

## 3 Need for the Scheme & Alternatives

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### 3.1 Introduction

A Motorway Order Application including an EIS for the M7 Osberstown Interchange was submitted to An Bord Pleanála (ABP) in November 2008. In February 2010, ABP refused permission for the M7 Osberstown Interchange scheme indicating that ‘in terms of road and transportation planning, there is a very strong connection between the motorway interchange and the R407 Sallins By-pass and the Board has come to the view that both projects should be considered together for the purposes of environmental impact assessment and that it would be premature to determine the instant applications in advance of, or separately from, the determination of a route and design of the R407 Sallins By-pass’.

As set out in Chapter 2, both the proposed M7 Osberstown Interchange and R407 Sallins Bypass schemes remain as key transport objectives of local and regional planning documents, including the Kildare County Development Plan (Kildare County Council (KCC), 2011 to 2017), the Naas Town Development Plan (Naas Town Council (NTC), 2011 to 2017) and the Sallins Local Area Plan 2009, all of which envisage continued expansion and growth of Naas and environs in a planned fashion and in accordance with National, Regional and Local planning policy. A key component of this planned development is the provision of a new motorway connection to the existing road network together with the additional linkage from this new motorway connection to bypass the town of Sallins. Following consideration of the decision from ABP on the initial interchange only application, this application has been prepared combining the M7 Osberstown Interchange and R407 Sallins Bypass as a single scheme (i.e. the scheme).

As the construction of the scheme is dependent on funding, a final decision has not yet been made on the exact contractual arrangements for the construction of the proposed M7 Osberstown Interchange and R407 Sallins Bypass Scheme. It may be that the construction of the proposed road development will be progressed as two separate construction contracts.

KCC is also advancing the planning and design of the M7 Naas to Newbridge By-Pass Upgrade Scheme, for which a separate application is being made to ABP. This scheme incorporates the widening of the M7; including the Naas bypass, from immediately north of the M7 Maudlins Interchange to the M7 / M9 Interchange. The M7 Naas to Newbridge By-Pass Upgrade Scheme incorporates a full upgrade of the N7 Newhall Interchange by means of closing the existing interchange and relocating it to the existing R445 M7 overbridge. The M7 Naas to Newbridge By-Pass Upgrade Scheme overlaps with the M7 Osberstown Interchange and R407 Sallins Bypass Scheme as widening of the M7 occurs through the proposed M7 Osberstown Interchange.

The planning and preliminary designs for each of these schemes has been carried out in a fully integrated manner taking cognisance of the potential development sequence of the schemes, and the cumulative traffic and environmental impacts arising.

This integrated approach has established that the proposed M7 Osberstown Interchange and R407 Sallins Bypass Scheme is dependent on the construction of the M7 Naas to Newbridge By-Pass Upgrade Scheme and this is discussed in greater detail in Chapter 5 Transportation. This adds further options to the potential construction phasing arrangements for the construction of both schemes as it is possible that the M7 Osberstown Interchange and R407 Sallins Bypass Scheme could be constructed with the M7 Naas to Newbridge By-Pass Upgrade Scheme.

The proposed development is also intended to facilitate the planned development of zoned lands within the 'Naas Northwest Quadrant'. One key principle of the Naas Northwest Quadrant Masterplan, 2007 is to promote accessibility, which is to be accommodated by a sustainable incremental approach to transport provision, including the additional connection to the motorway as proposed by this application, (refer to Section 2.6.6).

The proposed interchange will provide an effective link between the M7 and the Naas L3012 Western Distributor Road. The Naas Town Development Plan 2011-2017 seeks '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.'

As set out above, although the M7 Osberstown Interchange can be constructed first in time, the supplemental route options assessment undertaken for the R407 Sallins By-pass in conjunction with the M7 Osberstown Interchange has established that the preferred scheme for the bypass thereby results in a logical and hierarchal connection between the regional and national road networks.

This chapter specifically assesses in more detail the need for the proposed scheme and the alternative options considered for the M7 Osberstown Interchange and R407 Sallins Bypass.

## 3.2 Need for the Scheme

The need for the proposed road development, which comprises an interchange on the M7 and a bypass of Sallins town, is justified for the following principal reasons:

- Addresses existing inadequate connectivity between national, regional and local road networks.
- Inadequate capacity on the existing R407 Sallins Road.
- Removal of regional traffic from the local road network in Naas.
- Removal of traffic from the urban centre of Sallins town.
- To facilitate planned and zoned development in accordance with National, Regional and local development plans and objectives.
- Urban centres can focus on development of sustainable transport policies for shorter commutes.
- Current government policies fully support the need for the scheme.

- Current Regional and Local Planning policies support the need for the scheme.
- Facilitates the development of a more balanced, hierarchical regional road network as part of KCC integrated transport planning objectives.

In accordance with the Department of Transport's "Guidelines on a Common Appraisal Framework for Transport Projects and Programmes", the need for the proposed road development is described below against the five criteria of Economy, Safety, Environment, Accessibility and Social Inclusion and Integration.

### 3.2.1 Economy

Recent national developments mean that, more than ever, each region of the country has a crucial role to play in returning Ireland's economy to enterprise driven growth. The delivery of dynamic, competitive regions that provide quality and sustainable employment opportunities will involve not only the enterprise development agencies, but also a wide range of stakeholders including local authorities, higher education institutes and the business community at local, regional and national levels.

