 2000 introduced a hierarchy of regional planning guidelines, county and city development plans and local area plans. Policies and objectives of the Government are contained in documents such as the National Sustainable Development Strategy (NSDS) and the National Spatial Strategy (NSS) 2002 – 2020.
- 4.3 A full resumé of the hierarchy of national, regional and local planning guidance and strategies and statutory and non-statutory development plans is included in Chapter 2, Planning Policy Context section of the EIS for the proposed scheme.

³ Spatial Planning and National Road – Guidelines for Planning Authorities 2012

- 4.4 Strategic planning and investment in infrastructure have a long-term perspective for change. In strategic land use planning terms a longer perspective is required regardless of any short-term trends in an economic cycle. Even though State investment may be delayed the strategy remains the same, to be delivered over a longer time frame.
- 4.5 The Government is still planning for population growth and increased urbanisation. Overall, the national population is targeted to grow by 790,300 to 2022, to inform strategic infrastructure planning.
- 4.6 Integrated land-use and transport planning is accepted in strategic policy as pivotal to facilitation of effective competitive economic development, employment and corresponding population growth. National, Regional and Local Strategic policies, which have been comprehensively discussed in the EIS, provide for major population growth at a national level. Investment in improving motorways should primarily facilitate strategic traffic, namely traffic of high economic value such as the strategic employment locations identified in development plans.
- 4.7 The CSO, in December 2013⁴, issued updated Regional Population Projections, which in summary indicated that the GDA will see its population increase by over 400,000 by 2031. This would account for two thirds of the total projected population growth in the state over the period (613,000). A modified internal migration pattern (from Dublin losing to internal migration to hinterland areas within the GDA, to gaining from commuter towns and hinterland) would result in Dublin increasing by 286,000 with an 110,000 increase in the balance of the GDA. The population in all regions will grow at a lesser pace.
- 4.8 In spite of the downturn in the national and regional economy there is no apparent relaxation of policies, or for high growth rates, or review of target dates for population, economic and employment growth. The Government is committed to encouraging more balanced regional development.⁵
- 4.9 The motorway system emanating from the M7 serves the Gateway cities of Waterford, Cork and Limerick/Shannon, the ports and airports and Hub towns. There is a national population target growth from 2006 to 2022 of 790,300 persons and there are regional population targets (for infrastructure development planning purposes) contained in the Regional planning Guidelines for the South-East, South-West and the Midwest, which regions are served by this road infrastructure.
- 4.10 Therefore, there will be a continued expansion in strategic commercial traffic between the two largest cities in the Republic. The three major cities on the island (Dublin, Cork and Belfast) will be linked by the upgraded TEN-T Route, as well as providing improved links to the expanded Gateway cities and Hub towns in the south east and mid-west served by this part of the national road system.

⁴ CSO Statistical Release 12 December 2013; regional population Projections 2016 - 2031

⁵ Environ.ie web page –aligning NDP and NSS.

5.0 MINISTERIAL GUIDELINES

- 5.1 The Ministers of Government are also empowered to issue Guidelines and Policy Directives and to give planning authorities directions regarding development plans. Policies of the Government and any Minister, such as Smarter Travel – A Sustainable Transport Future – A New Transport Policy for Ireland 2009–2020 (Department of Transport 2009), are “material considerations” to which a planning authority (or An Bord Pleanála) has “to have regard...” in assessing development proposals. The statutory planning context and higher order policy and directives are matters to be taken into account by An Bord Pleanála in reaching its decision on a proposed qualifying project.

6.0 PLANNING ACT 2010

- 6.1 The main purpose of the Planning and Development (Amendment) Act 2010 (No 30 of 2010) is to amend previous planning legislation with the principal aim of supporting economic renewal and promoting sustainable development by ensuring that the planning system supports targeted investment on infrastructure by the State and by further modernising land zoning. The Act also aims to ensure a closer alignment between the NSS, RPGs, Development Plans and LAPs.
- 6.2 A key element in the Act is the introduction of a requirement for an evidence-based “core strategy” in development plans, which will provide information as to how it is consistent with Regional Planning Guidelines and the NSS. The Kildare County Development Plan incorporates a core strategy. Fundamental to the core strategy is the advancement of Naas in the context of NSS and RPGGDA strategic objectives and particularly, the advancement of the northwest sector of Naas as an important sustainable location for industry, employment and supporting urban development. The proposed scheme is consistent with the ‘core strategy’.

7.0 NATIONAL POLICY

National Spatial Strategy

- 7.1 The NSS states that “development in the hinterland of the metropolitan area is to be concentrated in strategically placed, strong and dynamic urban centres i.e. the ‘Primary Development Centres’ identified in the Strategic Planning Guidelines. These development centres have a unique role given the scale of the Dublin City region and the need for internal balance between the city and its surrounding counties”.
- 7.2 While the NSS is currently under review, until such time as that review is complete, it remains the most comprehensive national planning strategy available. The proposed scheme supports the NSS in terms of improved connectivity between key economic centres.

Infrastructure and Capital Investment 2012-16: Medium Term Exchequer Framework

- 7.3 In November 2011, the Department of Public Expenditure and Reform presented the findings of a Government-wide review of National Development Plan 2007 - 2013 infrastructure and capital investment policy, which, attempts to ensure that Ireland's stock of infrastructure is capable of facilitating economic growth given the context of tight fiscal constraints.
- 7.4 In this regard, it highlights that sharp prioritisation of investment is paramount, with 2 of the main infrastructure priorities of the framework being: -
- Ensuring adequate maintenance of the National Road network in order to protect the value of previous investments;
 - Targeting the improvement of specific road segments where there is a clear economic justification
- 7.5 In relation to the first point above, the existing Naas Bypass section was originally designed in the 1980's. The local and national traffic flows associated with that design and the growth predictions did not anticipate the unprecedented development growth in the Greater Dublin Area and nationally in the intervening period. The proposed improvement scheme is required to protect the value of the investment associated with the other developments and improvements of the national motorway network.
- 7.6 In relation to the second point, the upgrade of the existing Naas Bypass section is very much a targeted improvement initiative.
- 7.7 With regard to investment in the Road Network, the 2011 Framework Document, at page 14, states: - *"The key challenge in current circumstances is to ensure adequate maintenance of the National Road Network in order to protect the value of previous investments and to target the improvement of specific road segments where there is a clear economic justification. The focus of the Exchequer funding to be made available to 2016 will be on pursuing these objectives."*
- 7.8 In addition, page 15 of the document states: - *"should investment prospects pick up over the medium-term, there are further road projects which can serve to enhance competitiveness and improve enterprise conditions and which will be progressed by the NRA in the event of additional resources becoming available."*
- 7.9 The proposed M7 Naas – Newbridge Bypass Upgrade Scheme will help protect the value of previous investments along the M7/N7 route network, by relieving existing motorway congestion in the vicinity of Naas and providing an improved connection from the motorway network to the existing and proposed employment areas in Naas, Newbridge and beyond.
- 7.10 Therefore, the proposed improvement of the Naas Bypass section of motorway is consistent with the National Development Plan 2006 – 2013 and the Infrastructure and Capital Investment Framework published in November 2011.

Smarter Travel, 2009

- 7.11 Smarter Travel, A Sustainable Transport Future, is described as the transport policy for Ireland for the period 2009-2020.
- 7.12 Chapter 3 of the policy document outlines the Key Goals of the initiative as follows:
- Improve quality of life and accessibility to transport for all and, in particular, for people with reduced mobility and those who may experience isolation due to lack of transport;
 - Improve economic competitiveness through maximising the efficiency of the transport system and alleviating congestion and infrastructural bottlenecks;
 - Minimise the negative impacts of transport on the local and global environment through reducing localised air pollutants and greenhouse gas emissions;
 - Reduce overall travel demand and commuting distances travelled by the private car;
 - Improve security of energy supply by reducing dependency on imported fossil fuels.
- 7.13 The second Key Goal as defined within the policy document, in relation to maximising the efficiency of the transport system and alleviating congestion and infrastructure bottlenecks aligns entirely with the ambitions of the subject improvement scheme.
- 7.14 Chapter 5 of the document highlights that: -
- Roads will continue to be the main source of transport for people and goods;
 - There is recognition that the “efficient movement of goods is vital to our competitiveness and economic welfare” (page 36);
 - There is a focus on the need to improve the efficiency of motorised means of transport with a view to “limiting the development of traffic jams with their associated negative consequences for fuel consumption and emissions” (page 51);
 - Transport by roads is vital to the efficient movement of goods and people.
- 7.15 Therefore, continued investment in roads will remain an important element of sustainable travel to 2020 while relieving congestion problems.

Department of Transport — Statement of Strategy (2011 to 20 14)

- 7.16 The Strategy focuses on the Department of Transport’s highest priority transport objectives as agreed with the other Government Departments. The high level goal outlined at page 3 of the strategy is: -

“to provide for the maintenance and upgrade of the transport network and ensure the delivery of public transport services with particular regard to economic competitiveness, social needs, sustainability and safety objectives”. In addition, the strategy indicates that transport infrastructure is important to the country’s economic recovery and states (page 4) that the Department “must seek, where possible to deliver network improvements in support of competitiveness and economic recovery”.

7.17 Some of the key focus areas will include: -

- Maintaining road and public transport infrastructure and implementing improvements where funding is available;
- Encouraging more people out of their cars by improving their experience of public transport, safe cycling and attractive walking;
- Maintaining the downward trend in road fatalities and injuries.

7.18 The proposed M7 Naas – Newbridge Bypass Upgrade Scheme will support these focus areas by improving the network and relieving congestion along the route.

Spatial Planning and National Road – Guidelines for Planning Authorities 2012

7.19 These Guidelines indicate that the primary purpose of the national road network is to provide strategic transport links between the main centres of population and employment, including key international gateways such as the main ports and airports and to provide access between all regions.

7.20 Strategic traffic, in the context of national roads, primarily comprises major inter-urban and inter-regional traffic, whether HGV, car, public transport, bus services or other public service vehicles, which contribute to socio-economic development, the transportation of goods and products, especially traffic to and from main ports and airports, both freight and passenger related.

7.21 Key principles include:-

- Land use and transportation policies are highly interdependent;
- Proper planning is central to ensuring road safety;
- Development should be plan-led;
- Development management is key to Plan Management;
- Planning Authorities and the National Roads Authority and other public transport providers must work closely together.

7.22 The Guidelines acknowledge that in certain circumstances, additional junctions or enhancements to existing junctions on national roads may become necessary to service development needs of national and strategic importance. In such circumstances, the NRA will support such capacity enhancements.

7.23 Implementation of the Guidelines by Planning Authorities, the National Transport Authority, the National Roads Authority and An Bord Pleanála will ensure that the state's considerable investment in national roads is harnessed in a manner that is sustainable in economic, social and environmental terms.

8.0 REGIONAL POLICY

Regional Planning Guidelines for the Greater Dublin Area 2010–2022 (RPGGDA)

8.1 The proposed scheme is located in the Dublin & Mid-East Region (the Greater Dublin Area) of the National Spatial Strategy (NSS), which covers the counties of Dublin,

Kildare, Meath, Wicklow and south Louth. The RPPGDA contain policies to guide sustainable and balanced growth throughout the Greater Dublin Area.

- 8.2 The sections of motorway extending from Maudlins to the M9 run through an important urban economic cluster identified in the NSS and confirmed in the RPPGDA, including the towns of Naas, Newbridge and Kilcullen, which are to develop as a linked 'Primary Development Centre' within south county Kildare. The RPPGDA state, at page 72, that the 'locational advantages of the Naas/Newbridge Core Economic Area include its location on a multi-modal corridor including the N7/M7'.
- 8.3 Key Planning and development issues in the GDA (Ch 1.6) include the economic imperative to link future locations of growth with investment in public infrastructure, particularly through land use & transport integration.
- 8.4 It is policy (Ch 3.1) to promote balanced economic development within the Region. Connectivity and investment in linkages between centres of economic activity, ports and airports is important, has benefits to outputs, costs and productivity, with radial routes and multi-modal corridors offering access to larger indigenous and foreign markets and allowing movement of goods, services and labour between Gateways and major employment centres (Ch 3.5.6).
- 8.5 Barriers to enterprise include urban sprawl, congestion and long travel times. Priority targets for investment in transport infrastructure are essential to the economic success of the Region. Local congestion in the GDA represents the biggest road transport issue for the area. Possible solutions are suggested, including maximising the use of existing road infrastructure.
- 8.6 Outside the Gateway Core, Primary Economic Growth Towns including Naas are to be promoted as anchors for regional enterprise. They are important in delivering balanced regional development and should be prioritised for economic development and investment (Ch 3.7.1).
- 8.7 The RPPGDA require a holistic approach in the design and retro-fitting of the existing road network to:-
- Cater for sustainable transport modes;
 - Provide contingencies for such provisions as green bridges/ecoducts, connections for communications infrastructure and services which may be required over the next 10-20 years;
 - Provide high quality layout, safety and design.
- 8.8 It is further stated that 'investment in public transport development is the main priority in the GDA, it is recognised that future transport demands cannot be delivered solely by the public transport rail system, and that the road network will continue to be critical to transport management and the efficient movement of buses, people, goods and other services in the GDA and beyond' (Ch. 6.3.2).

