

**N9/N10 Kilcullen to
Waterford - South**

Constraints Study Report

May 2001

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Waterford - South**

Constraints Study Report

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Revision Record

Issue No.	Date	Status	Prepared	Checked	Passed
1	11/04/01	Draft	GO'D	RO'B	JH
2	11/05/01	Final Issue	GO'D	RO'B	JH

Table of Contents

1	Introduction	1
1.1	Need for the Scheme	1
1.2	Scheme Development	1
1.3	Initial Study Area	1
1.4	Constraints Study Objectives	3
1.5	Report Format and Contents	3
1.6	References	4
2	Scheme Background	5
3	First Public Consultation	7
4	Initial Review of Study Area	8
5	Engineering and Topography	10
5.1	Introduction	10
5.2	Study Methodology	10
5.3	Physical Features	10
5.4	Rivers and Canals	10
5.5	Infrastructural Features	11
5.6	Tie-In Constraints	12
6	Traffic and Road Accidents	13
7	Geology and Hydrogeology	16
7.1	Study Methodology	16
7.2	Bedrock	16
7.3	Glacial Soils	17
7.4	Soft Ground	17
7.5	Unstable Ground	18
7.6	Man-made Features	19
7.7	Groundwater	20
7.8	Resources	20
7.9	References	21
8	Planning and Development	23
8.1	Introduction	23
8.2	Study Methodology	23
8.3	County Carlow	23
8.4	County Kilkenny	25
8.5	Analysis by DED	26
8.6	Summary and Conclusions	28
8.7	References	29
9	Flora, Fauna and Fisheries	30
9.1	Study Methodology	30
9.2	Assessment Criteria	30
9.3	Constraints	31
9.4	Summary and Conclusions	32
10	Archaeology and Cultural Heritage	34

10.1	Introduction	34
10.2	Study Methodology	34
10.3	Assessment Criteria	35
10.4	Recommendations	38
10.5	Conclusion	39
11	Land Use and Agriculture	40
11.1	Introduction	40
11.2	Assessment Criteria	40
11.3	Significant Land Based Sports Establishments	41
11.4	Agri-Business	42
11.5	Summary of Land Use – Southern Section	42
12	Landscape and Visual.	43
12.1	Introduction	43
12.2	Methodology	43
12.3	Existing Environment	43
12.4	Detailed Landscape and Visual Constraints	44
12.5	Towns, Villages and Density of Residential Development	46
12.6	General Aspects	46
12.7	References:	46
13	Summary	47

Figures and Drawings

Figure 1:	Initial Study Area
Figure 2:	Constraints Study Area
Figure 3A:	Physical Features, Infrastructure and Utilities
Figure 3B:	Physical Features, Infrastructure and Utilities
Figure 4A:	Accident Locations
Figure 4B:	Accident Locations
Figure 5A:	Geological and Hydrogeological Constraints
Figure 5B:	Geological and Hydrogeological Constraints
Figure 6A:	Flora, Fauna and Fisheries Sites
Figure 6B:	Flora, Fauna and Fisheries Sites
Figure 7A:	Archaeological and Cultural Heritage Sites
Figure 7B:	Archaeological and Cultural Heritage Sites
Figure 8A:	Land Use
Figure 8B:	Land Use
Figure 9A:	Landscape and Visual Constraints
Figure 9B:	Landscape and Visual Constraints

Appendices

Appendix A	Geology and Hydrogeological
Appendix B	Planning and Development
Appendix C	Flora, Fauna and Fisheries
Appendix D	Archaeology and Cultural Heritage
Appendix E	Land Use and Agriculture
Appendix F	Landscape and Visual

1 Introduction

1.1 Need for the Scheme

The upgrading of the Dublin to Waterford inter-urban road link has been identified as a requirement by the National Roads Authority (NRA) in their National Road Needs Study (July 1998)¹ and now forms part of Government Policy. The new road link is set out as an objective of the Economic and Social Infrastructure Operational Programme element of the National Development Plan (2000–2006)² (NDP).

The NRA 'Assessment of Waterford–Dublin Route and Road Type Options' paper (February 2000)³ identified a 'Central N9 Corridor' as the preferred route for the inter-urban road link. Route corridor options located further to the east (N11/N30/N25) and to the west (from N8 via Durrow) were also considered by the NRA before selecting the preferred corridor.

The initial assessment by the NRA also recommended that the proposed scheme should be a dual carriageway / motorway road in its entirety meeting 'level of service' objectives so as to ensure consistency of route standard, maximise road safety benefits and secure uniform operating characteristics.

1.2 Scheme Development

A Technical Steering Committee has been set up which comprises technical officers from Carlow, Kildare, Kilkenny and Laois County Councils, from Waterford Corporation and from the NRA Regional Design Offices.

In order to expedite the planning and design of the new road, the proposed scheme has been split into two sections, being the areas to the north and south of a line along the N10 between Kilkenny and Paulstown extended to the west and east respectively. The proposed scheme is being managed by the NRA Regional Design Offices at Kildare County Council (Northern section) and Tramore House (Southern section).

Roughan & O'Donovan-Maunsell Alliance (ROD-M) and Arup Consulting Engineers (Arup) were appointed in September 2000 to develop the planning, design and environmental assessment for the northern and southern sections of the scheme respectively.

1.3 Initial Study Area

The initial study area identified by ROD-M and Arup for the proposed N9 scheme is indicated on Figure 1. This area is based on the preferred 'Central N9 Corridor', recommended by the NRA, and covers approximately 2,400 square kilometres crossing through Counties Kildare, Laois, Carlow, Wicklow and Kilkenny. The initial study area was presented to the Steering Group and agreed in December 2000.

The initial study area begins as an apex in the north at the interchange of the M7 and M9, with the M7/N7 forming the northern border of the area. The western border passes south from just east of Monasterevin, across the River Barrow and Royal Canal, and west of Athy to the N80 at Loughlass. From Loughlass the western border passes southwest, to the west of Castlecomer and Kilkenny City. It continues south-southeast to the west of Kells, Mullinvatt and Kilmacow to the N24 near Aglish, just north of the River Suir.

The eastern border of the study area goes south from the M7/M9 interchange, over the River Liffey, near Kilcullen, and to the west of Dunlavin and east of Grange Con. It passes through the Knockarigg Hill and Thorahill high ground before passing southwest to the east of Carlow, over the River Burren and to the east of Muinebheag and Paulstown. It continues southwest to the east of Goresbridge and crosses the River Barrow, forming a loop to the west of Brandon Hill and associated high ground. It then passes southeast, roughly following the eastern bank of the River Nore from Inistioge before crossing the Nore east of its confluence with the River Barrow. The eastern border then goes south, west of New Ross, and roughly follows the western bank of the River Barrow to its confluence with the River Suir.

The southern border of the initial study area roughly follows the N24 from east of Aglish to Belmont, continuing east to the railway crossing of the N29. It then curves northward towards the eastern bank of the River Barrow.

The counties of Carlow, Kildare, Kilkenny, Laois and Wicklow are all included in the northern section of the study area. The main towns located within the northern section are Kildare, Kilcullen, Ballitore, Athy and Castledermot in County Kildare; Grange Con in County Wicklow; Ballylynan in County Laois; Carlow, Muinebheag (formally Bagenalstown) and Leighlinbridge in County Carlow; and Kilkenny City, Clogh and Castelcomer in County Kilkenny.

The main county contained in the southern study area is Kilkenny County, with a small portion of Carlow County in the northeastern corner. The major towns located within the southern section in Kilkenny County are Gowran, Goresbridge, Bennetsbridge, Kells, Stoneyford, Thomastown, Knocktopher, Inistioge, Ballyhale, Mullinavat, Glenmore, Kilmacow and Slieveroe. No major towns are located in the Carlow County portion of the study area.

The northern section is predominantly rural in character and broadly consists of the fertile Barrow Valley in the north and east, and the Castlecomer Plateau in the southwest.

The general topography of the southern section broadly consists of undulating hills in the north and a river/valley system in the south. The South Kilkenny Hills are a dominant feature in the central-southern portion of the study area, and are the source for several of the tributaries of the Rivers Nore and Suir.

The river, floodplain and valley systems of the Rivers Nore and Barrow are a significant feature of the study area. The River Barrow flows in a southeasterly direction through the northern section of the study area, effectively cutting it in half. The River Nore flows south from Kilkenny through the southern section of the study area to Thomastown before heading southeast to meet the River Barrow just east of the study area.

Agriculture is the dominant land use in the study area with all of the lands, except for urban areas and roads, broadly classified as agricultural land. Soils are generally highly fertile and agriculture practiced intensively.

There are several national primary roads and national primary/secondary roads traversing the study area. The Dublin to Waterford railway traverses the study area diagonally from north to south connecting Athy, Carlow, Muinebheag, Kilkenny and Waterford.

1.4 Constraints Study Objectives

The planning and development of the N9 road is being carried out in accordance with the NRA National Roads Project Management Guidelines⁴. These guidelines provide for a phased approach to the development of major road schemes. The main phases defined in the guidelines are as follows:

- Project Management
- Constraints
- Route Selection
- Preliminary Design / Land Acquisition Procedures
- Construction Documents Preparation (including Detailed Design) / Tender Award

The planning for the scheme up to the completion of the Route Selection phase is being carried out jointly by ROD-M and Arup for the Northern and Southern Sections respectively.

This Constraints Study has been carried out at an early stage of the project with the objective of gathering as much information regarding the project as possible. This data collection is focused on determining the constraints including physical, environmental and engineering constraints that exist and could affect the location, design and progress of the scheme.

1.5 Report Format and Contents

The Constraints Study Report has been split into two volumes covering the northern and southern study areas respectively. Each volume has common sections giving a general introduction, the background to the scheme, the first public consultation and the initial review of the study area. Thereafter the report generally concentrates on either the northern or southern study area with individual chapters covering individual topics.

Specialist Socio-economic and Environmental studies were undertaken by the following, with their significant input to this report being gratefully acknowledged:

Socio-economic	Brady Shipman Martin
Flora, Fauna and Fisheries	Natura Environmental Consultants Ltd.
Cultural Heritage / Archaeology	Valerie J. Keeley Ltd.
Land Use and Agriculture	Philip Farrelly & Co Ltd.
Landscape and Visual	Brady Shipman Martin

Chapter 2 of this report discusses the background to the road scheme in more detail with particular reference to the NRA National Road Needs Study (July 1998)¹, and the Irish Government's National Development Plan (2000 – 2006)².

The First Public Consultation which took place in at the end of March 2001 and feedback generated from it is summarised in Chapter 3.

Chapter 4 describes the initial review of the study area undertaken and subsequent refinements made.

The constraints identified for each assessment topic are then presented in subsequent chapters as follows:

Chapter 5	Engineering and Topography
Chapter 6	Accidents
Chapter 7	Geology and Hydrogeology
Chapter 8	Socio-Economic Impact
Chapter 9	Flora, Fauna and Fisheries
Chapter 10	Archaeology and Cultural Heritage
Chapter 11	Land Use and Agriculture
Chapter 12	Landscape and Visual Aspects

1.6 References

1. National Road Authority; National Roads Needs Study; 1998.
2. Department of the Environment; National Development Plan (2000-2006); 2000.
3. National Roads Authority; Assessment of Waterford – Dublin Route and Road Type Options Paper; February 2000.
4. National Roads Authority; National Roads Project Management Guidelines; 2000.

2 Scheme Background

The NRA published the 'National Roads Needs Study' in July 1998. This Study presented the current level of service provided by the National Primary and National Secondary road system and formed the basis on which policy decisions for the development of the road network for the period 2000 – 2019 were to be made.

The Policy Objectives outlined in the Roads Needs Study were carried forward from the Operational Programme for Transport (OPT) 1994 – 1999³

The purpose of the OPT was to provide essential infrastructural support for the economic objectives of the European Union (EU) Community Support Framework and to assist the fundamental aim of achieving further substantial progress towards the national and EU goal of economic and social cohesion.

The OPT identified deficiencies in Ireland's internal and access transport, which were considerations in forecasting National Road Needs for the period 2000 – 2019.

One of the major objectives of the Roads Needs Study was to examine the National Road Network and to "Determine the appropriate type of roadway for each segment of the network to cater for projected traffic flows over the twenty year period from 2000 to 2019."

The study concluded that that the National Primary Road System, including the N9 Route should be upgraded to provide a minimum 'level of service D' (LOS-D) equivalent to an inter-urban travel speed of 80kmph.

The National Road Strategy was reviewed again by the Government when preparing the National Development Plan (2000 – 2016). While the LOS-D objective was retained as policy for the road network generally, a higher Level of Service C (LOS-C) was proposed for adoption for five major inter-urban routes radiating from Dublin, including the Waterford to Dublin Route. LOS-C is equivalent to an average inter-urban speed of 84kmph on a single carriageway road, 94kmph on a dual carriageway and 105kmph on a motorway.

In addition, the following transport objectives are identified as part of the National Development Plan²

- 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 transport infrastructure between regions and within regions, contribute to the competitiveness of the productive sector and foster regional development.
- To facilitate better access to and from the main ports and airports with the main objective of offsetting the negative 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.

The emphasis of the National Development Plan has changed from focusing on the provision of by-passes of towns on the National Roads Network, to the provision of high capacity inter-urban road links.

As there are a number of routes available for travel between Waterford and Dublin, the NDP did not specify the particular route to be improved to LOS-C. Both the route and the type of road were referred for further evaluation.

The NRA subsequently published an 'Assessment of Waterford–Dublin Route and Road Type Options' paper in February 2000. This assessment looked at three corridor options for the route, broadly along the existing N9, an East Coast Route (via Arklow, Enniscorthy and New Ross) and the 'Durrow Route' (departing the N8 at Durrow, continuing southwards to Waterford via Kilkenny). The 'Central N9 Corridor' was recommended as the preferred route for the inter-urban road link and forms the basis for this study. As indicated in Section 1.1, a dual carriageway / motorway standard road was also recommended as part of the NRA assessment for the route.

3 First Public Consultation

An initial (first) Public Consultation was undertaken at the end of March 2001 and presented the “Initial Study Areas” of interest for the proposed scheme.

The consultation involved the presentation of mapping and information on the scheme through a full-page advertisement in the following local newspapers: -

- The Nationalist and Leinster Times;
- The Leinster Express;
- The Munster Express;
- The Waterford News and Star;
- The Leinster Leader;
- The Carlow People; and
- The Kilkenny People.

Comments from the public on the scheme were invited and facilitated by a ‘cut-out’ comment sheet which could be returned to the National Roads Design Office in Kildare County Council. Responses were requested by 11 April, 2001 if possible.

A total of 46 responses were received by Kildare and Kilkenny County Councils. Over 80% of the responses were relevant to the northern section.

The comments received can be categorised as follows: -

- I. Comments on the extent of the study area
- II. Comments on the choice of route
- III. Information on local constraints
- IV. Requests to be kept informed

Two responses, one representing the parishes of Tullow, Grange and Ardattin and a second representing the Tullow Community Development Initiative suggested that the study area should be extended or moved eastwards to include the Tullow area.

The majority of responses were comments on the choice of route and can be summarised as follows: -

- Route to do to the east of Carlow
- Route to go to the west of Carlow
- The N9/N10 should be upgraded
- Extend the N81 to New Ross and the N25
- New route should serve Athy
- Route to follow N78 corridor
- Route to go from east of Kildare to Waterford
- Route to go from Kilcullen to New Ross (and hence to Waterford and Rosslare)
- Route to serve Carlow and Kilkenny and provide direct access to Athy, Castlecomer, Bagenalstown and possibly Tullow.

A number of responses included local information to be considered during the development of the route corridors. A number of replies requested to be kept informed of the development of the scheme.

The issue of route corridors will be considered during Public Consultation No. 2

4 Initial Review of Study Area

Given the size of the Initial Study Area for the scheme (see Figure 1), a preliminary study was undertaken to determine whether the study area could be refined. This was carried out by collecting preliminary information on major constraints within the study area. This information was methodically reviewed and displayed graphically such that areas where the probability of finding a feasible route would be unlikely (i.e. low routing potential) could be identified. The issues that were considered included:

- engineering constraints
- the existing infrastructure, land use, topography and physical features
- planning, development and socio-economic character
- identification of sites or areas of environmental significance or sensitivity.

These areas of low routing potential, and adjacent areas which become areas of low routing potential by association, have not been considered further at this stage of the project. Such areas, while not completely eliminated from the study, will only be reconsidered should routing subsequently prove not to be feasible within the remainder of the study area. The results of this exercise are shown in Figure 2, which defines the Constraints Study Area and comprises an overall reduction of 500 sq.km. from the initial study area.

The areas in the northern section excluded from further study are (listed north to south):

- **An area south of Kildare town including The Curragh, east of the Dublin – Waterford railway line and north of the N78.**

Exclusion of this area still permits consideration of a route north of Athy to join the proposed Heath – Mayfield Motorway at a new interchange and routes parallel to the N78 to join the M9 at Kilcullen. However an intermediate northern route joining the proposed M7 east of the railway has little or no cost advantages over a route to Kilcullen and would be less efficient in that traffic to and from Dublin would need to travel considerably further (via the proposed M7) compared with using the M9 Kilcullen link. For example, the journey length from Athy via the northern route west of the railway to the M7/M9 merge is 38.9 km, via a route parallel to the N78 and the Kilcullen link this distance is only 28.4 km. In addition The Curragh is a proposed National Heritage Area.

- **An area, primarily in Co. Wicklow, east of Moone which contains Grange Con and ground rising to over 200m culminating in the summits of Corballis Hill, Hughstown, Tinoranhill and Brewel Hill.**

The area has landscape significance with views towards Castledermot. The height of the ground and steep escarpment to the south are engineering constraints. Any route would require extensive earthworks for embankments and cuttings. This would significantly increase the cost compared to a lowland route and would also be more visually intrusive in the landscape.

- **The Castlecomer Plateau**

This area has been identified as a significant landscape feature in the study area. There is a steep escarpment on the east side rising to over 250m and over 300m in some areas. The area of high ground is considerably reduced to the north-west, where the N78 crosses

a col near Farnans at a height of 230m. Significant parts of the plateau have been identified as of high amenity and are designated as Areas of Special Development Control in the Kilkenny and Laois County Development Plans. In addition there are strong engineering reasons on grounds of cost for avoiding this area. The N78 corridor to Castlecomer and Kilkenny remains in the constraints study area, for further consideration. However, the combination of additional cost to traverse the high ground and the remoteness of corridor from the major population centre of Carlow Town may make any route in this corridor unattractive.

Whilst engineering complexity and hence capital cost, has been used as a reason for excluding the areas described above, should 'lowland' routes become very expensive or infeasible for any reason then these areas could be revisited.

As with the northern section, the southern section of the study area was analysed using the methodology explained at the beginning of this section. Figure 2 shows the areas excluded from further study, which are: -

- **Area on the east side of the initial study area close to the Rivers Nore, Barrow and Arrigle**
- **An area of high ground on the west side of the Arrigle Valley, forming part of the South Kilkenny Hills**

These areas have been omitted as a result of a combination of major constraints identified and meeting the objectives of the scheme. The following additional factors were considered when refining the southern study area;

- A corridor to the east of Thomastown should be retained, given the difficult constraints associated with that area.
- It is not recommend to reduce the study area to take account of relatively small pockets of areas, which are considered to have low routing probability. Instead combinations of small areas are looked at, where it is possible to provide a meaningful reduction in the study area, without affecting the opportunity to identify feasible options for route selection.

5 Engineering and Topography

5.1 Introduction

This section of the report highlights the main Physical and Infrastructural constraints within the study area. A study methodology is outlined, followed by a description of the main features under each heading.

5.2 Study Methodology

The Engineering features considered as part of the Constraints Study consist of the physical features (topography, river systems and valleys, etc.) and the main infrastructural features (roads, railways, main electricity lines and main gas lines) within the study area. Identification of such constraints was completed primarily as part of a desktop review of the information contained on the Ordnance Survey Discovery Series (1:50,000) mapping, complimented by site visits in the form of windscreen surveys. In addition to this, information was gathered from service providers (Electricity Supply Board and Bord Gais Eireann) in order to supplement the review.

5.3 Physical Features

5.3.1 Topography

The general topography of the southern section of the study area can be broadly broken into two areas – north and south of Thomastown.

The north section consists of undulating hills where the land generally varies between 20 – 90 m above Ordnance Datum (AOD). The River Nore Valley sweeps south through the middle of this section from Kilkenny City to the northwest to Thomastown. The Kings River Valley passes from west to east to meet the Nore Valley just northeast of Stoneyford.

The area south of Thomastown is dominated by the steep river valleys associated with the River Nore and its tributary, the Arrigle River, and the South Kilkenny Hills. The generally hilly topography varies between 50 – 100 m AOD with the higher peaks reaching up to 250 – 290 m AOD, as shown on Figures 3A and 3B. The steep, mountainous countryside eases to undulating terrain toward Kilmacow.

The ground elevation in the area north of Thomastown remains below 100 mAOD, however, the South Kilkenny Hills rise to above 200 mAOD over a relatively short distance, and pose a considerable physical constraint in this area. In addition, Tory Hill to the southeast of Mullinavat has similar characteristics. It is considered unlikely that any route through the study area would pass through these raised areas over the 200 mAOD elevation. Therefore, these areas above the 200 mAOD level have been shown as constraints on Figures 3A and 3B.

5.4 Rivers and Canals

There are a number of major river systems flowing through the study area. The river and valley systems of the Rivers Nore and Barrow are the most significant river features.

The River Nore flows south through Kilkenny City and across the northern part of the study area, as shown on Figure 3A.

Two of the River Nore's main tributaries, the Kings and Little Arrigle Rivers (flowing from the west and south-west respectively) join the Nore in the general vicinity of Stoneyford and Thomastown respectively. From Thomastown the Nore flows southeast, where it is joined by the Arrigle River.

The River Barrow flows south through the northeastern corner of the study area, forming the boundary between Kilkenny and Carlow Counties. There is a Canal on the River Barrow, in the vicinity of Goresbridge, County Kilkenny. This Canal runs within the southern study area for approximately 6 kilometers along the river, passing through Goresbridge. There are a number of Locks on the Canal, which allow for the regulating of the flow.

The River Blackwater, a tributary of the River Suir, is a feature on the south western side of the study area, as it flows south to meet the River Suir to the north-east of Waterford City, near Granny, as shown on Figure 3B. There are two tributaries flowing into the Blackwater in this area. The Derrylackey River drains from the east into the Blackwater to the north of Mullinavat, while the larger Pollanassa River drains from the west into the River Blackwater to the south of Mullinavat.

Intrinsically linked to the topographical features are the river systems and valleys. At this stage of the study it is mainly the linear nature of the rivers that represents a physical constraint. The associated constraints, such as nature conservation designations, topography, landscape and visual features are each dealt with elsewhere in this study.

5.5 Infrastructural Features

5.5.1 Existing Major Roads and Railway Network

There are several national primary roads traversing the study area. The N10 Paulstown to Kilkenny road serves as the northern border of the study area before heading southward on the N10 Kilkenny to Ballyhale where it meets the N9. The N9 Dublin to Waterford road passes through the centre of the southern study area, extending southwest from Paulstown and continuing south to meet the N24 Waterford to Limerick road, at Granny, County Kilkenny. The N24 Waterford to Limerick road skirts along the southern boundary of the study area before heading southeast from Granny and leaving the southern study area just north of Waterford City. The N25 Rosslare to Cork road enters the eastern side of the study area near Ballyverneen and heads in a south southwesterly direction before exiting the study area at Belmont. The N29 road serving Waterford Port extends from the N25 at Slieveroe at the southeastern corner of the study area. The only National Secondary road in the study area is the N76 Kilkenny to Clonmel road, which extends southwest from Kilkenny City, leaving the western side of the study area at Washers Bog.