An efficient integrated transport infrastructure is necessary to reduce levels of congestion and allow economic growth. The proposed scheme facilitates this improvement by providing relief to the national, regional and local road network, whilst also improving accessibility of the public transport network and allowing advancement of sustainable transport planning at a local level.

#### 3.2.1.1 Traffic relief to existing M7 interchanges

The proposed interchange will assist in providing relief to peak period traffic congestion on the immediate local and regional road network in both a scenario where it precedes the completion of the R407 Sallins Bypass and with the bypass in place. The nature of the proposed interchange scheme has however been informed by the advancement of the M7 Naas to Newbridge By-Pass Upgrade Scheme by KCC which addresses immediate traffic congestion and motorway safety concerns at the existing M7 Newhall Interchange through the proposed relocation of the interchange further south to the location of the existing R445 M7 overbridge.

Traffic modelling (Refer to Chapter 5- Transportation) confirms that the M7 Osberstown Interchange will reduce traffic volumes further on both the M7 Maudlins and relocated Newhall Interchange, thereby providing a more balanced and efficient distribution of traffic connectivity between the motorway and regional road networks.

KCC and Naas Town Council (NTC) have effectively completed the development of an orbital distributor road network, incorporating the Western Distributor Road, parallel to the M7 to cater for local orbital trips around Naas in order to avoid the need for local trips to use the M7 corridor. The existence of a high quality ring

road system around Naas will prevent unnecessary re-assignment of traffic from local roads to the national road system and is likely to lead to some re-assignment away from the national road. This can only happen if there is an appropriate interaction between the local, regional and national primary road networks.

The M7 Osberstown Interchange and R407 Sallins Bypass Scheme provides the appropriate connectivity and interaction, thereby ensuring that the function of the M7 corridor remains intact for 'inter-urban traffic' and not local orbital trips.

Current lack of capacity at the interface between the regional/local traffic network and the national network leads to re-assignment of traffic (along the motorway) between interchanges at periods of peak flow. This reduces the reserve capacity of the existing M7 Naas By-pass. While the proposed M7 Naas to Newbridge Bypass Upgrade Scheme will alleviate traffic congestion on the M7 mainline, the proposed interchange and bypass scheme will provide significant additional network improvements by providing a more balanced connectivity between the national and regional road networks. Therefore the proposed interchange will not adversely affect the carrying capacity of the M7 National Primary Route.

Further details are provided in Chapter 5 - *Transportation*.

### 3.2.1.2 Traffic Relief to Existing Local and Regional Road Network

The planned sequential upgrading of the national and regional road network by KCC, including the M7 Osberstown Interchange and the R407 Sallins Bypass Scheme will see the realisation of significant positive benefits to the local and regional road network in terms of reductions in traffic congestion, associated traffic capacity release on the network, and an ability for the Local Authorities to progress proposals for reallocation of space on the local road network for further planned enhancement of pedestrian, cycle and public transport infrastructure.

Additional planned local road network improvements include an objective by KCC to separately upgrade the existing R407 Sallins Road / Monread Road roundabout junction to relieve to some extent existing peak commuter time traffic congestion and improve facilities for pedestrians and cyclists at this pivotal node on the road network.

The subsequent introduction of the proposed M7 Osberstown Interchange will result in a further redistribution of traffic on the adjacent road network, with benefits in terms of traffic reductions on a number of key radial and orbital routes, most notably the R445 to the east and west of Naas town centre, congested sections of the Monread Road between the R407 Sallins Road and the M7 Maudlins Interchange, and sections of the Western Distributor Road to the west of the proposed new interchange location.

The introduction of the proposed R407 Sallins Bypass and its connection to the M7 via the proposed new interchange will provide immediate traffic relief to Sallins Main Street, effectively removing regional orbital 'through traffic', including HGV's accessing the motorway.

This traffic currently has to access the M7 via the Western Distributor Road and Newhall Interchange to the south or via Monread Road and Maudlins Interchange to the north. The Monread Road, in particular, which can be characterised as a

local distributor road with multiple commercial and residential access and road junctions, in particular experiences significant peak time congestion associated with this traffic movement.

The reductions in ‘through traffic’ from Sallins Main Street will present an opportunity for greater ease of movement for local traffic. It will also facilitate a focus on sustainable transport policies for shorter commutes within Sallins and connecting to Naas, including the development of safer, more pleasant cyclist and pedestrian routes.

### 3.2.1.3 Improved connectivity of Core Economic area

As set out in Chapter 2, the Regional Planning Guidelines (RPGs) for the Greater Dublin Area (2004 to 2016) identified the Naas/Newbridge area as a core economic area. Naas is identified as a ‘Large Growth Town I’ and ‘a primary economic growth town’ as part of an economic cluster with the adjoining towns of Newbridge and Kilcullen. As set out earlier, the R407 Regional route, which forms a strategically important transport corridor between Naas and Kilcock to the north of Kildare County, suffers from a lack of direct connection to the national primary road network at the M7 corridor. This results in a low level of service on this route for inter-urban trips with resulting congestion on this section of road at peak periods. The proposed scheme offers an opportunity to create a direct connection between the proposed R407 Bypass and the M7 at the proposed interchange location. This will facilitate compliance with the principle of ordering roads in a hierarchy (by connecting national roads to regional roads to local roads) whilst also improving access to the primary economic growth town of Naas.