Sub – Regional Context

- 8.9 Naas, the County town, is designated as a 'Large Growth Town I', a primary growth town and it is the principal economic growth town in the Core Economic Area. This category of town will accommodate significant new investment in transport, in economic and commercial activity and in housing. Large Growth Towns act as important self-sustaining regional economic drivers for the GDA, capitalising on their international connectivity and high quality connections to Dublin City Centre, whilst also supporting and servicing a wider local economy'. Such towns should plan for growth up to 50,000 persons in scale.
- 8.10 Newbridge is designated as a 'Large Growth Town II', recognising the lower population base and function. Such towns should plan for growth to 15,000 – 30,000 persons.
- 8.11 Kilcullen is designated as a Moderate Sustainable Growth Town with a supporting role in terms of linked economic activity and labour force.
- 8.12 Sallins is a Small Town located on the suburban rail commuter system.
- 8.13 These growth centres are to be prioritised for economic development and investment to redress the imbalance of residential development and jobs and the emergence of dormitory areas and to exploit sectoral opportunities in high-tech manufacturing, ICT, food production, tourism and bloodstock, including private healthcare in Naas.
- 8.14 Large business parks are being developed within the Naas/Newbridge Core Economic Area, as locations for commercial, logistical and industrial enterprise.

Greater Dublin Area Transportation Strategy (Draft 2011 – 2030)

- 8.15 The National Transport Authority (NTA) draft GDA Transportation Strategy 2011 – 2030 represents a 20 year Strategic Transport Plan for the GDA. It outlines a number of high level strategic objectives for the GDA:
- Improve accessibility to work, education, retail, leisure and other activities;
 - Improve links between communities within the region;
 - Improve link to the rest of the island of Ireland;
 - Improve journey time reliability for business travel and the movement of goods;
 - Reduce overall journey times for business travel and the movement of goods; and
 - Improve access to GDA ports and Dublin airport.
- 8.16 The report states that "a network of strategic roads for the GDA will provide reliable journey times for longer distance travel by road, particularly for goods and freight movements. The key elements of this network will be the motorways and national primary roads outside of the M50".
- 8.17 Each of the Planning Authorities in the region must ensure that their Development Plans are consistent with the transport strategy of the Authority.
- 8.18 The Strategy aims to meet: -

- Economic objectives by reducing delays and improving journey time reliability, particularly for business travel and the movement of goods, and by improving access to and within town centres;
- Social objectives by improving safety, reducing travel related stress and reducing the adverse impacts of traffic on neighbourhoods and centres whilst enabling all sectors of society to travel to the destinations they need to reach; and
- Environmental objectives, by giving priority to those means of travel that are less damaging to our natural and built environment.

Particular measures related to roads and traffic management include: -

- Future road development in the GDA should support Strategy objectives and the Government's Smarter Travel policies and targets;
- Development of traffic management arrangements that protect the role of the strategic road network;
- The preservation of the Eastern Bypass corridor and the finalisation and protection of a Leinster Orbital Route corridor, with possible incremental implementation of this road;
- Local accident remedial measures at locations with a poor road safety record; and
- Increased coordination and monitoring of roadworks, and a roadworks permit system.

- 8.19 The proposed M7 Bypass Upgrade Scheme, including its widening to three lanes and improvements to the Newhall Interchange, is compatible with the measures outlined above.

NTA Greater Dublin Area Cycle Network Plan, April 2014.

- 8.20 The NTA, in April 2014, published the GDA Cycle Network plan as a 10-year strategy to inform NTA investment in cycling across seven local authority areas in the region. The network plan devolves to the county and local level.
- 8.21 The Naas – Monasterevin route via Newbridge (Route K 15) is identified within the rural cycle routes in Kildare. It has been demonstrated that cyclists can be accommodated within the proposed scheme. It is noted that the NTA accepts that the provision should be confirmed at the 'detailed design stage'. A commitment to this has been made.

Draft Integrated Implementation Plan for the Greater Dublin Area 2013-2018

- 8.22 The NTA in April 2014 has published a draft Integrated Implementation Plan 2013 – 2018 for the Greater Dublin Area. This plan outlines the integration of landuse and transport planning. The general objectives of the integrated implementation plan have been categorised under economic, social and environmental headings.
- 8.23 Landuse policy is a key determinant in public transport investment decisions at both strategic and local level. This position is consistent with and is reflected in national

strategic planning and transport planning objectives and guidelines, including those on sustainable urban development.

- 8.24 The implementation plan refers to the allocation to public transport in the Infrastructure and Capital investment programme in the GDA of €715 million to the end of 2016, circa €900 million to the end of 2018, to be invested in public transport infrastructure and related cycling/walking infrastructure. It also envisages associated positive impacts of the environment as a result of anticipated mode shift away from the private car.
- 8.25 The proposed M7 Naas-Newbridge Bypass Upgrade Scheme is compatible with these objectives as it has the potential to provide an improvement, particularly at peak periods, to congestion along the M7 and will improve bus public transport speed and punctuality. The improvements to the Newhall Interchange will facilitate the cycling and walking network.

9.0 COUNTY KILDARE POLICY

Kildare County Development Plan 2011 - 2017

- 9.1 The current development plan for Kildare is the Kildare County Development Plan 2011 – 2017 (CDP). It incorporates a 'Core Strategy' which sets out how the development objectives in the CDP are consistent with the objectives of the NSS and RPGs.
- 9.2 The Settlement Strategy has confirmed Naas as the only Large Growth Town I in the County's settlement hierarchy (as referenced in the RPGs). In this regard, Naas is targeted for 12.9% of the overall population growth of the county up to 2017. This requires the town to act as an important self-sustaining regional economic driver, accommodating significant new investment in transport, housing, economic and commercial activity, while capitalising on international connectivity and high quality connections to Dublin.
- 9.3 Newbridge is identified as a Large Growth Town II and is targeted for 10.1% of the overall population growth up to 2017.
- 9.4 The Transport Strategy for the county is that "the improvement, protection and development of the local, regional and national road network, including motorways will continue during the period of this Plan". The strategy also "seeks to improve the safety, capacity and efficiency of the transportation infrastructure within County Kildare in accordance with national / regional policy.
- 9.5 The CDP takes cognisance of the role of the national road network in the county stating "the national road network primarily serves long and middle distance traffic originating in or passing through the county. These routes have an important role to play in the economic development of the county."
- 9.6 The CDP outlines the policy of the Council in relation to National Roads. The key points are:

- To upgrade and improve the national road network in accordance with national transport policy, in co-operation with the National Road Authority, the Department of Transport and the NTA (6.4.2 NR2); and
- To identify the future needs of the national route network and co-operate in fulfilling these needs with the National Roads Authority (6.4.2 NR7).

9.7 The CDP contains a number of policies of relevance to the proposed bypass upgrade scheme including:

- NR2: To upgrade and improve the national road network in accordance with national transport policy, in co-operation with the National Roads Authority, the Department of Transport and the NTA.
- NR3: To identify areas at interchanges which may be required for future upgrading and improvement in the medium to long term and when identified to restrict development within these areas and preserve them free of development for those future upgrades.
- NR7: To identify the future needs of the national route network and co-operate in fulfilling these needs with the National Roads Authority.
- NR8: To improve connectivity between the local road network and the national / regional road network.
- NR10: To ensure the county's national roads system is planned for and managed in an integrated manner enabling sustainable economic development of the county and wider area while encouraging a shift towards more sustainable travel and transport in accordance with the Draft Spatial Planning and National Road Guidelines (DoEHLG 2010), as may be amended.

9.8 In terms of objectives, the CDP contains the following:

- RP1: To proceed with development of the third lane in each direction along the M7/N7 including improvement of interchanges as the need arises;
- RP2: To facilitate an additional interchange along the M7 Naas by-pass serving access to Millennium Park;
- RP3: To identify an area for the future upgrade and improvement of the M7 Newhall Interchange (Junction 10) and preserve that area free from development;
- RP12: To co-operate with adjoining authorities and other public authorities regarding new and/or improved road infrastructure.

9.9 The proposed M7 Naas to Newbridge Bypass Upgrade Scheme accords with the policies and objectives of the Kildare CDP and with the aim of the Plan to promote ease of movement within the county.

Naas Environs Plan

9.10 This section of the Kildare County Development Plan (Chapter 18) zones strategically important sites that are currently located outside the Naas Town Development Plan boundary. The land use zoning of the sites includes residential, leisure, industrial and employment based uses. These are described in detail in the EIS, Chapter 2. These lands are adjacent to the Naas Northwest Quadrant lands.

Naas Town Development Plan 2011 – 2017

- 9.11 The zoning of lands in the northwest quadrant of Naas incorporates an important objective 'Q', to facilitate Enterprise and Employment in an area located adjacent to the motorway on the south-east side of the motorway. This reflects the employment core of the Naas Northwest Quadrant lands.
- 9.12 An indicative Road Objective shows the link to the proposed Osberstown Interchange from the existing distributor road system. This reflects the Roads Programme Objective RPO 6 'to facilitate provision of an additional motorway interchange along the M7 Naas by-pass, subject to NRA agreement. The Interchange shall be appropriately designed and scaled to provide access to the Millennium Park and the Northwest Quadrant Masterplan Lands'.
- 9.13 The proposed scheme makes provision for and can accommodate this objective.

Local Area Planning

- 9.14 The Newbridge LAP 2013 - 2019 and the Sallins Local Area Plan 2009 – 2015 (under review) are subsidiary statutory plans that are consistent with and support the provisions of the higher-order statutory development plans. They incorporate more specific local objectives for movement network and roads improvements.

10.0 OBSERVERS SUBMISSIONS

- 10.1 A number of observer's submissions address matters that have planning relevance.

10.2 Fintan Flood

The submission made by Vincent Farry, Planning Consultant, on behalf of Mr Flood takes into account: -

- The hierarchy of plans and National Roads Planning Guidelines;
- The future expansion of population in the towns of Naas, Newbridge and Rathangan and in their hinterlands.

It requests that the motorway project should not exacerbate the existing congested character of the local road network. These matters have been addressed in the submissions prepared by the Roads Design Engineers.

10.3 An Taisce

It is submitted that:-

- While relieving traffic congestion, the upgrade will have the effect of further encouraging commuter travel by private transport in contravention of Smarter Travel Policy;
- No consideration was given to strengthening public transport connections to alleviate existing congestion, by using enhanced train and bus services.

In response it submitted that Chapter 5 of the EIS dealt with Demand Management considerations as an alternative option but this option was not preferred in the context of achieving the proposed scheme objectives.

The submission suggests that *the applicant should have the overall objective of significantly reducing transport demand by creating compact walkable settlement patterns and include detailed policies on walking and cycling and reducing car use for existing and continued transport demands*. In response it is submitted that the statutory Kildare County Development Plan contains these policies, which are in line with higher-order regional and national spatial objectives. The Development Plan also contains policies and objectives in relation to roads improvements.

It is suggested that this *proposal does not align with the regional transport strategies of the National Transport Authority (NTA)*. In response it is noted that NTA has made an observation, which welcomes the proposal.

The submission suggests that *no evaluation of the impact of dispersed settlement on the current road has been carried out in the EIS*. In response, it is submitted that the function of the EIS is to describe the likely significant effects of the proposed development on the environment by reference to a number of criteria. The future of the spatial settlement and land use patterns of the Mid-East and Midland Regions will be determined by the Regional Planning Authorities and the local authorities in the preparation of statutory Development Plans.

It is suggested that *this proposal will facilitate an ease of use in motor vehicles feeding the Dublin Metropolitan Area from their respective hinterlands and from a National catchment and spatially, further exacerbating sprawl, fossil fuel consumption and emissions*. In response it is submitted that the proposed scheme is designed to reduce congestion and hazard in the interests of public safety. Reducing congestion saves on fuel consumption and emissions.

In relation to *strengthening public transport connections*, it is noted that in April 2014, the NTA has published the *Integrated Implementation Plan 2013 – 2018*, which covers investments in improvements to public transportation infrastructure in the short-term. Also, the motorway is a major bus public transport corridor and the improvements proposed will also improve public transport connections.

10.4 National Transport Authority (NTA)

- This submission indicates *the Authority has no objection in principle to the proposals set out in the M7 Naas to Newbridge bypass upgrade scheme*. The observation addresses issues relating to cycling, bus and pedestrian facilities. As indicated by my colleagues, these issues have been addressed to the satisfaction of the NTA.

10.5 Old Abbey Manor Residents Association

This submission indicates that any increase to the traffic on the M7 will further degrade the quality of life by reason of noise levels experienced by residents. The submission refers to what is described as *an unremedied breach of planning*. The observers have been in contact with the relevant sections in Kildare County Council and a satisfactory resolution has been agreed.

10.6 **Kerry Group Services International Ltd**

This submission indicates that the time frame for the construction of the M7 upgrade and the Osberstown Interchange and Sallins bypass scheme is critical to the Kerry Group to serve a new facility that will create in excess of 800 permanent jobs.

It is proposed that the M7 Naas to Newbridge By-Pass Upgrade Scheme will be carried out notwithstanding the existence of other contemporary proposals for a new interchange at Osberstown north of Naas and the Sallins western bypass. Therefore, it is appropriate that the proposed M7 Naas to Newbridge By-Pass Upgrade Scheme be separately described and assessed.

10.7 **Edward Kinirons**

Amongst other matters addressed on behalf of Mr Kinirons, the observation makes reference to a suggested Variation of the current County Development Plan in respect of lands at Ladytown, Naas. In response it is submitted that a variation of the statutory plan is a reserved function and cannot be addressed in the context of these procedures.

10.8 **Coyle Families**

Similarly, in the submissions made on their behalf by Maguire and Associates, Chartered Town Planners, it is submitted, inter alia, that the land holding should have been zoned Industrial/Commercial by Kildare County Council and that this should be considered during the next review of the Kildare County Development Plan in 2017.

In response, it is submitted that these are reserved functions and cannot be addressed in the context of these procedures.

11.0 **CONCLUSION**

11.1 Policy at all levels recognises the strategic importance of the motorway system and the need for its protection and improvement.

11.2 Policy support for the M7 Naas to Newbridge By-Pass Upgrade Scheme filters down from National level through to statutory planning at county level and to local area planning.

11.3 The scheme proposed in the Motorway Order application is submitted as continued fulfilment of the delivery of infrastructure improvements identified in national, regional and local planning strategies and policies and in Government initiatives such as Transport 21 and Smarter Travel.