At present the route of the Proposed N25 Waterford By-Pass traverses the southern end of the southern study area. It is part of the brief for this scheme to tie into the N25 Waterford By-Pass at some point along this length, as shown on Figure 3B.

Coras Iompair Eireann (CIE) and specifically Iarnród Eireann (IA) operate a number of railway lines within the southern study area. Of these lines, one is solely for the purposes of freight transport and the others are passenger lines, as shown on Figures 3A and 3B.

The line operated solely for the purposes of freight transport runs between New Ross on the River Barrow, and Waterford Port, in Waterford City on the northern banks of the River Suir. This line is approximately 20 kilometers in length and roughly runs parallel to the River Barrow.

The main passenger railway line in the area runs from Rosslare, on the County Wexford coast, into Waterford City. This line crosses the River Barrow adjacent to the Great Island power station before arriving in the city. From there it continues to the northwest for approximately 3 kilometers, where it splits into two lines in the vicinity of Granny, County Kilkenny. The westbound line continues through County Tipperary to Limerick Junction. The northbound line traverses the

center of the southern study area to a point approximately 4 kilometers southeast of Kilkenny City, where there is spur line into the city. The line continues to the northeast towards Carlow and on to meet the Cork to Dublin line to the west of Kildare Town.

5.5.2 Electricity Supply Network

The Electricity Supply Board (ESB) has a number of electricity supply lines running through the southern study area. The main concentration of lines is in the southern part of County Kilkenny. This is due to lines emanating from the ESB power station at Great Island, County Wexford. This power station is on the Suir Estuary, approximately 7 kilometers downstream and to the east of Waterford City, as shown on Figure 3B.

Three 110kV overhead lines are routed across the river Barrow at Loughtown, County Wexford, and then continues west into the southern study area. Each of these lines crosses the railway line and the N25 National Primary Road in this area. Two of these lines turn to the south and terminate on the northern side of the River Suir, adjacent to Waterford City. The third line turns to the north and proceeds north through the eastern side of the entire southern study area.

There is also a 220kV overhead line emanating from Great Island, which follows the route of the 110kV lines until they deviate north and south, whereby the 220kV line continues to the west. This line crosses the existing N9 National Primary Road approximately 4 kilometers northeast of Waterford City, before crossing the N24 National Primary Road and the River Suir into County Waterford.

5.5.3 Gas Supply Network

Bord Gáis Éireann (BGE) has a national transmission network for serving the country's major gas demand centres. Three BGE gas transmission pipelines traverse the southern study area, i.e. the Cork to Dublin pipeline, a spur line into Kilkenny City and the Baunlusk to Ballyragget pipeline, as shown on Figure 3A.

The Cork to Dublin pipeline crosses north County Kilkenny, to the south of Kilkenny City, in roughly a southwest to northeast direction. This pipeline crosses the N9 National Primary Road approximately 4 kilometres south of Kilkenny and continues to the River Barrow from where it heads north. This pipeline is within the southern study area for approximately 18 kilometers of its length.

The spur line into Kilkenny City is approximately 3 kilometres in length and running from the Loughboy Above Ground Installation (AGI) on the southern end of Kilkenny City, parallel to the N10 National Primary Road, until it joins the Cork to Dublin pipeline.

The Baunlusk to Ballyragget pipeline runs from Baunlusk AGI in roughly a northwestern direction to Ballyconra AGI, approximately 22 kilometres away in north County Kilkenny.

5.6 Tie-in Constraints

The proposed Waterford Bypass provides a new N9 connection in the vicinity of Granny. It is proposed that options for the new N9 between Kilcullen and Waterford tie-in at this point.

There are clear advantages with a connection at Granny but it is believed that more engineering and traffic information is needed to understand the full implication of any such connection. Junction options further the east along the Waterford Bypass are therefore still being considered at this stage of the scheme planning.

6 Traffic and Road Accidents

Accident statistics for the existing road networks within the southern section of the study area was compiled from database records maintained by the NRA for the four-year period from 1996 to 1999 inclusive. This information is presented graphically on Figures 4A and 4B indicating the location and type (classified as minor, serious and fatal) of traffic accidents.

Table 6.1 shows the 1999 AADT traffic flows for the following National Roads in the study area (north and south):

N9	Waterford to Kilcullen
N10	Ballyhale – Kilkenny – Paulstown
N76	Callan to Kilkenny
N77	Kilkenny to Durrow
N78	Kilkenny (junction with N77) – Athy – Kilcullen
N80	Ballon to Stradbally

Data has also been obtained from the NRA National Accident database for the four years 1996 to 1999 inclusive. The results are shown diagrammatically on Figures 4A and 4B for the following categories of accident:

fatal;
serious injury;
injury.

Table 6.1 – Daily Traffic Flows (1999 AADT)

ROAD SECTION	LOCAL AUTHORITY	SECTN LENTH MILES	MILES UP TO THIS	DESCRIPTION OF STARTING POINT OF THE SECTION	ESTIMATE 1999 AADT	% HCV	A G E
ROUTE N 9							
WATERFORD - THOMASTOWN - CARLOW - JN N7 GREATCONNELL							
START OF ROUTE IN WATERFORD							
1A	*WATBO	0.36	0.00	JN @ RLY STATN.MEET N25	13913	16%	3
1B	*KILKN	0.62	0.36	CO/CITY BOUNDARY	15170	14%	
END WATERFORD							
2/1	KILKN	0.60	0.98	END SL N OF WATERFORD	16241	16%	3
3/1	KILKN	6.41	1.58	YJN WITH N24	7105	15%	
ENTER MULLINAVAT							
4/1	*KILKN	7.80	7.99	YJN LHS	5431	20%	2
END MULLINAVAT							
5/1	KILKN	4.54	15.79	JN WITH N10 S OF KTOPHER	3662	14%	1
ENTER THOMASTOWN							
6/1	*KILKN	0.41	20.33	30 SL W OF THOMASTOWN	5094	12%	2
7/1A	*KILKN	0.31	20.74	TJN TO KILKENNY WITH T20	4061	13%	2
END THOMASTOWN							
8/1A	KILKN	8.25	21.05	30 SL E OF THOMASTOWN	3221	15%	2
9/1A	KILKN	4.09	29.30	30 SL NE OF GOWRAN	2879	13%	
10/1	KILKN	2.18	33.39	JN N10 FROM KILKENNY	9264	15%	
11/1A	CARLO	2.55	35.57	TJN TO MUINEBEAG L33	8943	18%	
12/1	CARLO	6.70	38.12	JN R705 TO LEIGHLINBR	11419	16%	
ENTER CARLOW							
13/1	*CARLO	0.99	44.82	40 SL S OF CARLOW	11951	16%	
14/1	*CARLO	1.11	45.81	JN WITH N80 & TULLOW ST	10547	20%	
END CARLOW							

15/1A CARLO 5.54 46.92 END SL N CARLOW 10378 20% 2
 ENTER CASTLEDERMOT
 16/1 *KILDA 5.79 52.46 YJN RHS 9140 21%
 END CASTLEDERMOT
 17/1 KILDA 2.45 58.25 TJN RHS 10183 19% 1
 18/1 KILDA 7.58 60.70 CROOKSTOWN R416 TO KILD 9581 21% 1
 19/1 KILDA 4.12 68.28 DI N78 ATHY & KILCULLEN 9540 22%
 END OF ROUTE : INTERCH M7 NEAR LEWISTWN

OROAD	LOCAL	SECTN	MILES	DESCRIPTION OF	ESTIMATE	A
SEC-	AUTH-	LENTH	UP TO	STARTING POINT	1999 %	G
TION	ORITY	MILES	THIS	OF THE SECTION	AADT HCV	E

ROUTE N 10
 BALLYHALE - KILKENNY - PAULSTOWN

START OF ROUTE : ROUTE STARTS JN WITH N9
 1/1 KILKN 4.56 0.00 Y JN RHS N9 3122 20%
 2/1 KILKN 7.60 4.56 ST 40 SL S STONYFORD 4441 15% 1
 ENTER KILKENNY BYPASS
 3/ *KILKU 0.91 12.16 RO @ SMITHSLAND,END N76 11377 14% 2
 4/ *KILKU 0.35 13.07 RO @ GALLOWSHILL (T20) 12759 15% 2
 END KILKENNY BYPASS
 5/1A KILKN 4.16 13.42 RO @ DUBLIN RD,MEET N77 10073 15% 1
 6/1A KILKN 5.40 17.58 Y JN RHS TO GOWRAN R702 6603 20% 1
 ENTER PAULSTOWN
 END OF ROUTE : ROUTE ENDS AT JN WITH N9

OROAD	LOCAL	SECTN	MILES	DESCRIPTION OF	ESTIMATE	A
SEC-	AUTH-	LENTH	UP TO	STARTING POINT	1999 %	G
TION	ORITY	MILES	THIS	OF THE SECTION	AADT HCV	E

ROUTE N 76 (Part of Route)
 CALLAN - KILKENNY

ENTER CALLAN
 6/1 *KILKN 0.35 17.17 T JN RHS CARRICK ON SUIR 6005 17% 2
 7/1 *KILKN 3.40 17.52 CR WATERFORD L111 5231 19% 2
 END CALLAN
 8/1 KILKN 5.69 20.92 BALLYMACK CROSSROADS 5652 16% 1
 ENTER KILKENNY BYPASS
 9/ *KILKU 0.70 26.61 RO @ WETLAND ENTER BYPAS 7848 14% 2
 END OF ROUTE : RO HITH N10 @ SMITHSLAND

OROAD	LOCAL	SECTN	MILES	DESCRIPTION OF	ESTIMATE	A
SEC-	AUTH-	LENTH	UP TO	STARTING POINT	1999 %	G
TION	ORITY	MILES	THIS	OF THE SECTION	AADT HCV	E

 ROUTE N 77
 KILKENNY - DURROW

START OF ROUTE IN KILKENNY
 1A *KILKU 0.90 0.00 RO WITH N10 ON DUBLIN RD17771 10% 2
 END KILKENNY
 1B KILKU 1.14 0.90 JN JOHN ST/DUBLIN RD 14363 11% 1
 2/1 KILKN 2.67 2.04 END 40 SL N KILKENNY 8211 16% 2
 3/1 KILKN 6.83 4.71 JN WITH N78 3479 23%
 ENTER BALLYRAGGET

4/1 *KILKN 0.34 11.54 T JN RHS BALLINAKILL T14 4552 22% 4
 END BALLYRAGGET
 5/1A KILKN 4.99 11.88 T JN TO FRESHFORD L110 3097 19% 1
 ENTER DURROW
 END OF ROUTE : ROUTE ENDS AT JN WITH N8

ROAD	LOCAL	SECTN	MILES	DESCRIPTION OF	ESTIMATE	A
SEC-	AUTH-	LENTH	UP TO	STARTING POINT	1999	%
TION	ORITY	MILES	THIS	OF THE SECTION	AADT	HCV
						E

ROUTE N 78
 KILKENNY(JN WITH N77) - ATHY - KILCULLEN

START OF ROUTE : ROUTE STARTS JN WITH N77
 1/1 KILKN 7.36 0.00 JN TO BALLYRAGGET N77 4169 12%
 ENTER CASTLECOMER
 2/1 *KILKN 0.54 7.36 ST 40 SL S CASTLECOMER 3660 17% 3
 3/1 *KILKN 0.29 7.90 JN TO BALLYRAGGET L110 4523 10% 1
 END CASTLECOMER
 4/1 KILKN 4.08 8.19 END 30 SL NE CASTLECOMER 3294 13% 1
 5/1 LAOIS 1.75 12.27 Y JN CARLOW L110 1290 15% 4
 6/1A LAOIS 5.64 14.02 COMPLEX JN L31 1917 19%
 7/1 LAOIS 0.03 19.66 T JN RHS CARLOW N80 2076 12% 1
 8/1 LAOIS 4.86 19.69 T JN LHS ABBEYLEIX N80 2935 13%
 ENTER ATHY
 9/1 *KILDA 0.70 24.55 ST 30 SL SW ATHY 4563 11% 2
 10/1 *KILDA 0.61 25.25 CR WITH L18 CARLOW 9926 11% 1
 END ATHY
 11/1A KILDA 5.35 25.86 END 40 SL NE ATHY 5138 13% 1
 12/1A KILDA 5.73 31.21 T JN LHS KILDARE L180 4581 15%
 13/1 KILDA 2.11 36.94 Y JN RHS TO CALVERSTOWN 5333 12%
 END OF ROUTE : ROUTE ENDS JN WITH M9

ROAD	LOCAL	SECTN	MILES	DESCRIPTION OF	ESTIMATE	A
SEC-	AUTH-	LENTH	UP TO	STARTING POINT	1999	%
TION	ORITY	MILES	THIS	OF THE SECTION	AADT	HCV
						E

ROUTE N 80 (Part of Route)

ENTER CARLOW
 7/1 *CARLO 0.68 27.25 JN TO TULLOW L31 10628 12% 2
 8/1 *CARLO 0.62 27.93 ST 30 SL SE CARLOW 9259 11%
 8/4 *CARLO 0.00 28.55 ROUTE FOLLOWS N9-13/3 0 11%
 8/5 *CARLO 0.26 28.55 JN N9 & KENNEDY AV 9259 11%
 9/1 *CARLO 0.69 28.81 JN KENEDY AV & KENEDY ST10603 7%
 END CARLOW
 10/1 LAOIS 8.30 29.50 END 30 SL NW CARLOW 2349 12%
 12/1A LAOIS 6.93 37.80 JN WITH N78 2678 13% 1
 ENTER STRADBALLY
 13/1 *LAOIS 5.26 44.73 JN TO ATHY L109 4861 13% 2
 END STRADBALLY

Source: National Roads and Traffic Flow 1999, RT 580, NRA

7 Geology and Hydrogeology

7.1 Study Methodology

This section of the report describes the geological and hydrogeological constraints within the study area.

The assessment comprised initial roadside site visits, and a desk study of available published information which is included as a list of references in Appendix A.

The information outlined in this section is presented graphically on Figures 5A and 5B.

7.2 Bedrock

7.2.1 Introduction

The bedrock in the southern part of the constraints study area changes from granites (igneous rocks) and surrounding metamorphic deposits (Leinster batholith) along the eastern part of the area, north of New Ross, to Ordovician slates and shales in the south-east (Thomastown to New Ross). Carboniferous limestone rocks underlie the section of the study area north of Thomastown.

In the southern part of the study area, south of Ballyhale, the bedrock is mainly composed of Devonian sandstone with an occurrence of limestone in the southwest corner near Kilmacow.

7.2.2 Sedimentary rocks

The main geological formations occurring in the constraints study area are described, starting with the oldest sequence, in Table 7.1.

Some of the Carboniferous limestone formations identified may be associated with Karst features (Ballyadams Formation, designated Rck-3 on the geotechnical figures, 5A and 5B, and the Waulsortian Formation, designated Rck-4). The dolomitised Limestone rocks may also prove hard to excavate.

The sandstone rocks encountered, during a site visit, in the vicinity of Thomastown, were massive and blocky and could also therefore prove hard to excavate.

7.2.3 Granite Complex

A granite complex known as the Tullow granite extends in a broad zone to the east of Gorebridge-Carlow (Rck-5) and along the eastern part of the constraints study area, northeast of Mullinavat. The granites are igneous rocks and the resulting heat and deformation has created the surrounding metamorphic rocks. The Tullow granite is the largest granite pluton in the Leinster Batholith and is mostly of medium-grained texture but some coarse and fine veins cut the mass. The granites can be very hard and difficult to excavate although, along the joints, the granite is often deeply weathered to sand with solid blocks in-between. This deep weathering can also result in a highly or completely decomposed granite structure.

Table 7.1: Geological formations occurring in the constraints study area.

Period	Formation	Rock Types	Excavatability	Cutting Stability	Map Symbol (where used)
Ordovician	Maulin	Slatey mudstones. Mudstones altered to phyllites and schists where they lie close to the granite	Generally rippable	May have instability problems along planes of weakness	Rck-1
	Browsford	Schists	May prove hard to excavate	As above	Rck-1
Devonian	Carrigmaclea	Conglomerates, sandstone and shales	Sandstones may prove hard to excavate	Bedding planes tend to be gentle and therefore fairly stable.	Rck-2
	Kiltorcan	Sandstones and mudstones	As above	As above	Rck-2
Carboniferous	Ballymartin	Interbedded muddy limestone and shaly mudstone	Generally rippable	Fairly stable	
	Ballysteen	Muddy limestone	Generally rippable	Fairly stable	
	Waulsortian reef Limestone	Massive, unbedded fine-grained limestone	May prove hard to excavate	Fairly stable, except for karstified zones	Rck-4
	Kilsheehan	Limestone occasionally cherty	Generally rippable. Hard in zones	Fairly stable	
	Butlersgrove	Argillaceous limestone	Generally rippable	Fairly stable	
	Ballyadams	Shelf Limestone, potentially Karstic	Generally rippable, may prove hard to excavate where the rock is massive	Stable except for karstified zones	Rck-3

7.3 Glacial Soils

7.3.1 Gravels

Thick gravel deposits occur within the constraints study area, mainly along the major river crossings. The main gravel areas identified are as follows: -

- Gravel deposits along the River Nore south of Kilkenny City. The major gravel aquifer within this area is designated G-3 on Figure 5A
- Gravel deposits along the River Barrow.

These materials do not present problems for road construction, provided the road alignment is kept above the water table. Generally, gravels provide good formation for pavement construction and are generally suitable for reuse. Water bearing sand and silt layers where encountered can be problematic.

7.3.2 Clayey Till

Glacial tills dominate much of the constraints study area. These glacial deposits are mainly deposits of the 'Midlandian' ice sheet with the coarse fraction dominated by cobbles and boulders of limestone with lesser proportions of sandstone, slates and shales.

The depth of till occurring within the constraints study area is not known, and is likely to vary. Depths of 0m to 5 m were reported in the vicinity of Thomastown . Elsewhere the depth of the till is likely to vary considerably.

The geotechnical properties of Irish glacial tills are well-documented These soils are generally well graded, variable with gravel lenses, with quite an absence of clay minerals. The clay fraction (rock flour) typically amounts to about 15% and the fines fraction (clay and silt) is about 30 to 40%. The glacial tills are generally over-consolidated, and therefore are of a low compressibility. These soils are usually firm to stiff, however due to their low plasticity they are very susceptible to softening and deterioration in wet weather, especially if heavily trafficked. When the clayey tills are kept dry, they present relatively little difficulty to road construction.

7.4 Soft Ground

The main soft soils occurring within the constraints study area are as follows: -

7.4.1 Peat deposits

- Small deposits occurring to the east of Kilmacow and north east of Mullinavat (P-3).

Based on available Geological Survey of Ireland (GSI) information there are relatively few areas of peat within the study area.

Peat soils are considered to be problematic for construction work owing to their high organic content, high compressibility and low shear strength. When loaded, these soils usually exhibit large immediate and primary settlement followed by a very pronounced long-term creep settlement. These soils are also known to exhibit a differential settlement due to their high variability within the same location. Peat soils could present problems for embankment stability as a result of the shear failure of the subsoil during construction. Special measures for embankment construction are usually required including piling, excavate-and-replace and preload with vertical drains, etc.

7.4.2 Alluvium

Alluvial materials are deposited by river action or the action of melting glaciers. The following major alluvial tracts cross the constraints study area:

- Along the basin of the River Barrow from Carlow town to Goresbridge (AL-2). These soils are poorly drained and have a slightly peaty clay loam texture. The organic content can reach up to 20%. The depth of the alluvium is usually greater than 1m. The depth of the alluvial sands/gravels occurring in river valleys can typically be 9 m to 12 m.
- Along the River Nore (AL-3).

These soils are normally consolidated (i.e. they have not been previously compressed by glaciers) and thus are moderately to highly compressible, though not as severe as peat soils. Special measures for embankment construction over alluvial materials include preloading, with or without vertical drains, and piling.

Table 7.2 presents a summary of the properties of the soils discussed in Sections 7.3 and 7.4.

Table 7.2 : Soil Properties within the Study Area

Soil Type	Strength	Compressibility	Use as Earthworks
Gravel	Good	Low	Good
Glacial Till	Variable	Low-medium	Variable
Alluvium	Poor	High	Poor
Peat	Very poor	Very high	Not suitable

7.5 Unstable Ground

7.5.1 Karst Solution Features

Some of the Carboniferous limestone formations occurring in the constraints study area are reported to have potential karst solution features. The formations most associated with solution features are known as 'Ballyadams' and 'Clogrenan' and occur in a broad band between Bennettsbridge and Carlow Town. The massive reef limestone (Waulsortian Formation) is also prone to karstification. The most exposed areas to Karst are those where the limestone is present near the surface or lies near a catchment area. The area near Kilmacow appears to be exposed to Karst because of the water discharge in this area coming from the surrounding hills.

The Karst database held by the GSI was consulted. This database holds records of locations and types of reported Karst features. The location and features of the reported Karst areas are presented in Figures 5A and 5B with details provided in Table 1 of Appendix A

The occurrence of sinkholes under a roadway can lead to depressions or collapse in the pavement. Specific areas prone to Karst should be identified at the aerial photograph interpretation and site investigation stages. Depending on the risks, it may be prudent to adopt design measures to control water discharge, which can re-activate solution features, and to incorporate measures which will protect the roadway from potential collapse.

7.5.2 Slope Stability

In order to assess the stability of rock cuttings, it is important to identify the orientation of present discontinuities, their condition and also the extent of weathering. Steep ground should also be identified during more detailed assessment of route options. A survey of any previous cases of slope failure in the area of study would prove very useful. Areas of instability along potential route options may be revealed by examination of aerial photographs.

The rocks associated with the Ordovician period may be susceptible to cutting instability because of the complex geological structure characterising these rocks (i.e. folds, faults and variable dip). This may also be due to the presence of frequent mudstone horizons, which can lead to low strength zones (i.e. residual strength) following the bedding pattern due to strain slip during folding. Cutting stability in Limestone rocks would need careful consideration where Karst weathering is present and also in the granites where deep weathering can occur.

7.5.3 Mining Areas

The GSI minerals inventory database records were also consulted and indicated that no recorded coal mines, former pits or natural outcrops of coal are present within in the study area.

7.6 Man-made Features

A list of pits and quarries within the study area are given in Table 2 of Appendix A. The location of the main quarries and pits in the constraints study area are shown on Figures 5A and 5B. At this stage no major landfill areas have been identified in the constraints study area. However the search was not exhaustive as it was based on limited historical data. The GSI are presently updating their records of pits and quarries. It is anticipated that updated records will be available in May 2001.

7.6.1 Pits

The geotechnical constraints mapping (Figures 5A & 5B) shows many gravel pits, both in-use and disused, within the gravel strata that occur within the constraints study area.

7.6.2 Quarries

The locations of quarries prove a good way of verifying locations where the rock is close to the surface. There are many quarries, mostly disused, noted in the southern portion of the southern section of the constraints study area, north of Waterford City. Anecdotal evidence also suggests that an in-filled landfill site exists to the north of Bennetsbridge.