### 3.2.2 Safety

The two cross-section types evaluated were a Type 1 Single Carriageway (S2) and Type 2 Dual Carriageway (D2AP). The existing traffic volumes and HGVs through Sallins town centre leads to traffic congestion on a consistent basis. As outlined in Section 3.2.1.2, the proposed scheme will result in a transfer of a large volume of traffic, especially HGVs, from the existing town centre to the proposed road development. This will reduce congestion in the town centre and thus lower collision rates.

Similarly, the proposed road development seeks to reduce traffic volumes and congestion on the Monread Road in Naas, and thus lower predicted collision rates and improve conditions for vulnerable road users, by providing an alternative route to Sallins town from the M7 Osberstown Interchange for significant volumes of traffic.

### 3.2.3 Environment

The proposed scheme will provide benefits to the local environment. The routing of thousands of vehicles per day through Sallins and the northern fringes of Naas brings with it associated and unmitigated impacts on businesses, public facilities,

homes and non-motorised road users. These impacts include noise and air pollution. The stop/start nature of urban driving and platooning of vehicles behind slow moving vehicles adds to the levels of pollution experienced by locals and visitors.

Additional impacts on the receiving environment at present include severance effects of traffic congestion in urban areas and traffic speeds in rural areas as local roads are used to avoid the congested national road network.

This severance will be reduced by the transfer of traffic to the proposed road development.

This will also bring an additional positive impact on air quality where traffic is diverted away from the receptors along the existing R407 as a result of the proposed road. This will also bring an additional positive impact on air quality where traffic is diverted away from the receptors along the existing R407 as a result of the proposed road development.

### **3.2.4 Accessibility and Social Inclusion**

Accessibility to community and business facilities in Sallins and Naas will be better facilitated with the proposed road development in place as these suffer at present due to the presence of the existing through traffic.

The removal of HGVs from Sallins town centre will facilitate the development of a safer environment for the use of the bicycle as a means of transport to access work opportunities. It will also facilitate improved bus services connecting Sallins and Naas which in turn, will offer transport options for non-car owners. The proposed scheme facilitates inclusion of all by making better provision for those less able to afford the luxury of private cars.

### **3.2.5 Integration**

#### **3.2.5.1 Smarter Travel – A Sustainable Transport Future 2009-2020**

As set out in Chapter 2, “Smarter Travel – A Sustainable Transport Future” a policy framework approved by the Government in 2009 (DoT, 2009) sets out measures so that by 2020 we can have thousands more people walking, cycling, using public transport and leaving their cars at home. With this action plan, the Government aims to change the transport mix in Ireland so that by 2020 the car share of total commutes drops from the current 65% to 45%.

This will involve new ways of approaching many aspects of policy making in Ireland. It affects how we plan our schools and school curricula, influences where we develop residential areas and centres of employment in the future, opens up social and employment opportunities for people who experience reduced mobility and returns urban spaces to people rather than cars.

In order to provide for the needs of the growing population of Naas and Sallins but abiding by the Smarter Travel policies, an integrated sustainable multi-modal transportation strategy is supported by KCC and NTC (the Local Authorities), as

reflected in the transport policies of the respective statutory local and regional Development Plans.

The key components of this sustainable multi-modal transportation strategy in the short to medium term are:

- The provision of improved public transport linkage between Naas and Sallins Train Station, located to the north of Naas. This will facilitate conversion of car commuter trips to and from Dublin to train commuter trips to take advantage of the Kildare Line Four Track Improvements.
- The provision of a new grade separated junction on the M7 Naas Bypass.
- Provision of a direct connection from the proposed regional road, the R407 Sallins Bypass to the M7 national primary route via the new motorway interchange.
- Development of improved pedestrian and cyclist networks for Naas, Sallins and the surrounding area, including an upgrading of existing, or provision of new cycle infrastructure along the R407 corridor between Naas and Sallins, including connectivity to Naas, Sallins Train Station.

Longer term, the strategy seeks to complement and take advantage of continued improvements to public transport connections, and makes provision for:

- The provision of a 'Strategic Park and Ride' facility serving an enhanced Sallins / Regional Railway Station. This 'park and ride' facility is intended to intercept car based trips on the M7 corridor and transfer them to the Kildare Rail Line.
- Provision of a 'Kiss and Ride' facility (temporary pick up and drop off zone for cars to allow passengers to transfer onto the rail transport system).
- Creation of Regional/Local Bus/Rail Interchange facilities.

The M7 Osberstown Interchange and R407 Sallins Bypass Scheme is necessary to allow the integrated multi-modal transportation strategy to work for the following reasons:

- In conjunction with the M7 Naas to Newbridge By-Pass Upgrade Scheme, it will provide further relief to the two existing M7 interchanges serving Naas at Newhall and Maudlins. Congestion at these interchanges is presently interfering with traffic flow on the existing M7 Naas By-pass and is also preventing traffic diverting from the M7 to the Naas Orbital Route.
- The proposed scheme will greatly assist with provision of improved pedestrian and cyclist networks in terms of reducing traffic on local roads and affording the opportunity to reallocate road space to accommodate cycle facilities. The proposed scheme will facilitate the improvement of the streetscapes in these areas to improve local trips by walking and cycling.

The scheme includes specific cycle measures, as discussed in detail in Chapter 4-Description of the Proposed Scheme, which seeks to integrate

with the wider developing cycle strategy and network for Naas and environs.

