

## Chapter 2

## Background to the Project

### 2.1 Existing Road Network

This chapter of the Environmental Impact Statement (EIS) briefly sets out the background to the proposed scheme. In particular, the deficiencies in the current road network are outlined as well as the future pressures which would otherwise result from increasing travel demand along the corridor.

#### 2.1.1 The N9 / N10 National Primary Routes and Regional Road Network

The full N9 / N10 Kilcullen to Waterford Scheme, of which the Kilcullen to Powerstown Scheme is a part, extends from the M9 at Kilcullen southwards through the counties of Kildare, Carlow and Kilkenny, and terminates where it connects with the Waterford City Bypass. The existing N9 and N10 separate at Paulstown, where the N10 provides the main link to Kilkenny, both from the east and south. The N10 then rejoins the N9 just south of Knocktopher, which then continues as the N9 to Waterford.

The N9 Kilcullen to Powerstown Scheme as described in Section 3.1, extends 46.2 kilometres and is routed off-line from the existing N9. The Mainline crosses the existing N9 at three locations:

Kilgowan, Kildare:	Mainline Ch. 71,900
Prumplestown, Carlow:	Mainline Ch. 50,500 (Junction 3)
Powerstown, Carlow:	Mainline Ch. 32,300 (Junction 5)

#### National Primary Roads

South from Kilcullen the existing N9 comprises a single carriageway road with significant variation with regard to its cross-section along its length. Some sections have been improved to provide a good horizontal and vertical alignment with a standard single carriageway with hard shoulders. On unimproved sections of the N9, the carriageway is narrow with no shoulders provided, and it follows a sub-standard horizontal and vertical alignment.

In general, the route passes through the rural areas of counties Kildare and Carlow with major / minor priority type junctions linking it to the road network. The existing N9 also passes through the well-populated towns of Carlow and Castledermot where it takes on a typically urban character with a narrower carriageway and adjacent footways.

Along the rural section of the existing N9 route, particularly near Castledermot and Carlow, there are numerous frontages and private accesses. These accesses comprise of private dwellings, business premises and recreational activities as well as farm / field entrances.

The national speed limit (60 mph) applies on the existing N9 in the rural sections from the M9 southwards. Restricted speed limits of 40 mph have been applied on the approaches to Castledermot and Carlow, reducing to 30 mph within the towns. Speed restrictions are also in place between Ballymount and Crookstown.

Within Castledermot, the route passes through the centre of the town with a number of trip generating developments fronting the route. On-street parking is permitted in locations through the town with one signal controlled pedestrian

crossing in the centre of the town. All other junctions along the route, within Castledermot, are priority-controlled. These factors combine to induce delays to traffic travelling through the town on the N9.

Through Carlow Town, the N9 uses the relief road / ring road along Barrick Street and Hanover, parallel to the main street within Carlow Town Centre. There are 3 roundabouts on the northern edges of the town linking the N80 and other important secondary roads and commercial developments. In addition, there are 4 signalised junctions with pedestrian crossing facilities along the route, which all contribute to the significant congestion which Carlow Town currently experiences during peak periods.

In addition to the existing N9 National Primary Route, the proposed N9 Kilcullen to Powerstown Scheme intercepts National Secondary Roads, Regional Roads and numerous Local Roads. All of these roads are single carriageways.

### **National Secondary Roads**

There are 3 National Secondary routes surrounding the N9 corridor.

- N78: An alignment west of the N9, separating from the M9 at Kilcullen, passing through Athy, and joining the N77 just north of Kilkenny City. This route also provides access to / from Carlow via the N80 and R417.
- N80: A northwest - southeast alignment linking the N6, near Athlone, passing through Carlow to join the N11, north of Enniscorthy. This route intersects with the N81 near Ballon, the N9 in Carlow, and N78 south of Ballylynan.
- N81: An alignment to the east of the N9, between Dublin and Tullow, and which continues southwards to join the N80 near Ballon.

### **Regional Roads**

There are a number of Regional roads within the N9 corridor.