11.4 The proposed M7 Naas to Newbridge By-Pass Upgrade Scheme will provide: -

- Relief to existing motorway congestion along the route;
- A more balanced distribution of traffic movements between the regional and national road network on the M7; and
- Improved connection from the motorway network to the existing and proposed employment areas in Naas, Newbridge and beyond;
- Improved speed and punctuality for regional bus public transport.

- 11.5 The M7 Osberstown Interchange and the R407 Sallins Bypass Scheme together with the Sallins Link Road are separate, additional proposals that have potential to have cumulative impacts upon the receiving environment. The cumulative impacts have been assessed in the EIS.
- 11.6 These separate proposals will provide the opportunity to improve connectivity for the areas in the north-west quadrant of Naas designated for economic development to link to Sallins train station and to the motorway network.
- 11.7 Relieving congestion that negatively affects performance and economic utility of the subject section of motorway is a standalone project that is required and justified in the context of national spatial planning, regional planning guidelines, Government guidance and infrastructure investment programmes.
- 11.8 In strategic planning terms, the cumulative effect of the schemes has been anticipated and the proposed developments are plan-led. The impacts of the proposed development, singularly or cumulatively will be long-term and positive in the context of the proper planning and sustainable development of the area in the interests of the common good.
- 11.9 The relevant planning matters addressed in observer's submissions have been taken into account in the preparation of this brief of evidence.
- 11.10 The evaluation, mitigation and design responses contained in the EIS are appropriate for the context conditions encountered in the vicinity, including cumulative effects.
- 11.11 Having regard to the foregoing, the construction of the proposed M7 Naas to Newbridge By-Pass Upgrade Scheme will be in accordance with Government policy, with National strategies, with the policies of the Regional Planning Guidelines for the Greater Dublin Area, the Kildare County Development Plan, and the Naas Town Development Plan and will be consistent with the proper planning and sustainable development of the area.



M7 Naas to Newbridge By-Pass Upgrade Scheme

Motorway Order and Environmental Impact Statement

Oral Hearing

Introduction to EIS

Brief of Evidence

By
Andrew Warwick
Roughan & O'Donovan Consulting Engineers

May 2014

1.0 INTRODUCTION

Name, Qualifications and Experience

- 1.1 My name is Andrew Warwick; I undertook the role of EIA Coordinator for the M7 Naas to Newbridge By-pass Upgrade Scheme.
- 1.2 I hold an Honours degree in Environmental Biology, a Masters degree in Applied Environmental Sciences and a Masters degree in Environmental Planning. I am a full Member of the Chartered Institute of Ecology and Environmental Management.
- 1.3 I am a Senior Environmental Scientist with Roughan & O'Donovan Consulting Engineers and have been undertaking the role of EIA Coordinator for the past 6 years. My previous experience includes five years working for the Northern Ireland Environment Agency.

Introduction

- 1.4 The Brief is entitled Introduction to the EIS and it provides a brief overview of the scheme and the principal environmental impacts and introduces the team whom were involved with the compilation of the EIS. Subsequently the brief deals with the following chapters of the EIS:
- Chapter 10: Soils and Geology;
 - Chapter 12: Human Beings;
 - Chapter 17: Resource and Waste Management; and
 - Chapters 18 and 19: Interactions and Cumulative Impacts.

2.0 SCHEME OVERVIEW

- 2.1 As described in detail by my colleague (Joe Kelly), the proposed scheme involves the widening of approximately 13km of the M7 from two lanes to three lanes between Junction 9 Maudlins and Junction 11 the M7 / M9 split; an upgraded Newhall Interchange connecting directly to the R445; and four attenuation ponds to address the additional surface water run-off and manage existing flooding.
- 2.2 The widened motorway will follow the alignment of the existing road both horizontally and vertically; and throughout the full length of the scheme all of the widening will be constructed within the existing wide grass median / central reserve. To visualise the works required it is worth referencing Plates 4.8, 4.9 and 4.10 included within Chapter 4 of the EIS (Page 4/7). Plate 4.8 is now presented on the overhead projector. This is the construction phase of the recently completed M1 Widening, which also widened into the existing wide grass median.



EIS Plate 4.8: M1 Widening

3.0 PRINCIPAL ENVIRONMENTAL IMPACTS

- 3.1 The primary direct physical impact of the M7 Naas to Newbridge By-pass Upgrade Scheme is the loss of the existing grass motorway median. Outside of the motorway boundary direct impacts occur as a result of the construction of the four proposed attenuation ponds and the construction of the new roundabouts and motorway on and off slips required for the new interchange.
- 3.2 From an environmental assessment perspective these direct physical impacts are not significant. This is confirmed by the assessments which address the natural and historic environment, such as ecology, hydrogeology, soils and geology and archaeology, which have each concluded that there is no significant impact on these aspects of the environment.
- 3.3 However from the outset it was clear and acknowledged that the more significant environmental effects which could arise would be those impacts which could affect people living in close proximity to the motorway, in particular noise, air quality and visual impact arising during both the construction and operational phases. The primary issue, which has been confirmed by the submissions, relates to the existing noise levels experienced due to the presence and proximity of the M7 motorway.
- 3.4 Each of these aspects of the environment has been assessed and examined in detail by the specialist who undertook the assessment. The specialists will respond to each of the submissions received by An Bord Pleanála and will endeavour to answer any further concerns raised with regard their area of expertise.

4.0 THE ENVIRONMENTAL IMPACT STATEMENT

- 4.1 An Environmental Impact Statement presents the likely significant effects on the environment of a proposed development.
- 4.2 Kildare County Council commissioned ROD – AECOM Alliance to compile the EIS for the M7 Naas to Newbridge Bypass Upgrade Scheme in December 2011. The EIS, as presented, was prepared by ROD – AECOM Alliance and a team of specialists in conjunction with Kildare National Roads Office.
- 4.3 The team of environmental specialists, who worked on the scheme, and from whom we shall hear shortly, are as follows:
- Noise and Vibration – Jennifer Harmon of AWN Consulting; and
 - Air Quality and Climate – Dr Ed Porter of AWN Consulting;
 - Landscape and Visual Assessment – Richard Butler of Cunnane Stratton Reynolds;
 - Agronomy and Material Assets – John Bligh of John Bligh and Associates;
 - Ecology – Paul Murphy of EirEco Environmental Consultants;
 - Hydrogeology – Dr Conor Quinlan of Minerex Environmental Ltd;
 - Hydrology – Eoin Cullinane, Senior Environmental Engineer with Roughan & O'Donovan;
 - Archaeology, Architecture and Cultural Heritage – Faith Bailey of Irish Archaeological Consultancy Ltd;
- 4.4 Before asking Jennifer from AWN Consulting to present a review of the Noise Impact Assessment I would like to deal with the following chapters of the EIS – Soils and Geology, Human Beings, Resource and Waste Management and Interactions and Cumulative Impacts.

Soils and Geology

- 4.5 Chapter 10 of the EIS reviews the potential impact on the underlying soils and geology. There are no important or significant geological features, such as karst features or geological heritage areas in the study area. The motorway widening does not require significant cut or fill as it follows the existing motorway alignment. As such it is concluded that the impact on the geological environment is not significant.
- 4.6 With respect to soils and subsoils the only significant earthworks required are for the construction of the new interchange. This impact on the local soil resource is not significant. The only recommended mitigation measure is therefore the effective re-use of material on site.

Human Beings

- 4.7 Chapter 12 of the EIS, which is entitled 'Human Beings', examines journey characteristics, community severance, journey amenity and the local economy. The issue of real '*human impacts*' or the impact on individual residential properties, relates more to noise impacts, air quality impacts and visual impacts. These impacts

are not addressed within Chapter 12 of the EIS but will each be addressed in detail by the respective specialists.

- 4.8 Chapter 12 of the EIS concludes that the completed and operational scheme will result in a reduction in congestion and improved journey times on both the M7 and the local road network; and as a result there will be an improvement in journey amenity.
- 4.9 The closure of the existing Newhall Interchange and associated on and off slips will have some effect on the journey characteristics of those users of the existing Interchange. The most significant of these will be on the east bound journeys (toward Dublin) from the Rathangan Road. The loss of the current east bound on slip will result in journeys from here to Dublin being required to cross the motorway and travel west for approximately 700m to access the new interchange. With respect to journey characteristics and journey times this impact is considered to be slight and it is believed that journey patterns will be maintained.
- 4.10 During construction, the phasing of works and the maintenance of two running lanes on the motorway ensures that any increase in congestion experienced during the AM and PM peaks will not be significant; and similarly by maintaining the operational capability of the existing interchange and having in place an effective traffic management plan on the R445 the construction of the new roundabouts on the R445 will not cause significant congestion or delay.
- 4.11 The proposed scheme does not create or exacerbate any instance of community severance and will have positive economic benefits through congestion reduction.

Resource and Waste Management

- 4.12 As already stated, the proposed M7 Naas to Newbridge Bypass Upgrade Scheme is primarily a widening of the motorway within the existing wide median. The required excavation and disposal of material is therefore not significant.
- 4.13 The principal types of material to be disposed of are aggregate, blacktop, concrete and soil. It is not expected that any of this material will be contaminated. It is considered that the majority of waste soils, rock and concrete will be used within the project area where possible for infilling or landscaping.
- 4.14 It has therefore been concluded that the potential effects on the environment of the appropriate disposal of waste material arising from the site is not significant.

Interactions and Potential Cumulative Impacts

- 4.15 In addition to addressing the individual aspects of the environment likely to be significantly impacted by the proposed development, the Environmental Impact Statement must also address the interrelationships between them.
- 4.16 Interrelationships relate to the interactions between impacts identified under one topic with impacts identified under another topic, a simple example is the effect a proposed noise barrier may have on the visual impact assessment.

- 4.17 To ensure that the interactions were properly considered and assessed each of the individual draft environmental assessments were circulated and reviewed by each of the specialists and by the design team; and subsequently each of the specialists discussed the potential impacts and proposed mitigation measures arising from their individual assessments directly and at an EIS workshop. In this way all of the potential interactions have been addressed within each relevant EIS chapter.
- 4.18 The most significant interaction occurred between the engineering requirement to maintain safe sight lines for drivers exiting the motorway on the new J10 southbound off slip, whilst at the same time providing noise mitigation, minimising landtake and providing space to facilitate landscape planting.



- 4.19 As is demonstrated on the overhead slide, maintenance of the safe sight lines requires a wide verge which dictates the position of the noise barrier at this location. The widened verge also provides a narrow 4m strip to the rear of the noise barrier which can be planted to mitigate visual impact.
- 4.20 With respect to potential cumulative impacts throughout the compilation of the EIS we were cognisant of the proposed M7 Osberstown Interchange / R407 Sallins Bypass scheme and the potential impacts which could arise in association with this related scheme.
- 4.21 Regular project co-ordination meetings between the Design Teams on the M7 Naas to Newbridge Bypass Upgrade Scheme and the M7 Osberstown Interchange and R407 Sallins Bypass Scheme were conducted throughout the design and EIS phases (2012 and 2013) to ensure that each team was aware of the design work and environmental assessments being completed and the overlap and interactions between the two.

- 4.22 In addition, to further ensure that potential cumulative impacts were thoroughly addressed, an environmental workshop was held to specifically discuss and review cumulative impacts of the respective schemes and to ensure accurate coverage and assessment of cumulative impacts. The workshop was attended by all of the environmental specialists from both schemes. Each environmental specialist subsequently undertook the cumulative impact assessment of their relevant speciality and input to the cumulative impact assessment which forms Chapter 18 of the EIS.
- 4.23 The most significant cumulative effect in association with the M7 Osberstown Interchange / R407 Sallins Bypass Scheme is the traffic relief that the Osberstown Interchange provides to the J10 Newhall and J11 Maudlins interchanges. As Philip Shiels has explained, while beneficial, this reduction does not remove the need for the proposed reconfiguration of J10.
- 4.24 Chapter 18 concludes that, with the application of the construction and operational mitigation measures identified in the EIS, there will be no negative cumulative impacts associated with the M7 Osberstown / R407 Sallins Bypass scheme.
- 4.25 I would now like to introduce Jennifer Harmon of AWN Consulting who shall review the noise impact assessment completed for the proposed scheme, discuss the proposed mitigation measures and respond to the submissions raised with regards noise impacts.

M7 Naas to Newbridge By-Pass Upgrade Scheme

Motorway Order and Environmental Impact Statement

Oral Hearing

Noise & Vibration

Brief of Evidence

By
Jennifer Harmon
AWN Consulting

May 2014

1.0 INTRODUCTION

- 1.1 My name is Jennifer Harmon. I am a Senior Acoustic Consultant with AWN Consulting which is a multi-disciplinary environmental and acoustic consultancy company. I hold a degree in Environmental Science from the University of Ulster and a Diploma in Acoustics and Noise Control from the Institute of Acoustics, of which I am a full member.
- 1.2 I have worked in the field of acoustic consultancy since 2001 and have a range of experience in the areas of noise and vibration impact assessments for various transport, commercial and industrial developments, in addition to noise and vibration control in relation to both construction sites and operational developments. I have conducted noise impact assessments for over 20 road and rail projects throughout Ireland.
- 1.3 Chapter 15 in Volume 2 of the Environmental Impact Statement (EIS) contains details of the noise and vibration study performed which includes details of the baseline study, noise model development, predicted noise levels and the recommended noise and vibration control measures.

