

N5 CHARLESTOWN BYPASS

N17 CHARLESTOWN BYPASS

ROUTE SELECTION REPORT

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CHAPTER 1

GENERAL CONSIDERATIONS FOR ROUTE SELECTION AND DESIGN

1.1 Introduction

- 1.1.1 This is the Route Selection Report for the N5 / N17 Charlestown Bypass Schemes. It is prepared by the Regional Design Office of Mayo County Council and it is the outcome of a Route Selection Study carried out by the Project Team and specialist consultants.
- 1.1.2 The town of Charlestown is located in East Mayo at the intersection of two National Primaries, the N5 and the N17. The area is rural in character. The aim of the report is to identify preferred routes for the N5 Charlestown Bypass and the N17 Charlestown Bypass.
- 1.1.3 The N5 Charlestown Bypass extends from the townland of Cloonlara, at the eastern end of the Swinford Bypass to the townland of Currinah on the existing N5 in Co. Roscommon.
- 1.1.4 The N17 Charlestown Bypass extends from the townland of Lurga on the existing N17 in Co. Mayo to the townland of Drumbaun on the existing N17 at Curry Village in Co. Sligo.

1.2 Reconciliation with the National Road Needs Study and the National Development Plan

- 1.2.1 The last Mayo County Development Plan was published in 1992. In it the main roads between Westport and Carracastle, and between Ballindine and Charlestown were classified as National Primary Roads, the N5 and the N17, respectively. One of the objectives of the Plan is to complete improvements on both the N5 and N17. With regard to the policy of the Council it is also their objective in the plan to complete the improvements to the National Primary Roads and to continue to improve these roads as finance permits.
- 1.2.2 The National Development Plan 2000-2006 includes the N5 Westport-Longford Route as part of its development strategy for national primary roads. It requires that major improvements be carried out on the N5. The Government's policy in the National Development Plan 2000-2006 is to provide a high quality of service on the national primary network. On improvements to inter-urban routes listed in the Plan, its aim is to achieve a minimum Level of Service D.
- 1.2.3 The National Development Plan 2000-2006 also includes the N17 Galway - Sligo Route as part of its development strategy for national primary roads. It requires that major improvements be carried out on the N17.
- 1.2.4 In July 1998 the NRA published the *NRA National Road Needs Study*. In Annex 4: Schedule of Improvement Needs it identified the N5 Charlestown Bypass and the N17 Charlestown Bypass as "Phase 1" projects requiring a Standard 2 Lane road. This illustrates that the existing routes cannot support an average inter-urban speed of 80kph (50mph). The *NRA National Road Needs Study* stated that improvement of these routes to a Standard 2 Lane Road would provide a Level of Service D.

1.3 Traffic Studies

- 1.3.1 The Road Design Office of Mayo County Council have been carrying out an annual traffic census at a number of count point locations on both the N5 and N17 National Primary Routes for many years. Two of these points, P5 and P6, are located west and east, respectively of Charlestown on the N5 National Primary Route. Another count point, P7 is located south of Charlestown on the N17 National Primary Route.
- 1.3.2 The annual counts are sixteen-hour visual classification counts and the AADT (Annual Average Daily Traffic) and HCV% (the % of Heavy Commercial Vehicles) figures are obtained from *RT201: Expansion Factors for Short Period Traffic Counts*. The route type is taken as a Rural Intertown Route.

- 1.3.3 Parkman Carl Bro Punch (PCP) were appointed as Consultant for the N5 Swinford to the County Boundary road scheme and the N17 Charlestown Bypass road scheme as part of their Multiple Framework Commission (MFC) with Mayo County Council. For the Preliminary Design Stage of the project, various work packages have been allocated for the attention of PCP. These work packages included the procurement of traffic surveys, analyse the data acquired and prepare a traffic model. The results of that the traffic surveys and analysis is contained in report entitled “*Mayo County Council N5 and N17 Bypasses Charlestown Traffic Analysis Report*”.