7.6.3 Landfills

A list of landfill sites compiled by the Environmental Protection Agency (National Waste Database 1998) was consulted for identifying any landfill sites occurring within the constraints study area. Based on the EPA list there are no major landfill sites within the constraints study area. According to the GSI data there appears to be an old landfill located just north of Waterford City.

7.7 Groundwater

The southern constraints study area is drained by two main rivers - River Nore, River Barrow and their tributaries. Low-lying areas prone to flooding should be identified in more detail during the evaluation of the feasible route options.

The GSI were consulted about the locations of public well supplies in the constraints study area, and were able to provide data on wells in County Kilkenny only. These are plotted on the geotechnical constraints figures. Further detailed investigation of wells will be necessary at route selection stage wherever the routes are likely to impact on the groundwater supply.

7.8 Resources

7.8.1 Aquifers

Consolidated Sediments (Bedrock)

The main bedrock aquifers identified are:

- Sandstone aquifer of the Kiltorcan formation. This formation may contain aquifers of regional importance.
- Karstified limestone: Ballyadams formation. This formation contains an aquifer of regional importance. A large spring located in the south of Paulstown is the source for a regional water supply in a part of Co Kilkenny.
- Dolomitised limestones, Waulsortian and Butlersgrove formations. A substantial part of this aquifer drains in the River Nore. This aquifer has been developed for industrial water supply in Carlow town and for municipal supply in Bagenalstown.
- Ballysteen Formation: can contain aquifers of regional importance (3).
- Ballymartin Formation: only contains aquifers of minor importance (3).
- Maulin Formation: These rocks contain only minor aquifers (3).

The constraints to route selection posed by bedrock aquifers are not likely to be as significant as sand and gravel aquifers, so they have not been plotted on the geotechnical constraints maps.

Unconsolidated Sediments (sands and gravels)

There is a thick deposit, mainly of sand and gravel, which occurs in the constraints study area as follows:

- Major aquifer along the River Nore south of Kilkenny city (10 m to 30 m), designated G-3.
- Other gravel aquifers identified stretching along the main rivers occurring in the constraints study area are considered to be minor aquifers (5).

Aquifer Vulnerability and Protection

Draft groundwater vulnerability mapping was provided for County Kilkenny by the GSI. The data available was examined to identify any major vulnerable aquifers occurring within the constraints study area. Some extremely vulnerable aquifers were reported in areas where the shallow rocks lay within 0 m to 3 m from the surface as follows:

- Rock aquifer between Thomastown and Kilmacow
- Rock aquifer between the north-east of Thomastown and Dungavan
- Rock aquifer at the north-east and north-west of Gowran.

Where the water table would be lowered as a result of excavation for road cutting, the potential effects on local wells would need to be assessed. Lowering of the water table, potentially could reduce or eliminate the well yields.

Road drainage as well as accidental spillages could also potentially have an impact on the quality of the local groundwater. In areas of road crossings through zones of high aquifer vulnerability, specific design measures for road drainage may be required to prevent surface activity from polluting the underlying groundwater.

7.8.2 Mineral Resources

There are numerous active and disused sand and gravel pits within the constraints study area, many of which are identified on the geotechnical constraints figures. The locations of rock quarries identified on the GSI maps, which are fewer in number are also shown on the geotechnical constraints figures. Some of these pits and quarries may also provide a source for road construction materials.

As specific routes could impact on the viability of open cast mining, the potential for mineral resources along specific routes will be considered at route selection stage. It may be possible to identify these potential mineral resource areas in consultation with the Department of the Marine and Natural Resources, the County Councils, as well as the minerals section of the GSI.

The only mine identified in the constraints study area was an active dolomite mine near Bennettsbridge.

7.9 References

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8 Planning and Development

8.1 Introduction

This section of the Constraints Report describes the major planning and development constraints of the southern section of the study area, including a review of the Kilkenny and Carlow County Development Plans, and a socio-economic assessment of the major population centres. Much of this section is duplicated in Volume 1 (Northern Section) as it is appropriate that assessments are made in the context of the entire study area. Accompanying tables and figures referred to in the text are presented in Appendix B.

In addition to this, a detailed Planning Register / Application Search for the Kilkenny and Carlow Sections of the study area has been undertaken. A comprehensive wind-shield survey of the southern section of the study area has also been completed. This information has been compiled to update available mapping and aerial photography. It is not presented in this report, but will be used at the next phase, when identifying and assessing feasible route options for the scheme.

8.2 Study Methodology

The constraints study area comprises a broad band of countryside stretching between Paulstown and Waterford, covering the County Administrative areas of Carlow and Kilkenny. Only a small section of County Carlow is in the constraints area, with the bulk of the area in County Kilkenny.

The constraints study area encompasses Kilkenny City, Thomastown and a number of smaller villages, including Bennetsbridge, Goresbridge, Gowran, Inistiogue, Kilmacow, Knocktopher and Mullinavat. The area is characterised by extensive areas of relatively difficult terrain, including rugged topography and areas liable to flood.

The broad socio-economic context, including the planning framework, is dealt with in Sections 8.3 and 8.4 on a county basis. This also includes details of the principal centres of population. Section 8.5 examines the constraints study area on a District Electoral Division (DED) basis, which provides an overview of the rural areas in particular. The Census of Population is the principal sources for the analysis. The bibliography for this section is included with the overall report references.

8.3 County Carlow

The County Carlow Development Plan 1997 promotes the development and vitality of the county in a manner that reflects the needs of its present and future citizens. Carlow County Council aim to continue the programme of road realignment and strengthening work, which will ensure high quality links with Dublin, the ports and the Midlands.

The 1996 Census of Population recorded the population of County Carlow as 41,616 persons, an increase of 4.5 per cent on the figure of 39,820 persons recorded in 1981. Although the population of the county did not increase by a substantial figure during these intercensal periods, there has been significant household formation. This is particularly the case in Carlow town where there has been a considerable increase in the resident population commuting to the general Dublin area, using both public and private modes of transport. Population totals for each of the larger centres in the county are given in Table B1, Appendix B.

Population totals for the County and Carlow & Environs is given in Table 1, Appendix B. Population projections up to 2011, sourced from the Development Plan, are given in Table 2, Appendix B.

8.3.1 Carlow Town

The county town of Carlow is said to be the Celtic Centre of Ireland. Carlow is situated on the River Barrow and on the intersection of the N9 with the N80, linking Carlow with Portlaoise and Rosslare. Carlow town also has the advantage of the presence of a rail line station on the Dublin to Waterford route. Transportation infrastructure makes Carlow accessible to and from national ports and regional centres

The environs of Carlow have undergone a dramatic increase in population over the 10-year period rising by 91 per cent between 1981-1991. In 1996 the population of Carlow and Environs was 14,979 a growth of 17 per cent since 1981. The *Carlow County Development Plan 1997* envisages the bulk of the 2001 projected population increase for the County to be accommodated within Carlow Environs.

Within the *Carlow County Development Plan 1997* it is a policy to examine the feasibility of a national primary bypass of Carlow town. A by-pass route for the town is indicated on the development plan maps.

The development of a road system linking population and employment centres to the rest of the nation and also to the country's sea and air ports is an essential element in facilitating the development of Carlow. An efficient transport system plays a major role in influencing investment decisions, particularly in the case of industry where accessibility and centrality have become such important elements of manufacturing and distribution. The link with Dublin has improved with the realignment at Bolton Hill and the recent completion of the motorway, terminating at Kilcullen. The upgrading of the N9 to Euroroute status is considered important to the completion of the required access improvements. It is the policy of the Council to develop a safe and efficient road system for the county, which will cater for its development needs into the next century.

The portion of those employed in manufacturing has only marginally increased since the 1970s, when two multinational firms, Lapple (Ireland) Ltd. and Braun (Ireland) Ltd. were established. Other industry in the town includes the Greencore Sugar Company, Oglesby & Butler, Process Control and Automation. Industrial estates include Strawhall and Kernanstown.

The Carlow Institute of Technology has a student population 2500 (1997) estimated to rise to 4000 in 2000. St Patrick's College had a student population of 200 in 1997 offering adult education in third level qualifications and is included as an institution in the CAO/CAS application process.

8.3.2 Muinebheag

Muinebheag (formally Bagenalstown) is situated on the eastern bank of the River Barrow, approximately 16 kilometres south of Carlow town, 21 kilometres north-east of Kilkenny City and 100 kilometres from Dublin. Muinebheag acts as a local service centre. The town depends to a great extent on its rural hinterland. The town is accessed by road from the N9 at the Royal Oak junction and by rail from the Dublin and Waterford railway line.

Laid out in the 18th century on a grid system, the river and the rail line have constrained the western and eastern expansion of the town. The population decreased by 3 per cent between 1986 and 1996. The population was recorded in 1996 at 2,695 persons, 1.4 per cent increase since 1981. Although the *Carlow County Development Plan 1997* includes population projections for the county it does not allocate growth to specific locations.

Agriculture is important to the urban centre due to the high percentage of land in the vicinity, which is suitable for intensive farming. Muinebheag also has some employment based on the manufacturing of agricultural related machinery both for the home and export markets.

8.4 County Kilkenny

The county consists of a highly fertile central plain with uplands in the north-east, the north-west and the south. The land is well drained by its river network, the river Nore bisects the county and Kilkenny city on a north/south axis. The Rivers Barrow and Suir are natural boundaries to the east and south of the county respectively and their tidal estuaries converge at the extreme south-east of the county.

The development of an efficient strategic transport system is essential to the future economic social and physical development of the county. Included as an objective in the *Draft Kilkenny County Development Plan 2000* is the development of the central corridor route Waterford to Dublin to motorway dual carriageway standard.

The population of County Kilkenny was recorded at 75,336 persons in 1996, an increase of 6.3 per cent since the *1981 Census of Population*. With the exception of Kilkenny city all towns within the county have less than 2,000 persons. Some large towns, close to the county boundary include Waterford City, New Ross and Carrick-on-Suir. Population totals for each of the larger centres within the county are given in Table 3, Appendix B.

8.4.1 Kilkenny City

Kilkenny City is sited on a bend in the River Nore. Commonly referred to as the Medieval City, Kilkenny is a designated heritage town. Buildings constructed by the Normans during the twelfth and thirteenth century are evident throughout the urban area.

Almost equidistant from Dublin and Cork, Kilkenny is well served by national primary routes. Kilkenny has access to the sea via Belview Port on the Suir Estuary and via New Ross on the Barrow River. The Dublin to Waterford main line rail also services the City.

The population of Kilkenny City was 18,696 in 1996, an increase of 10.5 per cent since 1981. With the attraction of investment into the city, the population is set to increase considerably over the coming years.

Kilkenny, traditionally home to industries such as brewing and food processing, has now succeeded in attracting development in the financial and IT sectors. Designated an Information Age town, Kilkenny has begun to promote the information, communications and technology concepts among the community, business, education and government sectors.

8.4.2 Thomastown

Thomastown is situated approximately 16 kilometres south-west of Kilkenny City and 20 miles north-west of Waterford City. The regional route R700 linking Kilkenny to Rosslare via New Ross, and the N9 Dublin to Waterford National Primary Route, intersect at Thomastown. The town is also served by the Waterford – Dublin railway route via Kilkenny.

Thomastown is set within the Nore Valley mainly on the north bank of the river. The Nore's flood plain remains as grazing land on both the north-west and the south-east of the river. The extremes of topography to the south of the river have precluded substantial development, being either liable to flooding or too steep to develop. Growth has also been restricted due to the level of sanitary services available within the town. The Draft Kilkenny County Development Plan 2000 includes objectives to overcome these constraints.

Thomastown acted as an entrpot for Kilkenny City and the rich agricultural land of mid Kilkenny. Goods were moved by road from Kilkenny to Thomastown and from there by water to New Ross and Waterford Ports. The processing of the agricultural produce of the town's rural hinterland, in particular milling weaving and tanning, as been important to the town's prosperity.

The population of Thomastown increased by 7 per cent between 1981 and 1996 to 1,581 persons. The development plan for the area includes a by-pass road, which will connect the R700 and the N9, redirecting through traffic away from the town centre.

8.4.3 Castlecomer

The town of Castlecomer is located 19km north of Kilkenny City, where the Athy-Kilkenny Road crosses the Dinin River Valley. The N78 National Secondary Route links the town with Kilkenny City and with Athy and Dublin. The town is also directly linked with Ballyragget and with Abbeyleix.

Following the discovery of coal, Castlecomer was laid out in the 17th century as a model town. It acted as the principal market town for North Kilkenny and as an estate village for the Castlecomer Demesne of the coal mine owners. The loss of mining activity has faced the town with the challenge of establishing new sources of employment.

The population of Castlecomer was 1,380 persons in 1996, a decrease of 11 per cent since 1981. No population projections are stated for the town but *the Draft Kilkenny County Development Plan 2000* recognises that ample land is available for development within the town's development boundary.

8.5 Analysis by DED

A set of six indicators were recorded for each DED within the constraints study area, namely population density, population change, change in the total at work, percentage employed in manufacturing industries, unemployment rate, and percentage employed in the primary sector. Using a statistical formula specific to each indicator, each DED within the constraints study area was placed in a percentage band based on their performance. It should be noted that this information is based on the population that resided in each DED during the 1991 and 1996 census according to the CSO small area information.

8.5.1 Population Density – 1996

The constraints study area is divided into four population density bands (see Figure 3, Appendix B). The population density of each DED varies from greater than 150 persons per square kilometre to less than 25 persons per square kilometre.

The densely populated DEDs are located in and surrounding the towns of Kilkenny and Thomastown. The areas of lowest population density are generally in upland areas, relatively remote from the principal settlements.

The areas of lowest population density are generally in upland areas, relatively remote from the principal settlements.

8.5.2 Percentage Population Change 1991 - 1996

Using this indicator, DEDs within the constraints study area are divided in five population percentage change bands ranging from -19.3 to 52.6 per cent (Figure 4, Appendix B).

The DEDs which experienced large population decline (-19.3 to 6%) are generally located in marginal rural areas and many of them correspond to areas of low population density.

While DEDs located around Carlow and Kilkenny experienced population increases in the 1991-96 intercensal period, some DEDs surrounding Athy and New Ross recorded a decline, indicating the relative weakness of these urban centres.

8.5.3 Percentage Change in Total at Work 1991-1996

The study area is divided into five bands of percentage change in the total population 'at work' between 1991 and 1996, varying from -16.2 to 72.6 per cent (Figure 5, Appendix B). It should be noted that these data refer to place of residence not place of work. The majority of DEDs fall within the 7.5 to 16 per cent change band and these are evenly dispersed across the study area.

In general, the northern section of the study area experienced higher levels of growth in the numbers at work, possibly reflecting the relative strength of urban centres in this area as well as the influence of commuting to the Dublin area.

In contrast, the southern section of the study area experienced relatively lower percentage changes in the total population 'at work' during the 1991 to 1996 period with a number of DEDs recording a modest 0 to 16 per cent increase.

The DEDs recording a decrease in numbers at work are mainly located in relatively remote and/or upland areas, and many of these correspond to DEDs with a weak demographic structure as identified on Figures 3 and 4, Appendix B.

8.5.4 Percentage Employed in Manufacturing Industries – 1996

Using this indicator the study area is divided into four categories (Figure 6, Appendix B). The percentage of those who are employed manufacturing industries varies from 3.3 to 35.9 per cent. The indicator shows where those employed in manufacturing industries reside. It does not indicate where the manufacturing industries are located.

The relative strength of the northern section of the study area is evident. Three concentrations may be identified in this area as follows: -

1. along the N78 from Kilcullen to Castlecomer;
2. between Castlecomer and Carlow;
3. along the N9 from Carlow to Bagenalstown. These reflect the traditional industrial base of Carlow and Athy and may also reflect the relative accessibility to work provided by the National Route system.

Within the southern section, the DEDs with the highest concentration of those employed in manufacturing industries concentrate in the Waterford area. The relatively low percentage of workers in manufacturing in the vicinity of Kilkenny is also apparent. This probably reflects the importance of services, including tourism, as an economic activity in Kilkenny as compared with manufacturing.

8.5.5 Percentage Unemployment rate – 1996

The unemployment rate is defined as unemployed plus 1st job seekers as a percentage of the total labour force. In 1996 in the study area, percentage unemployment rate fell into four bands ranging from 3.5 to 28.1 per cent (Figure 7, Appendix B).

The northern section recorded higher percentages in the rate of unemployment than the southern section. The unemployment rate in the northern section lies between 15.9 to 28.1 in the majority of DEDs. The northern section also contained a number of DEDs in the 9.7 to 15.9 per cent category. In some respects, this is surprising, given the employment opportunities in the Dublin area and the evidence of commuting provided by the other indicators. However, it may reflect the decline of traditional industries in the area.

Within the southern section the rate of unemployment is significantly lower with the majority DEDs in the two lower bands 3.5 to 9.7per cent. Six DEDs within the southern section fell into the 15.9 to 22.1 per cent bands. None of the DEDs in the southern section fell into the highest percentage band.

8.5.6 Percentage at Work in Agriculture, Forestry and Fishing – 1996

This indicator shows the percentage of the DED population that were at work in the primary industries of agriculture, fishing or forestry in 1996 (Figure 8, Appendix B). The DEDs were divided into four bands ranging from 0.6 to 59.1per cent. DEDs surrounding the main urban centres Athy, Carlow, Kilkenny and Waterford Environs fall into the 0.6-14.5per cent band, the lowest band. The remaining DEDs portray an even distribution across the study area.

8.5.7 Rural Typology

A map of Rural Typology was developed as part of the study of the Irish Rural Structure and Gaeltacht Areas Study commissioned by the Spatial Planning Unit in the Department of the Environment. The study was carried out by Fitzpatrick Associates in association with NUI Maynooth and Brady Shipman Martin. From this work, it was possible to identify Urban DEDs, which are those DEDs aggregated to Urban Districts (as defined by the CSO), other DEDs with a population density in excess of 150 persons per square kilometre (following an OECD definition of urban regions) and DEDs which contained other urban centres of 1,500 population or greater. These DEDs were then excluded from further analysis.

Using Cluster Analysis on the remaining DEDs generated a spatial classification of the rural part of the study area (Figure 9, Appendix B). Using combinations of socio-economic variables, six clusters or types of rural areas were identified and these are described in Table 4, Appendix B.

The urban and peri-urban areas are generally densely populated and represent the locations of most economic activities, as well as the principal centres of population.

The remainder of the study area is generally made up of Cluster Areas 2 and 3 which are generally recognised as being strong agricultural areas.

8.6 Summary and Conclusions

The principal centres of population are also the most important locations for economic activity. The DEDs around these centres generally have characteristics that are strongly urban and, in effect, represent extensions of the urban areas.

The largest centre is Kilkenny with a population in 1996, including its environs, approaching 20,000. Kilkenny serves a wide rural hinterland, largely of good agricultural land, and thus has range of services and facilities significantly greater than its population would indicate. It is a heritage centre of national significance, reflected in the extent and quality of its historic buildings and streetscapes. This heritage is the foundation of a developing tourism business.

Carlow is the next largest centre and is an important manufacturing town, with an Institute of Technology. It also serves a substantial rural hinterland. Carlow has a current population in excess of 15,000.

Kilkenny and Carlow are the two principal centres to be served by the proposed new N9/N10 route.

The largest of the other centres is Athy, which is designated as a Secondary Development Centre in the *Strategic Planning Guidelines for the Greater Dublin Area*. In accordance with this designation, Athy will require much improved links to the Dublin Metropolitan Area in the future. If the proposed N9/N10 route cannot provide the road component of this link, alternative provision will have to be made to service Athy.

The rural part of the study area is characterised by relatively strong agricultural areas, into which the influence of the towns is extending, through urban generated housing. The northern part of the study area has a stronger manufacturing base and is more accessible to Dublin for employment, although it has a higher level of unemployment. The southern part is, in contrast, more rural, although it contains Kilkenny city, the economy of which is more focused on services than manufacturing.

The rural areas with the weaker socio-economic profile are generally those in upland and/or more remote areas, but the extent of these in the study area is not significant.

8.7 References

1. Carlow County Development Plan 1997
2. Carlow Urban District Development Plan 1998
3. Census of population of Ireland, 1981, 1986, 1991, 1996
4. Kildare County Development Plan 1998
5. Kilkenny County & City Development Plan 2000 (Draft)
6. Strategic Planning Guidelines for the Greater Dublin Area 1999
7. Various Web sites

9 Flora, Fauna and Fisheries

9.1 Study Methodology

Existing and proposed designated conservation areas were identified from the Duchas database of sites (December 2000). The fisheries value of rivers in the constraints study area was determined by consultation with the Southern and Eastern Regional Fisheries Boards.

The Constraints Study also included using satellite imagery (Landsat Thematic Mapper false colour images of May 2000 / April 1995) to identify sensitive ecological sites within the constraints study area.

Recent aerial photographs (Summer 2000) were used to check ecological sites identified from satellite images and to identify some additional sites. Detailed interpretation of the aerial photographs was not undertaken at this stage.

Areas of intensively managed farmland contain few habitats, apart from hedgerows, that are important for flora and fauna. Hedgerows are important for wildlife at a local level and are widespread throughout the constraints study area so are not considered further in this report.

Dúchas was consulted in relation to records of rare and protected plant species in the constraints study area. Important sites for wetland birds were identified from the Irish Wetland Bird Survey (I-WeBS) reports.

The fisheries value of the main rivers was determined by consultation with the Southern Regional Fisheries Board. [*Some of the information requested has not yet been received.*] Information on the occurrence of protected freshwater species (listed in Annex II of the EU Habitats Directive) was derived from published reports.

9.2 Assessment Criteria

Ecological sites and fisheries waters were assessed according to the criteria for site evaluation outlined in Table 1 of Appendix C.

This Constraints Study is concerned with sites of international to regional importance (A/B sites), and with sites of local importance (C/D sites). As it is not possible to evaluate ecological sites and habitats from satellite images, no distinction has been made between sites of high local value (C sites) and those of low local value (D sites). These sites will be evaluated at the route selection stage on the basis of field surveys.

The two main designations are proposed candidate Special Area of Conservation (pcSAC) and proposed Natural Heritage Area (pNHA).

The pcSAC is a statutory designation, which has a legal basis under the EU Habitats Directive (92/43/EEC) as transposed into Irish law through the European Communities (Natural Habitats) Regulations, 1997. The main implication of this designation is that any project likely to have a significant adverse impact on the integrity of the pcSAC may only be carried out for “imperative reasons of overriding public interest, including those of a social or economic nature”.

The pNHA is a non-statutory designation at present but is expected to become a statutory designation when the Wildlife Act, 1976, is amended. Most local authority development plans include an objective to protect pNHA’s within their jurisdiction so this gives the designation some legal status under the Local Government (Planning and Development) Act, 1992. An application for planning permission for any development that may have impacts on a pNHA will be referred by the planning authority to Duchas, the Heritage Service, for comment.

9.3 Constraints

9.3.1 Designated Conservation Areas

One pcSAC and eight pNHA's occur within the constraints study area. These sites are listed in Table 2 of Appendix C together with a brief site description and a summary of the main conservation interests, including rare and protected species. These sites are presented in Figures 6A and 6B.

In the extreme south the Lower River Suir pcSAC occurs outside but in close proximity to the southern boundary of the constraints study area.

The River Barrow and River Nore pcSAC is a long, narrow site that dissects the northern half of the southern constraints study area. It comprises the River Nore, part of the Kings River (downstream of Kells), and associated areas of semi-natural habitat along the two river corridors.