- R415: This route links Kildare Town to Crookstown, intersecting the N9. This road also intersects with the N78, north of Athy.
- R417: This route links Carlow Town with the N78 at Athy and connects with the N7 at Monasterevin.
- R418: This route links Athy, with the N78, and Tullow, with the N81. It intersects the N9 at Castledermot.
- R430: This provides a link from Carlow to Abbeyleix to the west, also connecting with the R431 and N78.
- R725: This road links the south east of Carlow Town directly to Tullow and the N81.
- R726: This road connects Carlow with the N81, west of Rathvilly. It also connects with other regional roads in the area including the R418 and R727.
- R747: This route connects the N9, between Timolin and Crookstown, to Baltinglass where it intersects the N81.

### **Local Roads**

In addition to the National and Regional Routes there are many Local Roads connecting to the N9 at priority junctions at regular intervals along its length. Many of these roads have narrow cross sections and sub-standard alignments. The junctions between the various Local Roads, and between the Local Roads and the

National and Regional roads, are frequently of poor standard in respect of width and visibility for vehicles on both the major and minor roads.

From 1996 to 2001, the following junctions with the N9 in the area under consideration experienced 4 or more accidents:

- The L8015 Narraghmore Road junction with the N9 has a history of 2 fatal and 3 serious injury accidents between 1996 and 2001.
- The L8033 Colbinstown Road junction with the N9, approximately 1 kilometre north of the R415 junction, has a history of 1 fatal, 1 serious and 4 slight injury accidents between 1996 and 2001.

## **2.1.2 Section A Kilcullen to Mullamast Ch. 78,500 – Ch. 62,000**

### **National Primary Roads**

The existing N9 National Primary Road from Kilcullen southwards to near Mullamast comprises a single carriageway road of varying standard. Some sections have been improved to provide a single carriageway width exceeding 7.0 metres, with hard shoulders, and a good horizontal and vertical alignment.

Between Junction 1 at Kilcullen and Ballymount, a length of 6 kilometres, the existing road has a relatively free flowing alignment, with shoulders for the majority of its length. However there are substandard horizontal and vertical curves within this length of road, as well as sections with no hard shoulders.

From Ballymount to Crookstown, the alignment is sub-standard and the carriageway is in general approximately 6.0 metres in width. This 5.5 kilometre length of the N9 has no shoulders, and carries a speed restriction with no overtaking permitted.

South of Crookstown the road has been improved over a length of 9 kilometres, including the Moone – Timolin – Ballitore Bypass, which comprises a wide single carriageway with hard shoulders, with ghost islands at the major / minor junctions.

### **National Secondary Roads**

The N78 National Secondary Road provides a 16 kilometre single carriageway link from where it crosses over the M9 at the existing grade separated junction at Kilcullen to Athy and south to Castlecomer and the N77. The N78 from Kilcullen to Athy is a single carriageway of generally poor standard. The route is narrow with sections of sub-standard horizontal and vertical alignment, and no hard shoulders and extensive frontal development.

### **Regional Roads**

The R415 links the N9 at Crookstown, Co. Kildare with Kildare Town. It comprises a single carriageway rural road generally 5.5 metres wide in the vicinity of the scheme with no hard shoulders.

### **Local Roads**

The proposed Mainline intercepts eleven Local Roads within this section of the route with the following road numbers: L6024, L6079, L6089, L6090, L6091, L6096, L6095, L8015, L8014, L8005 and L8027. These roads have cross-sections ranging from 3.0 metres – 6.0 metres in width. The limited verge widths, poor alignment and limited forward visibility keep vehicle speeds low. Accesses to houses and agricultural holdings are regular features along all the Local Roads.

### **2.1.3 Section B Mullamast to Prumplestown Ch. 62,000 – Ch. 50,000**

#### **National Primary Roads**

The existing N9 National Primary Road from Kilcullen to Powerstown is described in general in Section 2.1.1. The section between Hobartstown West and Castledermot and between Castledermot and Prumplestown has a paved width of 6.0 metres approximately and in places has a poor vertical alignment. No other National Primary Roads are affected within this section.

#### **National Secondary Roads**

There are no National Secondary Roads within this section.