Table 1: Road Traffic Census on N5 West of Charlestown (Census Point No. P5)

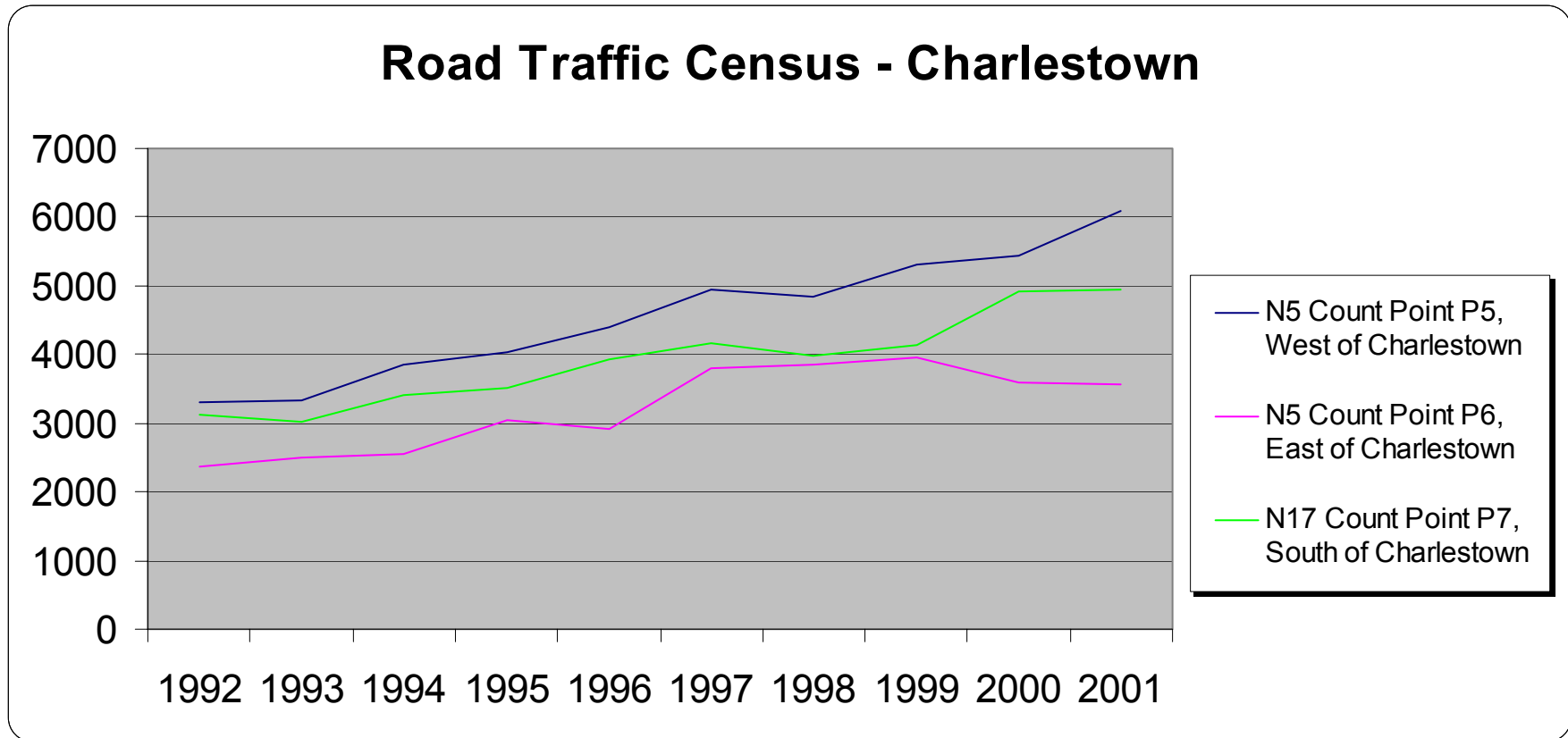
Year	AADT	%HCV's	% AADT Increase Per Year	Av. % Increase Since 1995
1990	3151	7.13		
1991				
1992	3312	8.23		
1993	3324	8.24	0.36%	
1994	3856	8.83	16.00%	
1995	4024	8.87	4.36%	
1996	4409	8.92	9.57%	6.2%
1997	4937	8.48	11.98%	6.2%
1998	4828	9.10	-2.21%	6.2%
1999	5301	7.88	9.80%	6.2%
2000	5438	8.94	2.58%	6.2%
2001	6079			

Table 2: Road Traffic Census on N5 East of Charlestown (Census Point No. 6)

Year	AADT	%HCV's	% AADT Increase Per Year	Av. % Increase Since 1995
1990	2075	13.00		
1991				
1992	2378	13.85		
1993	2504	14.60	5.3%	
1994	2558	15.46	2.16%	
1995	3052	14.83	19.31%	
1996	2916	15.60	-4.46%	6.6%
1997	3792	13.77	30.04%	6.6%
1998	3845	11.40	1.40%	6.6%
1999	3946	12.73	2.63%	6.6%
2000	3595	14.02	-8.90%	
2001	3571			