Three pNHA's overlap with the River Barrow and River Nore pcSAC; Archersgrove, Thomastown and Mount Juliet. These are essentially sub-sites of the larger pcSAC.

The pNHA's are typically small and have a scattered distribution. Most are wetland areas that comprise fen and wet grassland, in some cases together with areas of reedswamp, open water, scrub or broadleaved woodland. Kilkeasy Bog also contains areas of cutover bog and heath.

9.3.2 Rare and Protected Plant Species

There are a number of records of rare and protected plant species within the constraints study area. **[Information not yet available from Dúchas.]** Rare plants that occur in designated conservation areas are listed in Table 2.

9.3.3 Sites of Ecological Value

A total of 77 ecological sites of interest were identified in the constraints study area, in addition to the designated conservation areas listed Table 3 of Appendix C. Site visits will be required at the route selection stage to establish the full range of habitats present and their ecological significance.

Ecological sites have an uneven distribution in the constraints study area and are mainly found along river corridors and in upland areas, as shown in Figures 6A and 6B. The greatest concentration of sites occur in the uplands and hills south of Thomastown and typically comprise of unimproved grassland, heath and conifer plantation.

In the lowlands to the north and west of Thomastown, and in the extreme south of the constraints study area, there are comparatively few ecological sites. The main habitats that do occur are woodland, scrub, unimproved grassland (mainly wet), and wetland areas associated with streams, rivers and lakes.

9.3.4 Important Bird Sites

Bishops Lough Tullahern is an important site for wetland birds. Holly Lake/Lough Cullin, which is also a pNHA, is of lesser importance. For site locations see Figures 6A and 6B.

9.3.5 The Aquatic Environment

The constraints study area contains a number of important rivers, most being part of the River Nore system, as listed in Table 4 Appendix C. The areas referenced are presented on Figures 6A and 6B.

The River Nore is extremely important for salmonid fish and is a Designated Salmonid River under the EU Freshwater Fish Directive. Salmonid fish occur in all the main watercourses in the constraints study area. The Barrow is also noted for the quality of its coarse angling at a number of locations.

The three species of lamprey that occur in Ireland are legally protected under the EU Habitats Directive (listed in Annex II). Brook lamprey occur throughout the Barrow catchment, all three lamprey species have been observed in the lower reaches of the River Barrow downstream of Borris (outside the constraints study area) (Kurz and Costello, 1999).

Brook and sea lamprey appear to be common in the Nore catchment.

The River Barrow and River Nore pcSAC and Lower River Suir pcSAC are noted for the presence of all three lamprey species and twaite shad, all of which are listed in Annex II of the EU Habitats Directive. Tributaries of the River Suir occur inside the constraints study area.

Two freshwater macroinvertebrates that are legally protected under the EU Habitats Directive (listed in Annex II), white-clawed crayfish (*Austropotamobius pallipes*) and freshwater pearl-mussel (*Margaritifera margaritifera* and *M. margaritifera durrovensis*), occur in the River Barrow and River Nore pcSAC; the latter also occurs in Lower River Suir pcSAC. There are records of white-clawed crayfish from two 10 km grid squares within the constraints study area, as shown on Figures 6A and 6B.

The River Barrow and River Nore pcSAC and Lower River Suir pcSAC also contain otter, a legally protected species listed in Annex II of the EU Habitats Directive. Otter are likely to be widespread along most rivers in the constraints study area.

9.4 Summary and Conclusions

There are nine designated conservation areas for flora and fauna within the constraints study area. One of these is a proposed candidate Special Area of Conservation (pcSAC), and eight are proposed Natural Heritage Areas (pNHA). As most of the pNHAs are small and have a scattered distribution, it should be possible to avoid any direct impact on these sites unless otherwise unavoidable.

The main ecological constraint is River Barrow and River Nore pcSAC. This site comprises the River Nore and part of the King's River, and will have to be crossed by the proposed road at some point. Any river crossing should target sections of the river where the ecological and fisheries value is comparatively low.

In the case of pcSACs, projects that are likely to have a significant adverse impact on the integrity of the site may only be carried out for "imperative reasons of overriding public interest, including those of a social or economic nature". Consultations with Dúchas, the Heritage Service will be required if any pNHAs are affected by this scheme.

There are 77 additional ecological sites in the constraints study area. These are generally concentrated in upland areas and along river corridors. While all ecological sites should be avoided, this is unlikely to be possible owing to the number of long narrow sites along river corridors, and the high density of sites in the uplands. If sites cannot be avoided then mitigation will be required.

Numerous watercourses occur in the constraints study area and most of these are important for fisheries. They include the main channels and numerous tributaries of the Barrow and Nore rivers, and tributaries of the River Suir in the south.

The River Nore dissects the constraints study area from north to south and will have to be crossed by the proposed road at some point. Particular attention will be required in the selection of crossing points for any watercourse to avoid, where possible, designated conservation areas, other ecological sites and stretches of the channel that are of high fisheries value and/or contain protected freshwater species listed in Annex II of the EU Habitats Directive.

All river and stream crossings should be treated with care and should be the subject of consultation with the Southern Regional Fisheries Board. Single span bridges for rivers and bottomless culverts for streams are recommended, where practical, as they have the least impact on fish and macro-invertebrate populations, and on the stream or river habitat.

10 Archaeology and Cultural Heritage

10.1 Introduction

This section of the Constraints Study summarises the stand-alone archaeological desk study of the southern section. The archaeological report provides information on the known archaeological data and sites of architectural significance over the study area.

The report discusses the receiving environment from an archaeological perspective in general terms, describes the known baseline data in some detail, and recommends that the proposed works avoid, where practical, direct impacts on archaeological sites. A full glossary of site types is included in Appendix D.

10.2 Study Methodology

The archaeological assessment consisted of a paper survey identifying all recorded sites within the study area. The search utilised a number of sources, including the Sites and Monuments Record, National Museum of Ireland Topographical Files, County Development Plans, Primary sources and Literary sources.

The Sites and Monuments Record (Record of Monuments and Places), held in the Duchas archives, is an inventory of archaeological sites known to the National Monuments Service with accompanying RMP Constraint Maps, based on Ordnance Survey (OS) 6" Sheets, which indicate the location of each recorded site. The inventory is backed up with files housed in the National Monuments Services offices. The record is updated on a constant basis. Buildings belonging to the seventeenth century and later are not well represented in the Duchas archive.

The National Museum of Ireland's Topographical Files are the national archive of all antiquities known to the National Museum. Artefacts identified in the Constraints study area are listed in Table 1 of Appendix D.

The Museum's files present an accurate catalogue of artefact find-spots reported to that institution between 1928 and c. 1995.

The County Development Plans for Carlow and Kilkenny were also consulted. These plans include each Council's policy for the conservation and enhancement of their county's natural and built environment and lists items of special environmental or archaeological/artistic interest. They contain lists of historic buildings and other items for preservation as compiled for the County Council by expert bodies. The Kilkenny County Development Plan also includes a completed list of industrial archaeological items.

Catalogues of sites of Architectural Importance and Industrial Archaeological Sites identified in the Constraints study area are listed in Tables 2 and 3 of Appendix D.

Also consulted was the published archaeological inventory of sites and monuments in County Carlow; Anna Brindley & Annaba Kilfeather, *Archaeological Inventory of County Carlow* (Dublin 1993). As yet there is no published inventory for County Kilkenny.

The principal literary sources consulted are listed in the bibliography of Appendix D.

10.3 Assessment Criteria

10.3.1 The Archaeological Receiving Environment

The southern section study area is a rich archaeological landscape with approximately 1045 sites identified. Many sites were identified by Dúchas using aerial photography, where above ground indications identify a monument which may have been destroyed. These have been interpreted as cropmarks, enclosures, field systems and deserted medieval settlements or complexes. It is likely that topsoil stripping at a later stage will uncover new sites with no visible surface remains.

A number of megalithic structures are recorded in the area, some of which have been destroyed over time. This type of site consists of stone built monuments often containing collective burials. Four definitely classified portal tombs are located within the Constraints study area (CW019-041, CW019-090, KK021-029, KK032-00901) (see Figures 7A and 7B). The presence of this type of site in the area is an indication of well-established activity and settlement during either the Neolithic or Early Bronze Age.

The vast majority of the sites identified in the desktop study consist of earthworks and enclosures – circular, oval and rectilinear. Most of the earthwork sites listed in the Record of Monuments and Places were identified through early maps and aerial photography, as the majority of these sites have been levelled through time. Consequently it is often difficult to determine their exact nature.

A large amount of *fualachta fiadh* sites, or cooking sites, were identified in the assessment. Most were noted during a National Museum of Ireland *Fulacht Fiadh* survey and presumably remain extant. They have become the most frequent monument found in the Irish countryside in recent times.

A number of cists, or graves, were found in the Constraints study area. The majority of these graves date to the Bronze Age period (c. 2000 – 700 BC).

A large number of ringforts were identified which are the most widely distributed and commonplace monuments on the Irish landscape. Research and excavation have dated the majority of ringforts to between c. 500 – c. 1200AD (Mitchell & Ryan 1997, 254-261; Edwards 1990, 6-33; Ó'Riordáin 1979, 29-59).

A number of souterrains were identified. These sites are frequently associated with ringforts and early ecclesiastical settlements. As souterrains were used for defense the plans for many of them are completely unpredictable and most are found accidentally during ploughing or foundation digging. Excavation results indicate a date range from c. 800 – 1200 AD.

A number of moated sites were identified and are usually associated with the Anglo-Norman settlement of Ireland during the thirteenth and fourteenth centuries.

Also located within the area of interest were several motte and baileys. These consist of earthen mounds, which were usually erected as initial forts by the invading Anglo-Normans in the 12th century.

A number of castles and tower houses were identified which can date from the 12th to 17th centuries. Some 17th century and possible earlier dwellings are associated with the castles and tower houses. Associated landscape features might include formal gardens, vistas, ponds, follies, mazes and tree rings.

Quite a number of ecclesiastical remains were also found within the Constraints study area. These consisted primarily of churches and graveyards, with features such as bullaun stones, fonts and altar tombs. Nave and chancel churches date primarily to the 12th and 13th centuries while more simple rectangular buildings are of 14th to 16th century date. A number of post-medieval (1540AD onwards) churches are also included.

Many of the holy wells identified are associated with ecclesiastical remains, although a number of isolated sites do occur. The date and origin of the dedication of some wells is known from documentary evidence and many are still used for pilgrimage. Local interest in and awareness of such sites can often be very high.

10.3.2 Historic Towns and Areas of Settlement

Historic Towns

The following historic towns and areas of settlement (see Figures 7A and 7B and Table 6 of Appendix D) are located within the Constraints study area: -

- Kilkenny;
- Dungarvan;
- Gowran;
- Kells;
- Knocktopher;
- Thomastown; and
- Danesfort.

The towns are listed in the Kilkenny County Archaeological Urban Survey and are considered to be zones of archaeological potential.

Areas of Settlement

Seven deserted medieval settlements were identified within the study area (also refer to Figures 7A and 7B and Table 6 of Appendix D).

- Kilree (KK023-04703);
- Newtown Baker (KK023-067);
- Kilbline (KK024-083);
- Stonecarthy West (KK027-047);
- Sheepstown (KK031-01505);
- Newtown Jerpoint (KK028-062); and
- Jerpoint Church (KK028-056).

These sites have mainly been identified through literary sources and aerial photography, although on some sites evidence for settlement is still visible in the form of churches or tower houses.

These areas should be avoided, where practical, as they are extensive areas of high archaeological potential.

10.3.3 National Monuments

Eleven of the sites identified in the archaeological report (see Table 1 of Appendix D) are classed as National Monuments currently under state ownership or guardianship.

The majority of the sites are listed in the Record of Historic Monuments and Places (RMP), established under Section 12 of the 1994 National Monuments (Amendment) Act.

The inclusion of archaeological objectives by planning authorities in their statutory development provides the basis for such authorities to provide for the protection of the archaeological heritage.

10.3.4 Preservation Orders, Registered Sites and Sites listed in County Development Plans

Four of the sites within the Constraints study area are protected by Preservation Orders (see Figures 7A and 7B and Table 2 of Appendix D). These Orders make it unlawful to interfere with the monument in any way without the written consent of Duchas.

Nine sites are listed as Registered Sites (see Figures 7A and 7B and Table 2 of Appendix D). Under the National Monuments (Amendment) Act 1987 it is unlawful to carry out work to a Registered Monument, except in the case of urgent necessity and with the consent of Duchas. The majority of Registered Sites are also listed in the county development plans as being protected.

10.3.5 Record of Historic Monuments and Places

The vast majority of the archaeological sites identified (see Table 3 of Appendix D) are listed in the Record of Historic Monuments and Places (RMP), which was established under Section 12 of the 1994 National Monuments (Amendment) Act.

10.3.6 Architectural Heritage

Eighty three Architectural Heritage sites were identified (see Table 4 of the Archaeological Report) through consultation with the Kilkenny and Carlow County Development Plans.

The buildings and structures listed in the Catalogue of Sites of Architectural Importance were identified in expert surveys carried out for the County Councils.

The 1999 Planning and Development Act introduced the provision for a Record of Protected Structures. It is the policy of the County Councils to seek the preservation of items listed in the Record. No listed building or structure may be demolished or materially altered without the permission under the Local Government Acts. Listed sites include country houses vernacular houses, churches, mills, bridges and other buildings of note.

10.3.7 Industrial Archaeology

Sixty two Industrial Archaeological sites were identified in the Kilkenny County Council portion of the study area (see Table 5 of Appendix D). These sites consist primarily of bridges, mills, railway bridges and structures associated with coal mining.

There were no Industrial Archaeological sites included in the County Carlow Development Plan. It is likely that sites will be identified during the field walking to be carried out during the route selection phase.

Under the new provisions of the National Monuments (Amendment) Act 1987 the owners of industrial archaeological sites, which are deemed to be important, require planning permission in order to demolish or alter these sites.

A further amendment to the Act enabled industrial archaeological sites to be added to the national record of monuments, affording them a measure of statutory protection.

10.3.8 Rivers

Duchas The Heritage Service requires archaeological assessments to take water bodies and associated features into account.

10.3.9 Bogland

Bogs or water-logged areas are frequently rich sources of archaeology and their exceptional capability in the preservation of remains makes them a unique archaeological resource.

Although there are no very large areas of bogland within the Constraints study area, the location of smaller areas of bog or waterlogged, highly organic soils should be noted in the route selection phase.

10.3.10 Gravel Ridges

Gravel Ridges/Gravel deposits by their nature provide raised areas, generally with commanding views and with well-drained soils, which were very popular in particular for Bronze Age Settlement.

10.4 Recommendations

It is recommended that, if possible, all impact on archaeological sites be avoided in the selection of the Preferred Route option.

If this is not possible, ameliorative measures, including archaeological investigation and excavation for sites in proximity to or directly impacted by the proposed scheme, would be recommended. This should be undertaken well in advance of the construction phase to allow for comprehensive recording of archaeological and architectural remains and to avoid causing delay to route construction.

The archaeological merit of waterways in the Constraints study area needs to be taken into account in the selection of the Preferred Route option. It is likely that levels of pre-disturbance archaeological assessment of relevant sections will be required ahead of the construction phase.

It is recommended that areas of bogland be avoided if possible. Should this not be possible a full programme of assessment of the potential of the bogland affected would be recommended.

It should be noted that the above recommendations are subject to approval by Duchas The Heritage Service at the Department of Arts, Heritage, the Gaeltacht, and the Islands.

10.5 Conclusion

Research through the desktop study indicated that the study area for the southern section of the N9 / N10 Kilcullen to Waterford Scheme comprises landscape rich in archaeology. There are 1045 known archaeological sites and areas of archaeological potential within the constraint area. Eighty three sites of architectural significance and sixty two sites of industrial archaeological significance were also noted. The study area also contains many rivers and small waterways.

It is recommended that the proposed scheme avoids direct impacts, where practical, with the elements of the known archaeological landscape. Should this not be possible, a full program of archaeological mitigation including aerial survey, topographical survey, geophysical survey and investigative excavation would be recommended. This would be followed by full-scale excavation, should this be required. Underwater assessment would also be recommended for all the waterway crossings.

11 Land Use and Agriculture

11.1 Introduction

This section describes the existing land use and agriculture within the refined constraints study area. The study was based on a desktop study and local knowledge of the area.

11.2 Assessment Criteria

The land within the constraints study area has been categorised under the following headings:

- Agricultural Lands
 - Dairy Farms
 - Stud Farms and Training Establishments
 - Tillage Farms (including Sugar Beet Farms)
 - REPS Farms
 - Grassland Farms
- Significant Land Based Sports Establishments
- Agri-Businesses

The farming practice, enterprise mix and soil types are similar throughout the constraints study area. Therefore it is unlikely that standard farming practices will act as a constraint in deciding the route to be selected. The affect of a new road will be keenly felt by a given number of farmers along the chosen route.

It is important to consider areas in which the placing of a major road would create a significant impact. For example where prominent dairy farms or a cluster of dairy farms occur, and/or where land based sports establishments, stud farms and training establishments are based. Establishments that are of national and international importance would need individual assessment before deciding to route a road through them.

11.2.1 Agricultural Lands

All of the constraints study area, except for urban areas and roads, can be broadly classified as agricultural land. Generally soils are highly fertile and agricultural land is highly productive. Agriculture is practiced intensively with specialist sugar beet, cereal, dairy, stud, beef & sheep farms throughout the area.

Individual farms occupy the vast majority of the area and should a route pass through these individual farms they will be significantly affected. However, the selection of an alternative route will equally significantly affect another set of individual farms. Therefore, since the quality of land and the farming practices are common throughout the area, the length of the route is of most significance since it will decide the number of farmers affected.

11.2.2 Dairy Farms

Table 1 of Appendix E lists a number of the prominent dairy farms, including individual dairy farms or clusters of dairy farms may be found, highlighting where dairy farming is of importance in the local industry. Field assessment to reveal more comprehensively the level of dairy farming will be required at route selection stage.

Dairy farms are particularly sensitive to the location of a major road. A dairy farm is entirely dependent on the land parcel or grazing paddocks adjacent to the farmyard. The location of a major road may cause severance of the land parcel into smaller areas or severance of the access from the yard to the grazing paddocks. This would have a significant impact on the future viability of the farm or it's continuation in dairying.

11.2.3 Stud Farms and Training Establishments

Table 2 of Appendix E highlights a non-exhaustive listing of stud farms and training establishments. The exact site boundaries of these industries would require individual mapping surveys at route selection stage.

The location of a proposed road would have a significant impact on stud farms or equine-based enterprises. Horses would be greatly affected by the location of a major road in close proximity to a farm. It would have implications for both the rearing and breeding of horses in the area. The severance of land parcels can create field sizes and shapes unsuitable to the training of horses.

11.2.4 Tillage Farms

Prominent tillage regions are associated with lands of very high quality and fertile soils. The southern section of the study area does not contain significant tillage areas.

The impact of the location of a major road on a tillage farm is not as significant as the impact on a dairy or stud farm. It may lead to the severance of an area or parcel of land resulting in access problems for machinery.

11.2.5 Sugar Beet Farms

The soil type and the climatic conditions favour the growing of sugar beet in this area. The sugar factory located in Carlow town has contributed to farms within the constraints study area growing sugar beet.

The location of a major road in the area will have a similar effect on individual sugar beet farms as tillage farms. That is, severance of land causing problems for machinery, as well as the additional potential impacts of access problems and severance of minor local roads impeding the delivery of beet to the factory in Carlow town.

11.2.6 Rural Environment Protection Scheme Farms

There is among the lowest uptake of the Rural Environment Protection Scheme (REPS) in Ireland, reflecting the high percentage of intensive farmers and high quality soils within the study area.

It is not considered that REPS farms will form a significant constraint in the routing of the new road.

11.2.7 Grassland Farms

Grassland based farming operations include suckler, drystock, sheep or mixed farms. These farms are spread evenly throughout the study area.

The impact of the location of a major road on grassland farming is not as significant as the impact on a dairy or stud farm. This is due to access not being required to the grassland areas on as regular a basis as with the dairy farm. Cattle and sheep are not as sensitive as horses would be to the impact of a major road. The route location may lead to the severance of an area or parcel of land resulting in access problems for machinery to the severed area.

11.3 Significant Land Based Sports Establishments

Table 3 of Appendix E lists a sample of golf courses and race-courses within the constraints study area. Of these Mount Juliet Golf Course and Gowran Park Racecourse are internationally famous.

11.4 Agri-Business

A sample of agri-businesses in the constraints study area that would be most significantly affected by the location of a major road are listed in Table 4, Appendix E. These businesses, most of which are used by the farming community on a daily basis, are involved in the collection of milk, the supply of animal feeds, fertiliser, etc. and services to the agricultural and the wider community.

The location of a major road near such businesses will impact on the accessibility of the businesses to the agricultural and wider community.

11.5 Summary of Land Use – Southern Section

South Kilkenny City to Goresbridge The land quality of this area is generally very high, with the exception of the area around Gowran, where land quality was slightly lower. As a result of this, a high level of dairy and tillage farming was found. Large land parcels in both the dairying and tillage areas reflected the intensive nature of the farming currently in practice. Other grassland based farming is evident although the field sizes are generally smaller.

Bennettsbridge to Kells to Thomastown - The land quality is very high from south of Kilkenny City to Kells and extending east to the River Nore. To the east of the River Nore the land quality is average to good. There is a significant level of tillage west of the River Nore although the farming there is predominantly grassland based. There is a high level of dairying in the Kells region. East of the River Nore the farming is predominantly grassland based with a higher level of mixed livestock enterprises such as suckler cow herds, drystock and sheep. Field and land parcels are larger to the west of the area.

Thomastown to Ballyhale - Land quality in the Thomastown region and west of the N9 road is very high. In the south-east of this area the quality decreases with several areas of poor quality land or hilly areas where land quality is low. There is a high level of grassland farming throughout this area and a significant level of tillage west of the N9. There are several large parcels of commercial forestry.

Ballyhale to Mullinavat – There is a large parcel of commercial forestry to the east of the N9 road. The constraints study area extends south on both sides of the forestry parcel. Land quality is mixed with large areas of poor quality land throughout this area. Land quality west of the excluded area is generally average with grassland based farming and small field sizes. East of the excluded area it is poor to average with large parcels of commercial forestry. In the Mullinavat region the land quality improves with a higher level of tillage and dairy based farming activity. There are some poor land parcels and commercial forestry east of Mullinavat town.

South of Mullinavat town to Waterford - The land quality is high in general with a few areas of average to good land quality, mainly along the eastern side. In this area the land use is grassland based with tillage levels highest in the center, around the N9. Of the grassland based farming, dairying is most prominent in the Kilmacow to Waterford area.

12 Landscape and Visual.

12.1 Introduction

This section of the report describes the major landscape and visual constraints for the southern section of the N9 corridor constraints study area, which includes parts of two counties, Carlow and Kilkenny.

12.2 Methodology

The assessment of the landscape constraints was prepared with regard to the following:

- Appraisal of Ordnance Survey 1:50,000 Discovery Series and 1:126,720 half inch scale mapping.
- Review of Geological Survey of Ireland Mapping for constraints study area.
- Review of the various County Development Plans.
 - Review of various landscape publications.
 - Review of various amenity, landscape and relevant material

References are listed at the end of this section of the report.