EXECUTIVE SUMMARY

- *A noise and vibration impact assessment has been conducted along the length of the proposed M7 Naas to Newbridge Bypass Upgrade Scheme to determine the potential noise impacts associated with the development.*
- *There are no direct applicable guidelines for noise relating to upgrade works of an existing road scheme in Ireland. The NRA "Guidelines for the treatment of noise and vibration in national road schemes" (2004) document provides a design goal for new national roads and hence is not directly applicable for this scheme. Notwithstanding this point, applying the criteria for noise mitigation set out within the NRA noise guidelines for this scheme would only require that the pre-existing noise levels are not increased by more than 1dB(A). There is no requirement within these guidelines to reduce existing noise levels below those currently experienced.*
- *On consideration of the range of existing noise levels along the length of the M7 Naas to Newbridge motorway, however, the noise impact assessment has determined that additional consideration should be given to mitigation measures to reduce noise levels at existing properties as part of the widening works and new interchange construction.*
- *This approach is in agreement with the Kildare Local Authorities Noise Action Plan (NAP) 2013 to 2018 Document. The NAP specifies noise threshold levels for determining areas where noise management and or mitigation should be prioritised and have, therefore, formed the basis for noise mitigation as part of this road upgrade works.*
- *Due to the minor change in traffic flows between the Do Nothing and Do Something scenarios, the associated change in traffic noise levels in the absence of any noise mitigation measures at the noise sensitive properties along the scheme is minor to neutral for both current and future years.*

- *With the inclusion of noise mitigation measures incorporating a low noise road surface along the length of the resurfaced road in addition to the range of noise barriers included as part of the upgrade works, the residual impact to noise as a result of the proposed scheme is positive.*
- *During the construction phase, the assessment has indicated that construction activities can operate within the adopted noise limits for the relevant periods at the nearest properties to the works. Given the linear nature of the works, noise emissions related to construction works will be of short term impact at any one area as the works progress along the length of the scheme. The application of the construction noise limits, restrictions to working hours, along with implementation of appropriate noise control measures, will ensure that noise impact is kept to within acceptable standards.*

2.0 IMPACT ASSESSMENT METHODOLOGY

- 2.1 The methodology adopted for the noise and vibration impact assessment of the proposed scheme are set out in Sections 15.2 and 15.4 of Volume 2 of the EIS.
- 2.2 The criteria used for the control of noise and vibration during construction works are those set out in the NRA's guidance document for noise and vibration in national road schemes and are outlined in Tables 15.1 and 15.13 of Volume 2 of the EIS. These criteria are directly applicable in this instance.
- 2.3 For the construction phase, a maximum limit of 70dB $L_{Aeq, 1hr}$ has been applied for works to be undertaken during normal working hours i.e. Monday to Friday between 07:00 to 19:00hrs. Lower limits are set within the EIS for works which are to be undertaken during evening periods and Sundays and Bank Holidays, where required. During these periods, construction noise limits are lowered to 60 and 65dB $L_{Aeq, 1hr}$.
- 2.4 The NRA guidelines do not specify noise limits for construction works during the night-time periods. The scheme under consideration will, however, require periods where night-time works are required to permit traffic management lanes to be developed. Review of best practice standards have been undertaken to identify acceptable night-time noise criteria to be applied for this element of the works. The most appropriate criteria will be set with reference to British Standard BS 5228 *Code of Practice for the Control of Noise and Vibration on Construction and Open Sites* (2009), Part 1: Noise.
- 2.5 In line with the Kildare Local Authorities NAP document, the threshold values for the consideration for noise mitigation from road traffic are 57dB L_{night} and 70dB L_{den} . This has been assessed for both the year of opening 2015 and the design year of 2030.

3.0 EXISTING ENVIRONMENT

- 3.1 Full details of the baseline noise survey are contained within Section 15.3 of Volume2 of the EIS. The survey locations are illustrated in Figures 15.1 to 15.9 in Volume 3 of the EIS.

- 3.2 The results of the survey have indicated that baseline noise levels at all locations assessed are dominated by traffic flows along the M7 Motorway. At properties located towards Naas and Johnstown, local road traffic along the Monread Road in addition to urban noise sources from retail and commercial premises was also noted to be a source of noise.
- 3.3 The range of noise levels measured at the survey locations were between 56 to 74dB L_{den} . Highest noise levels were recorded at locations in closest proximity to the M7 with a direct line of sight onto the motorway. The lower range of noise levels were recorded at locations set back further from the mainline.

4.0 IMPACT ASSESSMENT

Construction Phase

- 4.1 The construction phase will primarily involve ground breaking, drainage works, construction of attenuation ponds and resurfacing works. In the vicinity of Newhall, construction of the new interchange will be undertaken.
- 4.2 Indicative noise prediction calculations were undertaken for a range of activities associated with typical activities associated with the proposed works. The assessment has indicated that the works can nominally be undertaken within the construction noise and vibration limits for the project at the closest properties to the works during normal working hours.
- 4.3 In order to permit the M7 to remain open to traffic during the upgrade works, weekend, evening and night-time works will be required to facilitate certain elements of works to be undertaken, predominately setting out of traffic management measures.
- 4.4 Reference to BS 5228 (2009) Part 1 indicates that appropriate night-time construction noise criteria are in the range of 45 to 55dB L_{Aeq} depending on the pre-existing noise environment in the surrounding area. Prior to the commencement of any night-time works, the contractor will be required to determine the pre-existing night-time noise levels in order to set appropriate night-time criteria for specific areas. The EIS notes that works will be scheduled, to ensure that activities with the potential for high noise levels e.g. ground breaking and other percussive works will not take place during periods with higher sensitivities to noise. i.e. night-time periods.
- 4.5 In terms of construction compounds, these will be subject to the same construction noise criteria as those associated with the upgrade works on the mainline. Any activities occurring within these areas will therefore have to comply with the noise and vibration limits set out in the EIS.

Operational Phase

- 4.6 Traffic noise levels have been predicted at a total of 59 receiver locations, these being representative of the closest residential noise sensitive locations along length of the scheme. At all locations the relevant L_{den} and L_{night} values were calculated taking into account the relevant factors contributing to road traffic noise. All receiver locations are detailed in Figures 15.1 to 15.9 in Volume 3 of the EIS.

- 4.7 The results of the assessment concluded that traffic noise levels calculated during the 'Do Nothing' and 'Do Something' scenarios were nominally the same. This is due to the minor change in traffic flows between the two scenarios and the re-configuration of traffic along the three lanes in both directions. The specific noise impact from the upgrade works were for the majority found to be of neutral noise impact.
- 4.8 Notwithstanding the neutral impact of the proposed development, the EIS has acknowledged that existing and predicted future noise levels along the length of the scheme are considered to be high and that the upgrade works present an opportunity to address traffic noise levels by means of incorporating noise mitigation measures into the design as part of this proposal. In this instance, each of the assessment locations were compared against the threshold noise levels set out in the Kildare Local Authorities NAP for both the L_{den} and L_{night} parameters for both the opening year of 2015 and design year 2030. The EIS chapter identified those locations which were predicted to exceed these threshold values during both the Do Nothing and Do Something scenarios.
- 4.9 For the majority of assessment locations, the L_{den} threshold value of 70dB was not exceeded along the length of the route. Approximately one third of the assessed properties were, however, predicted to be above the L_{night} threshold value of 57dB and hence noise mitigation were recommended in order to reduce traffic noise levels, as far as practicable at these locations.

5.0 MITIGATION MEASURES

Construction Phase

- 5.1 During the construction phase of the project the Contractor will be required to construct the scheme within the noise and vibration limits that are set out in the EIS. The noise mitigation measures specified in the EIS will be incorporated into the schedule of environmental commitments. Control measures for noise and vibration control set out in BS 5228: Part 1 and 2 (2009) and the European Communities (*Noise Emission by Equipment for Use Outdoors*) Regulations, 2001 will be complied with.
- 5.2 During the construction phase, the Contractor will be required to prepare an Environmental Operating Plan (EOP) which will include the various mitigation measures to be undertaken to control noise and vibration to within the limits set out in the EIS. The measures outlined in the EIS including selection of quiet plant, control of noise sources, screening, liaison with the public, and monitoring will all form part of this plan which will be developed for specific areas of works. As the project progresses, the requirements for specific mitigation measures will be evaluated by the contractor in order to ensure compliance with the specified limits.
- 5.3 Construction site compounds will make use of site offices and other permanent structures to provide screening along their boundaries closest to noise sensitive properties.

Operational Phase

- 5.4 The scheme will incorporate noise mitigation in the form of a low noise road surface as part of its standard construction. This will be applied along the length of the widened M7 road in addition to the Newhall Interchange. The noise reduction from this surface will be 2dB(A) compared to standard hot rolled surface.
- 5.5 Additional mitigation measures in the form of road side barriers have also been specified along the length of scheme at noise sensitive locations where the NAP threshold values are predicted to be exceeded.
- 5.6 The location, length and height of each barrier has been designed specifically for each location in order to reduce traffic noise levels below the threshold noise levels set out in the NAP. Noise barriers have been specified at locations in the vicinity of Great Connell, along the Grand Canal, Newhall, Ploopluck and Monread North. The specific barrier details are set out in Table 15.8 of Volume 2 of the EIS and are illustrated in Figures 15.1 to 15.9 of Volume 3 of the EIS.

6.0 RESIDUAL IMPACTS

Construction Phase

- 6.1 During the construction phase, the assessment has concluded that construction activities can operate within the adopted noise limits for the relevant periods at the nearest properties to the works. Given the linear nature of the works, noise emissions related to construction works will be of short term impact at any one area as the works progress along the length of the scheme. The application of the proposed noise limits and proposed construction working hours, along with implementation of appropriate noise control measures, will ensure that noise impact is kept to within acceptable standards.

Operational Phase

- 6.2 Once the upgrade works are complete, a residual positive impact will be experienced at noise sensitive properties along the length of the proposed works taking account of the new road side barriers and low noise road surface. The residual noise levels are set out in Table 15.9 of Volume 2 of the EIS.
- 6.3 The assessment set out in the EIS is based on the medium growth traffic figures for future years. The effectiveness of the noise mitigation has also been sensitivity tested for the high growth scenario. The assessment has confirmed that residual noise levels associated with the high growth scenario are below the assessment criteria used in the EIS and hence the mitigation measures also provide a suitable level of noise protection against worst case scenarios.
- 6.4 A separate proposal to construct a new interchange along the M7 at Osberstown has been considered as part of a separate EIS study for the proposed Sallins Bypass and Osberstown Interchange. In order to ensure a full cumulative impact assessment has been undertaken, traffic flows associated with the operation of both full schemes have been assessed along the full length of the M7 upgrade scheme. The results of the assessment taking account of the mitigation measures set out in both schemes

(i.e. a low noise road surfaces and road side barriers) confirms that the mitigation measures assessed within the body of this report are appropriate for this scheme in isolation and for the combined operation of both.

- 6.5 In the event that both projects are constructed simultaneously, the same construction noise and vibration limits set out in the EIS and the schedule of environmental commitments will be complied with.

7.0 RESPONSE TO SUBMISSIONS

Catherine Morrin, Ladytown, Newbridge, Co. Kildare

- 7.1 Mrs Morrin has raised a concern relating to the noise impact of the new motorway junction at Newhall and notes the imposition of a source of noise of this level will severely impact on the value of the owner of the retained land and residence.
- 7.2 In response, noise levels associated with the M7 Motorway and realigned Newhall interchange at Mrs Morrin's property has been assessed as part of the EIS (Reference R24 - Figure 15.4, Volume 3 and Section 15.4 of Volume 2 of the EIS).
- 7.3 The results of the assessment have concluded that a positive noise impact will be experienced at this location once the upgrade scheme is completed. This is due to the fact that traffic flows on the M7 mainline will remain nominally unchanged between the Do Nothing and Do Something scenarios, the road surface of the widened M7 and Newhall interchange will incorporate a low noise road surface and the position of the new slip roads of the interchange will provide screening to the motorway from the property. The combined effect of these scenarios has led to a reduction in traffic noise levels at the property when compared against the Do Nothing scenario. In conclusion, the operation of the proposed scheme will reduce the noise levels at the property under consideration.

7.4 Mary Coyle, Harry and Maura Coyle, Brendan and Gertie Coyle, Newhall, Naas

- 7.4.1 Three individual submissions have been made from the three landowners noted above. All three submissions make reference to the noise impact of the proposal with respect to the construction phase and the operational phase.
- 7.4.2 Maguire and Associates have submitted individual submissions for each of the landowners noted above and a combined submission has been submitted by Searson Associates specifically relating to the noise impact at the three properties.

7.5 Operational Phase

- 7.5.1 The Searson Associates report presents a range of noise levels measured at the Coyle's residences which were recorded to the rear of the properties facing towards the M7 Motorway, to the front of the houses facing the R445 Road and internally within bedrooms with windows both open and closed. The measurements were undertaken over short attended periods, typically from 15 minutes to 1 hour in duration at each location. One unattended noise monitoring survey was undertaken over a 24 hour period to the front of Brendan and Gertie Coyle's property facing the

R445 road. The range of noise level varies depending on the monitoring location chosen.