- Initially, as with walking and cycling, the proposed scheme removes significant volumes of traffic from the R407 route, thereby offering an opportunity to improve local public transport services and connections to Sallins Train Station.
- In the longer term, it also provides the necessary infrastructure to realise an objective to create a strategic park and ride and an expansion of train facilities on lands adjacent to the proposed bypass (ref PT5 Sallins LAP, 2009), conveniently accessed off the motorway via the Interchange) thereby relieving congestion on the M7 from Naas to Dublin.
- It will provide sufficient access from Naas and Sallins to the national road and rail network to allow it to achieve its objectives under the National Spatial Strategy and Regional Planning Guidelines.

### 3.2.5.2 Kildare Development Plan 2011-2017

As discussed in Chapter 2 Planning and Policy, the Kildare County Development Plan 2011 - 2017 was adopted on 4 April 2011, and came into effect on 2 May 2011. It replaces the Kildare Development Plan 2005-2011. The current development plan retains the objective included in the previous plan with regard to the provision of an additional interchange on the M7 with access to Millennium Park and provides for the following specific objective:

*“RP2: To facilitate provision of an additional interchange along the M7 Naas bypass serving access to Millennium Park.”*

The current development plan also contains an objective relating to the development of a public transport hub near Naas, which is relevant to the proposed scheme.

*“LT 3: To develop a public transport hub near Naas which will connect road, rail transport and public bus transport.”*

### 3.2.5.3 Naas Town Development Plan 2011-2017

As discussed in Chapter 2, the Naas Town Development Plan 2011-2017 was adopted on 9 May 2011, and came into effect on 6 June 2011. This plan retains objectives included in the previous plan with regard to the provision of an additional interchange on the M7 with access to Millennium Park and the provision of a ‘park and ride’ site in the vicinity of Naas.

### 3.2.5.4 Sallins Local Area Plan 2009

As discussed in Chapter 2, the Sallins Local Area Plan (KCC, 2009) was adopted on 26 January 2009. It contains a number of objectives relating to the provision of the R407 Sallins Bypass and a public transport interchange adjacent to the bypass route.



## 3.3 Consideration of Alternatives

### 3.3.1 Introduction

The EIS Directive which was transposed into Irish Law as the ‘European Communities (Environmental Impact Assessment) Regulations (SI No 349 of 1989)’ (as amended) requires that the Environmental Impact Statement contains an outline of the main alternatives considered and the reasons for choosing the proposed development.

As outlined in Chapter 1 Introduction, a Motorway Order Application including an EIS for the M7 Osberstown Interchange was submitted to ABP in November 2008. This application was refused by ABP on the basis that the scheme should incorporate the R407 Sallins Bypass for the purpose of environmental assessment.

This section outlines the main alternatives to the development of the proposed scheme and the reasons for choosing the proposed scheme. Initially the implications of the ‘do nothing’ and ‘do-minimum’ scenarios are considered, followed by alternatives to any road scheme development. Finally, the alternative options considered for the location and routing of, and for the design of both the M7 Osberstown Interchange and the R407 Sallins Bypass are presented.

### 3.3.2 Do-nothing / Do-Minimum

The need for the scheme is set out in Section 3.1, with the requirements for intervention at a National, Regional and local road network evident from the concurrent planning applications by KCC for both the M7 Naas to Newbridge By-Pass Upgrade Scheme and the M7 Osberstown Interchange and the R407 Sallins Bypass Scheme.

Naas currently functions as a commuter town to Dublin, with the predominant means of travel between both centres being by private car. In this regard, the M7 Naas Bypass and the N7 between Naas and Dublin functions as a commuter traffic route in addition to its inter-urban motorway function.

A ‘Do-Nothing’ option will only compound existing significant congestion issues on the inter-urban M7 corridor and interfaces with the regional and local road network at Naas. Furthermore, without intervention, development in accordance with regional and local land use planning policy and objectives will be limited by capacity constraint on transport networks.

The ‘Do-Minimum’ scheme scenario for the M7 Osberstown Interchange and the R407 Sallins Bypass Scheme assumes that the proposed M7 Naas to Newbridge By-Pass Upgrade Scheme will be operational in advance of, or at the same time as completion of the interchange and bypass.

The proposed motorway widening and upgrade scheme will effectively address mainline capacity constraints along the M7 Interurban route on the Naas Bypass. Congestion issues on the regional and local road network will remain however with pressures on a number of key Naas radial and orbital road routes increasing over time.

While other planned regional and local road network improvements, such as at the R407 Sallins Road roundabout upgrade (see Section 5.3.2.2) will provide some limited benefit in the short term, significant sections of the road network will remain congested at peak commuter periods, while, in the medium to longer term, this lack of capacity will ultimately have an impact on the extent of planned development which can progress.

It is also noted that there are limited additional road network improvement options available to address. For example, any increase on road-link capacity on the Monread road, as a means of improving connectivity between the M7 and the R407 is limited by the current local functionality of the road, including the number of junctions, accesses and practical availability of land to widen.

Traffic volumes, driven by the R407 regional route, through Sallins town centre will also continue to increase and, without intervention will only serve to exacerbate existing severance and traffic related environmental impacts within the built up urban area.

In the absence of the proposed scheme, it is likely that there will still be continued investment in public transit services, associated road or street based public transport infrastructure, as well as walking and cycle networks at a local and regional level, which will continue to encourage a move away from private car use for both local and commuter travel / trips.

In a lot of instances, the deliverability of these network improvements is however similarly as constrained as with options to increase road network capacity, with effectiveness / attractiveness also constrained by existing and increasing levels of traffic congestion.