12.3 Existing Environment

12.3.1 General Character of the Constraints study area

The 'Atlas of the Irish Rural Landscape'¹ identifies the southern study area at the south-eastern corner of the Central Lowland Area, within a sub-classification known as the 'Southern Hill and Vale Area'. The study area is close to the upland 'Caledonian Province of the south-east', where the overall landscape falls westward and southward and is interrupted by a number of detached hill and mountain blocks.

The southern section study area tends to have an elevated or upland edge with wide lowland river valleys through the centre, all of which falls into 2 distinct character areas:

- The Lowland river valleys of the Barrow, Nore and Suir
- The South Kilkenny Hill Area

12.3.2 Landscape Character Areas

Barrow, Nore and Suir River Valleys

The landscape associated with the river valleys is typically low lying being generally under 100m. The land south of Kilkenny City is generally flat to gently undulating in character and rises up to the South Kilkenny Hills south of Thomastown. The Barrow Valley in particular, is broad (as it combines with the Slaney Valley to the east) and well drained with a limestone substrata which is characteristically fertile and well suited to a range of agricultural and horticultural uses. The influence of the river Barrow as a major transport waterway in the past has contributed to the quality of associated architecture of the riverside properties providing the base for numerous country houses, demesnes and estates.

The Nore Valley between Bennetsbridge and Inistiogue is an area with a rich agricultural heritage and this is reflected in the size and frequency of long established large estates spread throughout this area. The impact of these estates has left the area with a strong landscape character of open parkland and scenic views. The Suir Valley close to Waterford City is a wide fertile valley and has a traditionally been associated with dairying and more recently with fruit and horticultural nursery stock production.

South Kilkenny Hills

The South Kilkenny Hills appear as a continuation of the Comeragh and Blackstair Mountains and are divided by the Barrow, Nore and Suir river valleys. Most of the high areas and the narrow steep sided valleys of the Barrow and Nore have been excluded from the Constraints study area as part of the Major Constraints phase.

12.4 Detailed Landscape and Visual Constraints

The landscape constraints in the constraints study area may be considered in terms of the following:

- National Landscape Designations or Listings
- County landscape Designations or Listings
- Other areas of significant landscape value not directly designated or listed.

12.4.1 National Landscape Designations or Listings

These areas are also designated under various categories within the appropriate statutory County Development Plans.

Areas of Outstanding Landscape

The following areas were identified in the 'Inventory of Outstanding Landscapes in Ireland'², as being within the constraints study area:

Number	Description
29	Barrow Valley from Paulstown to south of Goresbridge
78	River Nore from Thomastown south

These areas are shown on Figures 9A and 9B.

Areas of Scientific Interest

The term ASI usually refers to either an ecological, geological or a geomorphological feature rated as being of International, National Regional or Local Importance. However, as they often relate to areas, which are also of amenity or scenic importance, their listing in the Areas of Scientific Interest in Ireland is also considered under landscape. Many other ASI have been re-designated as either Special Areas of Conservation (SAC) or as proposed Natural Heritage Areas (pNHA). Such areas are considered under Flora and Fauna and as such, are not detailed here.

County Carlow has no relevant references. County Killkenny areas are listed in Table 1 Appendix F. These areas are shown on Figures 9A and 9B

12.4.2 County Landscape Designations or Listings

In terms of landscape and visual issues each local authority uses differing designation nomenclature and as such the areas are set out a county by county basis.

County Carlow

Areas of Special Development Control

No relevant references

Areas of High Amenity

River Barrow Valley through Constraints study area

Areas of Local Natural Interest

No relevant references

Views to be Preserved or Improved

Table 2 Appendix F lists the area identified. The area is presented on Figures 9A and 9B.

Trees and Woodland for Preservation

No relevant references

County Kilkenny

Areas of Special Development Control / Areas of High Amenity

Table 3 Appendix F lists the areas identified. The areas are presented on Figures 9A and 9B.

Views to be Preserved and Protected

Table 4 Appendix F lists the areas identified. The areas are presented on Figures 9A and 9B.

Tree Protection Orders

No relevant references

12.4.3 Other Areas of Significant Landscape Value

This sets out a number of important landscapes associated with the setting and surrounding of national monuments, estates and other features where the wider setting is an important constraint.

County Carlow

Table 5 Appendix F lists the other areas of significant landscape value. The areas are shown on Figures 9A and 9B.

County Kilkenny

Table 6 Appendix F lists the other areas of significant landscape value. The areas are shown on Figures 9A and 9B.

12.5 Towns, Villages and Density of Residential Development

Towns, villages and residential density are highlighted given the likely high incidence of visual impact, which would potentially arise. The areas are also shown on Figures 9A and 9B.

12.5.1 County Carlow

Towns and Villages:

Parts of Goresbridge was the only town identified within the southern section study area.

Density of Development:

Density of development areas are listed in Table 7 Appendix F.

12.5.2 County Kilkenny

Towns and Villages:

Towns and villages are listed in Table 8 Appendix F.

Density of Development:

Density of development areas are listed in Table 9 Appendix F.

12.6 General Aspects

Additional landscape and visual constraints relating to the study area include:

- General residential property
- Local amenity areas such as for walking and fishing areas, pitch & putt courses, camping and caravan centres, equestrian centres etc.,
- River (& canal) corridors,
- Historic demesnes and estates,
- Upland or elevated areas
- Cultural landscapes

12.7 References:

1. Aalen, F.H.A., Whelan, K., and Stout, M. Atlas of the Irish Rural Landscape, 1997
2. An Foras Forbartha: Inventory of Outstanding Landscapes in Ireland, 1977
3. An Foras Forbartha: Areas of Scientific Importance in Ireland, 1977
4. Carlow County Development Plan 1997
5. Countryside Commission UK: Environmental Assessment - The Treatment of Landscape and Countryside Issues, 1991
6. EPA: Advice Notes On Current Practice (in the preparation of Environmental Impact Statements), 1995
7. EPA: Guidelines On Information To Be Contained In Environmental Impact Statements, 1995
8. Harbison, P. Guide to National and Historic Monuments in Ireland, 1992
9. Kilkenny County Development Plan, 2000
10. Various amenity and landscape publications and information relating to the local and regional environment.

13 Summary

This constraints study has been carried out in accordance with the NRA National Roads Project Management Guidelines and has assembled a full range of constraints information for assist with the planning of the new route. This included a comprehensive windshield survey.

It is intended to hold a public consultation and exhibition in the near future at the start of the route selection phase. As a result of that consultation, and additional site studies, further constraints will be identified which will be taken into account in the selection of a preferred route.

**N9/N10 Kilcullen
to Waterford - South**

**Appendix A:
Geology and Hydrogology**

May 2001

D 2560/10

Table 2: List of Pits and Quarries

Location	Rock Type	Nearest Significant Town
Ballyellen Limestone Flour Works, Ballyellen, Co. Carlow	Limestone	Goresbridge
Dunbell Big Quarry, Dunbell Big, Co. Kilkenny	Dolomite	Kilkenny
Holdensrath Quarry, Holdensrath, Co. Kilkenny	Limestone	Kilkenny
Kilmacow Quarry, Granny, Co. Kilkenny	Limestone	Waterford
Sheastown Pit, Sheastown, Co. Kilkenny	Sand and Gravel	Kilkenny

**N9/N10 Kilcullen
to Waterford - South**

**Appendix B:
Planning and Development**

May 2001

D 2560/10

Table 1: County Carlow Population 1981-1996

Settlement	County	Pop 1981	Pop 1986	Pop 1991	Pop 1996	% change 1981-1986	% change 1986-1991	% change 1991-1996
County	Carlow	39820	40988	40942	41616	2.9	-0.1	1.6
Carlow & Environs	Carlow	12775	13090	14027	14979	2.5	7.2	6.8

Table 2: County Carlow Population Projections

	1996	2001	2006	2011
Carlow County	41,616	42,387	42,974	43,582

Table 3: County Kilkenny Population 1981-1996

Settlement	County	Pop 1981	Pop 1986	Pop 1991	Pop 1996	% change 1981-1986	% change 1986-1991	% change 1991-1996
County	Kilkenny	70,806	73,186	73,635	75,336	3.4	0.06	2.3
Thomastown	Kilkenny	1477	1465	1487	1581	-0.8	1.5	6.3
Kilkenny & Environs	Kilkenny	16919	17537	17669	18696	3.7	0.8	5.8

Table 4: Cluster Area Types

<i>Cluster Area 1 Peri urban Areas</i>	These areas have relatively high average scores in components relating to dominance of non agricultural employment, socio economic profile and demographic viability. These are DEDs characterised by high population densities, advanced level of transition to a higher socio economic profile (higher proportions with advanced levels of education, larger shares of the workforce in professional services and commerce functions) and low reliance on agricultural employment. They are generally found in close proximity to urban centres and are particularly in evidence around the larger towns and the cities.
<i>Cluster Area 2 Very Strong Areas</i>	High in components relating to strength of agricultural; sector, dominance of non agricultural employment and labour force participation. These areas are characterised by large farms, high levels of economic return and greater stability. DEDs assigned to this cluster also exhibit an above average level of transition to non-agricultural employment. There is evidence of generally favourable demographic structures where the effect of natural increase has been augmented by selective in-migration, leading to over average levels of growth in employment and population. However, the main difference between 1 and 2 is the higher percentage of population with relatively low levels of education, lower female participation rates, higher levels of employment in manufacturing and / or higher levels of unemployment. These areas are suggestive of present conditions in areas previously characterised by a strong rural industrial base linked to natural resources but it has been decline since the 1970s. Therefore these areas represent zones where the agricultural rural economy remains strong but there are weaknesses in the socio-economic profile which may in part be due to residential consequences of the restructuring of rural industrialisation.
<i>Cluster Area 3 Strong area adjusting to restrictions on agricultural output</i>	Characterised by large farms, strong orientation towards dairying, younger farmers. The cluster represents those strong agricultural areas which have been relatively stable, but slower to make the transition to non agricultural activities.

<p><i>Cluster Area 4</i> <i>Structurally weak area</i></p>	<p>Characterised by weak farm structure with elderly farmers on small farms producing low levels of output, with a significant decline in number of farms, low levels of employment in manufacturing or services and a below average level of self employment outside agriculture. These attributes have contributed to the very weak demographic profile based on an ageing population with relatively fewer households with young children.</p>
<p><i>Cluster Area 5</i> <i>Very marginal rural areas</i></p>	<p>These are mainly in peripheral locations. Here, the agriculture structures are weakest, and labour force participation rates are among the lowest which may reflect the age profile and the greater proportions of adults classified as either retired or in home duties. Many of these areas are also characterised by above average levels of unemployment.</p>
<p><i>Cluster Area 6</i> <i>High Amenity</i> <i>Diversified area</i></p>	<p>These areas tend to have higher levels of self employment outside agriculture and higher levels of part-time work though the contribution of manufacturing is very weak. This is suggestive of a very high level of reliance on tourism, but also may be an indication of new residential and work place locational preference for often highly-educated professionals. In terms of demographics the cluster is weaker relative to other clusters with fewer younger persons and greater percentages of elderly people. The clusters consist of districts which may be described as consisting of new consumption space particularly for residents of the urban and peri-urban clusters and also for people abroad, many of whom have settled in these areas.</p>

Table 5: Towns and Villages over 200 in 1996

Town	DED name	County	Population 1996
Paulstown	Shankill, Paulstown	Kilkenny	221
Inistioge	Inistioge	Kilkenny	260
Clogh-Chatsworth	Clogh	Kilkenny	272
Mullinavat	Killahy, Farnoge	Kilkenny	275
Kernanstown	Carlow Rural, Johnstown	Carlow	277
Ballytore	Ballitore, Narraghmore	Kildare	295
Slieverue	Rathpatrick	Kilkenny	296
Tinriland	Kellistown	Carlow	331
Ballylinan	Ballylynan	Laois	406
Goresbridge	Goresbridge	Kilkenny	407
Rathvilly	Rathvilly, Rahill	Carlow	458
Brownstown	Ballysax East	Kildare	462
Kilberry	Kilberry, Bert	Kildare	466
Gowran	Gowran	Kilkenny	476
Suncroft	Ballysax West	Kildare	490
Leighlinbridge	Leighlinbridge	Carlow	508
Kilmacow	Ullid	Kilkenny	599
Bennettsbridge	Bennettsbridge, Danesfort, Outrath	Kilkenny	601
Hacketstown	Hacketstown	Carlow	628
Moneenroe	Moneenroe, Clogh	Kilkenny	655
Coill Dubh (or Blackwood)	Robertstown, Timahoe South	Kildare	682
Castledermot	Castledermot, Graney	Kildare	733
Castlecomer-Donaguile	Castlecomer	Kilkenny	1380
Thomastown	Thomastown, Jerpoint Church	Kilkenny	1581
Kilcullen	Kilcullen, Carnalway	Kildare	1604
Muinebeag & Environs	Muinebeag Urban	Carlow	2695
Kildare	Kildare	Kildare	4278
Athy	Athy Urban District	Kildare	5306
Carlow & Environs	Carlow Urban District	Carlow	14979
Kilkenny & Environs	Kilkenny Municipal Borough	Kilkenny	18696

Source: Census of Ireland 1996

**N9/N10 Kilcullen
to Waterford - South**

**Appendix C:
Flora, Fauna and Fisheries**

May 2001

D 2560/10

Table 1: Evaluation of sites for Flora, Fauna and Fisheries in Route Corridor Assessment

Rating	Importance of ecological sites	Importance of fisheries waters
A	Internationally important Site qualifying for designation as proposed SAC or SPA, therefore subject to the EU Habitats Directive	Internationally important Designated salmonid waters under the EU Freshwater Fish Directive
B	Nationally or regionally important Site listed as proposed NHA or containing habitats which are nationally or regionally rare	Nationally important Other major salmonid waters
C	High value, locally important Sites containing semi-natural habitat types with high biodiversity. High degree of naturalness. Locally rare habitats or species	High value, locally important Small streams with known salmonid populations. Larger waters with some fisheries value
D	Low value, locally important Artificial habitats which provide some secondary wildlife habitat of local value	Low value, locally important Small streams without known salmonid populations
E	Very low value Modified sites or sites with very low habitat diversity	Very low value Polluted waterways with no current fisheries value
F	Unknown value Sites of possible ecological value which require further investigation at optimum season to establish importance	Unknown value Sites of possible fisheries value requiring further survey

Table 2: Designated conservation areas within or adjoining the southern section of the N9/N10 route corridor from Kilcullen to Waterford.

Site name	Code	Status	General site description/main habitat types/rare species
River Barrow and River Nore	2162	pcSAC	Long, narrow site incorporating the river corridors and associated bankside habitats of the Barrow, Nore and parts of some of the main tributaries. Important for five Annex I habitats: floating river vegetation (3260), *alluvial forests (91E0), *old sessile oak woods (91A0), *petrifying springs (7220) and salt meadows (1330) Vascular plants: meadow saffron, nettle-leaved bellflower, Killarney Fern Mammals: otter, Daubenton's bat Birds: Greenland white-fronted goose, whooper swan, Bewick's swan, kingfisher, peregrine Fish: salmon, twaite shad, smelt, brook lamprey, river lamprey, sea lamprey Invertebrates: white-clawed crayfish, freshwater pearl mussel (<i>Margaritifera margaritifera</i> , <i>M. margaritifera durrovensis</i>)
Red Bog, Dungarvan	0846	pNHA	Wetland area with floating fen surrounded by wet grassland and scrub. Proposed as an SAC on the NGO shadow list of SACs (Dwyer, 2000) for the Annex I habitat, degraded raised bog (7120)
¹ Archersgrove	2051	pNHA	Three areas of scrubby woodland supporting an important population of a rare plant on the banks of River Suir Vascular plants: nettle-leaved bellflower
¹ Thomastown	0410	pNHA	Narrow strip of wet grassland and broadleaved woodland beside the River Nore. Supports populations of two rare plants Vascular plants: meadow saffron, nettle-leaved bellflower
¹ Mount Juliet	0843	pNHA	Wet grassland and woodland on the floodplain of the River Nore Vascular plants: meadow saffron
Lough Cullin	0406	pNHA	Lake and associated wetland habitats (fen and wet grassland) in a low-lying depression. Important for birds (I-WeBS count site)
Hugginstown Fen	0404	pNHA	Large isolated area of swamp and floating fen with iron-rich springs in a small valley. Proposed as an SAC on the NGO shadow list of SACs (Dwyer, 2000) for the Annex I priority habitat, * <i>Cladium</i> fen (7210)
Grannyferry	0833	pNHA	Reedswamp, marsh and wet grassland with a saline influence on the margins of the Black Water, a tributary of the River Suir Vascular plants: meadow barley
Kilkeasy Bog	0839	pNHA	Large wetland area comprising small lakes, fen, wet grassland, cutover bog and heathland
Lower River Suir [adjoins the southern boundary of the study area]	2137	pcSAC	Long narrow site incorporating the river corridor of the Suir. Important for four Annex I habitats: floating river vegetation (3260), *alluvial forests (91E0), *old sessile oak woods (91A0) and salt meadows (1330) Vascular plants: opposite-leaved pondweed Mammals: otter, pipistrelle bat, natterer's bat, Daubenton's bat Birds: Greenland white-fronted goose, greylag goose, whooper swan, dunlin, greenshank, kingfisher, golden plover Fish: salmon, twaite shad, smelt, brook lamprey, river lamprey, sea lamprey Invertebrates: white-clawed crayfish

¹ = sites that overlap with, or are sub-sites of River Barrow and River Nore pcSAC 2162

pcSAC = proposed candidate Special Area of Conservation

pNHA = proposed Natural Heritage Area

Annex I = list of habitats of conservation importance in the EU Habitats Directive

* = Annex I priority habitat (in danger of disappearance)

I-WeBS = Irish Wetland Bird Survey

Rare and protected species include those listed in the Flora Protection Order, 1999, in the Irish Red Data books for vascular plants (Curtis and McGough, 1988) and vertebrates (Whilde 1993), and in Annex I of the EU Birds Directive.

Table 3: Ecological Sites in the Study Area

Site no.	Grid ref.	Site description/habitat types
1	S 47 54	Broadleaved woodland
2	S 46 56	Quarry
3	S 46 53	Small lowland conifer plantation
4	S 45 52	Conifer plantation, partly felled
5	S 47 55	Lowlying wetland area with wet grassland and possibly heath
6	S 53 51	Waterbody and wetland area
7	S 64 53	River and woodland fringe near Gowran
8	S 62 51	Woodland along the margins of a racecourse
9	S 68 54	River Barrow and associated semi-natural habitats (woodland, scrub, unimproved grassland)
10	S 68 54	Quarry adjacent to site 9
11	S 48 49	Broadleaved woodland
12	S 48 48	Lowland area of wet grassland and fen (and possibly bog) beside two streams
13	S 52 48	Small woodland
14	S 55 47	Small area of broadleaved woodland adjacent to River Barrow and River Nore pcSAC – see Table 1
15	S 60 23	Conifer plantation, recently felled woodland and heath
16	S 55 43	Scattered areas of broadleaved woodland, east of River Barrow and River Nore pcSAC – see Table 1
17	S 54 42	Mosaic of conifer plantation and broadleaved woodland adjacent to River Barrow and River Nore pcSAC – see Table 1
18	S 54 41	Lowlying wetland area
19	S 59 42	Scrub and scattered trees along two streams
20	S 59 43	Small area of woodland
21	S 60 40	Mixed broadleaved/conifer woodland adjacent to River Barrow and River Nore pcSAC – see Table 1
22	S 51 39	Woodland/scrub on a hill
23	S 52 36	Small lowland wetland area beside stream, scattered trees
24	S 55 38	Little Arrigle River and associated semi-natural habitats
25	S 55 38	Wooded area along railway embankment and nearby hill slope
26	S 57 38	Wooded river valley
27	S 57 39	Mixed broadleaved/conifer woodland on hill slope
28	S 58 40	Scrub/woodland on hill slope
29	S 59 38	Woodland, upland unimproved grassland and heath on hill slope
30	S 60 38	Wooded river valley along the Arrigle River
31	S 51 34	Conifer plantation and recently felled woodland on hill slope
32	S 53 35	Conifer plantation and recently felled woodland along Little Arrigle River
33	S 55 35	Conifer plantation and recently felled woodland on hill slope, possibly with areas of heath
34	S 58 35	Conifer plantation, recently felled woodland, heath and unimproved grassland in upland area
35	S 59 34	Broadleaved woodland in the Arrigle River valley
36	S 52 31	Conifer plantation, recently felled woodland and heath on hill slope
37	S 54 32	Conifer plantation, recently felled woodland and heath on hill slope
38	S 53 29	Unimproved grassland and wetland area adjacent to Hugginstown Fen pNHA – see Table 1
39	S 54 30	Wetland area adjacent to Kilkeasy Bog pNHA – see Table 1
40	S 57 31	Conifer plantation and areas of open upland habitat (heath, grassland)
41	S 59 32	Mixed broadleaved/conifer plantation on hill slope
42	S 60 32	Conifer plantation on hill slope near Arrigle River
43	S 61 32	Conifer plantation on hill slope

44	S 61 31	Wetland area in the Arrigle River valley
45	S 55 28	Woodland fringe along Derrylacky River
46	S 57 28	Conifer plantation, recently felled woodland and areas of open upland habitat (grassland and heath)
47	S 60 25	Conifer plantation, recently felled woodland and areas of open upland habitat (grassland and heath)
48	S 62 27	Wetland area in the Arrigle River valley
49	S 55 25	Wetland area in the Black Water River valley
50	S 57 25	Scrub and wetland areas in river valley
51	S 54 24	Woodland/scrub fringe along Pollanassa River
52	S 57 23	Scrub fringe along river
53	S 59 23	Conifer plantation and areas of upland wet grassland
54	S 55 22	Broadleaved woodland on hill slope
55	S 55 21	Conifer plantation and scrub
56	S 58 22	Conifer plantation and areas of open upland habitat (grassland and possibly heath)
57	S 61 21	Wet grassland on hill slope and wetland area adjacent to river
58	S 57 21	Small upland conifer plantation
59	S 57 20	Small lowland conifer plantation
60	S 61 20	Woodland on steep slopes
61	S 61 19	Small mixed broadleaved/conifer plantation in lowland area
62	S 58 15	Broadleaved woodland/scrub and wet grassland adjacent to Grannyferry pNHA – see Table 1
63	S 59 15	Woodland along the valley of Smartcastle Stream
64	S 59 14	Strip of woodland/scrub adjacent to Grannyferry pNHA – see Table 1
65	S 55 15	Exposed rock and possible wetland area
66	S 55 51	Quarry adjacent to River Barrow and River Nore pcSAC – see Table 1
67	S 54 50	Quarry adjacent to River Barrow and River Nore pcSAC – see Table 1
68	S 60 49	Lowland wetland area with wet grassland, scrub and heath
69	S 54 48	Mixed broadleaved/conifer woodland on estate
70	S 54 45	Broadleaved woodland adjacent to River Barrow and River Nore pcSAC – see Table 1
71	S 60 48	Lowland wetland area along river
72	S 51 38	Lowland area with trees, scrub and wet grassland
73	S 54 33	Wetland area along river
74	S 54 22	Upland wet grassland and heath
75	S 54 21	Upland wet grassland and heath
76	S 55 21	Heath and wet grassland on hill slope
77	S 57 22	Lowland wet grassland

Table 4: Fisheries value of the main watercourses in the southern section of the N9/N10 Kilcullen to Waterford study area.