7.5.2 The following comments are made with respect to the noise survey measurements undertaken by Searson Associates when compared to the predicted noise levels set out in the noise chapter:

- The short-term measurements represent a 'snap shot' of the existing noise environment over a selected short sample period. The noise predictions set out in the EIS are based on an annual average noise level, taking account of annual average traffic flows over the course of a year.
- The surveys were noted to have been undertaken during periods of unsettled weather conditions, noting wind gusts and occasional rain and sleet and snow showers.
- In accordance with guidance included in the *Calculation of Road Traffic Noise* (CRTN), noise surveys are to be undertaken during dry road conditions. This is also in accordance with International Standards ISO 1996: Part 2 (2007) which also notes that for road noise surveys *the road surface should be dry, shall not be covered in snow or ice and should neither be frozen nor soaked with excessive amounts of water*. In addition to the above, the presence of a large amount of surrounding foliage at the surveyed properties as noted in the Searson report during periods of wind gusts will potentially have contributed to higher noise emissions.
- Paragraph 20 of the Searson Associates report notes that one of the measurements recorded "unusually high" L_{AFmax} values (i.e. 98dB(A)), for which the following is noted: "*an occasional flurry of snow had occurred and it is probable that the relatively high level in respect of the L_{AFmax} for the first and second interval (with overload) were occasioned by these contracting the microphones protective cover. On this basis these level of about 75dB(A) in respect of the third and fourth periods are representative (periods devoid of such falls)*". This statement calls into question the results of the surveys being undertaken during periods of unsuitable weather conditions which are likely to have had an effect on the overall noise levels. If the comments included by Mr Searson stating that the L_{AFmax} noise levels are likely to have been influenced by '*contracting the microphones protective cover*' due to unsuitably cold conditions, this will have a similar effect on all the recorded noise parameters, including the L_{Aeq} . In addition to the above, it has not been noted if the preceding or subsequent readings were also affected.
- All of the above considerations including wet roads, wind generated noise and cold temperatures which were noted to "contract the microphone cover" could potentially have compounded to produce noise levels that might be markedly different from those under standard CRTN measurement periods.
- Notwithstanding the above, it is acknowledged within the EIS that existing levels of road traffic noise are high at the Coyle's residences and other properties in close proximity to the M7 as a result of current road traffic volumes. The EIS has therefore included noise mitigation measures to reduce noise levels at the Coyle's properties. The proposals set out in the EIS (Section 15.5, Vol. 3) include the use of a low noise road surface along the full extent of the widened scheme and Newhall interchange in addition to the

installation of a 2m high acoustic barrier along the full length of the M7 boundary with the Coyle's properties extending along the edge of the Newhall interchange slip road.

7.5.3 In terms of noise mitigation at the properties under consideration, Searson Associates has requested the following:

- Noise levels external to the properties are reduced to 50dB LAeq or below;
- The noise barrier along the M7 boundary is increased to 3m in height;
- A noise barrier is installed along the front of the properties facing the R445, and;
- Double glazing and acoustic vents are installed within the properties.

7.5.4 In response to these requests, the following are noted:

- Consideration has been given to the submission provided by Searson Associates with respect to noise from the R445 Road fronting the Coyle's residences and in response to this submission, it is proposed to install a 2.5m high noise barrier along R445 fronting the local access road for these properties (refer drawing SOC Figure 2 which is attached to my Brief).
- The design goal of 50dB LAeq proposed by Searson Associates within the garden areas of these properties is considered a highly unrealistic target noise level for properties in close proximity to an existing busy motorway and would be difficult to achieve even in more rural settings set back from a major road. In addition to the above, this level of noise is significantly below that set out in the NRA guidelines for road traffic noise for *new road schemes* and is also significantly below the threshold noise levels used in the EIS, as adopted from the Kildare Local Authorities NAP, on which all noise sensitive locations along the extent of the scheme have been assessed against. It should be noted that even with the inclusion of extensive additional noise mitigation to the boundary of the Coyle's properties, this level of noise would not readily be achieved.
- In terms of increasing the proposed barrier along the M7 boundary to a height of 3m, this has been calculated to provide a minimal benefit, with a net reduction in noise levels of 1dB(A) compared to that provided by the 2m high barrier proposed. A difference of 1dB(A) is undetectable to the human ear. An increased height of barrier would therefore provide a negligible benefit in terms of reducing noise levels at the properties under consideration.
- In order to achieve the maximum benefit provided by an acoustic barrier, this should be positioned as close as possible to either the source or receiver under consideration. In this instance, the location of proposed barrier along the boundary with the Coyle's residences is positioned along the edge of the M7 carriageway, and is thus positioned adequately close to the noise source in order to achieve maximum benefit. In this instance, noise levels calculated within the EIS take account of the shadow effects of a barrier and the residual noise levels at Coyle's residential dwellings as the set out in the EIS reflect this.
- The mitigated noise levels at the Coyle's residences are predicted to be below the noise threshold levels set out within the Kildare Local Authorities Noise

Action Plan on which the assessment for noise across the full scheme have been assessed against. The implementation of further noise mitigation measures, particularly those incorporating physical changes to individual properties in the form of glazing or wall vents are beyond the scope of this assessment and are not considered necessary given the scheme will reduce noise impacts with the range of measures already to be included.

- The net effect of the proposed upgrade works incorporating the proposed noise mitigation measures included within the EIS in addition to the additional noise barrier along the R445 road results in a reduction in noise levels at the Coyle's residences over and above what is currently experienced. In this instance a positive residual impact is predicted at these properties as a result of the upgrade works.

Construction Phase

- 7.5.5 The construction phase of the upgrade works and realigned Newhall interchange will take place over a number of phases. The main element of works will involve clearance, road surface breaking, resurfacing and construction of the new slip roads and roundabout associated with the realigned Newhall interchange.
- 7.5.6 As noted in the EIS, provision has been made for a construction compound to be made available adjacent to the proposed Newhall Junction. The location of the compound will be over 200m from the closest resident in the Coyle's land holdings (i.e. Mary Coyle's property). The compound will incorporate the main site offices and stores, plant storage, material processing, where necessary and car parking for staff. The operation of any site compound in addition to any of the works involved in the road upgrade will be subject to the noise and vibration limits and mitigation measures set out in the EIS.
- 7.5.7 Prior to any construction works taking place, the contractor will be required to prepare an Environmental Operating Plan (EOP) to include details of how they will work within the various schedules of environmental commitments. In terms of noise and vibration control, the contractor will be required to include details of noise and vibration management practices to prevent noise nuisance and to ensure works are undertaken within the relevant limits.
- 7.5.8 For construction compounds, mitigation measures will likely include adequate hoarding around the site perimeter, the use of offices and stores to act as buffers to noise sensitive boundaries and hours of operation. The range of activities undertaken at the site compounds are not expected to generate any more noise than that associated with the main works and will be controlled in the same manner. In addition to the above, given the distance between the site compound and the nearest residents, the impact from this area of the works is not considered to pose any significant impacts.
- 7.5.9 The majority of the works will be undertaken during normal working hours i.e. Monday to Friday between 07:00 to 19:00hrs. Weekend, evening and on occasion night-time works will be required. It should be noted that night works will be limited to traffic management measures and will not involve road construction works and specifically will not be permitted to include percussive and breaking works.

7.6 Brendan and Carol Carton, Lewistown, Naas

- 7.6.1 Maguire and Associates have submitted a submission on behalf of Brendan and Carol Carton. Their submission notes the following:

"It is noted from the EIS that no noise measurements were carried out on our client's property. Taking in conjunction with the under estimation above (relating to traffic forecasts) it is fairly evident that the noise barriers proposed will be totally inadequate to reduce the impacts of this new M7 upgrade to our client's property"

- 7.6.2 In response, it is not necessary to undertake noise measurements at every property along a road scheme. The baseline noise survey is used to establish the prevailing noise environment and to provide information for the calibration of the noise model. Baseline surveys were, however, conducted at two properties adjacent to the Carton's property which is representative of this residence, given the same proximity to the M7 mainline and its alignment at this location.
- 7.6.3 The project's traffic consultant Mr Philip Shiels has confirmed that the traffic assessment undertaken is fully robust and hence the noise mitigation measures included in the EIS are fully adequate to deal with current and future traffic flows. A specific response to the Trafficwise and Maguire and Associates submission is addressed by Mr Shiels in his brief of evidence.
- 7.6.4 Noise predictions have been undertaken at the five adjacent properties to the Carton's residence, representing the row of properties along the Canal Road (Included in Figure 15.2 Volume 3 and Section 15.4, Volume 2 of the EIS). The predicted noise level during the Do Something scenario for both the opening and design year is lower than that during the Do Nothing scenario. This is due to the nominally neutral change in traffic flows along the M7 once widened, the new low noise road surface which will form part of the standard upgrade works in addition to the 2.5m high noise barrier which will be installed along the full length of the M7 boundary (to the rear of the Carton's residence), extending to a length of approximately 900m as set out in Table 15.8 of Volume 2 of the EIS.
- 7.6.5 The residual noise level at the Carton's property is predicted to be some 6dB below the Do Nothing scenario, i.e. in the absence of the proposed works. The noise mitigation measures which will be provided are considered to be fully adequate and will result in a positive noise impact at the property concerned.
- 7.6.6 The submission states *"The proposal for night-time working in close proximity to a cluster of residential properties will lead to a significant and profound impact on the occupants of the dwellings houses."*
- 7.6.7 The majority of the works will be undertaken during normal working hours i.e. Monday to Friday between 07:00 to 19:00hrs. Weekend, evening and on occasion night-time works will be required. As noted previously, night works will be limited to traffic management measures and will not involve road construction works and specifically will not be permitted to include percussive and breaking works.

7.7 An Taisce

7.7.1 An Taisce have noted the following as part of their submission:

“The expansion of the motorway can only exacerbate the already-existing noise problem. Excessive noise levels are not just of concern to human populations but to anthropogenic noise has been shown to adversely affect songbird communication. The consideration of noise in relation to amenity of lands adjoining the motorway should be fully considered”

7.7.2 In response, whilst it is acknowledged within the EIS that existing noise levels along the M7 are relatively high, it should be noted that once the proposed upgrade works are completed there is a predicted residual reduction in noise levels compared to the existing situation. This is due to the combination of a nominally neutral increase in traffic flows with the widened scheme in place, a newly laid low noise road surface in addition to noise barriers. With respect to song bird communication, the upgrade works will not deteriorate the existing noise environment and as a result will have no notable impact on the response of birds in the vicinity of the road.

7.8 **Oral & Trevor Nuzum, Roseanne & Vincent Butler, Mary & PJ Breen, Marie & Padraig Gibbons, Caragh Road, Naas, Co. Kildare**

7.8.1 This submission states that *At present the 2 lane motorway presents significant noise pollution and we would be very concerned an upgrade to three lanes could potentially make the noise change intolerable.*

7.8.2 In response, the noise impact of the proposed upgrade works have been assessed at the properties in question within the EIS (Refer to Figure 15.5 of Volume 3 and Section 15.4, Volume 2). The results of the assessment concluded that predicted noise level during the Do Something scenario for both the opening and design year is lower than that during the Do Nothing scenario. This is due to the nominally neutral change in traffic flows along the M7 once widened, the low noise road surface along the full extent of the scheme and the 2m high noise barrier which will be installed along the full length of the M7 boundary of these properties (as set out in Table 15.8 of Volume 2). The residual noise level at these properties is predicted to be some 3dB below the Do Nothing scenario, i.e. in the absence of the proposed works and hence a positive impact will be experienced at these properties as a result of the works.

7.8.3 The submission makes reference to the proposed noise barrier and requests details of the structure and its performance rating.

In response:

7.8.4 Environmental barriers provide mitigation by physically screening the receiver from the source of noise. The effectiveness of the barrier is determined by its height, the height of the receiver, the barrier length and also the relative position of the barrier to the source and receiver.

- 7.8.5 In this instance the barrier will be positioned along the roadside edge of the M7 and therefore its effectiveness will be determined by the height of the barrier and the distance of the residential properties from the road edge.
- 7.8.6 A number of types of proprietary noise barriers are supplied to the market. These range from the timber barriers (typically the most frequently used barriers along roadsides in Ireland) to sheet metal, concrete/brick, plastic (PVC) and bio barriers.
- 7.8.7 When specifying noise barrier the BS ISO Standard relating to noise-reducing barriers for road schemes that have been adopted by the EU and thus by the National Roads Authority (NRA), as follows:
- BS EN 1793-2:1998: *Road traffic noise reducing devices – Test method for determining the acoustic performance – Part 2: Intrinsic characteristics of airborne sound insulation*
- 7.8.8 This standard sets out a method whereby the acoustic insulation characteristics, i.e., the sound going directly through the material of the barrier, are tested in a laboratory. The overall sound insulation performance is then given a rating, B0, B1, B2, B3, in order of increasing sound insulation.
- 7.8.9 In the NRA document *NRA Specification for Road Works – Series 300 Fencing and Environmental Noise Barriers*, published March 2007, a barrier for noise mitigation must have a minimum insulation performance of B3.
- 7.8.10 In terms of the proposed barrier along the boundary of the properties noted in this submission, the barrier will have to meet, as a minimum the sound insulation performance standard of B3.
- 7.8.11 The height and length of the barrier at this location has been calculated in order to effectively reduce road traffic noise levels to below the threshold noise levels used in the EIS. The current 2m high barrier as proposed, is predicted to provide a suitable level of noise attenuation to the properties under consideration here.
- 7.9 Annette and Ciaran Parker and Grainne and Michael Forde, Ladytown, Naas, Co. Kildare**
- 7.9.1 A combined submission from the above parties has requested that a noise barrier is extended at the location of Ladytown to screen property reference R16 (Reference to Chapter 15, Table 15.8). The request is based on a number of points of information relating to varying noise criteria.
- 7.9.2 In response, Section 15.2 of Volume 2 of the EIS sets out the rationale for the noise criteria used for the determination of noise mitigation as part of this project. This section of the EIS summarises the reasons why the NRA guidelines for road schemes are not directly applicable to the scheme in question and the rationale for using the relevant threshold noise levels set out in the Kildare Local Authorities Noise Action Plan (2013 to 2018). The noise assessment set out in the EIS has predicted noise levels at the various properties located within the area of Ladytown and has concluded that a noise barrier of approximately 900m in length is to be provided between chainage Ch 2,770 and Ch 3,680 to the south of the M7. The

predicted noise levels at R16 are below the threshold noise levels adopted as part of the EIS for the specification of noise mitigation for both the Do Nothing and Do Something scenarios. It should be noted, however, that residual noise levels at this property will still be reduced compared to the Do Nothing scenario due to the application of a low noise road surface.

7.9.3 The submission provides comments on the threshold values which are set out in the Kildare Local Authorities NAP. In response, it is beyond the scope of this EIS to adopt alternative noise threshold noise levels to those set out in the NAP. The threshold noise levels are those which have been set by Kildare Local Authorities which have been approved by the EPA. The various documents quoted in the submission are not applicable to road traffic noise (i.e. construction, industrial and entertainment noise).