### 3.3.3 Public Transport Only Alternative

A potential alternative to the proposed scheme would be an even greater reliance on additional public transport infrastructure intervention and level of service provision.

The sustainable means by which current levels of commuter travel by private car can be reduced combines land-use planning, including attracting significant additional employment locally, such as the Kerry Group facility in Millennium Park, and the provision of new and improved regional public transport linkages to Dublin and continued investment in local public transport infrastructure.

Land-use planning policy is clearly established through National, Regional and local planning objectives, as summarised in Section 3.1.5 and set out in more detail in Chapter 2.

It is considered however that reliance on a public transport only option would need to significantly deliver mode shift at regional and inter-urban levels in order to provide for example the predicted traffic volume reductions in Sallins Town centre that the proposed bypass achieves.

There already exists a high level of regional bus connectivity, particularly between Naas and Dublin, as set out later in Section 5. 3.1.2. Furthermore, while there is an already good quality rail service (commuter and some inter-city) also stopping at Sallins train station, accessibility and connectivity at a local level provides limitations on patronage uptake.

The most significant regional transport objective which could influence travel mode locally and regionally to the proposed scheme is the Kildare Route Project, which is intended to provide additional rail line capacity on the Cork-Dublin rail line for commuter train services. As discussed later in Section 5.3.2.3 however, the second phase of the Kildare Route Project, between Hazelhatch and Kildare Town which includes the station at Sallins, has now been deferred, and is therefore now realistically considered to be a longer-term transport objective in terms of delivery.

Notwithstanding the ultimate delivery of this rail upgrade objective, its effectiveness will remain constrained by connectivity and accessibility locally to Sallins Station from Naas and environs. For example, options to improve bus connections to the rail station on the local road network are limited by existing traffic congestion, which results in poor journey time and journey-time reliability, and land-availability along roads to provide for additional bus priority.

A public transport only objective is not therefore considered to be a practical or deliverable alternative solution. Instead, the proposed scheme has been planned to form part of a more strategic integrated transport strategy. The need for the scheme, as set out in Section 3.1, identifies short term benefits to local transport networks through the removal of regional traffic volumes from the local road network in Naas and Sallins which will facilitate continued investment at a local level in walking, cycling and public transport services.

In the longer term, the proposed scheme is planned to maximise the benefits of the proposed Kildare Route project through the facilitation of a new Regional Transport Hub (See Section 5.3.2.3) on lands adjacent to the proposed R407 Sallins Bypass.

### 3.3.4 Upgrading of Existing Interchanges

Upgrading of the existing interchanges on the M7 Naas Bypass will effectively be delivered by the proposed M7 Naas to Newbridge By-Pass Upgrade Scheme and is therefore assumed to be part of the 'Do-Minimum' scenario for assessment purposes for the M7 Osberstown Interchange and R407 Sallins Bypass Scheme.

This option was, and remains as an interim measure as part of an incremental approach by KCC to address the transport needs of the region. It is not an alternative to the provision of the M7 Osberstown Interchange and R407 Sallins Bypass Scheme, on the basis of the following:

- While the now assumed Do-Minimum scheme will significantly address capacity constraints at the existing interchange connections between the regional and national road network at Newhall and Maudlins, capacity constraints on the regional and local road network on approaches to the interchanges and elsewhere will remain without the subsequent introduction of the proposed M7 Osberstown Interchange.
- The current deficiency in the road hierarchy between the R407 and M7 remains, specifically the mixing of regional and local traffic on the Monread Road and Western Distributor Road, and can only be properly addressed by the proposed provision of the new interchange and the opportunity to then connect to the R407 Sallins Bypass at that location.

- It fails to address the aforementioned deficiencies in the existing regional and local road networks which would support continued development of public transport services, including accessibility to Sallins Train Station, cyclist and pedestrian improvements.
- It fails to make any provision for the longer term regional transport policies of KCC, including strategic Park and Ride off the M7 and the development of an enhanced Sallins / Regional Railway Station.

Planning of the M7 Naas to Newbridge By-Pass Upgrade Scheme in combination with the M7 Osberstown Interchange and R407 Sallins Bypass Scheme has resulted in a balanced approach to the overall interchange strategy for the M7 Naas By-pass and has informed the final location and form of interchange identified for the proposed scheme.

### 3.3.5 Alternative Locations for the Interchange and Bypass

In 2007, Fehily Timoney Gifford Ltd. (FTG) confirmed a preferred route for the R407 Sallins Bypass project as a stand-alone project which has been adopted as an objective in the Sallins Local Area Plan, 2009. The FTG Preferred Route Corridor Report is contained in Appendix A3.1 V4 of this EIS.

Both the R407 Sallins Bypass and the M7 Osberstown Interchange have therefore been through route option assessment as separate projects independently of each other previously.

The decision of ABP in respect of the M7 Osberstown Interchange is that it cannot be considered in isolation but that it should be considered in conjunction with the R407 Sallins Bypass.

In order to address this, a supplementary route selection assessment was prepared by Arup in June 2013, whereby Arup carried out a full assessment of the original FTG R407 corridors, the original Arup M7 interchange options, plus any additional viable route options that presented given that both the bypass and the interchange are now being assessed as a single combined scheme. Arup then developed an emerging preferred route for the overall combined scheme.

The complete Supplementary Route Selection Report is included in Appendix A3.2, V4 of the EIS.

As part of this supplementary route selection assessment, three potentially feasible interchange options, based on existing constraints and allowable motorway design standards relating to geometry and traffic safety considerations, were assessed for the location of the M7 Osberstown Interchange.