Name	Channel type	Fisheries value/protected fauna	Rating
<i>Barrow system</i>			
Barrow	Main channel	Good stock of brown trout. Salmon, bream and pike also present. Noted for quality of coarse fishing at a number of locations. Lamprey (unspec.) in the upper reaches	A
Monefelim River	Tributary	Contains salmonids	C
Gowran River	Tributary	Contains salmonids	C
Powerstown River	Tributary	Contains salmonids	C
<i>Nore system</i>			
River Nore	Main channel	Designated Salmonid Water. Proposed as an SAC for salmon (Dwyer, 2000). Good stocks of brown trout. Lamprey (unspec.) in the upper reaches. Ammocoetes (unspec.) in the lower and middle reaches. Brook and sea lamprey common; sea lamprey spawn between Thomastown and Inistioge	A
Pococke River	Tributary	Contains salmonids	C
King's River	Tributary	Important for salmonids. Lamprey (unspec.) in the upper reaches. White-clawed crayfish present. <i>Two main tributaries: River Glory and Ennisnag Stream</i>	B
Little Arrigle River	Tributary	Ammocoetes (unspec.) in the lower reaches. Important for salmonids	B
Arrigle River	Tributary	Brook and sea lamprey spawn in the lower reaches. Important for salmonids	B
<i>Suir system</i>			
River Suir	Main channel	Adjoins the southern boundary of the study area. Contains salmonids, twaite shad, smelt, brook lamprey, river lamprey, sea lamprey, white-clawed crayfish	A
Black Water River	Tributary	Important for salmonids	B
Smartcastle Stream	Tributary	<i>One main tributary: Pollanassa River</i> Contains salmonids	C

Sources: Southern Regional Fisheries Board, Reynolds (1998), Kurz and Costello (1999), Dwyer (2000)

**N9/N10 Kilcullen to
Waterford – South**

**Appendix D:
Archaeology and
Cultural Heritage**

May 2001

D 2560/10

Table 1: Catalogue of Artefacts from National Museum of Ireland Topographical Files**County Carlow**

No.	Townland	OS 6" Sheet	Co-ordinates	Reg. No.	Acquisition	Monument	Artefact
001	Ballyellin and Tomdarragh	19	3.5 cm from W; 24.5 cm from S	1980:41	Purchased by museum	-	Axehead Polished Stone
002	Kilgraney	19	22.4 cm from W; 28.5 cm from S	1998:26	Received by museum	-	Stone axehead or adze
003	Kilgraney	19	21.7 from W; 28.3 from S	1986:137-139	Presented to museum	Cist Burial	Two Food Vessels 137,138 Cremation, C. 139
004	Sliguff	19	14.1 cm from W; 7.5 cm from N	1974: 26, 27	Gifted to museum	Rectangular Cist	Bowl Food Vessel, Human Bones

County Kilkenny

No.	Townland	OS 6" Sheet	Co-ordinates	Reg. No.	Acquisition	Monument	Artefact
005	Aglish North	42,43	-	1968:16	Gifted to museum	-	Bronze Ring
006	Aglish South	42	-	1976:517	Gifted to museum	Beside ruins of Aglish Church-	Utilised Stone
007	Ballydaw	40,43	-	1901:56	-	-	Stone Mould for decorated socketed axehead
008	Ballyduff	32	27.8 cm from E; 11.6 from N	1984:4a-d	Gifted to museum	Mound	4 Potsherds, Medieval, Unglazed
009	Ballygriffin	43,46	-	1970:220	Gifted to museum	-	Flint Scraper
010	Ballygriffin	43,46	-	1970:188	Gifted to museum	-	Flint Flake
011	Ballygriffin	43,46	-	1971:999 1971:1000	Presented to museum	-	Flint Pebble & Flint Waste Flake

No.	Townland	OS 6" Sheet	Co-ordinates	Reg. No.	Acquisition	Monument	Artefact
012	Ballygriffin	43,46	-	1971:984-998	Presented to museum	-	15 Glazed Potsherds
No.	Townland	OS 6" Sheet	Co-ordinates	Reg. No.	Acquisition	Monument	Artefact
013	Ballygriffin	43,46	-	1972:135-147	Presented to museum	-	Iron axehead, Iron knife blades,9 Potsherds, Animal Bones, Grooved Stone
014	Ballynoony East or West	36,40	-	-	-	Cemetery Mound	Cists containing "small urns"
015	Ballyvool	32	31.7cm from E; 10cm from S	1946:339,340	Purchased by museum	Cist-Burial	Cinerary Urn, Human Bones, cremated1
016	Bishopslough South	24	-	Photographic Record 1982	-	-	Pot Quern
017	Bishopslough Newton	24	-	1980:85	Gifted to museum	-	Bronze Ring Pin
018	Bohergaddy	24	30cm from W; 35.8cm from S	Record 1A/148/80	-	Unenclosed Burial Ground	Human Bones
019	Brownsford (Parish Dysartmoon)	33	17.1cm from E; 2.6cm from N	1934:5602	Presented to museum	-	Stone axehead
020	Brownsford	33	14.8cm from E; 3.8cm from N	1933:3	Presented to museum	-	Stone axehead
021	Cappagh	28,29,32,33	-	1940:157	Purchased by museum	-	Bronze axe
022	Castleinch or Inchyloghan	23	29.5 cm W; 1 cm N	Record	-	Castleinch castle (site of)	Glazed Pottery Jug Medieval

No.	Townland	OS 6" Sheet	Co-ordinates	Reg. No.	Acquisition	Monument	Artefact
023	Cloghabrody	28	-		Property of Commissioners of Public Works	-	Ogham Stone
024	Cloghalla	24	-	Record IA/329/90	-	Mound	Spindle Whorl
025	Coolmore	31	20.3cm from E; 9.0cm from S	1961: 216-227	Purchased by museum	Group of 4 Cists	Cist 1 Cremated Bones, Boars tusk, Flint knife, Flint Arrowhead or Scraper, Rock crystal fragment
025	Coolmore	31	20.3cm from E; 9.0cm from S	1961: 216-227	Purchased by museum	Group of 4 Cists	Cist 2 Cremated Bones, Food Vessel, Food Vessel sherd, Flint knife
025	Coolmore	31	20.3cm from E; 9.0cm from S	1961: 216-227	Purchased by museum	Group of 4 Cists	Cist 3 Cremated bones, Cist 4 Cremated Bones
026	Danesfort	23	-	-	-	Earthwork	3 Fictile Vessels
027	Dangan	28	19cm N; 41.5cm from W	Record	-	Alleged Prehistoric Sites	-
028	Dunbell Big "Dunbell 6"	20, 24	-	E 108:1-	Presented to museum	Ringfort	Material from excavation
029	Ennisnag	23, 27	-	WK 183 (W5)-	-	Rath	Tine of Antler
030	Firgrove	32	30.8cm from E; 15.5cm from S	Record	Reported to museum	Fulacht fiadh	-
031	Gallowshill	19	24.25cm S; 22.9cm E	1969:827 IA/158/69	Inspection by museum	Burial without stone grave	Human Bones
032	Gowran	20	Record			-	Bronze Needle
033	Grange Lower	25	32.5cm W; 1.4cm N	1960:273	Gifted to museum	Bronze Age Cist	Human Bones, Cremated

No.	Townland	OS 6" Sheet	Co-ordinates	Reg. No.	Acquisition	Monument	Artefact
034	Granny	43	-	1973:18-22	Presented to museum	-	Stone wig-curler, Bronze Strip, 3 Glazed Potsherds
035	Granny	43, 46	-	1973:13	Gifted to museum	-	Ceramic (Candle Stick?) Base
036	Granny	-	-	1972:153-4	Gifted to museum	-	2 rimsherds
037	Granny	-	-	1972:149	-	-	Net-sinker, concrete, modern
038	Granny	43, 46	-	1972 126-134	-	-	2 Whetstones, 3 Flint objects, 3 pieces vitreous matter, 2 Iron objects, 1 Bronze object.
039	Granny	43	-	1972:64	Gifted to museum	-	Hammerstone
040	Granny	42	-	1972:24	Gifted to museum	-	Gun flint.
041	Granny	43	-	1971:1031-1038	Gifted to museum	-	Miscellaneous objects
042	Granny	43, 46	-	1971:1025-1027	Gifted to museum	-	Glazed Potsherds; Unglazed Potsherd
043	Granny	43, 46	-	1971:1001	Gifted to museum	-	Iron Fragment, 2 pieces Iron Slag; Glazed Rimsherd, Waste Flint flake
044	Granny	43, 46	-	1971:976-983	Gifted to museum	-	Potsherds, Bronze Finger Ring, Bronze Disc, Iron Object, Flint artefacts, Iron knife blade.
045	Granny	43	-	1971:960:975	Gifted to museum	-	Flints, Potsherds, Glass fragment, Rim fragment of Bronze Vessel.
046	Grove	23	-	1971: 908, 909	Presented to museum	-	2 sherds, joined
047	Inistioge Vicinity of.		-	-	-	-	Bronze Axe
048	Jerpoint Abbey	28	27cm from E; 6cm from N	1948:75	Purchased by museum	Jerpoint Abbey	Portion of Glazed floor tile

No.	Townland	OS 6" Sheet	Co-ordinates	Reg. No.	Acquisition	Monument	Artefact
049	Jerpoint Church	28	25cm from E; 8cm from N	E 123:1-	Gifted to museum	Medieval Grange	Excavation Finds
050	Jerpoint Church	28	-	E 123:1-	Excavation	Medieval Grange	Excavation Finds
051	Jerpoint Church	28, 32	-	E 272:1-	Presented to museum	Deserted Medieval Village	-
052	Jerpoint Church	28	-	E 272:1	Presented to museum	Deserted Medieval Village	Excavation Finds
053	Jerpoint Church and Jerpoint West	28	-	Record	-	-	Burials
054	Jerpoint West	28	-	E 93: 1-16	-	Late Neolithic Burial Cairn	Pottery, Flint, Metal Objects, Human Bone, Samples
055	Kells	27	-	1971:914-919	Presented to museum	Priory	Tile Fragments, Pot and bottle sherds.
056	Kells	27	-	W 22	-	Abbey	Spindle Whorl
057	Kilfane Demesne	28	52.5cm from left 87cm from top	-	-	Cantwell effigy (cast)	-
058	Kilferagh	19	-	E214:1-	Excavation	Moated Site	-
059	Kilmog(ue)?	35	44.6cm from W; 15.6cm from S	IA/169/83	Loaned to museum	-	Stone axehead
060	Kilmurry	43	7.8cm from E; 12.2cm from S	1959:29,30	Investigation	Cist	Cremated Human Bones Stone Silkensides?
061	Knockbrack	40		1975:24	Presented to museum	-	Heat fractured stone
062	Knockmoylan	35	9.3cm from E; 29.2cm from S	Record	-	Ringfort	Iron Slag

No.	Townland	OS 6" Sheet	Co-ordinates	Reg. No.	Acquisition	Monument	Artefact
063	Knockmoylan	35	24.2cm from S; 9.3cm from E	1978:115	Collected by museum	-	Iron Slag fragments
064	Knocktopher	31	-	-	-	-	Cross bases one inscribed.
065	Knocktopher Manor	31	-	1973:26-28a-d	Presented to museum	-	Sole of leather shoe, 2 boar tusks and other miscellaneous animal bones sample of timbers, sample of mortar.
066	Listerlin	-	-	-	-	-	Decorated Slab 15 th century?
067	Listerlin	-	-	-	-	-	Fulacht Fiadh and Stone Trough
068	Loughboy	19	-	1957:351	Presented to museum	Destroyed Burial Mound	Human Bones, Unburnt
069	Newtown (Baker)	27	17-18cm from W; 41-42cm from S	1974:14-15	Donated to museum	Deserted Medieval Village	2 Medieval, 8 Post-Medieval Potsherds
070	Nicholastown	39, 42	-	1971:1055	Gifted to museum	-	Iron Arrowhead.
071	Outrath	23	27.7cm from E; 2.6cm from N	Record	-	-	Skeleton (not recovered)
072	Rathduff	27	-	IA/191/80 E110:1	Excavation	Augustinian Priory	Various Excavated Finds
073	Sheastown	24	9.5cm from E; 20.2cm from N	1974:4-5	Presented to museum	-	Iron knife, Human Bones
074	Sheastown	19, 20, 23, 24,	-	1968:401-5	-	-	Amber Beads (5)
075	Smithstown (Parish Dysart Barony Fassadinin)	6	-	1937:1	Purchased by museum	-	Stone axehead
076	Thomastown	28	-	-	-	-	Stone Hand Anvil

No.	Townland	OS 6” Sheet	Co-ordinates	Reg. No.	Acquisition	Monument	Artefact
077	Tullaherin	24	-	1944:874	Presented to museum	Field Bank System	Portion of Neck of Glazed medieval Pottery vessel.
078	Knocktopher	31	-	-	-	Abbey	-
079	Maddockstown	20	-	1972:6	Gifted to museum	-	Fragment of Lignite Bracelet.

Table 2: Catalogue Of Sites Of Architectural Importance**SITE 1**

LOCATION	Annamult
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25410 14646
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

This site consists of an early 19th century Gothic house with gables.

SITE 2

LOCATION	Barrowmount
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	26867 15235
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

Bence-Jones (1988, 34) describes this as “a two storey early 18th century house, with a three bay recessed centre and projecting end bays. Eaved roof; bold quoins.”

SITE 3

LOCATION	Bennettsbridge
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25613 14891
SITE TYPE	Blackwell Lodge Country House
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

The site consists of a plain, five bay, three-storey house dating to the late 18th century.

SITE 4

LOCATION	Birchfield
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25032 15311
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	International Importance

DESCRIPTION

This site consists of a solid five bay, two-storey house.

SITE 5

LOCATION	Blanchville
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25881 15329
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

This site consists of an early 19th century three bay, two storey rendered house. It was built by Lt-Gen Sir James Kearney, KCH 1830.

SITE 6

LOCATION	Burnchurch Glebe
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	24799 14695
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

Bence-Jones (1988, 50) described this as “a two storey three bay late-Georgian house built for Rev. Richard Butler, Vicar of Burnchurch. Large drawing room. Remained in the Butler family until the third quarter of the 19th century, being occupied by succeeding vicars; then sold to the Mosse family, millers, of Bennettsbridge.”

SITE 7

LOCATION	Castle Bamford
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	24931 15248
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan/Record of Monuments & Places (KK019-039)
RATING	Local Importance

DESCRIPTION

There are documentary references to a castle that formerly stood in Banfield. Part of it was modernised into the south wing of the present dwelling house, as can be observed in the depth of the window jambs and the massiveness of the masonry. The castle stood on the brow of the ancient road, traces of which led to the back of Castle Bamford where it is open as an entrance to the farmyard.¹

SITE 8

LOCATION	Castle Blunden
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	24772 15422
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan/Record of Monuments & Places (KK019-03201)
RATING	International Importance

DESCRIPTION

Bence-Jones (1988, 62-63) describes this as “a highly romantic mid 18th century house with water on both sides of it so that it seems to float; the water being two lakes probably formed out of the moat of the earlier house or castle here. It was built either for John Blunden, MP, or for his son Sir John Blunden, 1st Bt. Of three storeys over a vaulted basement; six bay front, central niche with statue below square armorial panel and above single-storey pedimented Doric portico. Quoins; rusticated surrounds to all the windows and in the niche. Slightly sprocketed roof. The back of the house consists of two gables with a projection between them containing the principal and secondary staircases. The decoration of the interior is late 18th century and was probably carried out by the 2nd Bt. after his marriage to a bride who, according to Dorothea Herbert, brought him ‘a clear £8,000 a year.’ Hall with a frieze of rams’ heads. Drawing room with ceiling of Adamesque plasterwork.”

There is a gothic ice-house in the grounds of Castle Blunden. According to Howley (1993, 206) this ice-house is the finest surviving example in Ireland. “This quaint little building is a most successful garden ornament, but, as most of its structure is above ground, it was probably not quite so successful at preventing ice from melting. The entrance is a pointed-arched doorway, above which there is a simple pediment adorned with three crude pinnacles and a blind circular reveal. It is flanked either side by slightly recessed wings with shallow pointed-arched reveals. Behind this façade is the more traditional arrangement of a vaulted passage, in this case with reveals halfway along on either side, which leads to the circular ice chamber. Externally the

¹ RMP Files.

structure is all in rendered rubble stone, with a covering of slate to the vault and the conical roof of the ice chamber. The interior of the passage is finished with a stone-flagged floor and neat brick vaulting; and the ice chamber, which extends to a depth of about twelve feet below the level of the passage, is a splendid circular structure with a brick dome. It stands on the edge of an open field above a small stream, clearly visible from the main driveway when coming from the house.”

SITE 9

LOCATION	Castlefield
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25978 14884
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

Bence-Jones (1988, 67) described this as “a three storey bow-fronted Georgian house, the bow having a trefoil window and battlements. Pillared porch.”

SITE 10

LOCATION	Chapelizoid
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	24874 14026
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	National Importance

DESCRIPTION

Griffin & Robinson (1988, 89) describe this as a “house dated 1672 and 1748. Unusual ground plan and some remains of mid 18th century plasterwork. In ruins.”

SITE 11

LOCATION	Clifden Castle
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25825 15539~
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	National Importance

DESCRIPTION

This site consists of an important early 18th century house with a H plan. In the yard is a simple three bay, two-storey mid 17th century house. Behind and connected to this house is a short tower house.

SITE 12

LOCATION	Coolmore
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25823 13882~
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

Bence-Jones (1988, 91) describes this as “a two storey five bay late-Georgian house with a single-storey wing. Single-storey Doric portico with die; entablatures over ground-floor windows; roof on cornice supported by unusually heavy brackets.”

SITE 13

LOCATION	Danesfort
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25184 14733
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	National Importance

DESCRIPTION

Griffin & Robinson (1988, 89) describe this as a late 17th century and early 18th century house to which alterations were made. It was the seat of James Wemys in 1814 and was later demolished. There is a farm house on the site. At the end of the park is an ornamental garden mound, which has a gazebo on top.

SITE 14

LOCATION	Dangan
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25940 14067
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

Bence-Jones (1988, 295) described this as “an unusual house of c. 1820; two storeys over a high basement, three bay front of random ashlar with one bay breakfront; other sides enclosed by verandas. The ground floor as well as the basement is vaulted over. In 1837 it was the residence of S. Davis.”

SITE 15

LOCATION	Duninga
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	26849 15752
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

Bence-Jones (1988, 115) describes this as “a house with a three storey centre and two storey projecting wings, joined by a Doric colonnade. The seat of the Bookey family.”

SITE 16

LOCATION	Farmley
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	24679 14762
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

This site consists of a late 18th century five bay, two-storey house.

SITE 17

LOCATION	Garryduff Glebe
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	26461 15716
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

This site consists of a simple three bay, two storey house, dated c. 1830.

SITE 18

LOCATION	Gowran Castle
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	26363 15340
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

Bence-Jones (1988, 144) described this as “originally an old castle with several towers, onto which a two storey nine bay pedimented front was built 1713 by James Agar, grandfather of 1st Viscount Clifden. This was demolished in 1816 by the 2nd Viscount, being by then in bad repair; and replaced by a compact classical house built during the course of the next three years, to the design of William Robertson, of Kilkenny. Of two storeys over a basement; seven bay entrance front with three bay pedimented breakfront; rectangular niche in centre above Doric frontispiece. Garden front with rather awkward central feature of thin Composite half-columns, paired at the sides, under a pediment; with a central rectangular niche in both storeys to resolve a duality. Three bay end. The house was originally free-standing; but a lower two storey wing was subsequently added at one side of it, which has since been

SITE 19

LOCATION	Gowran Glebe
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	26356 15357
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

This site consists of a simple rendered two-storey house with two bays on the entrance front and three on the garden.

SITE 20

LOCATION	Gowran House
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	Country House
SITE TYPE	26250 15165~
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

This site consists of an early 19th century neo-Gothic house.

SITE 21

LOCATION	Grange Sylvae
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	26814 15595~
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

This site consists of a glebe house of five bays and two-storeys. The house is rendered.

SITE 22

LOCATION	Grennan
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25868 14177
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

This site consists of a simple late 18th century five bay, rendered, three-storey house.

SITE 23

LOCATION	Jerpoint Church
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25612 14069
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

This site consists of a four-bay, two-storey early 19th century house.

SITE 24

LOCATION	Kilcoran
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	24799 14555~
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

This site consists of a three bay, two-storey, white rendered house dating to the early 19th century.

SITE 25

LOCATION	Kilcreene Lodge
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	24902 15579
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

Bence-Jones (1988, 166) described this as “a pleasant two storey stucco-faced Victorian house built c. 1860 by J.W. Smithwick, incorporating an older, smaller house. Four bay front with triangular pediments on console brackets over ground floor windows, and gabled wing at one end. Roof of main block on bracket cornice. Irregular adjoining garden front, with single-storey curved and balustraded bow; decorative ironwork cresting on ridge of roof. Ornate overdoors in the hall and drawing room, the latter being a large and handsome room in Louis Quinze style. Good late 17th or early 18th century chimneypiece brought from Kilcreene House in billiard room. Attractive garden with lake spanned by bridge.

SITE 26

LOCATION	Kilfane
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25984 14464
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

Bence-Jones (1988, 166) describes this as “a house of late-Georgian appearance consisting of a three storey five bay centre block with three bay wings which are single-storey at the front and two storey at the back. On the front of the centre block there is a one bay break-front and a single-storey portico of fluted Doric columns. Fine straight lime avenue; ruined medieval church with fortified rectory at edge of park. The church contains a large and celebrated 14th century effigy of a knight, known as ‘Long Cantwell’. Originally the seat of a branch of the Bushe family, of which the great Charles Kendal Bushe came of another branch, established at the neighbouring house, Kilmurry. Passed to the Powers through the marriage of Harriett Bushe to Sir John Power, 1st Bt., founder of the Kilkenny Hunt and brother of the talented amateur actor, Richard Power, who ran the Kilkenny Theatre in its great days in the early 19th century.”

SITE 27

LOCATION	Kilferagh
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25420 15300
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

Bence-Jones (1988, 167) described this as “a long low house in early 19th century cottage ornée style, built onto an old tower and with a Regency ironwork veranda at one end. The drawing room has a large Gothic doorway opening onto this veranda, which frames a Reptonian landscape of sweeping lawn, river and woods.”

SITE 28

LOCATION	Killapsey
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	26171 11565
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

This site consists of a ruin. No further details available in sources consulted.

SITE 29

LOCATION	Killarney
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25627 14537
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

According to the county development plan this house was not seen, but there was a fine pair of mid 18th century gate piers.

SITE 30

LOCATION	Kilmurry
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	26014 14403
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan/Record of Monuments & Places (KK028-02802)
RATING	National Importance

DESCRIPTION

Bence-Jones (1988, 175) describes this as “a house of many periods, part of it believed to date from 17th century or earlier; but now predominantly 18th or early 19th century. The back of the main block is three storey, but it has a two storey front of mid 18th century appearance; five bay, the roof parapet being adorned with urns. This front is now flanked by single-storey one bay early 19th century Classical wings, with Wyatt windows and dies surmounted by sphinxes; the left-hand one extending along the whole side of the house to form a single-storey entrance front, with a centrepiece of Doric pilasters and half columns. The wings were added between 1814 and 1830 by the great advocate and orator, Charles Kendal Bushe, Chief Justice of Ireland, known as ‘The Incorruptible’, whose home it was. The wings added by Charles Kendal Bushe contain a hall with a recessed screen of fluted Ionic columns, a library with bookcases recessed under arches and a dining room which was adorned, later in 19th century, with elaborate wood carving. A fine long drawing room occupies the whole of the 18th century front; it was formed out of the previous entrance hall and the rooms on either side of it; beyond this drawing room was another drawing room in one of the wings, which has been made into a loggia by the removal of the back wall. All the rooms have early 19th century doorcases with rosettes and mouldings. The children of Charles Kendal Bushe sold Kilmurry after his death to Major Henry Butler, of the Mountgarret family; whose daughter, Miss Mildred Butler, the eminent water colour painter, bequeathed it to her cousin, Mrs. Archer Houblon, the equestrian.”