#### **Regional Roads**

The R418 is a single carriageway rural road of about 5.5 – 6 metres width which crosses the proposed N9 Mainline approximately 2.7 kilometres northwest of Castledermot. The national speed limit applies in the area of the proposed N9. Although there are a limited number of accesses to residential properties along the R418 in this area, there is no provision of footways on this road.

#### **Local Roads**

The proposed Mainline intercepts seven Local Roads within this section of the route with the following road numbers: L4004, L8041, L8042, L8049, L8050, L4009 and L4011. These roads have cross-sections ranging from 3.0 metres – 5.0 metres in width. Limited verge widths, alignment and forward visibility keep vehicle speeds low. Accesses to houses and agricultural holdings are regular features along all the Local Roads.

### **2.1.4 Section C Prumplestown to Powerstown Ch. 50,000 – Ch. 32,300**

#### **National Primary Roads**

The existing N9 National Primary Road is intersected by the proposed Mainline between Castledermot and Carlow. At this location, the existing road comprises a carriageway width of approximately 6 metres and is straight and relatively flat. Due to the straightness of its alignment vehicle speeds tend to be higher than average. There is a crossroads junction about 550 metres west of the Mainline intersection, serving 2 Local Roads. The narrow road cross-section continues southwest to near the Carlow / Kildare County Boundary, where it has been widened to approximately 7.0 metres carriageway width, plus hard shoulders.

The existing N9 passes through the eastern side of Carlow Town, and is subject to speed restrictions, 30 mph and 40 mph, over a length of approximately 3.5 kilometres. This section of the road is subject to delays, particularly during the morning peak traffic, due to the number of signal controlled junctions.

South of Carlow Town, most of the existing N9 is constructed with hard shoulders and a carriageway width of approximately 7.0 metres, totalling approximately 12 metres wide. At the southern termination of the proposed scheme, the proposed Mainline intersects with the existing N9 National Primary Road at Junction 5, near to Powerstown. Within the vicinity of Junction 5 the existing road passes through a short valley forming a tributary to the River Barrow. It follows a curving horizontal alignment through the area. An access to Powerstown landfill site is located within the proposed Junction 5 area, comprising a ghost island priority junction to cater for frequent use by the public and traders / contractors.

## **National Secondary Roads**

The N80 National Secondary Road runs southwest from Carlow Town to Wexford, and intersects with the proposed Mainline near Rathcrogue, where Junction 4 will be located. On the outskirts of Carlow Town the N80 has an urban character with frequent junctions, and accesses comprising private dwellings and business premises which constrict the road. Passing to the southwest, the N80 crosses the River Burren whereupon it becomes more rural in nature, with an improved alignment and wider road cross-section, including provision of shoulders.

The existing road has been improved to a good alignment standard in the vicinity of the intersection with the N9 scheme and the single carriageway is approximately 8 metres wide plus hardshoulders of 2 metres width each. In the area of the Mainline there are accesses to Tinryland GFC club ground and Rathcrogue House (Restaurant) together with some residential and farm entrances. Southwest of the proposed Mainline crossing there is a heavier concentration of houses fronting onto the N80 road.

## **Regional Roads**

Two regional roads are crossed by the proposed Mainline route within this section. These are the R725 and the R726.

The R726 route connects Rathvilly and the N81 National Secondary Road with Carlow Town. This single carriageway rural road of about 6 metres width crosses the proposed N9 Mainline approximately 5.5 kilometres east of Carlow. The national speed limit applies in the area of the proposed N9. There are no footways on this road. There are a number of accesses in the area of the proposed N9 especially to the east where there is a group of existing properties fronting the road.

The R725 route connects Gorey, near to the east coast, with Carlow via the N80 in its latter stages. This single carriageway rural road of about 6 metres width crosses the proposed N9 approximately 5.5 kilometres east of Carlow. The national speed limit applies in the area of the proposed N9. There are no footways on this road. There are a few isolated accesses in the area of the proposed N9.

Two other Regional roads serve Carlow Town. The R417 Regional road connects Carlow Town and Athy, and the R430 connects Carlow Town to the N78 west of the town. These roads have restricted cross-sections with no hard shoulders.