A total of three potential route options were considered for the R407 Sallins Bypass, based on a refinement of the emerging preferred 'corridor' for the bypass established previously. Options for the Sallins Link Road connection to the bypass were also assessed during this review. The M7 Osberstown Interchange location options and R407 Sallins Bypass route options considered are as detailed below, and are illustrated on Figure 3.1 V3:

**M7 Osberstown Interchange Options:**

- Option A – most western option maintaining two kilometres separation on the M7 with the existing Newhall Interchange excluding segregated lanes on the westerly merge and diverge slips.
- Option B – most eastern option maintaining two kilometres separation on the M7 with the existing Maudlins Interchange including segregated lanes on all slips.
- Option C – central option maintaining two kilometres separation on the M7 with the existing Newhall Interchange including segregated lanes on all slips.

During Design development post Route Selection, the M7 Naas to Newbridge Bypass Upgrade Scheme incorporated an upgrade to the Newhall Interchange. This did not impact on the selection of the M7 Osberstown Interchange location as it was not possible to move the interchange further west due to the further constraint of the Osberstown Treatment works. The upgrade to the Newhall Interchange which included its relocation further west then allowed the inclusion of segregated slips on the westerly merge and diverge slips.

**R407 Sallins Bypass Route Options:**

- Option A – Under the railway at an eastern location.
- Option B – Over the railway at an eastern location.
- Option C – Over the railway at a western location.

These options were combined to give nine overall options and were then assessed under the following engineering and environmental criteria:

- Length of route.
- Junctions.
- Structures.
- Topography and earthworks.
- Constructability.
- Agronomy.
- Ecology.
- Noise and vibration.
- Air quality and climate.
- Hydrology and drainage.
- Hydrogeology.
- Soils and geology.
- Landscape and visual.
- Archaeology and cultural heritage.
- Architectural heritage
- Human beings.
- Material assets.

Upon review of the individual engineering and environmental assessments it was found that all routes had advantages and disadvantages, as summarised in Table 3.1 below (reproduction of Table 6.1 from Appendix A3.2, V4).

**Table 3.1: Route Option Assessment Summary of the M7 Osberstown Interchange and the R407 Sallins Bypass**

Route Options <sup>1</sup>	AA	AB	AC	BA	BB	BC	CA	CB	CC
<i>Engineering</i>	<u>P</u>	MP	MP	LA	<u>P</u>	A	A	<u>P</u>	<u>P</u>
<i>Agronomy</i>	A	MP	<u>P</u>	A	MP	<u>P</u>	LA	LA	LA
<i>Ecology</i>	MP	<u>P</u>	A	MP	<u>P</u>	A	A	LA	LA
<i>Noise and vibration</i>	A	MP	<u>P</u>	LA	MP	A	LA	<u>P</u>	LA
<i>Air quality and climate</i>	LA	A	LA	A	<u>P</u>	A	<u>P</u>	MP	MP
<i>Hydrology and drainage</i>	<u>P</u>	A	LA	MP	A	LA	MP	<u>P</u>	A
<i>Hydrogeology</i>	LA	LA	LA	MP	<u>P</u>	A	MP	<u>P</u>	A
<i>Soils and geology</i>	MP	MP	<u>P</u>	LA	A	LA	A	<u>P</u>	A
<i>Landscape and visual</i>	MP	<u>P</u>	<u>P</u>	LA	LA	LA	A	A	A
<i>Archaeology and cultural Heritage</i>	A	A	<u>P</u>	<u>P</u>	MP	MP	LA	LA	A
<i>Architectural heritage</i>	MP	<u>P</u>	MP	<u>P</u>	A	A	A	LA	LA
<i>Human beings</i>	LA	A	LA	A	MP	<u>P</u>	A	MP	<u>P</u>
<i>Material assets</i>	MP	LA	LA	MP	LA	LA	MP	LA	LA

MP (shaded) = Most Preferred

**P (bold & underlined)** = Preferred

A = Acceptable

LA = Least Acceptable

The conclusion of the supplemental route selection was that the R407 Sallins Bypass Option A combined with the M7 Osberstown Interchange Option A was the most favourable option.

On this basis, the preferred route Option AA was chosen to be progressed through design and environmental assessment.

As part of public consultation, various other options were proffered for consideration by members of the public, affected landowners and/or others, and were assessed against the preferred route Option AA. These included but are not limited to the following additional options:

- Option D – To the west of Osberstown House.
- Option E – Through Castlesize Housing Estate via tunnel.

<sup>1</sup>Route Options are referenced with R407 Sallins Bypass Option first and M7 Osberstown Interchange Option second (e.g. Route Option 'AB' is R407 Sallins Bypass Option A combined with M7 Osberstown Interchange Option B)

These options did not alter the choice of the preferred route as they did not rank better than the preferred route when assessed under the engineering and environmental criteria outlined earlier.

### 3.3.6 Interchange Form and Road Scheme Cross-Section

After selection of the emerging preferred route for the M7 Osberstown Interchange and R407 Sallins Bypass Scheme, the next fundamental decisions were the choice of carriageway cross-section for the R407 Sallins Bypass and the form of the interchange on the M7.