SITE 31

LOCATION	Knocktopher Abbey
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25321 13706
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

Bence-Jones (1988, 179) describes this as “a house incorporating the remains of 1st Carmelite friary in Ireland, rebuilt in High Victorian Gothic to the design of John McCurdy c. 1866 after a fire. Gables and trefoil-headed mullioned windows; high roofs; pyramidal-roofed porch tower.”

SITE 32

LOCATION	Knocktopher Glebe
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25191 13707~
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

Bence-Jones (1988, 179) describes this as “a gable-ended battlemented Georgian house of three storeys over a basement and three bays. Fanlighted doorway approached up a flight of steps with iron railings. Return.

SITE 33

LOCATION	Lavistown
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25435 15429
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

This site consists of a house built c. 1800. It is rendered and consists of three bays and two storeys.

SITE 34

LOCATION	Maidenhall
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25498 14715
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

Bence-Jones (1988, 198) described this as “a house of c. 1745, remodelled 18430 with a veranda along its front in the Regency style. Originally owned by the Flood family; owned later in 18th century by Richard Griffith, who, like his wife, was a talented novelist and letter-writer; owned later again by Rev. Ambrose Smith; bought in the 19th century by John Butler, of the Dunboyne family. A wing was added in 1910.”

SITE 35

LOCATION	Mill Mount
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25442 15387
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	National Importance

DESCRIPTION

Bence-Jones (1988, 206) described this as “a house of two storeys over a basement built probably between 1760 and 1770 by William Colles, owner of the nearby Kilkenny Marble Works, which supplied the familiar black marble chimneypieces to houses all over Ireland. Of an unusual cruciform plan; one arm having a pedimented one bay end with a Venetian doorway; the two arms at right angles ending in curved bows.” This site is also listed in the catalogue of industrial archaeological sites (Site IA 17).

SITE 36

LOCATION	Mount Juliet
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25516 14225
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	International Importance

DESCRIPTION

Bence-Jones (1988, 214-15) describes this as “a mid to late 18th century house built by the 1st Earl of Carrick across the River Nore from the former family seat, Ballylinch Castle on an estate which he had bought c. 1750 from Rev. Thomas Bushe, of Kilmurry; traditionally named by him after his wife. Of three storeys over a basement; front of seven bays between two shallow curved bows, each having three windows. One bay central breakfront, with Venetian windows in the upper two storeys above tripartite pedimented and fanlighted doorway. Centre window in two lower storeys of bows round-headed. Perron and double steps in front of entrance door, with iron railings. High-pitched roof and massive stacks. Sold 1914 by 6th Earl of Carrick to the McCalmonts who had leased the house for some years. Major Dermot McCalmont made a new entrance in what had formerly been the back of the house, where the main block is flanked by two storey wings, extending at right angles from it to form a shallow three sided court, and joined to it by curved sweeps. The interior of the house was richly decorated by 2nd Earl of Carrick 1780s with plasterwork in the manner of Michael Stapleton. The hall, which is long and narrow, is divided by an arcade carried on fluted Ionic columns, beyond which rises a bifurcating staircase with a balustrade of plain slender uprights; the present entrance being by way of a porch built out at the back of the staircase. The rooms on either side of the hall in what was formerly the entrance front and is now the garden front have plasterwork ceilings; one with a centre medallion of a hunting scene, another with a medallion of a man shooting. One of these rooms, the dining room, also has plasterwork on its walls, incorporating medallions with Classical reliefs. One of the wings flanking the present entrance front contains a ballroom made by Major Dermot McCalmont 1920s, with a frieze of later 18th century style plasterwork; it is reached by way of a curving corridor. The demesne of Mount Juliet is one of the finest in Ireland, with magnificent hardwoods above the River Nore; it includes the Ballylinch demesne across the river. There is a series of large walled gardens near the house.”

SITE 37

LOCATION	Mountrothe
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	26513 15809
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

The site consists of a mid 18th century house of three bays and two storeys. The house is rendered.

SITE 38

LOCATION	Mullinabro
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25911 11619
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

Bence-Jones (1988, 220) describes this as “a bow-ended 18th century house with a doorway rather similar to that at Woodstock, in the same county; round-headed, rusticated and incorporating the flanking windows. Good mahogany doors. Now demolished.”

SITE 39

LOCATION	Shamrock Lodge (near Thomastown)
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	26438 14241~
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

This site consists of an early 19th century Butler shooting lodge. No further details available.

SITE 40

LOCATION	Sheeptown
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25084 13718
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

This site consists of a five bay two-storey house dating from the late 18th century.

SITE 41

LOCATION	Summerhill
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25834 14577
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

This site consists of a mid 18th century house, refaced in the 19th century. No further details available.

SITE 42

LOCATION	Thomastown Glebe
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25814 14260~
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

This site consists of an early 18th century house, with six bays and two storeys.

SITE 43

LOCATION	Tinny Park
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	24847 15267
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

This site consists of a three bay, two-storey rendered house dating to the 19th century.

SITE 44

LOCATION	Wellington
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	24626 14075~
SITE TYPE	Country House
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

This site consists of the ruin of an early 19th century house.

SITE 45

LOCATION	Annamult
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25411 14646
SITE TYPE	Tower House
SOURCE	Kilkenny County Development Plan/Record of Monuments & Places (KK023-084)
RATING	Regional Importance

DESCRIPTION

This site is located midway down a gentle W-facing slope, commanding a fine view from NE-S and from SW-W-N from the top of the tower house. It consists of a ruined, ivy-clad rectangular four-storey structure (ext. dims. 12.4m N-S x 10m E-W; wall T 1.60m), with a base batter. It is constructed of randomly coursed limestone rubble with slightly larger blocks employed as quoins. There is an entrance at the N end of the E wall with a murder-hole discharging from the second floor. There is a straight staircase in the N, E and S walls and a mural passage in the E and S walls on the ground floor; in the N wall, at first floor level on one in the SW corner of the second floor. There is a suggestion of another at this level, at the S end of the E wall. There is a barrel vault over the first floor and the remains of a possible machiolation at the E end of the N wall on the second floor. The fenestration is poorly preserved. There is a fireplace in the NW corner of the second floor. There are put-log holes in the base batter.

SITE 46

LOCATION	Ballybur
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	24757 14936
SITE TYPE	Tower House
SOURCE	Kilkenny County Development Plan/Record of Monuments & Places (KK023-039)
RATING	National Importance

DESCRIPTION

This tower house consists of three storeys; the upper one vaulted with stone; the other floors composed of timber. It measures 24ft. by 19 ft. in the clear, the door, which is a pointed one, being in the east side. It contains eleven windows and fourteen loopholes, all built with cut stone. The site is very well preserved.²

SITE 47

LOCATION	Ballylinch
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25511 14305
SITE TYPE	Tower House
SOURCE	Kilkenny County Development Plan/Record of Monuments & Places (KK028-019)
RATING	No Rating Available

DESCRIPTION

This site consists of the ruins of Ballylinch Castle. The castle is a 15th century tower. Added to this is a very large castellated mansion. This is probably of 16th-17th century dates and was probably added by Gerald Grace. In 1780 the castles owners, the Carrick family, moved from Ballylinch to Mount Juliet House and the old castle and mansion soon became derelict and fell into ruin.

SITE 48

LOCATION	Ballyshanemore
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	26318 15295
SITE TYPE	Tower House
SOURCE	Kilkenny County Development Plan/Record of Monuments & Places (KK020-061)
RATING	National Importance

DESCRIPTION

This site consists of the ruins of a castle, which lies about a quarter mile south of Gowran village, to the left of the Thomastown road and within Gowran Castle Estate. The castle is somewhat similar to Clara castle and is evidently an Anglo-Norman tower building of the 14th century, or later. It was captured by the Cromwellians in 1650 and is recorded as having been destroyed, but is nevertheless, still in fairly good condition. Its four walls remain to their full height, though without the parapet and roof.

² RMP Files.

SITE 49

LOCATION	Burnchurch
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	24767 14738
SITE TYPE	Tower House
SOURCE	Kilkenny County Development Plan/Record of Monuments & Places (KK023-071)
RATING	International Importance

DESCRIPTION

According to Reeves-Smyth (1995, 59) “many tower houses have an abundance of mural chambers and passages hidden away within their walls, though few have the number and complexity of those found in the early 16th century castle of the Burncourt FitzGeralds, barons of the county Palatine. This well-preserved tower house, occupied until 1817, has four storeys beneath a vault with the principal chamber above, lying just below a gabled roof. Apart from its mullioned windows, this chamber is noteworthy for its finely carved chimney-piece, whose projecting flat arch is spanned with joggled voussoirs and skewbacks bearing against elbow-like stones at each end. It has a tall, round chimney, while the roof’s gable walls have been extended so that both ends of the tower are carried up an extra stage to provide high battlemented fighting platforms. A great hall was formerly attached to the tower’s outside wall, but this has now vanished, as has most of the bawn – save only for a round flanker in the NW corner. A curved outside staircase still provides access to the three upper floors of this little tower.”

SITE 50

LOCATION	Kilbline
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25770 14738
SITE TYPE	Tower House
SOURCE	Kilkenny County Development Plan/Record of Monuments & Places (KK024-083)
RATING	National Importance

DESCRIPTION

De Breffny & ffOllrott (1975, 74) describe Kilbline castle as “an excellent instance of the integration of house with castle. The castle had originally belonged to the Comerfords, who were there before 1556, and on its first floor it has a chimney-piece dated 1580. From the Comerfords it passed in 1586 to the Shortalls, who remained there until at least 1668. It may have been Thomas Shortall who added the house. Later Kilbline became the property of Ralph Gore, and by the mid 18th century was occupied by the Chandlers. For over a hundred years now it has been in the hands of the Ryans, who still employ two floors of the tower as store-rooms, and until recently used a panelled room in the tower as a sitting room.”

SITE 51

LOCATION	Kilcurl
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25285 13504
SITE TYPE	Tower House
SOURCE	Kilkenny County Development Plan/Record of Monuments & Places (KK031-033)
RATING	National Importance

DESCRIPTION

This site consists of a four-storey tower house, vaulted over ground and second floor levels (over all dimensions 10.2m N-S, 8.8m E-W). The original doorway is at the SE giving access to a lobby with a murder hole over. There is an intramural stair in the S wall giving access to first floor. There is a fireplace in the E wall at first floor level, and windows in the N and E walls. There is a chamber in the S wall end under stairs in the W wall. There is a garderobe in the W wall at third floor level and a hidden chamber under the stairs at the SE corner. The roof-level is dangerous.

SITE 52

LOCATION	Ballyroden
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25246 13586
SITE TYPE	Vernacular House
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

This site consists of a simple three bay two storey house, dating from the mid 19th century.

SITE 53

LOCATION	Grange East
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	26548 15323~
SITE TYPE	Vernacular House
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

This site dates to the early 18th century. No further details available.

SITE 54

LOCATION	Kilfane
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	26064 14564
SITE TYPE	Vernacular Houses (2) & Forge
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

This site consists of a forge with a horse-shoe arch and two vernacular houses. The first is a good five bay, two-storey rendered house, while the second is a good three bay, two-storey house.

SITE 55

LOCATION	Loughbrack
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	24551 14026~
SITE TYPE	Vernacular House
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

This site consists of an attractive house with a half-hipped roof.

SITE 56

LOCATION	Lukeswell
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25557 12751
SITE TYPE	Vernacular House
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

This site consists of a three bay, two storey thatched house.

SITE 57

LOCATION	Cuffesgrange
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	24693 15008
SITE TYPE	Catholic Church
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

This site consists of a single cell church, dated c. 1850.

SITE 58

LOCATION	Dundaryark
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25134 14821
SITE TYPE	Catholic Church
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

This site consists of a T-plan barn church.

SITE 59

LOCATION	Foulstown
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25080 15252
SITE TYPE	Catholic Church
SOURCE	Kilkenny County Development Plan
RATING	National Importance

DESCRIPTION

This site consists of a T-plan church.

SITE 60

LOCATION	Hugginstown
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25089 13363
SITE TYPE	Catholic Church
SOURCE	Kilkenny County Development Plan
RATING	International Importance

DESCRIPTION

This site consists of a T-plan barn church, dating to the late 18th century. It is the most interesting and attractive example in the county, but it is now derelict.

SITE 61

LOCATION	Ladyswell
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25079 14609~
SITE TYPE	Catholic Church
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

This site consists of a roofless T-plan bar church dating from c. 1800.

SITE 62

LOCATION	Lukeswell
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25556 12748~
SITE TYPE	Catholic Church
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

This site consists of a cruciform church of early 19th century date.

SITE 63

LOCATION	Tullaherin
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25918 14780
SITE TYPE	Catholic Church
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

This site consists of a T-plan church of early 19th century date. The priests house abuts onto the Sanctuary.

SITE 64

LOCATION	Burnchurch
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	24764 14735
SITE TYPE	Church of Ireland Church
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

The site consists of a church of three bays, rectangular in plan. It was built in 1810.

SITE 65

LOCATION	Castleinch
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	24768 15223
SITE TYPE	Church of Ireland Church
SOURCE	Kilkenny County Development Plan
RATING	National Importance

DESCRIPTION

This site consists of a ruined church containing the Cuffe mausoleum, secured by an iron gate.

SITE 66

LOCATION	Ennisnag
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25253 14398
SITE TYPE	Church of Ireland Church
SOURCE	Kilkenny County Development Plan
RATING	International Importance

DESCRIPTION

This site consists of a church of First Fruits type, built in 1815.

SITE 67

LOCATION	Kilfane
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25985 14507
SITE TYPE	Church of Ireland Church
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

This site consists if a late First Fruits church built c. 1830.

SITE 68

LOCATION	Kilmochail (Shankill)
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	26629 15990~
SITE TYPE	Church of Ireland Church
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

This site consists of a typical First Fruits Church, dated to 1806.

SITE 69

LOCATION	Powerstown
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	26688 15109
SITE TYPE	Church of Ireland Church
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

This site consists of the ruin of an early 18th century single-cell church.

SITE 70

LOCATION	Ballylinch
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25469 14365
SITE TYPE	Bridge
SOURCE	Kilkenny County Development Plan
RATING	National Importance

DESCRIPTION

This site consists of a good late 18th century bridge. The bridge is comprised of twelve segmental arches of varying size which span the Nore floodplain just west of Ballylinch Demesne. Five arches span the river proper, the remainder serving as floodwater channels. This site is also listed as a site of Industrial Archaeological Importance (IA 10).

SITE 71

LOCATION	Ennisnag
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25248 14390
SITE TYPE	Bridges (2)
SOURCE	Kilkenny County Development Plan
RATING	International Importance

DESCRIPTION

This site consists of two bridges, one over the King's River and one over a tributary. Both are inter-visible with the Church of Ireland church and pub, making a very good group. The larger bridge is very architectural in character. These bridges are also listed as site of Industrial Archaeological importance (IA 25, 34).

SITE 72

LOCATION	Goresbridge
COUNTY	Carlow
NATIONAL GRID REFERENCE	26843 15371
SITE TYPE	Bridge
SOURCE	Carlow County Development Plan/Kilkenny Development Plan
RATING	Grade 2 Industrial Archaeology site

DESCRIPTION

This bridge consists of nine arches of semi-circular profile and varying size. It carries the Borris road over the Barrow River on the east side of Goresbridge. There is a warehouse located at the County Carlow end. This site is also listed as a site of Industrial Archaeological importance (IA 5).

SITE 73

LOCATION	Jerpoint
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25758 14099
SITE TYPE	Railway Bridge
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

This site consists of a mid 19th century iron truss bridge with a wide central span, approached by rusticated limestone arches. This site is also listed as a site of Industrial Archaeological Importance (IA 1).

SITE 74

LOCATION	Newtown
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	24647 14354
SITE TYPE	Bridge
SOURCE	Kilkenny County Development Plan
RATING	National Importance

DESCRIPTION

This site is part bridge and part causeway. It is also part medieval and part modern. This site is also listed in the Catalogue of Industrial Archaeological sites (IA 22).

SITE 75

LOCATION	Barraghcore
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	26848 15567
SITE TYPE	Mill
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

This site consists of Minch Norton's magnificent castellated mill on the Barrow River. It is no longer in use. This site is also listed in the catalogue of industrial archaeological sites (IA 6).

SITE 76

LOCATION	Maddockstown
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25443 15350
SITE TYPE	Mill
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

This site consists of a mill with a former distillery opposite. Part of a large group of note-worthy mills in the area known as Abbeyvale. This site is also listed among the sites of Industrial Archaeology (IA 19).

SITE 77

LOCATION	Inch
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25297 15546~
SITE TYPE	Railway Arches
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

This site consists of two railway arches cut diagonally through the embankment.

SITE 78

LOCATION	Bonnetstown
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	24629 15753~
SITE TYPE	Bonnettstown School
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

This site consists of a simple three bay early 19th century school house. The school is no longer in use.

SITE 79

LOCATION	Dunkitt
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25816 11619
SITE TYPE	School House
SOURCE	Kilkenny County Development Plan
RATING	International Importance

DESCRIPTION

This site consists of three bay, two-storey school housed dated 1832. It is now derelict.

SITE 80

LOCATION	Kilfane
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25956 14552
SITE TYPE	Stoan Fountain
SOURCE	Kilkenny County Development Plan
RATING	Regional Importance

DESCRIPTION

Howley (1993, 205) describes as an interesting fountain. "This is called the Bushe fountain, and was probably built by, or commemorates, the Bushe family, branches of which lived at the nearby houses of Kilfane and Kilmurry. This fountain consists of a cylindrical base surmounted by a hemispherical dome topped with a small obelisk-like finial. There are three curved steps butting up to the side of the base, but the inscription has unfortunately become illegible, apart from the name 'Bushe'. The structure has a modest scale, but this is more than compensated for by its delightful shape and detail."

SITE 81

LOCATION	Gowran
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	26119 15444
SITE TYPE	Gowran Station
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

This site consists of a simple brick-built station and limestone goods shed. This site is also listed in the catalogue of industrial archaeological sites (Site IA 42).

SITE 82

LOCATION	Cuffesgrange
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	24693 15003~
SITE TYPE	Inn
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

This site consists of an inn, vernacular in character. There is also a good lime tree opposite on an island in the road.

SITE 83

LOCATION	Knockwilliam
COUNTY	Kilkenny
NATIONAL GRID REFERENCE	25489 13411
SITE TYPE	Chimney Stack
SOURCE	Kilkenny County Development Plan
RATING	Local Importance

DESCRIPTION

This site lies east of the Waterford road and consists of a chimney-stack which must have been part of a mining operation.

Table 3: Catalogue of Industrial Archaeological Sites**GRADE 1****SITE****IA 1**

LOCATION	Jerpoint West/Thomastown
TYPE	Rail Bridge
NATIONAL GRID REFERENCE	25753 14099
SOURCE	Kilkenny Development Plan

DESCRIPTION

This site consists of a wrought-iron bowstring girder bridge of a 215 ft. rail viaduct (65m) span, with twin arched masonry approaches, over the Nore south of Thomastown. It was completed in 1877 and replaced an earlier wooden bridge. It carried the main Kilkenny-Waterford line. This site is also listed in the catalogue of architectural sites (Site 73).

SITE**IA 2**

LOCATION	Killinny
TYPE	Mosse's Mill
NATIONAL GRID REFERENCE	24812 14315
SOURCE	Kilkenny Development Plan

DESCRIPTION

This site is also known as Hutchinson's and Boland's Mill and is Co. Kilkenny's only fully functioning traditional flourmill, being operated by William Mosse trading under the name of Kells Wholemeal Ltd. The present five-storey mill occupies a 12th century site on the King's River west of Kells. It is complete with kiln, undershot 18 ft. diameter waterwheel, great spurwheel transmission gearing and six sets of millstones. The mill owner's house stands nearby.

SITE**IA 3**

LOCATION	Grenan
TYPE	Grenan Grain Mill
NATIONAL GRID REFERENCE	25854 14157
SOURCE	Kilkenny Development Plan

DESCRIPTION

This site is located on the southern outskirts of Thomastown, on mill the left bank of the Nore. It consists of a massive virtually-intact 5-storey mill with a kiln, two undershot waterwheels and great spurwheel gearing; two sets of millstones remain. The ground floor is now used as a café and craft shop.

SITE**IA 4**

LOCATION	Granny
TYPE	Suir Railway Bridge
NATIONAL GRID REFERENCE	25854 11394
SOURCE	Kilkenny Development Plan

DESCRIPTION

This site consists of none-span bridge, 120 ft. (367m) in length. It consists of a viaduct carrying the former Mallow-Rosslare line over the River Suir. It is of Pratt truss construction by Sir William Arrol of Glasgow and its spans are supported on twin cast-iron pier, the central span lifting to allow boats to pass through. It is of similar design to the Barrow viaduct.

GRADE 2**SITE****IA 5**

LOCATION	Goresbridge
TYPE	Bridge
NATIONAL GRID REFERENCE	26843 15371
SOURCE	Kilkenny Development Plan

DESCRIPTION

This bridge consists of nine arches of semi-circular profile and varying size. It carries the Borris road over the Barrow River on the east side of Goresbridge. There is a warehouse located at the County Carlow end. This site is also listed in the catalogue of architectural sites (Site 72).

SITE**IA 6**

LOCATION	Duniga
TYPE	Grain Mill/Maltings
NATIONAL GRID REFERENCE	26848 15567
SOURCE	Kilkenny Development Plan

DESCRIPTION

This site consists of an extensive six-storey complex with crenellated walls and towers on the Goresbridge-Paulstown road. It was originally built as a flour mill, powered from the Barrow River and was later used by Minch Norton as a malt house. A massive kiln and turbine survive. This site is also listed in the catalogue of architectural sites (Site 75).

SITE**IA 7**

LOCATION	Bennettsbridge
TYPE	Bennett's Bridge
NATIONAL GRID REFERENCE	25517 14925
SOURCE	Kilkenny Development Plan

DESCRIPTION

The bridge consists of six semi-circular humpbacked arches of varying size. It carries the Kilkenny to Thomastown road. The keystones of the dressed voussoirs are highlighted.

SITE**IA 8**

LOCATION	Garrynamann Lower
TYPE	Mullin's Mill
NATIONAL GRID REFERENCE	24949 14364
SOURCE	Kilkenny Development Plan

DESCRIPTION

This site consists of a three-storey random-rubble grain mill on the left bank of the King's River at Kells. It is now used as a dwelling house, but is apparently complete with machinery and external undershot waterwheel.

SITE**IA 9**

LOCATION	Annamult
TYPE	Merino Factory
NATIONAL GRID REFERENCE	25362 14434
SOURCE	Kilkenny Development Plan

DESCRIPTION

This site was erected c. 1810-15 on the left bank of the King's River near its confluence with the Nore. Its purpose was to create local employment in the spinning, weaving and dyeing of wool. This socially progressive undertaking functioned until 1822, being partly reused as a grain mill from the 1850's to 1870. Substantial remains survive around three sides of a courtyard, while at the west side there is a massive waterwheel pit.