## **Local Roads**

The proposed Mainline intercepts nine Local Roads along its route within this section with the following road numbers: L8092, L8094, L5030, L1009, L3053, L3052, L3051, L3050 and L3044. These roads have cross-sections ranging from 3.0 metres – 5.0 metres in width. Limited verge widths, alignment and forward visibility keep vehicle speeds low. Accesses to houses and agricultural holdings are regular features along all the Local Roads.

### **2.1.5 Section D Athy to R747 Link Road**

#### **National Primary Roads**

The proposed Athy to R747 Link Road will connect to the existing N9, at the eastern end of the proposed Link Road, just north of the existing junction between the N9 and the R747.

### **National Secondary Roads**

Athy is located to the west of the N9 corridor. Traffic from Athy travelling northbound to Dublin currently uses the N78, a 16 kilometre single carriageway link from Athy to where it crosses over the M9 at the existing grade separated junction at Kilcullen. Southbound traffic primarily uses the regional routes R418 or R417 to connect with the N9.

After emerging from the northeast side of Athy, the N78 heads northeast towards Kilcullen. The N78 from Kilcullen to Athy is a single carriageway of generally poor geometric standard. The road is narrow with sections of sub-standard horizontal and vertical alignment, and no hard shoulders and extensive frontal development.

### **Regional Roads**

The R747 links the N9 at Timolin, Co. Kildare eastwards to Arklow, Co. Wicklow. It comprises a single carriageway rural road. The R747 junction with the existing N9 is located 150 metres south of the proposed junction of the Athy Link with the existing N9.

### **Local Roads**

The proposed Athy to R747 Link Road intercepts nine Local Roads along its route with the following numbers: L4008, L8072, L8073, L4008, L8027, L8029, L8028, L8040 and the Old N9. These roads have cross-sections ranging from 3.0 metres – 5.0 metres in width with limited verges and no hard shoulders. The Athy to R747 Link Road follows the line of the existing L 4008-2 Local Road for a distance of 1.7 kilometres.

## **2.2 The Need for a New Road**

The National Road Needs Study (NRNS), recommended that improvements should be made to both the N9 and N10 between Kilcullen and Waterford with bypasses being required for Mullinavat, Knocktopher / Ballyhale, Thomastown, Paulstown, Carlow, Castledermot and Moone / Timolin. In addition, the NDP has the objective of providing a uniform carriageway type either to motorway or high quality dual carriageway standard to provide a high quality of service on the national primary road network. A feature of the NDP is the adoption of an integrated planning approach involving the identification of improvement needs and route selections for substantial sections of the routes rather than focusing solely on the delivery of bypasses of congested population centres.

In meeting these objectives, the route should not contribute to an increased traffic loading on the existing local road network due to the location and operation of interchanges. In practice the interchanges should be sited on roads which will benefit from a reduction in traffic following the implementation of the scheme. The road network in the vicinity of the proposed interchanges should be improved if there is a perceived funnelling of traffic onto sub-standard roads.

In addition, the following transport objectives are identified as part of the NDP:

- to improve the reliability of the road transport system by removing bottlenecks, remedying capacity deficiencies and reducing absolute journey times and journey variance;

- to improve internal road infrastructure between regions and within regions, contribute to the competitiveness of the productive sector and foster balanced regional development;
- to facilitate better access to and from the main ports and airports with the main objective of offsetting the effects of peripherality;
- to contribute to sustainable transport policies, facilitating continued economic growth and regional development while ensuring a high level of environmental protection;
- to help achieve the objectives of the Government's Road Safety Strategy in relation to the reduction in fatalities and serious injuries caused by road accidents.

These objectives will be achieved as part of an integrated transport investment programme for the period 2000 – 2006. The key features of this programme include:

- a concentrated and focused development strategy for the national primary road network focusing in particular on key national routes
- an improvement of national secondary roads of critical importance for economic development and balanced regional development;
- a high priority given to the safety of road users in the design and construction of road projects.

In addition, the objectives of the National Spatial Strategy can be achieved with the proposed N9 / N10 improvements, in particular the development and enhancement of strategic radial corridor between Dublin and Waterford.