Guidance on the approach to the selection of the appropriate cross-section and form of junction is given in TA 30/82 “Choice between Options for Trunk Road Schemes” of the UK Design Manual for Roads and Bridges and has been used in this comparison assessment. The method takes a holistic approach to the decision making process and does not rely solely on compliance with design standards. This is to say that while the cross-section utilises Road Capacity as defined in TD 9/12 of the NRA Design Manual for Roads and Bridges (DMRB), economic and environmental criteria are also used in the assessment. Economic criteria are included in an assessment framework with other policy and environmental criteria to ensure a more complete assessment.

A detailed report on the Incremental Assessment of Scheme Cross-Section and Interchange form is included in **Appendix A3.3, V4** of the EIS for reference.

This report was prepared to determine the most appropriate carriageway cross-section for the proposed R407 Sallins Bypass and the form of the interchange on the M7.

#### 3.3.6.1 Cross-Section Provision on R407 Sallins Bypass

The R407 Sallins Bypass, as discussed in more detail in Chapter 4- Description of the proposed Scheme, is approximately 3km in length. Three potential junctions have been identified on the proposed R407 Sallins Bypass as follows:

- M7 Osberstown Interchange at the southern terminus.
- Sallins Link Road Roundabout.
- R407 Clane Road Roundabout at the northern terminus.

An additional junction on the Bypass at Osberstown Road was discounted from inclusion in the scheme as preliminary traffic analysis however indicated that it would inappropriately attract traffic to the local road network, particularly the ‘Canal Bank’ Road which is not capable of supporting such additional traffic volumes.

Using these three junctions as nodes, two links were identified on the proposed Sallins Bypass for the cross-section assessment as follows:

- Link 1 – M7 Osberstown Interchange to Sallins Link Road Roundabout;  
and,
- Link 2 – Sallins Link Road Roundabout to R407 Clane Road Roundabout.

The links and junctions are shown on **Figure 3.2 V3**.



Three scenarios were assessed as part of the cross-section assessment. Each scenario has a different combination of cross-section types for Links 1 and 2 identified above. The two cross-section types evaluated were a Type 1 Single Carriageway (S2) and Type 2 Dual Carriageway (D2AP). These cross-sections were initially selected as the traffic volumes (see Chapter 5 - Transportation) were estimated to lie in the capacity range of these cross-sections, as detailed in Table 6/1 of TD 9/12 of the NRA DMRB.

The three scenarios are as shown in Table 3.2. Traffic models were built for all three scenarios and interrogated to produce traffic flows for input into the 'cost benefit assessment' model. The speed limit has been taken as 80km/h and all classes of traffic are catered for in the three scenarios.

**Table 3.2: R407 Sallins Bypass Cross-section Assessment Scenarios**

Scenario Number	Link 1	Link 2
Scenario 1	S2	S2
Scenario 2	D2AP	S2
Scenario 3	D2AP	D2AP

The cost-benefit assessment was carried out using the COBA 11 Program (Release 15, Republic of Ireland, TRL) to assess the incremental cost of each upgrade in cross-section against the economic benefits of the improved cross-section provision in terms of travel and accident benefits.

A summary of the overall assessment process is presented in Table 3.3 below.

**Table 3.3: Scenario Assessment**

	Scenario 1			Scenario 2			Scenario 3		
	Low Growth	Medium Growth	High Growth	Low Growth	Medium Growth	High Growth	Low Growth	Medium Growth	High Growth*
User Cost Savings (€M) (summation of Link Costs, VOT and VOC)	443.4	484.7	627.2	449.4	491.1	635.7	449.6	491.3	636.2
Accident Savings (€M)	1.31	1.38	1.57	4.99	5.17	5.88	8.52	8.81	10.01
Conditions experienced by Drivers	Sparse overtaking opportunities, particularly in peak periods, along full length of bypass.			Sparse overtaking opportunities, particularly in peak periods, along 1.9km of single carriageway.			High standard at all times.		
Route Consistency	Significant change in cross-section once depart motorway and enter a single carriageway on the proposed Sallins Bypass.			Gradual change in cross-section to reflect changing traffic volumes with step down from dual to single carriageway at tie-in to Sallins Link Road.			Significant change at tie-in to existing R407 as dual carriageway meets single carriageway with 60km/h posted speed limit at northern tie-in.		
Number of accidents saved on network over 30 years	151	156	176.0	182	188	213	212	220	249
- Fatal	-	-	-	3	4	4	7	7	8
- Serious	5	6	5	18	19	21	31	32	37
- Minor	313	323	358	428	443	499	539	559	635

	Scenario 1			Scenario 2			Scenario 3		
	Low Growth	Medium Growth	High Growth	Low Growth	Medium Growth	High Growth	Low Growth	Medium Growth	High Growth*
<b>Total</b>	<b>318</b>	<b>329</b>	<b>363</b>	<b>449</b>	<b>466</b>	<b>524</b>	<b>577</b>	<b>598</b>	<b>680</b>
Residential number of properties within 300m subject to increased visual impact	The road centreline location remains constant for each scenario. The road cross-section varies by a maximum of 4.2m between scenarios for the different links. The additional 4.2m width does not impact additional new landowners or additional dwellings. Therefore, the number of properties within 300m subject to increased visual impact is the same for each scenario.								
Number of properties requiring acquisition	1			1			1		
Agricultural land acquisition necessary (ha)	48.14			48.87			49.67		
Local Area Plan Compliance	All scenarios are equally compliant with Sallins Local Area Plan which has an objective to develop the bypass of Sallins Town.								
PVC: Total Discounted Scheme Budget Cost	42.65			44.75			47.75		
PVB: Quantified Monetary Benefits (including Residual Value Benefits)	528.58	582.71	764.81	539.58	594.28	779.43	545.03	599.95	786.47
<b>NPV (Net Present Value)</b>	<b>485.93</b>	<b>540.06</b>	<b>722.15</b>	<b>494.82</b>	<b>549.53</b>	<b>734.68</b>	<b>497.28</b>	<b>552.20</b>	<b>738.7</b>
<b>CBR (Cost Benefit Ratio)</b>	<b>12.39</b>	<b>13.66</b>	<b>17.93</b>	<b>12.06</b>	<b>13.28</b>	<b>17.42</b>	<b>11.41</b>	<b>12.56</b>	<b>16.47</b>

\* for information only

Note: Growth rates referred relate to the traffic growth forecasts used in the traffic model (refer to Section 5.4.3.2 for details).