7.9.4 The submission notes that the NAP should:

- a) Avoid significant adverse impacts from noise, and;
- b) Preserve environmental noise quality.

7.9.5 In response, the upgrade works associated with the M7 are not predicted to increase noise levels at the properties within Ladytown. Where properties have been identified to be above the threshold for noise mitigation, this has been provided as part of this scheme.

7.9.6 The submission comments on the prevailing wind direction and speed noted during the survey period. In response, surveys were undertaken in line with standard applicable guidance. The baseline noise survey data is used to provide information on the prevailing noise level as part of the overall assessment. The baseline noise data is not used to develop the noise model, this is developed using alignment road data, traffic flow and speed data and other factors affecting the propagation of sound. With respect to the predicted noise levels generated by the noise model, predictions are made assuming 'downwind' conditions for each receiver location in order to provide a worst case assessment.

7.10 **Mr Gerald Kehoe, Osberstown, Naas, Co. Kildare**

7.10.1 Mr Kehoe refers to the noise criteria used in the EIS and provides a discussion on alternative criteria which should be applied to the project.

7.10.2 The submission notes that since the publication of the NRA guidelines (2004), there is a requirement to now comply with the Safety, Health and Welfare at Work Act 2005 and states that under the Safety Health and Welfare at Work Regulations 2013, the permitted acceptable noise level during the day is 55dB L_{den} and 44dB L_{night} .

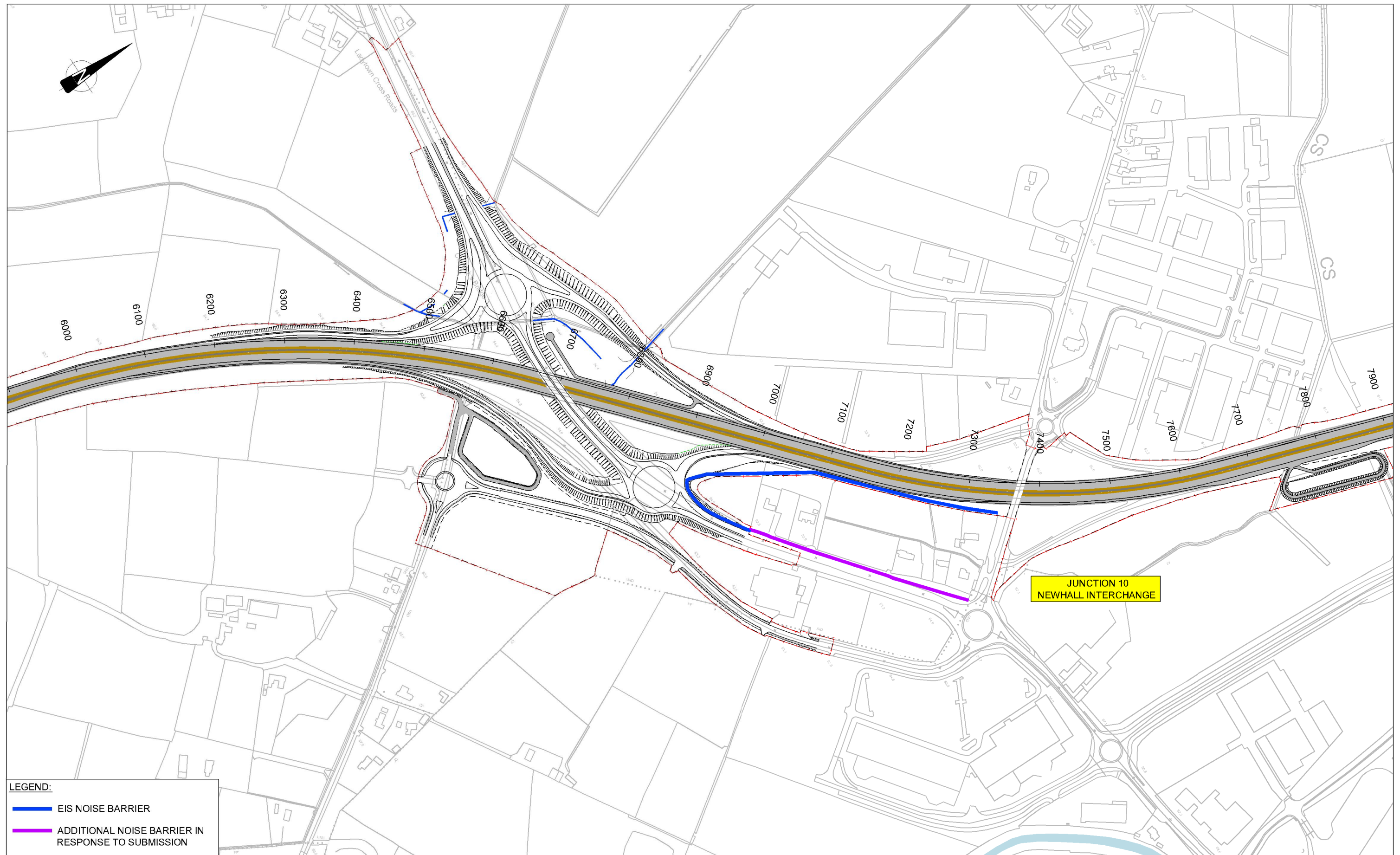
7.10.3 The following points summarise our response:

- a) The NRA 2004 guidelines for noise and vibration are used for the assessment of road traffic noise from new road schemes and have a wholly different application to the Safety Health and Welfare regulations which are used for the protection of workers in their work place.

- b) The NRA guidelines, whilst referred to in the noise chapter have not been used to assess the requirement for noise mitigation for the reasons outlined in the EIS and in the Executive Summary of this brief. The basis for noise mitigation for this scheme are based on the threshold values included in the Kildare Local Authorities Noise Action Plan (2013 – 2018) which is wholly appropriate in this instance.
- c) Notwithstanding that the Safety Health and Welfare at Work Regulations 2013 are not applicable for environmental or road traffic noise, these regulations and the 2005 Act do not include any reference to noise levels.
- d) The only health and safety regulations which include a reference to noise are the *Safety, Health and Welfare at Work (General Application) Regulations 2007* as Statutory Instrument No. 299. These regulations set noise action levels of 80 and 85dB $L_{EX, 8hr}$ for the protection of employees exposed to workplace noise.
- e) On consideration of the above, the noise assessment set out in the EIS is considered to be wholly appropriate and in line with best practice guidelines for road traffic noise.

8.0 CONCLUSIONS

- 8.1 During the construction phase, the assessment has indicated that construction activities can operate within the adopted noise limits for the relevant periods at the nearest properties to the works. Given the linear nature of the works, noise emissions related to construction works will be of short term impact at any one area as the works progress along the length of the scheme. The application of the proposed noise limits and proposed construction hours, along with implementation of appropriate noise control measures, will ensure that noise impact is kept to within acceptable standards.
- 8.2 Once the upgrade works are complete, the residual noise impacts taking account of the new road side barriers and low noise road surface are predicted to be lower than those currently experienced at the majority of noise sensitive properties along the length of the works. The overall impact to noise is predicted to be neutral to positive at the most affected properties along the upgrade works.



LEGEND:

— EIS NOISE BARRIER

— ADDITIONAL NOISE BARRIER IN RESPONSE TO SUBMISSION



Roughan & O'Donovan-AECOM Alliance



Arena House, Arena Road,
Sandyford, Dublin 18.
Tel : +353 (1) 2940880
Fax : +353 (1) 2940820
e-mail : info@rod.ie
www.rod.ie

| Project | | Title | |
|--|---------------|--|----------------------|
| M7 NAAS TO NEWBRIDGE BY-PASS UPGRADE SCHEME | | SCHEDULE OF COMMITMENTS ADDITIONAL COMMITMENT - NOISE | |
| ENVIRONMENTAL IMPACT STATEMENT | Designed: AW | CAO File: 11.204 | Status: SOC |
| | Drawn: PC | Job No: 11.204 | |
| | Checked: BC | Scale: 1:2,500 @ A1 | Drawing No: Figure 2 |
| | Approved: JET | Date: MAY 14 | Rev: |



M7 Naas to Newbridge By-Pass Upgrade Scheme

Motorway Order and Environmental Impact Statement

Oral Hearing

Air Quality & Climate

Brief of Evidence

By
Dr. Edward Porter C Chem MRSC
AWN Consulting

May 2014

EXECUTIVE SUMMARY

- *An air quality and climate impact assessment has been conducted along the length of the proposed M7 Naas to Newbridge Bypass Upgrade Scheme to determine the potential air quality and climatic impacts associated with the development.*
- *In relation to the operational phase of the scheme, the results of the air dispersion modelling study show that predicted ambient concentrations of CO, benzene, PM₁₀, PM_{2.5} and NO₂, at the worst-case sensitive receptors near the Proposed Scheme will be well below the ambient air quality limit values. Legislation-driven technical improvements will ensure that pollutant levels will remain well below the limit values in future years*
- *With regard to CO₂ and Ireland's obligations under the Kyoto Protocol and the EU Climate & Energy Package, the regional impact of traffic emissions resulting from the Proposed Scheme is insignificant.*
- *Specific measures will be implemented to mitigate the effects of dust emissions from construction activities as outlined in Section 16.13 of the EIS. In acknowledgement of the concerns of the Coyles' residences to the scheme due to their close proximity to the Proposed Scheme, a series of robust additional mitigation measures will be implemented during the construction of the scheme in the vicinity of these residences.*
- *Cumulative impacts have been assessed between the current Scheme and the M7 Osberstown Interchange and R407 Sallins Bypass Scheme and these impacts have been found to have a negligible effect on air quality and climate.*

1.0 INTRODUCTION

Name and Qualifications

- 1.1. My name is Edward Porter. I hold a Bachelor of Science degree (1st Class (Hons)) in Chemistry (1991) from the University of Sussex and a Ph.D. in Chemistry (Air Quality) from University College Dublin (1997). I am a Charter Chemist and a full member of the Royal Society of Chemistry (C Chem MRSC), a requirement of membership being that I am active in the field of professional chemistry and satisfy the Society's requirements with regard to level of qualifications and experience.

Experience

- 1.2. I have been active in the field of air quality for 21 years, the last 17 years as an Environmental Consultant. I have considerable experience in the areas of planning of proposed developments with regard to air quality and climate, assessment of air quality for compliance purposes and air quality mitigation measures in relation to both construction sites and operational developments. I am currently Director of Air Quality and Climate with AWN Consulting.

2.0 IMPACT ASSESSMENT METHODOLOGY

- 2.1 AWN Consulting was commissioned to conduct a detailed appraisal of the air quality and climate impacts associated with both the construction and operation of the proposed M7 Naas to Newbridge By-Pass Upgrade Scheme.
- 2.2 The assessment was carried out using guidance from the National Roads Authority document “*Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes*” (NRA, 2011) and other current published national and international guidance and standards as required. Details of the impact assessment methodology employed are outlined in Chapter 16.3 of the EIS.

3.0 EXISTING ENVIRONMENT

- 3.1 The assessment of the existing environment is outlined in Section 16.2 of the EIS.

4.0 PREDICTED IMPACTS

Operational Phase – Local Air Quality Impacts Along The Route

- 4.1 The assessment has been undertaken using the UK DMRB air dispersion model. The key inputs into the model are year of operation, annual average daily traffic (AADT), average vehicle speed and receptor locations. Air dispersion modelling was performed at the worst-case receptors located along the existing and proposed route of the M7 Naas to Newbridge By-Pass Upgrade Scheme based on proximity to the road carriageway.
- 4.2 The impact of traffic-derived emissions from the proposed road development on ambient air quality has been extensively assessed using air dispersion modelling of the proposed road infrastructure for the opening year (2015) and design year (2030).
- 4.3 The screening air dispersion modelling study found that predicted concentrations of CO, benzene, NO₂, PM₁₀ and PM_{2.5} were below their respective limit values, at all residential locations including the 14 identified potential worst-case receptors, with the proposed road development in place as outlined in Section 16.4 of the EIS.

Operational Phase - Regional Air Quality Impacts

- 4.4 The regional air quality assessment investigated the impact of the proposed road development on national emissions of the following pollutants: nitrogen oxides (NO_x), volatile organic compounds (VOCs) and carbon dioxide (CO₂).
- 4.5 With regard to NO_x and VOCs, results indicate that the impact of the proposed road on national emission levels is negligible being less than 0.02% of the relevant emissions ceiling in either the opening or design year as outlined in Sections 16.6 – 16.7 of the EIS
- 4.6 With regard to climate, EPA guidance states that a development may have an influence on global climate where it represents “*a significant proportion of the*

national contribution to greenhouse gases". Based on an analysis of the increase in traffic resulting from the proposed development, CO₂ emissions resulting from the development will be insignificant in terms of national emissions and Ireland's agreed limit under the Kyoto Protocol and the EU Commission's *Climate and Energy Package*. Thus the impact of the proposed road scheme on climate will be negligible.

Operational Phase – Screening Air Quality Impacts on Sensitive Ecosystems

- 4.7 The impact of NO_x (i.e. NO and NO₂) emissions resulting from the proposed road at the Grand Canal pNHA was assessed as outlined in Section 16.6 of the EIS.
- 4.8 The impact of the Proposed Scheme leads to an increase in NO_x concentrations of, at most, 0.9 µg/m³ within the Grand Canal pNHA whilst the maximum increase in the NO₂ dry deposition rate is 0.03 Kg(N)/ha/yr in 2015 and 0.04 Kg(N)/ha/yr in 2030. This reaches only 0.8% of the critical load for inland and surface water habitats of 5-10 Kg(N)/ha/yr (NRA 2011).