The need for a new road in the N9 / N10 corridor is evident from the following:

- the (peak hour) congestion that is evident on the existing N9, particularly at Carlow and Castledermot.
- the increasing traffic volumes on the existing network due to the increased population and vehicle ownership levels.
- the consequential growth of traffic on the existing N9 and N10, creating major safety and environmental problems on the existing road.
- the accident rates experienced on the present road would be greatly reduced by the development of a road offering free-flow traffic conditions where the road geometry is compatible with the operational speed limit.
- the need for major improvement in safety and comfort of those using the existing road;
- the need to accommodate future growth of traffic as a result of development adjacent and at the ends of the N9 / N10 corridor
- the need for major improvement in the environment for those people living adjacent to the existing N9.
- the need to reduce conflict between vehicles, pedestrians and cyclists particularly through the towns of Castledermot and Carlow.
- the need to provide a consistent national standard of road.
- the need to provide better connectivity between major towns and cities in Ireland.
- the need to provide traffic relief within Carlow Town by reducing traffic volumes and reducing local journey times.

- the need to remove through traffic from the local road network in the towns of Castledermot and Carlow, thereby reducing congestion and improving environmental standards and safety along the local road network.
- the need to reduce transport costs to improve competitiveness in the production and export of goods and to offset the negative effects of European Union peripherality by improving access to ports and airports.

The proposed N9 road scheme addresses the above criteria and represents a positive impact on the policies of the National Development Plan (2000 to 2006).

## 2.3 Existing Traffic Conditions and Accidents

### 2.3.1 Traffic Volumes

The N9 / N10 is an important corridor linking the major centres of Dublin, Carlow, Kilkenny and Waterford. The current N9 / N10 experiences significant volumes of traffic, and in particular large volumes of heavy vehicles travelling between Dublin and Waterford.

The results from 2 permanent count sites along the N9 have been analysed to determine the magnitude of traffic volumes. One count site is north of Carlow Town and the other north of Leighlinbridge. Tables 2.1 and 2.2 indicate statistics from the 2 count sites during 2001:

**Table 2.1 Permanent Count Data from N9, North of Carlow**

Statistic	Northbound	Southbound
AADT (veh/day)	6291	5957
AAWT (veh/day)	6286	6245
AM Peak Hour Flow (veh/h)	435 (8-9AM)	367 (8-9AM)
PM Peak Hour Flow (veh/h)	453 (5-6PM)	552 (5-6PM)
Average Weekday % HCV	13.9%	14.6%

**Table 2.2 Permanent Count Data from N9, North of Leighlinbridge**

Statistic	Northbound	Southbound
AADT (veh/day)	6267	6120
AAWT (veh/day)	6287	6245
AM Peak Hour Flow (veh/h)	468 (8-9AM)	373 (8-9AM)
PM Peak Hour Flow (veh/h)	493 (5-6PM)	558 (5-6PM)
Average Weekday % HCV	13.4%	12.2%

The data indicates little variance from weekday to weekend flows. In fact significant flows occur on both Saturdays and Sundays. In addition, peak hour flows account for a relatively small percentage of daily traffic being under 8% in most cases with the amount of Heavy Commercial Vehicles (HCV's) typical for a national primary route at generally 13%.

The count data shows the route, outside the urban areas, generally operates at a Level of Service (LoS) of D. With growth rates extracted from the NRNS, the road

would be expected to reach link capacity, or the upper limit of LoS E, near 2020. However, this volume of traffic travelling through the town of Carlow generates significant junction delays. This is reflected in the journey time survey results described in the Section 2.3.2.

### 2.3.2 Journey Times

Journey time surveys were performed in February 2003. The results from this survey show significant delays occurring within Carlow Town during the AM, PM and off peak time periods. On the N9 through Carlow Town, average travel speeds range from 15 to 25 kilometres per hour with delays experienced throughout the day. These delays refer to the amount of time spent stationary as a result of traffic congestion and are primarily incurred at the signalised junctions along the route. Time spent in slow moving traffic is difficult to quantify as delay, and hence the assessment focuses on journey time variation to indicate the levels of disruption to general traffic movement.