The scenarios are compared in pairs starting with Scenario 1 which comprises the single carriageway cross-section over the full length of the Sallins Bypass and the comparison moves ahead then to the subsequent scenarios in incremental steps. The conclusions from this assessment process are set out below:

- The present value of costs (PVC) increases as you move from Scenario 1 (all single carriageway) to Scenario 3 (all dual carriageway); with a €5.1M increase in costs for Scenario 3 over Scenario 1.
- The present value of benefits (PVB) also increases as you move from Scenario 1 to Scenario 3. However, the increase when moving from Scenario 1 to Scenario 2 is very significant in PVB compared to PVC and of a magnitude of five. Whereas the increase in value of benefits is of the same order of magnitude as the increase in value of costs when moving from Scenario 2 to Scenario 3.
- There is strong justification for moving from Scenario 1 (all single carriageway) to Scenario 2 (dual carriageway to Sallins Link Road with single carriageway to the northern tie-in).
- There is not as strong a justification to incur further spend and move to Scenario 3 and therefore, the additional spend is not recommended.

On the basis of the above, Scenario 2 (dual carriageway to the proposed Sallins Link Road with a single carriageway to the northern tie-in) was recommended and brought forward as the preferred cross-section. There is a clear justification for provision of a dual carriageway cross-section from the M7 Osberstown Interchange to the proposed Sallins Link Road Roundabout. However, as traffic numbers decrease to the north of the proposed Sallins Link Road Roundabout and construction costs increase there is no justification for the additional spend and therefore, the cross-section on the northern section of the R407 Sallins Bypass is a single carriageway.

During Design development, hydraulic modelling was carried out for the River Liffey crossings. This resulted in the bridge spans increasing so that the southern River Liffey crossing is a two span structure and the northern River Liffey crossing is a three span structure. These measures are required to ensure that there will be negligible increase to upstream or downstream water levels and flood risk from the proposed road development. The cost of these structures increases the overall cost of Link 2 and further increases the present value of costs (PVC) without any increase in the present value of benefits (PVB) as you move from Scenario 2 to Scenario 3. This strengthens the argument for progressing with Scenario 2.

It is appraised that with the recommended Sallins Bypass Cross-section Scenario 2, there will be an accident savings of around €5.17 M. In terms of number of accidents, it equates to around 188 accidents on the network over 30 years considering the medium growth in traffic.

### 3.3.6.2 M7 Osberstown Interchange Form

The previous application to ABP for the M7 Osberstown Interchange in 2008 comprised of a rotary interchange with two overbridges on the M7 and full connectivity to the motorway by means of four slip roads.

As indicated in Section 3.1 however, the form of the proposed M7 Osberstown interchange has now been considered in an integrated manner in consultation with the NRA, taking cognisance of the detail of the proposed M7 Naas to Newbridge By-Pass Upgrade Scheme in terms of traffic demand and impacts and the establishment of a consistent approach to the interchanges on the M7 Naas Bypass.

Three potential interchange forms were identified for the proposed M7 Osberstown Interchange as follows:

- Option 1: Dumbbell Interchange.
- Option 2: Rotary Interchange.
- Option 3: Dumbbell Interchange with Partial Signalisation.

Layouts for each of these options are presented on **Figure 3.3 V3** to **Figure 3.5 V3** respectively.

The interchange options were evaluated on the basis of cost comparison and assessment of traffic capacity and impact utilising a combination of the regional traffic model developed for the schemes (see Chapter 5 - *Transportation*) and the development of a 'local area' traffic micro-simulation (VISSIM) model. A summary of this comparison exercise is presented below:

- Option 2 is preferable to Option 1 in terms of Journey Time Savings and Queues on the Sallins Bypass approach at northern roundabout. However, with introduction of signals at the northern roundabout of Option 1 in the future (i.e. Option 3); it significantly improves the operational capacity of the roundabout.
- There is not a strong justification to incur additional spend to provide Option 2 in the opening year, when there is a reasonable solution to address operational capacity issues if they occur in the future due to an increase in traffic demand. If the high growth traffic forecast scenario does not materialise, then Option 1 as provided at year of opening will meet traffic demand up to design year.

On the basis of the above, Option 1 (Dumbbell) was recommended and brought forward to the Design stage as the preferred interchange option. Further, with any potential future increase in forecasted traffic demand there is an option to introduce partial signals at the northern roundabout (i.e. Option 3) as and when required.

### 3.4 References

Kildare County Council. 2011. Kildare County Development Plan, 2011-2017.

Naas Town Council. 2011. Naas Town Development Plan, 2011-2017.

Arup. 2013. M7 Osberstown Interchange and R407 Sallins Bypass, Route Selection Report.

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