Table 3: Road Traffic Census on N17, South of Charlestown (Census Point No. P7)

Year	AADT	%HCV's	% AADT Increase Per Year	Av. % Increase Since 1995
1990	3329	9.44		
1991				
1992	3132	7.37		
1993	3027	7.90	-3.35%	
1994	3411	7.48	12.69%	
1995	3509	6.95	2.87%	
1996	3930	7.51	12.00%	6.9%
1997	4156	7.24	5.75%	6.9%
1998	3984	8.40	-4.14%	6.9%
1999	4134	10.35	3.77%	6.9%
2000	4908	11.40	18.72%	6.9%
2001	4945			



1.4 Future Traffic Projections and Determination of Road Type

- 1.4.1 The estimated year of opening of the N5 Charlestown Bypass is 2005 and the estimated year of opening of the N17 Charlestown Bypass is post 2006. This takes into account the time required to carry out detailed design and construct the road. The new road would be designed to achieve a level of service D as recommended in the *NRA National Road Needs Study* after 20 years. Therefore traffic projections for the purpose of design and the determination of the road type will be for the year 2025. There are various methods of assessing projected traffic figures. The evaluation methods discussed below are based on the projected increase of vehicle ownership and usage over time as a result of national and regional growth.
- 1.4.2 The NRA in their July 1998 publication of the *NRA National Road Needs Study*, as stated above, has indicated that both the N5 Charlestown Bypass and the N17 Charlestown Bypass Schemes should be improved to a single two-lane carriageway standard. The report also includes forecast growth rates for each national road for the period 1995 to 2019. Table 4 gives the traffic forecasts for the sections under consideration on the N5 and N17 Charlestown Bypass Schemes in accordance with the projections presented in the *NRA National Road Needs Study*.

Table 4: Traffic Growth on N5 Westport-Castlebar Road Project

(Extract from National Road Needs Study – July 1998)

Route	Section	1995 AADT	HCV %	2019 AADT	HCV %	SATURATION AADT	HCV %
N5	West of Charlestown Census Pt. P5	4024	9	8884	7	9513	7.5
N5	East of Charlestown Census Pt. P6	3052	15	7567	11	8102	11
N17	South of Charlestown Census Pt. P7	3509	7	7771	6	8323	6

- 1.4.3 Since the publication of the *NRA National Road Needs Study* the observed traffic growth over the period since 1995 has exceeded the projected estimates in the study. This is due in part to the higher than expected economic growth rate and resulting car ownership. The traffic growth projections in the *NRA National Road Needs Study* are no longer representative of the actual growth experienced over the last numbers of years and what is expected in the future. This is illustrated in the growth rates experienced in the traditional traffic census locations P5, P6 and P7 as shown in Table 1, Table 2 and Table 3, respectively. The average yearly growth rates since 1995 are in excess of the 6% projected in the *NRA National Road Needs Study*.
- 1.4.4 One growth profile, which has been used recently, gives a conservative traffic growth projection. This is a forecast of 6% per annum to 2003, 4% per annum to 2008 and 2% per annum thereafter. The base year for this projection is 1995. This traffic growth projection has been used on various schemes such as in the assessment of the N26 Ballina – Foxford Road at Carrowntreila and has been used at public inquiry. Using the method to project traffic for the N5 / N17 Charlestown Bypass Schemes gives the anticipated traffic volume for the year 2025 at the various traffic census points as illustrated in Table 5.

**Table 5: Current Traffic Count and Projected Design Year Traffic Analysis
(Conservative Traffic Growth)**

Census Point	1995 AADT	2003 AADT	2008 AADT	2025 AADT
N5 P5	4024	6398	7780	10892
N5 P6	3052	4853	5901	8261
N17 P7	3509	5579	6784	9498

1.4.5 In the *NRA National Road Needs Study* the limiting capacity for a Standard Two lane carriageway road giving a LOS D for a rural road in level terrain is 11,600 AADT.