Construction Phase

- 4.9 The greatest potential impact on air quality during the construction phase of the Proposed Scheme is from construction dust emissions and the potential for nuisance dust. Construction dust emissions can come from a variety of sources including construction traffic.
- 4.10 While construction dust tends to be deposited within 200m of a construction site, the majority of the deposition occurs within the first 50m. Most importantly, if the dust minimisation measures specified in Section 16.13 of the EIS are implemented, fugitive emissions of dust from the site will not be significant and will not lead to a nuisance at nearby receptors. These measures are discussed in more detailed in Section 6 of this Brief of Evidence.
- 4.11 As shown in Table 16.6 of the EIS, the major source of greenhouse gas emissions associated with the construction phase of the project is waste removal with approximately 52% of total emissions. Other sources include concrete, mortars and cement emissions and quarried material emissions. In terms of Ireland's target over the period 2013-2020, the construction phase of the project will account for 0.1% of the annual target under the *EU Climate & Energy Package*.

Cumulative Impacts

- 4.12 The air quality and climate impacts along the M7 Naas to Newbridge By-pass Upgrade Scheme have been assessed for the scenario where both the M7 Naas to Newbridge By-pass Upgrade Scheme and the Osberstown Interchange and Sallins By-pass Scheme are in operation.

Construction Phase

Local Air Quality

- 4.13 The greatest potential impact on air quality during the construction phase of both schemes is from construction dust emissions and the potential for nuisance dust. Dust emissions can come from a variety of sources including construction traffic. As long as the dust minimisation measures specified in Section 16.13 of the EIS are implemented during the construction phase of both schemes, fugitive emissions of

dust from the site will not be significant and will not lead to a nuisance at nearby receptors.

Climate

- 4.14 Based on the assessments carried out for both schemes, it can be concluded that the construction phase of both schemes will have an insignificant impact on climate.

Operational Phase

Local Air Quality

- 4.15 The cumulative impact of traffic associated with both schemes along the M7 Naas to Newbridge By-pass Upgrade Scheme for the pollutants CO, benzene, PM₁₀, PM_{2.5} and NO₂ have been assessed for the opening and design years. Levels of all pollutants range from 21 – 66% of their respective limit values in either 2015 or 2030. The greatest impact on pollutant concentrations in the region of both schemes in either 2015 or 2030 will be an increase of 3.3% of the annual or maximum 1-hour limit value for NO₂. Furthermore, the greatest improvement in pollutant concentrations in either 2015 or 2030 will be a decrease of 6.5% of the annual or maximum 1-hour limit value for NO₂. The impact of the Proposed Schemes in terms of the assessed pollutants is negligible at all receptors assessed.

Impacts on Sensitive Ecosystems

- 4.16 The impact of NO_x emissions resulting from traffic associated with both schemes at the Grand Canal pNHA was assessed. The impact of the Proposed Schemes leads to an increase in NO_x concentrations of, at most, 1.4 µg/m³. The maximum increase in the NO₂ dry deposition rate is 0.04 Kg(N)/ha/yr in 2015 and 0.06 Kg(N)/ha/yr in 2030. This reaches only 1.2% of the critical load for inland and surface water habitats of 5-10 Kg(N)/ha/yr (NRA 2011).

Regional Air Quality

- 4.17 The regional impact of traffic associated with both schemes along the M7 Naas to Newbridge By-pass Upgrade Scheme on emissions of NO_x and VOCs has been assessed. For 2015, the predicted impact of the Proposed Schemes is to increase NO_x levels by 0.02% of the NO_x emissions ceiling and increase VOC levels by 0.0002% of the VOC emissions ceiling which was to be complied with in 2010. For 2030, NO_x levels are predicted to increase by 0.005% of the NO_x emissions ceiling and decrease VOC levels by 0.0004% of the VOC emissions ceiling which was to be complied with in 2010.

Climate

- 4.18 The impact of traffic associated with both schemes along the M7 Naas to Newbridge By-pass Upgrade Scheme on emissions of CO₂ was also assessed. The results show that the impact of the Proposed Schemes will be to increase CO₂ emissions by 0.005% and 0.006% of Ireland's Kyoto target in 2015 and 2030 respectively. Thus, the impact of the Proposed Scheme on national greenhouse gas emissions will be insignificant in terms of Ireland's obligations under the Kyoto Protocol.

5.0 MITIGATION MEASURES AND RECOMMENDATIONS

Construction Phase

- 5.1 A Construction Management Plan will be formulated for the construction phase of the project, as part of the implementation of the mitigation strategy.
- 5.2 Measures to be implemented to mitigate the effects of dust emissions from construction activities will include the following as outlined in Section 16.13 of the EIS:
- Vehicles exiting the site to make use of a wheel wash facility, prior to entering onto public roads;
 - Vehicles using site roads will have their speeds restricted where there is a potential for dust nuisance at nearby properties;
 - Site roads will be regularly cleaned and maintained. Any road that has the potential to give rise to fugitive dust will be regularly watered during dry and/or windy conditions;
 - Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind;
 - Water misting or sprays will be used during dry and / or windy periods.

Operational Phase

- 5.3 In relation to design and operational aspects of road developments, emissions of pollutants from road traffic can be controlled most effectively by either diverting traffic away from heavily congested areas or ensuring free flowing traffic through good traffic management plans and the use of automatic traffic control systems. Moreover, as the flow of traffic will be smoother and a steady speed maintained, vehicle emissions on the proposed road development will be lower than those experienced in more built-up areas, where higher emissions result from frequent stop-start motions and queuing.

6.0 SPECIFIC SUBMISSIONS

- 6.1 *Objection on behalf of the Coyles family, Newhall, Naas by TMS Environment Ltd. The submission outlines in detail specific air quality issues relating to the M7 widening. The submission has highlighted the following issues in its conclusions:*
- *The Coyles land is uniquely located close to the upgraded Newhall Interchange and the main construction compound for the scheme maximising the impact at these receptors;*
 - *The baseline survey is not reported;*
 - *No meaningful mitigation plan has been presented in the EIS and it will not be possible to guarantee the successful implementation of such a plan at this uniquely sensitive location;*
 - *It is likely that air quality standards for PM_{2.5} and PM₁₀ will be exceeded at the Coyle family residences during the construction phase;*

- *The deposition of dust carrying microorganisms and fungi on the land of the paddock as well as the dispersion of airborne particulate matter and microorganisms and fungi may exert a significant adverse impact on the health of the thoroughbred horses on the Coyle family lands.*

Response

- 6.1.1 It is acknowledged that the Coyles' residences is located in close proximity to the proposed M7 Naas to Newbridge By-pass Upgrade Scheme and that robust mitigation measures will be required during the construction of the scheme.
- 6.1.2 Although the scheme will peak at 346 truck movements per day over the full length of the scheme and on both sides of the motorway, the actual increase in AADT traffic levels will vary from 0.8% – 2.7% of the existing baseline AADT levels at the nearest roadways to the Coyles' residences as shown in Table 6.1. In relation to the nearest road to the residences, the R445 Naas - Newbridge roadway (Link 5 below), the maximum increase in truck movements will be 173 HCV per day compared to an existing HCV level of 1194 per day.

Table 6.1 Maximum Construction Traffic In The Vicinity Of The Coyles' Residences

| Link as identified on Plate 6.9 of EIS | AADT 2012 Base | % HCV | HCV | Maximum Increase HCV | % increase In HCV | % increase In AADT |
|--|----------------|-------|------|----------------------|-------------------|--------------------|
| 4 | 43400 | 9 | 3906 | 346 | 9 | 0.8 |
| 5 | 17050 | 7 | 1194 | 173 | 14 | 1.0 |
| 23 | 14250 | 8 | 1140 | 346 | 30 | 2.4 |
| 24 | 17400 | 10 | 1740 | 346 | 20 | 2.0 |
| 25 | 6400 | 6 | 384 | 173 | 45 | 2.7 |

- 6.1.3 The NRA publication "*Guidelines for the treatment of Air Quality During the Planning & Construction of National Road Schemes*" (NRA, 2011) outlines the approach for defining significance in terms of construction impacts. Under Section 4.2.6 Construction Impacts, the guidance document states that:

"The significance of impacts due to vehicle emissions during the construction phase will be dependent on the number of additional vehicle movements, the proportion of HGVs and the proximity of sensitive receptors to site access routes. If construction traffic would lead to a significant change (>10%) in AADT flows near to sensitive receptors, then concentrations of nitrogen dioxide, PM₁₀ and PM_{2.5} should be predicted using the approach described previously" (NRA, 2011).

- 6.1.4 As the current scheme leads to a 0.8% - 2.7% increase in AADT traffic levels (and an increase of 1.0% along the R445), the scheme may be viewed as being below significance criteria and thus the prediction of the concentrations of nitrogen dioxide, PM₁₀ and PM_{2.5} at sensitive receptors is not required under the guidelines.
- 6.1.5 The guidelines also outline the assessment criteria for assessing the impact of dust emissions from construction activities with standard mitigation in place. As shown

in Table 6.2 below the risk from soiling ranges from 25m – 100m and in relation to PM₁₀, the risk ranges from 10m – 25m depending on the scale of the construction activity:

Table 6.2 Assessment Criteria for the Impact of Dust Emissions from Construction Activities with Standard Mitigation in Place

| Source | | Potential Distance for Significant Effects (Distance from source) | | |
|----------|--|--|------------------|--------------------|
| Scale | Description | Soiling | PM ₁₀ | Vegetation Effects |
| Major | Large construction sites with high use of haul routes | 100m | 25m | 25m |
| Moderate | Moderate sized construction sites with moderate use of haul routes | 50m | 15m | 15m |
| Minor | Minor construction sites with limited use of haul routes | 25m | 10m | 10m |

Source: Appendix 8: Assessment of Construction Impacts taken from “Guidelines for the treatment of Air Quality During the Planning & Construction of National Road Schemes” (NRA, 2011)

- 6.1.6 Given that the façade of the Coyles’ residences is approximately 50-90m from the edge of the M7 dual-carriageway & proposed off-ramps and 35-40m from the R445 Naas – Newbridge roadway, the guidance above would indicate that there is the potential for soiling when the scale of construction is defined as major. In relation to PM₁₀, which is the particulate fraction with the potential harmful health effects, the Coyles’ façades falls outside of the distance for potential significant effects.
- 6.1.7 An additional consideration is the road surface that construction trucks will be using in the vicinity of the Coyles’ residences. Research in the USA has found that unpaved haul trucks generate between 78-97% of total dust from surface mining sites¹. Similarly, in relation to road construction projects, the dominant source will be emissions from construction trucks along unpaved roads via the mechanism of dust re-suspension. However, the road surface nearest the façade of the Coyle’s residences (M7, R445) will in general be paved roads rather than unpaved construction roads. The estimated emission rates of TSP (Total Suspended Particulates), PM₁₀ and PM_{2.5} can be derived using USEPA approved emission factors² as outlined below in Table 6.3. The table shows that in relation to TSP, which is an indicator of nuisance dust levels, emissions from an unmitigated unpaved road will be 717 times greater than that from an unmitigated paved road. Likewise, in relation to PM₁₀ and PM_{2.5}, emissions from an unmitigated unpaved road will be 1,067 and 441 times greater respectively than that from an unmitigated paved road.

¹ IAQM (2014) Guidance on the Assessment of Dust from Demolition and Construction

² USEPA (1995 & subsequent updates) AP42 Compilation Of Air Pollutant Emission Factors, Fifth Edition

Table 6.3 Unpaved and Paved TSP, PM₁₀ & PM_{2.5} Emission Factors (g/VKT) (USEPA, AP42)

| Unpaved Roads (Chapter 13.2.2 AP42 Dated 11/2006) | | | | | |
|---|--------|--------|-------|-------|--------------------------------|
| $E = [281.9 \cdot k \cdot (s/12)^a (W/3)^b]$ g/veh km | | | | | |
| Parameter | Units | TSP | PM10 | PM2.5 | Reference |
| Mean Vehicle Weight | tons | 30 | 30 | 30 | Average for construction truck |
| Wet Days Per Year | Days | 0 | 0 | 0 | 24-Maximum Scenario |
| Constant, k | lb/VMT | 4.9 | 1.5 | 0.15 | AP42 Table 13.2.2-2 |
| Constant, a | | 0.7 | 0.9 | 0.9 | AP42 Table 13.2.2-2 |
| Constant, b | | 0.45 | 0.45 | 0.45 | AP42 Table 13.2.2-2 |
| Silt content, s | % | 8.5 | 8.5 | 8.5 | Construction Scraper Routes |
| Uncontrolled Emission factor, E | lb/VMT | 10.85 | 3.10 | 0.31 | Calculation |
| Uncontrolled Emission factor, E | g/VKT | 3058.1 | 873.8 | 87.4 | Calculation |
| Paved Roads (Chapter 13.2.1 AP42 Dated 01/2011) | | | | | |
| $E = [k \cdot (sL)^a (W)^b]$ g/veh km | | | | | |
| Parameter | Units | TSP | PM10 | PM2.5 | Reference |
| Mean Vehicle Weight | tons | 30 | 30 | 30 | Average for construction truck |
| Wet Days Per Year | Days | 0 | 0 | 0 | 24-Hr Maximum Scenario |
| Constant, k | g/VKT | 3.23 | 0.62 | 0.15 | AP42 Table 13.2.1-1 |
| Constant, a | | 0.91 | 0.91 | 0.91 | AP42 Equation 13.2.1-1 |
| Constant, b | | 1.02 | 1.02 | 1.02 | AP42 Equation 13.2.1-2 |
| Silt Loading, SL | g/m2 | 0.03 | 0.03 | 0.03 | Traffic Levels > 10,000 AADT |
| Uncontrolled Emission factor, E | g/VKT | 4.27 | 0.82 | 0.20 | Calculation |
| Ratio Unpaved / Paved Emission Rate | | 717 | 1067 | 441 | |

6.1.8 Thus, the impact from the construction of a new road along unpaved haul roads will be orders of magnitude greater than the impact of the upgrade of an existing road using existing paved roads. Although the Newhall Interchange and off-ramps will involve the construction of a section of new road the majority of the distance travelled by the truck movements associated with this construction will still be undertaken along paved roads particularly at the closest points to the Coyles' residences and, in tandem with the mitigation measures discussed below, are unlikely to lead to a nuisance.