Through Carlow Town, from the Carlow Ring Road in the North, to Powerstown in the South, journey times vary from a minimum of 10.3 minutes to a maximum of 14.5 minutes northbound, and from 11 to 20.5 minutes southbound. This implies a difference between maximum and minimum journey times of some 4 minutes and 10 minutes for northbound and southbound traffic respectively. The surveys also indicate that even for minimum journey times, about 1 minute is spent at traffic signals. An assessment of link lengths and speed limits suggest that this section of road could be travelled in approximately 6 minutes under freeflow conditions.

The data also indicates delays in static traffic of up to 3 minutes travelling through Athy on the N78, particularly during the PM Peak period.

### 2.3.3 Accident Data

The N9 covers a distance of approximately 110 kilometres through counties Kildare, Carlow and Kilkenny. Various accident data from the NRA and local authorities were assessed in order to determine the nature, frequency and location of the road accidents along this particular corridor. Table 2.3 shows number of accidents between 1996 – 2000 along the N9 and N81.

**Table 2.3 Accidents Statistics along the N9 and N81 Corridor 1996 – 2000**

Accident Type	Accidents on the existing N9 (1996 – 2000)	Accident on the existing N81 (1996 – 2000)
Fatal	19	12
Serious	44	43
Slight	109	74
<b>All Accidents</b>	<b>172</b>	<b>129</b>

The NRA report “*Road Accident Facts Ireland 2001*”, shows that along the N9 corridor over a 5 year period a total of 172 accidents occurred, of which 19 were fatal. A second NRA report “*High Accident Locations 1996-2000 – The Inter-Urban National Route Network*” identifies that the section of the N9 between Kilcullen and Carlow Town as a high accident location along the N9 corridor. This section of the N9 is largely rural with limited hard shoulders. The report also identifies that between 1996 – 2000 the existing N9 corridor as having a varying ‘accident rate of between half and twice the expected rate’ for a National Road. It must also be

noted that the N81, a National Secondary route parallel to the N9, has been classified as a high accident area.

On a county basis, Carlow has been identified during 2000 – 2001 as experiencing an accident rate at 3.0 per 1,000 population. The N9 through Carlow Town is currently approaching its operational capacity, while at peak hours the road operates at capacity, with queues of traffic. There are speed limits in operation within the town but the high volume of through traffic interacts with local traffic and pedestrians. This leads to an increased likelihood of both fatal and non-fatal accidents.

There are also sections of the N9 that are rural with limited hard shouldered areas. The higher speeds occurring in both directions at these locations can lead to serious accidents particularly with the high percentage of Heavy Commercial Vehicles (HCV's).

The accident rate on the N9, between Kilcullen and Powerstown, over the last 8 years has reduced significantly with the improved road infrastructure, in particular the Moone-Timolin bypass. Speed restrictions and restrictions on overtaking have also been introduced in recent years between Calverstown Little and Moone. Despite these improvements, the average accident rate over the last three years, is the same as the average for the entire national route network.

A detailed assessment of accident records also shows that the N78 and N81 have higher accident rates than the average for all national routes, while the N9 is currently consistent with the entire national route average. This information is summarised in the Table 2.4 and relates to the following road sections:

- N9 – between Kilcullen (M9) and Paulstown.
- N78 – Kilcullen (M9) and N80 Junction.
- N81 – entire route.

**Table 2.4 Summary of 1999 – 2001 Total Accident Rates**

Accident Rate for all national routes per 10 <sup>6</sup> vehicle km	Accident Rate for the N9 per 10 <sup>6</sup> vehicle km	Accident Rate for the N78 per 10 <sup>6</sup> vehicle km	Accident Rate for the N81 per 10 <sup>6</sup> vehicle km
0.15	0.15	0.20	0.24

The upgrading of the N9 will alleviate pressures on the N78 and N81, which currently experience a very high accident rate when compared to the national average. Table 2.4 indicates, in safety terms, the corridor requires works to upgrade the standard of carriageway on all the national routes in the corridor to reduce accident rates to, at the very least, below that of the national average.

### 2.3.4 Conclusion

This section of the EIS has identified the current deficiencies in the N9 / N10 corridor in terms of traffic capacity and safety. Given the strategic importance of the link within the National Road network, the capacity and safety deficiencies described in this section fully support the proposals to upgrade the N9 corridor within the National Development Plan.