SITE**IA 10**

LOCATION	Ballylinch Demesne
TYPE	Ballylinch Bridge
NATIONAL GRID REFERENCE	25469 14365
SOURCE	Kilkenny Development Plan

DESCRIPTION

This bridge is comprised of twelve segmental arches of varying size, which span the Nore floodplain just west of Ballylinch Demesne. Five arches span the river proper, the remainder serving as floodwater channels. This site is also listed in the catalogue of architectural sites (Site 70).

SITE**IA 11**

LOCATION	Ballylinch Demesne
TYPE	Estate Bridge
NATIONAL GRID REFERENCE	25509 14249
SOURCE	Kilkenny Development Plan

DESCRIPTION

This site consists of a well proportioned multi-arched bridge providing access to Mount Juliet across the Nore. It comprises seven equi-sized elliptical arches with angled cutwaters, with two additional floodwater channels on the eastern approach. A wooden fence acts as a parapet.

SITE**IA 12**

LOCATION	Thomastown
TYPE	Thomastown Bridge
NATIONAL GRID REFERENCE	25858 14175
SOURCE	Kilkenny Development Plan

DESCRIPTION

This bridge is comprised of six segmental spans of varying size. It carries the Thomastown to Waterford road and was apparently erected c. 1790, although an inscribed stone plaque is now indecipherable. The bridge has recently been improved with the addition of a cantilevered concrete foot-path on the downstream side, and the replacement of the stone parapet with metal railings.

SITE**IA 13**

LOCATION	Ballyduff
TYPE	Ballyduff Mill
NATIONAL GRID REFERENCE	26079 13826
SOURCE	Kilkenny Development Plan

DESCRIPTION

This site consists of a three-storey grain mill on the Arrigle River, near its confluence with the Nore, SE of Thomastown. The site is fully restored and is used as a craft workshop. It still retains its pitchback waterwheel, great spurwheel gearing and four sets of millstones.

GRADE 3**SITE****IA 14**

LOCATION	Purcellsinch
TYPE	Inch Sawmill
NATIONAL GRID REFERENCE	25315 15463
SOURCE	Kilkenny Development Plan

DESCRIPTION

This site consists of an operation sawmill on the left bank of the Nore River, SE of Kilkenny. An undershot waterwheel powers a circular saw via a bevel and belt gearing.

SITE**IA 15**

LOCATION	Highrath
TYPE	Marble Sawmill
NATIONAL GRID REFERENCE	25429 15401
SOURCE	Kilkenny Development Plan

DESCRIPTION

This site consists of a derelict two-storey mill situated on the left bank of the Nore River. The undershot waterwheel pit is infilled and no machinery survives.

SITE**IA 16**

LOCATION Highrath
TYPE Grain Mill/Marble Sawmill
NATIONAL GRID REFERENCE 25439 15382
SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of a massive five-storey flour mill on the left bank of the Nore River just below Millmount House. It was later reutilised as a marble sawmill. No machinery survives, although the undershot waterwheel pit is clearly visible.

SITE**IA 17**

LOCATION Highrath
TYPE Millmount House
NATIONAL GRID REFERENCE 25442 15387
SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of the three-storey mill owner's house dating to the 1770's. This site is also listed in the catalogue of architectural sites (Site 35).

SITE**IA 18**

LOCATION Maddockstown
TYPE Grain Mill/Marble Sawmill
NATIONAL GRID REFERENCE 25443 15350
SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of a massive former flour mill located on the left bank of the Nore River. It was later reused as a marble sawmill and is now a roofless shell with no machinery. The undershot waterwheel pit is clearly visible.

SITE**IA 19**

LOCATION	Maddockstown
TYPE	Grain Mill
NATIONAL GRID REFERENCE	25441 15354
SOURCE	Kilkenny Development Plan

DESCRIPTION

This site consists of a four-storey flour mill located on the left bank of the Nore River. It is now derelict, but the undershot waterwheel pit remains along with a millstone. This site is also listed in the catalogue of architecture sites (Site 76).

SITE**IA 20**

LOCATION	Maddockstown
TYPE	Limestone Quarry
NATIONAL GRID REFERENCE	25428 15454
SOURCE	Kilkenny Development Plan

DESCRIPTION

This site consists of a 50 ft. high quarry face several hundred yards long on the left bank of the Nore from which William Colles extracted black marble.

SITE**IA 21**

LOCATION	Bennettsbridge
TYPE	Grain Mill
NATIONAL GRID REFERENCE	25526 14896
SOURCE	Kilkenny Development Plan

DESCRIPTION

This site consists of a fire-gutted shell of a six-storey flour mill on the right of the Nore below Bennett's bridge. Little machinery now survives, although a Francis turbing continues to generate electricity for the complex, part of which is used as a pottery. Now repaired.

SITE**IA 22**

LOCATION Newtown
TYPE Newtown Bridge
NATIONAL GRID REFERENCE 24647 14354
SOURCE Kilkenny Development Plan

DESCRIPTION

This bridge is comprised of nine spans, three of semi-circular shape with angled cutwaters, being on normal use at the S end. It carries a minor road across the floodplain of the King's River, W of Kells. This site is also listed in the Catalogue of Architectural Sites (Site 74).

SITE**IA 23**

LOCATION Kells
TYPE Kells Bridge
NATIONAL GRID REFERENCE 24939 14367
SOURCE Kilkenny Development Plan

DESCRIPTION

This bridge carries the Kilkenny road over the King's River to the north of the village. This bridge is of great technical interest, the eight semi-circular arches of the original bridge having been widened on the downstream site with a five span addition (three elliptical, two semi-circular arches).

SITE**IA 24**

LOCATION Kellsborough
TYPE Grain Mill
NATIONAL GRID REFERENCE 24967 14351
SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of an extensive five-storey range on the left bank of the King's River to the W of Kells, encompassing two flour mills, each drive off an undershot waterwheel. There are traces of one wheel and some transmission gearing survive.

SITE**IA 25**

LOCATION	Ennisnag
TYPE	Ennisnag Bridge
NATIONAL GRID REFERENCE	25248 14390
SOURCE	Kilkenny Development Plan

DESCRIPTION

This site consists of an fine segmental arches bridge carrying the Kilkenny-Knocktopher road over the King's River just north of Stonyford village. Three arches are in normal use, with a fourth floodwater channel on the south approach. The spandrels are ornamented with raised circular and rectangular designs. This site is also listed in the catalogue of architectural sites (Site 71).

SITE**IA 26**

LOCATION	Jerpoint Abbey
TYPE	Grain Mill
NATIONAL GRID REFERENCE	25715 14033
SOURCE	Kilkenny Development Plan

DESCRIPTION

This site consists of a ruinous four-storey mill on the right bank of the Nore, SW of Thomastown. Most of the breastshot waterwheel survives along with a great spurwheel gearing to four sets of millstones.

SITE**IA 27**

LOCATION	Grenan
TYPE	Island Mill
NATIONAL GRID REFERENCE	25938 14140
SOURCE	Kilkenny Development Plan

DESCRIPTION

This site consists of a massive six-storey flour mill on the left bank of the Nore, SW of Thomastown. Although the building is now used as an art college, the undershot waterwheel and much of the great spurwheel gearing survives.

SITE**IA 28**

LOCATION Granny
 TYPE Railway Bridge
 NATIONAL GRID REFERENCE 25875 11461
 SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of a lattice-girder bridge carrying the Limerick-Waterford line over the Blackwater River. Its three spans are supported on stone abutments and twin pairs of cast-iron piers on either bank.

SITE**IA 29**

LOCATION Deer Park
 TYPE Grain Mill
 NATIONAL GRID REFERENCE 25610 12329
 SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of a four-storey mill on the left bank of the Blackwater River below Mullinavat. The great spurwheel gearing and three sets of mill stones survive, along with traces of the breastshot waterwheel.

SITE**IA 30**

LOCATION Kilmacow
 TYPE Kilmacow Bridge
 NATIONAL GRID REFERENCE 25627 11791
 SOURCE Kilkenny Development Plan

DESCRIPTION

This bridge is comprised of six equi-sized 'gothic' arches, five of which are in normal use. A millrace is also accommodated on its western approach. It carries a minor road over the Blackwater.

SITE**IA 31**

LOCATION Greenvill
 TYPE Grain Mill
 NATIONAL GRID REFERENCE 25662 11756
 SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of a four-storey mill with an adjoining mill house, located on the left bank of the Blackwater, below Kilmacow. The undershot waterwheel, great spurwheel gearing and millstones survive.

SITE**IA 32**

LOCATION	Dangan
TYPE	Dangan Bridge
NATIONAL GRID REFERENCE	25703 11998
SOURCE	Kilkenny Development Plan

DESCRIPTION

This bridge is comprised of six equi-sized semi-circular spans with angled cutwaters. It carries a minor road over the Blackwater north of Kilmacow.

SITE**IA 33**

LOCATION	Ennisnag
TYPE	Grain Mill
NATIONAL GRID REFERENCE	25219 14357
SOURCE	Kilkenny Development Plan

DESCRIPTION

This site consists of a massive seven-storey derelict flour mill, also known as Rockview and O'Brien's Mill. It is located on the left bank of the King's River east of Kells. Most of the great spurwheel gearing and four sets of millstones survive. Its owners, The King's River Community, hope to restore it as a heritage centre and install a hydro-electric turbine.

SITE**IA 34**

LOCATION	Ennisnag
TYPE	Bridge
NATIONAL GRID REFERENCE	25232 14375
SOURCE	Kilkenny Development Plan

DESCRIPTION

This bridge is comprised of six segmental arches of varying size and with angled cutwaters. It carries a minor road across the King's River to the east of Kells. Of particular interest is the V-shaped recess in the upstream parapet wall, said to be where the toll collector stood, the only such example in the country. This site is also listed in the catalogue of architectural sites (Site 71).

SITE**IA 35**

LOCATION Annamult
 TYPE Wind Pump
 NATIONAL GRID REFERENCE 25368 14439
 SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of a wind-powered climax water pump, complete with multi-bladed sails, lattice tower and windvane. It supplied drinking water to animals.

GRADE 4**SITE****IA 36**

LOCATION Thomastown
 TYPE Railway Station
 NATIONAL GRID REFERENCE 25781 14158
 SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of the still operational two-storey ashlar lime stone building, in proximity to a goods shed and signal box.

SITE**IA 37**

LOCATION Ballyhale
 TYPE Railway Station
 NATIONAL GRID REFERENCE 25520 13560
 SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of a single-storey ashlar limestone building, which is now a dwelling. A rubble-stone goods shed stands nearby.

SITE**IA 38**

LOCATION	Killeen
TYPE	Railway Bridge
NATIONAL GRID REFERENCE	25541 12733
SOURCE	Kilkenny Development Plan

DESCRIPTION

This bridge is comprised of a high single elliptical masonry arch span carrying railway over a minor road. This bridge lies just north of IA 95.

SITE**IA 39**

LOCATION	Killeen
TYPE	Railway Bridge
NATIONAL GRID REFERENCE	25534 12743
SOURCE	Kilkenny Development Plan

DESCRIPTION

This bridge is comprised of a high single elliptical masonry arch span carrying railway over a minor road. This bridge lies just north of IA 94.

SITE**IA 40**

LOCATION	Mullinavat
TYPE	Railway Station
NATIONAL GRID REFERENCE	25653 12397
SOURCE	Kilkenny Development Plan

DESCRIPTION

This site consists of a double-bay single-storey ashlar limestone building, which is now a dwelling. It has up-and-down line platforms, a signal box and a level crossing.

SITE**IA 41**

LOCATION Dunkitt
TYPE Railway Bridge
NATIONAL GRID REFERENCE 25841 11615~
SOURCE Kilkenny Development Plan

DESCRIPTION

This bridge is comprised of a single semi-circular masonry span carrying the railway over a former mineral railway line.

SITE**IA 42**

LOCATION Gowran
TYPE Railway Station
NATIONAL GRID REFERENCE 26119 15444
SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of a single storey brick dwelling, with platform and limestone goods shed opposite. This site is also listed in the catalogue of architectural sites (Site 81).

SITE**IA 43**

LOCATION Thomastown
TYPE Quay
NATIONAL GRID REFERENCE 25883 14196~
SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of the disused remains of river frontage on the left bank of the Nore River at the east end of the town.

SITE**IA 44**

LOCATION Archersgrove
 TYPE Fennessy's Mill
 NATIONAL GRID REFERENCE 25256 15484
 SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of the shell of a massive five-storey flour-mill on the Nore River, south of Kilkenny, formerly with two undershot waterwheels.

SITE**IA 45**

LOCATION Gowran Demesne
 TYPE Grain Mill
 NATIONAL GRID REFERENCE 26319 15315
 SOURCE Kilkenny Development Plan

DESCRIPTION

This site is known as Dalton's Mill and most has now been demolished. The great spurwheel transmission gearing and millstones survive elsewhere on site.

SITE**IA 46**

LOCATION Gowran Demesne
 TYPE Francis Sawmill
 NATIONAL GRID REFERENCE 26325 15318
 SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of a now abandoned rubble-stone building in which only the water turbine survives *in situ*. The circular saw bench is still used elsewhere on site, powered off an electric motor.

SITE**IA 47**

LOCATION Annamult
 TYPE Threshing Mill
 NATIONAL GRID REFERENCE 25354 14432~
 SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of a long two-storey random-rubble building of early 19th century date, probably horse-powered. No machinery survives.

SITE**IA 48**

LOCATION Bennettsbridge
 TYPE Grain Mill/Seed Dressing Mill
 NATIONAL GRID REFERENCE 25532 14913
 SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of a large four-storey former grain mill, later converted to seed dressing on the left bank of the Nore below Bennett's Bridge. Only the latter's machinery survives, powered from electricity generated by Francis turbine. The building is being re-converted to flour milling by William Moss.

SITE**IA 49**

LOCATION Kellsgrange
 TYPE Grain Mill
 NATIONAL GRID REFERENCE 25108 14368
 SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of a ruinous five-storey flour mill, also known as Bradley's Mill, on the left bank of the King's River E of Kells. Formerly with two under shot waterwheels, but now gutted of all machinery.

SITE**IA 50**

LOCATION Burrellspark
 TYPE Arland's Inch Mill
 NATIONAL GRID REFERENCE 25830 14149
 SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of a small three-storey corn mill, now refurbished as a house

SITE**IA 51**

LOCATION Ballyduff
 TYPE Ballyduff Bridge
 NATIONAL GRID REFERENCE 26083 13817
 SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of a bridge of four segmental spans with angled cutwaters over the Arrigle River.

SITE**IA 52**

LOCATION Mullinavat
 TYPE Bridge
 NATIONAL GRID REFERENCE 25625 12426
 SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of a multi-arched bridge carrying a minor road across the Blackwater, just W of Mullinavat village. The bridge comprises five semi-circular arches of varying size, with angles cutwaters (two of which are in normal use), plus a floodwater channel.

SITE**IA 53**

LOCATION Stangsmill
 TYPE Water Tower
 NATIONAL GRID REFERENCE 25940 11575~
 SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of a large reinforced concrete water reservoir atop a five-storey former grain mill.

SITE**IA 54**

LOCATION Granny
 TYPE Limestone Quarry
 NATIONAL GRID REFERENCE 25779 11476
 SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of the extensive remains of abandoned seep workings.

SITE**IA 55**

LOCATION Greenville
 TYPE Grain Mill
 NATIONAL GRID REFERENCE 25679 11845
 SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of a five-storey flour mill on the left bank of the Blackwater River near Kilmacow. The Francis turbine survives along with traces of machinery. An impressive cast-iron aqueduct dated to 1885 (by R. Graham of Waterford) conveys headwater to the mill. The wheelpit now houses a modern electricity generating turbine.

SITE**IA 56**

LOCATION Dangan
 TYPE Grain Mill
 NATIONAL GRID REFERENCE 25694 11997
 SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of a three-storey mill on the Blackwater with traces of great spurwheel gearing.

SITE**IA 57**

LOCATION Smartcastle West
 TYPE Limestone Quarry
 NATIONAL GRID REFERENCE 25955 11610
 SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of an extensive high limestone faces, which survive on either side of a causeway road; also traces of mineral railway (IA 134).

SITE**IA 58**

LOCATION Smartcastle West
 TYPE Mineral Railway
 NATIONAL GRID REFERENCE 25943 11552~
 SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of an abandoned railway serving a limestone quarry track still partly visible, with under road tunnel (IA 133).

SITE**IA 59**

LOCATION Dunkitt
 TYPE Limestone Quarry
 NATIONAL GRID REFERENCE 25868 11572
 SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of extensive workings; also traces of a mineral railway and associated lime kiln.

SITE**IA 60**

LOCATION Dunkitt
TYPE Railway
NATIONAL GRID REFERENCE 25860 11564~
SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of an abandoned railway serving limestone quarry track for railway still partly visible, along with tunnel under railway.

SITE**IA 61**

LOCATION Thomastown
TYPE Tannery
NATIONAL GRID REFERENCE 25849 14196
SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of the ruinous remains of a former tannery. It still retains tanning pits and a brick chimney.

SITE**IA 62**

LOCATION Granny
TYPE Bridge
NATIONAL GRID REFERENCE 25857 11454
SOURCE Kilkenny Development Plan

DESCRIPTION

This site consists of a bridge of a single segmental arch, which formerly carried the Thomastown-Waterford road over the Blaclwater river. The extreme shallowness of the arch necessitated later reinforcement to cope with the increasing traffic. It is now superseded by a modern concrete bridge immediately downstream.

**N9/N10 Kilcullen
to Waterford - South**

**Appendix F:
Landscape and Visual**

May 2001

D 2560/10

Table 1: County Kilkenny Areas of Scientific Interest

Number / Grid	Name	Description
ASI 1 S559 343	Kiltorcan Old Quarries	Of <u>International</u> geological interest.
ASI 3 S580 409	Thomastown	Grassland of <u>National</u> ecological interest.
ASI 4 S517 548	Archer's Grove quarry	Of <u>Regional</u> geological interest.
ASI 9 S520 300	Hugginstown Fen	Of <u>Regional</u> ecological interest.
ASI 12 S610 180	Lough Cullin	Of <u>Regional</u> ecological interest.
ASI 15 S553 477	Bennettsbridge	Grassland of <u>Local</u> ecological interest.
ASI 18 S570 140	Granny Quarries	Of <u>Local</u> geological interest.

Table 2: County Carlow View to be Preserved or Improved

Number	Description
A3	Mount Leinster and Blackstairs Mountains from Muinebheag / New Ross L. 18.

Table 3: County Kilkenny Areas of Special Development Control/Areas of High Amenity

Number	Description
5	Lands bounded by roads 229, 259, 182, 241, 235 bounding Co. Carlow.
8	Barrow – Nore River Valley area bounded by road nos. 319, 351, 527, 508, 515, 459, 538, 473, 519, 494, 498, Barrow River, road nos. 694, 628, 672, 529, 524, & 532.
9	Area at Tipperary border bounded by roads nos. 364, 363, 346, 488 & 489.
10	Part of area bounded by N24 to the north and to the south and south-east by the River Suir.
11	Lough Cullin Area.
13	Lands to north and south at King's River Valley bounded to south by road no. 319.

Table 4: County Kilkenny View to be Preserved and Protected

Number	Description
A7	Views west over the Nore Valley on the Thomastown / Inistiogue Rd. R700 between Inistiogue and the junction with road no. 463, particularly those at Brownsbarn Bridge and Dangan.
A8	View east over the Nore Valley on the Thomastown / Inistiogue Rd. (Grennan Rd.) no 517 S of Thomastown between the junctions with road nos.457a and 529.
A10	View north-west over the valleys and confluence of the Nore and Kings Rivers on the Stoneyford / Bennetsbridge Rd. no. 512 between the junctions with road no. 757 and 490.
A20	View south and north over Kings River Valley between Kells and Waterford Rd.
A21	Views south west over River Suir at Grannagh Castle to the Comeraghs

Table 5: County Carlow Other Areas of Significant Landscape Value

Grid	Description
S695 587 to S695 520	Barrow River - as well as being landscape feature, the River Barrow and adjoining canal is an important tourist and recreation amenity and the towpath along the river is a long distance way marked walk known as the Barrow Way.
S605 560	Kilgraney

Table 6: County Kilkenny Other Areas of Significant Landscape Value

Grid	Description
S695 587 to S695 520	Barrow River Valley
S670 575	Paulstown Castle / Mount View.
S640 520	Gowran Town, site of 11 th Century church, demesne and also a well known racecourse
S682 560	Barraghoore Demesne
S605 525	Clashwilliam,
S585 535	Blanchville House
S545 530	River Nore Valley and Maddockstown
S475 545	Castlebunden Woodlands
S460 523	Woodlands Amenity Area
S510 525	Prospect House
S480 495	Ballybur Woodland
S470 475	Farmley Burnchurch
S515 475	Danesfort
S615 490	Dungarvan Village
	Large Central Area encompassing Jerpoint Abbey, Mount Juliet, Bennettsbridge, Thomastown Stoneyford, River Nore and Barrow Valley and confluence.
S605 440	Kilfane Demesne, Waterfall and Heritage Garden, a major tourist attraction is located 3km north-east of Thomastown
S500 435	Kells, and site of a 10 th Century Augustinian Priory
S485 430	Confluence of Kings and Glory River
S495 410	Kilree Church and round tower are located to the south of Kells
S520 395	Flood Hall Woods and Hill
S530 370	Knocktopher, Abbey, Woods
S600 380 to S600 330	River Arrigle River Valley
	The South Leinster Way, a way marked long distance walking route crosses the study area from Rochestown Hill in the west through Mullinavat, Lukeswell and Glenpipe.
S610 270	Smithstown Hill
S560 250 to S570 200	Mullinavat Confluence of Blackwater and Pollanassa Rivers
S595 220	Tory Hill
S560 195 to S590 150	Kilmacow Village and Blackwater Valley

Table 7: County Carlow Density of Development Areas.

Grid	Description
S695 540	Ballyellin Cross on R702
S700 570	Along R705

Table 8: County Kilkenny Towns and Villages

Town/Village
Kilkenny City Environs
Goresbridge
Gowran
Dungarvan
Bennettsbridge
Kells
Stoneyford
Thomastown
Knocktopher
Ballyhale
Mullinavat
Kilmacow
Slieveroe

Table 9: County Kilkenny Density of Development Areas

Grid	Description
S650 570	Mountrothe / Garryduff partly along existing N9
S605 555	Along N9 near Rathcash
S620 550	Cliften Commons
S530 530	Along R700 at Raggettsland
S470 500	At Grange
S480 475	Burnchurch
S480 515	Danesfort
S665 510	Ballycabus, Powerstown
S615 475	South of Dungarvan
S605 455	Kilfane East
S550 410	South of Mount Juliet
S590 350	Coolroebeeg
S290 550	Knockmoylan
S285 560	Manselcourt
S545 260	Redacres
S575 260	Ballylusk
S540 245	West of Ballymorris
S580 240	Ballygreek
S570 215	Rosshan
S590 190	Skeard
S595 185	Bishopshall
S555 165	Newtown
S583 160	Dunkitt / Blossomhill
S595 165	Blossomhill / Gaulshill
S610 165	Ballymountain
S600 153	Cloone
S620 155	Ballynamona