6.1.9 The Institute of Air Quality Management (IAQM) guidelines also outline the assessment criteria for assessing the impact of dust emissions from construction activities based on both receptor sensitivity and the number of receptors affected. As shown in Table 6.4 below the risk from dust soiling at the Coyles' residences (a high sensitivity environment, distance 20m - 50m and with receptor numbers between 1 - 10) is considered low under this guidance:

Table 6.4 Sensitivity Of The Area to Dust Soiling Effects on People and Property

| Receptor Sensitivity | Number Of Receptors | Distance from source (m) | | | |
|----------------------|---------------------|--------------------------|--------|--------|------|
| | | <20 | <50 | <100 | <350 |
| High | >100 | High | High | Medium | Low |
| | 10-100 | High | Medium | Low | Low |
| | 1-10 | Medium | Low | Low | Low |
| Medium | >1 | Medium | Low | Low | Low |
| Low | >1 | Low | Low | Low | Low |

Source: IAQM (2014) Guidance on the Assessment of Dust from Demolition and Construction

- 6.1.10 In addition, the IAQM guidelines also outline the assessment criteria for assessing the impact of PM₁₀ emissions from construction activities based on current annual mean PM₁₀ concentration, receptor sensitivity and the number of receptors affected. The current PM₁₀ concentration in Zone C locations as reported by the EPA's "Air Quality Annual Report 2012" (EPA, 2013) is approximately 16-19 µg/m³. As shown in Table 6.5 below the risk to human health from PM₁₀ emissions at the Coyle's residence (high sensitivity, distance 20m - 50m and with receptor numbers between 1 - 10) is considered low under this guidance:

Table 6.5 Sensitivity Of The Area to Human Health Impacts

| Receptor Sensitivity | Annual Mean PM ₁₀ Concentration | Number Of Receptors | Distance from source (m) | | | |
|----------------------|--|---------------------|--------------------------|-----|------|------|
| | | | <20 | <50 | <100 | <200 |
| High | < 24 µg/m ³ | >100 | Medium | Low | Low | Low |
| | | 10-100 | Low | Low | Low | Low |
| | | 1-10 | Low | Low | Low | Low |

Source: IAQM (2014) Guidance on the Assessment of Dust from Demolition and Construction

- 6.1.11 Section 16.13 of the EIS has identified the key mitigation measures which will be employed to ensure that dust nuisance is avoided and that ambient levels of PM₁₀ and PM_{2.5} remain below the ambient air quality standards. These measures include the following:

- Site roads will be regularly cleaned and maintained. Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic only. Any road that has the potential to give rise to fugitive dust will be regularly watered during dry and/or windy conditions.
- Vehicles using site roads will have their speeds restricted where there is a potential for dust nuisance at nearby properties.
- Where practicable, vehicles exiting the site shall make use of a wheel wash facility prior to entering onto public roads. This will ensure that mud and other wastes are not tracked onto public roads. Public roads outside the site will be regularly inspected for cleanliness, and cleaned as necessary. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions.
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods.
- The dust minimisation procedures put in place will be monitored and assessed by the contractor. In the event of dust nuisance occurring outside the site boundary, the effectiveness of existing measures will be reviewed and further mitigation will be implemented to rectify the problem.

- 6.1.12 In relation to the construction compound, this will be located at a distance of approximately 210m from the closest Coyle residence. The main activities which will be undertaken at the compound will be the provision of site offices, welfare

facilities, plant and refuel storage, and on occasions for the storage of pre-fabricated items such as pipes, signs etc. Thus, no particularly dusty activities will be undertaken at the compound.

6.1.13 Given that the Coyle families have raised dust concerns in their detailed submission to the hearing and based on further detailed assessment based on the submission received it is considered appropriate to provide some additional site-specific mitigation measures in the vicinity of their residences. These additional very stringent measures will form part of a site specific dust minimization plan for the construction activities in the vicinity of the Newhall Interchange. This will involve the following supplementary measures:

- Any exit point of the haul roads within 200m of the Coyles' residences will make use of a wheel wash facility prior to entering onto public roads;
- A speed detector on haul roads within 200m of the Coyles' residences will be installed to ensure that a speed limit of 15 km/hr is strictly adhered to;
- A minimum distance for stockpiling of materials of 200m from the Coyles' residences will be enforced;
- The use of dust suppressant (using chemical stabilizers) will be investigated in addition to watering of the haul roads on a daily basis.

6.1.14 The use of these site-specific targeted dust suppression measures will ensure that no significant impact from the construction phase of the road project will occur at the Coyles' residences.

Baseline Assessment

6.1.15 In relation to the issue of the baseline assessment, no site specific baseline monitoring was undertaken. In this regards Figures 15.1 – 15.9 incorrectly states "air monitoring locations". These locations are in fact "air assessment locations".

6.1.16 Although no baseline air monitoring was undertaken, an extensive air quality monitoring program has been undertaken for many years by the EPA. As part of the implementation of the Air Quality Standards Regulations 2002 (S.I. No. 271 of 2002), four air quality zones have been defined in Ireland for air quality management and assessment purposes (EPA 2012). Dublin is defined as Zone A and Cork as Zone B. Zone C is composed of 21 towns with a population of greater than 15,000. The remainder of the country, which represents rural Ireland but also includes all towns with a population of less than 15,000, is defined as Zone D. In terms of air monitoring, the region of the Proposed Scheme is categorised as Zone C (EPA 2012). EPA data representative of the Zone C background locations was used in the air modelling assessment.

6.1.17 In assessing baseline air quality, two tools are generally used: ambient air monitoring and air dispersion modelling. In order to adequately characterise the current baseline environment through site-specific monitoring, comprehensive measurements would be required at a number of key receptors for PM₁₀/PM_{2.5}, NO₂ and benzene. In addition, two of the key pollutants identified in the scoping study (PM₁₀ and NO₂) have limit values which require assessment over time periods varying from one hour to one year. Thus, continuous monitoring over at least a one-year period at a number of locations would be necessary in order to fully determine

compliance for these pollutants. Although this study would provide information on current air quality it would not be able to provide predictive information on baseline conditions, which are the conditions which prevail just prior to opening in the absence of the development. Hence the impact of the scheme was fully assessed by air dispersion modelling which is the most practical tool for this purpose. The baseline environment has also been assessed using air dispersion modelling, since the use of the same predictive technique for both the “do nothing” and “do something” scenario will minimise errors and allow an accurate determination of the relative impact of the development.

Bacteria & Fungi

- 6.1.18 The submission refers to the issue of “uncontrolled bioaerosol levels released” returning to background levels within 250m. This may be a reference to the UK Environment Agency composting guidance and the potential health effects from bioaerosols (Policy Number 405_07) (Environment Agency (2007) *Policy Number 405_07 Our Position on Composting and Potential Health Effects from Bioaerosols*). The policy indicates that a site-specific bioaerosol risk assessment is required if there is a workplace or dwelling within 250m of a composting facility. The Environment Agency has outlined appropriate levels for bioaerosols which should not be exceeded at the sensitive receptors. The appropriate levels are:
- i) those before the start of the composting process or,
 - ii) bioaerosol levels no greater than 1,000 colony forming units cfu/m³ total bacteria, 1,000 colony forming units cfu/m³ total fungi and 1,000 colony forming units cfu/m³ gram-negative bacteria.
- 6.1.19 Composting is a well known significant source of bioaerosols with levels typically returning to background levels within 250m. There is no evidence presented to relate normal soil disturbance during construction to emissions from composting which as stated above is one of key sources of bioaerosols. Data from the Environment Agency publication “Guidance on the Evaluation of Bioaerosol Risk Assessments for Composting Facilities” (EA, 2009) outlines a range of potential sources of bioaerosols. This includes horses’ stables with bacteria and fungi levels in horses’ stables typically of the same order of magnitude as composting. Thus the suggestion that the impact from soil disturbance will impact on the paddock (a known source of bioaerosols) has no basis.

DMRB NO₂ 1-Hour Methodology

- 6.1.20 Under “Section 3. Air Quality Standards”, the submission asserts that the calculation relating to the Maximum 1-hour NO₂ concentration is incorrect on the basis that the annual average background is used when predicting the 1-hour impact rather than twice the annual average background concentration.
- 6.1.21 However, this is incorrect. The DMRB methodology outlined in “*Local Air Quality Management Technical Guidance LAQM.TG(09)*” (UK DEFRA (2009)) under Sections 2.18, 2.30 – 2.35 outlines the methodology for calculating the relationship between the annual mean and 1-hour mean NO₂ objective.
- 6.1.22 The DMRB model is used to predict the annual mean concentration of NO₂ and PM₁₀. Empirical relationships are then applied for assessment of the short-term (1-

hr) objectives rather than directly predicting the short-term limit value. The relationship between the 1-hour NO₂ and the annual mean is difficult to predict as the 1-hour NO₂ is based on the number of exceedence of the limit value in a calendar year. However, the guidance states that it can be assumed that the 1-hour mean objective for NO₂ will be complied with provided the annual mean concentration of NO₂ is below 60 µg/m³. As the maximum 1-hour limit value for NO₂ is 200 µg/m³, the ratio between the maximum 1-hour and annual mean concentrations is 3.33. Thus, in order to obtain the maximum 1-hour NO₂ concentration, the annual mean NO₂ concentration (including background) should be multiplied by a factor of 3.33.

- 6.1.23 In the EIS, this approach was adopted with the exception that the annual mean was multiplied by a factor of 5.0 (rather than 3.33) in line with the conservative assessment adopted in the EIS.

Catherine Morrin, Ladytown, Newbridge, Co. Kildare

- 6.2 *Mrs Morrin has raised a concern relating to the air quality impact of the new motorway junction at Newhall and notes that the introduction of a roundabout on the lands will require traffic to slow and increase again causing increased air pollution from fuel emissions.*

Response

- 6.2.1 In response, as outlined in Section 16.4 of the EIS the impact of the Proposed Scheme on CO, benzene, PM₁₀, PM_{2.5} and NO₂ levels were assessed relative to “Do nothing” levels in years 2015 and 2030. Relative to baseline levels, some increases and decreases in pollutant levels are predicted as a result of the Proposed Scheme. However, using the assessment criteria outlined in Tables 16.2 – 16.4 of the EIS, the impact of the Proposed Scheme in terms of CO, benzene, PM₁₀, PM_{2.5} and NO₂ is negligible at all 14 worst-case receptors assessed.
- 6.2.2 Thus, although some increases in the maximum pollutant concentrations may occur at the nearest sensitive receptors as a result of the development, no significant increase in pollutant levels will occur and ambient levels of regulated air pollutants will remain well below the relevant ambient air quality limit values.

An Taisce

- 6.3 *Fossil Fuel & Climate Change*
“This proposal exacerbates the locality’s dependence on oil, increases the locality’s contribution to global warming and fails to prepare the locality with the resilience to thrive in a time of energy and climate uncertainty. The Environmental Impact Statement does not address this”

Response:

- 6.2.3 As outlined in Section 16.8 of the EIS, the impact of the Proposed Scheme on emissions of CO₂ was assessed. The results show that the impact of the Proposed Scheme will be to increase CO₂ emissions by 0.005% and 0.007% of Ireland’s Kyoto target in 2015 and 2030 respectively. In reality this is an overestimation of the impact of the scheme as the methodology employed (UK DMRB regional assessment methodology) does not capture adequately the GHG emissions

associated with the existing congestion that currently exists and which will be significantly improved by the Proposed Scheme.

- 6.2.4 In terms of the EU Commission's *Climate and Energy Package*, Ireland is required to deliver a 20% reduction in non-ETS greenhouse gas emissions by 2020 (relative to 2005 levels). This limit is set at 37.5 Mtonnes of CO_{2eq}. The results show that the impact of the Proposed Scheme will be to increase greenhouse gas emissions by 0.008% and 0.010% of this 2020 Target Level in 2015 and 2030 respectively.
- 6.2.5 Thus, the impact of the Proposed Scheme on national greenhouse gas emissions will be negligible in terms of Ireland's obligations under the Kyoto Protocol and under the EU Commission's *Climate and Energy Package*.
- 6.2.6 The EPA publication "*Ireland's Greenhouse Gas Emissions Projections 2013 – 2020*" (EPA, 2013) outlines the measures which will be taken to mitigate greenhouse gas emissions from the transport sector. These measures include:
- The improvement to the fuel economy of private cars supported by EU Regulation which will mandate that maximum levels of CO₂ for new cars will be 120 g/km in 2015 and 95 g/km in 2020;
 - More efficient road traffic movements and public transport efficiencies will deliver savings;
 - Renewable energy penetration of 10% by 2020 under the RES-T target which is binding under the Renewable Energy Directive (28/EC/2009).
- 6.2.7 Thus, the Proposed Scheme will help in the objective of achieving more efficient road traffic *movements* in line with the EPA publication.

7.0 CONCLUSIONS

- 7.1 The results of the air dispersion modelling study show that predicted ambient pollutant concentrations at the worst-case sensitive receptors near the Proposed Scheme will be well below the ambient air quality limit values. Legislation-driven technical improvements will ensure that pollutant levels will remain well below the limit values in future years.
- 7.2 With regard to CO₂ and Ireland's obligations under the Kyoto Protocol, the regional impact of traffic emissions resulting from the Proposed Scheme is insignificant.
- 7.3 The levels of dust emissions during the construction phase will be minimised through the implementation of a comprehensive dust minimisation plan with particular emphasis in the vicinity of the Coyles' residences.
- 7.4 Cumulative impacts have been assessed and these impacts will have a negligible effect on air quality and climate.