1.4.6 DKM Economic Consultants Ltd and Michael J. MacNicholas recently developed another alternative traffic growth estimation, which has been issued as guidelines by the NRA. In the jointly prepared report *DKM Report – National Roads Monitoring Group: Guidelines for Road Type Selection in Road Improvement Proposals (DKM Report)* (NRMG) it has recommended a method of traffic estimation based on expansion and reduction factors, which would ultimately estimate future traffic volumes for when vehicle ownership is at saturation level. The following is a breakdown of the factors chosen for this project.

Measurement Error: As the measurement of AADT has been done manually at all the traffic census points, allowance must be made for error. The estimate for error will be as given in RT201 with a 68% level of confidence.

Diverted Traffic: This factor (F_1) is not taken into account, as traffic is not seen to divert to other routes to avoid “bottlenecks” at present. This is because no other reasonable alternative exists.

Assigned Traffic: The “*N5 and N17 Bypasses for Charlestown Traffic Analysis Report*” prepared by Parkman Carl Bro Punch identified that 75% of traffic on the existing N5 and N17 is through traffic. As the existing roads will remain for the use of local traffic a correction factor of 0.75 (F_2) is applied.

Induced Traffic: Due to the development potential that has been suppressed in the area due the condition of the existing N5 and N17, a conservative factor of 1.05 (F_3) is applied to take this into account. The full correction factor 1.20 recommended in the *DKM Report* is not used due to any new accesses being allowed onto the new road and limited access via junctions will only be allowed.

Normal Traffic Growth: There is clear evidence from the UK that traffic growth on main arterial roads comfortably exceeds increases in vehicle numbers, and indeed overall traffic growth. A similar picture is emerging in Ireland. Consequently, it is suggested that for the present it is allowed for in determining the expansion factor F_4 . On this basis it is recommended that, using 1998 as the base year, expansion factors of about 2.1 to 2.4 be used for low growth and high growth situations to determine saturation flows. 2.4 (F_4) is taken for this factor as traffic census points P5, P6 and P7 have indicated a higher than estimated traffic growth in this area for a number of years.

Design Hour Determination: The recommended factor of 1.0 (F_5) is taken in this instance.

1.4.7 **Determination of Road Type:** The *DKM Report* suggests “that road type assessment for NRMG proposals be based on an estimate of future traffic at saturation level”. From this it considers the choice of road type “based solely on the relationship between traffic flow and capacity” by satisfying the inequality below

$$Q \times F_1 \times F_2 \times F_3 \times F_4 \leq S \times F_5$$

1.4.8 Therefore, the estimated traffic volumes at saturation level for the N5 / N17 Charlestown Bypass Schemes at each of the traffic census points are given as follows in Table 6:

Table 6: Determination of Traffic at Saturation Level

Traffic Census Point	1998 AADT	Measurement Error from RT201	Base Traffic Q	Traffic at Saturation Level ** Q x F ₁ x F ₂ x F ₃ x F ₄
P5	4828	±16%	4828	9125***
P6	3845	±16%	3845	7267
P7	3984	±16%	3984	7530

**
F₁ = 1.0
F₂ = 0.75
F₃ = 1.05
F₄ = 2.4

(For low traffic growth, e.g. using F₄ = 2.1, the estimated traffic volume at saturation for P5 = 7984 AADT, P6 = 6358 AADT and P7 = 6589 AADT)

- 1.4.9 The estimated traffic volumes using the various methods of prediction are illustrated in Table 7 below for the census points used in the study.

Table 7: Future Traffic Predictions

Method	Base Year	P5 (N5)	P6 (N5)	P7 (N17)
Roads Needs Study	1995	9513	8102	8323
Conservative Traffic Growth	1995	10892	8261	9498
DKM Report	1998	9125	7267	7530

- 1.4.10 The capacity, S, for the road types considered for the N5/N17 Charlestown Bypass as per the *NRA National Road Needs Study* to give a LOS D for a rural road on level terrain are illustrated in Table 8.

Table 8: Capacities for Road Types Considered
(Extract from *National Road Needs Study – July 1998*)

Road Type	Maximum AADT for LOS D
Standard Two Lane Road	11,600

- 1.4.11 Calculation of the above inequality for the conservative traffic growth at census point P5 gives the following:

$$\text{For Standard Two Lane Road:} \quad 10892 < 11,600$$

The future traffic projections for the N5/N17 Charlestown Bypass Schemes have been calculated using the most recently available methods of calculation.

1.5 Road Type Selection

- 1.5.1 All projections used in this section indicate that the N5/N17 Charlestown Bypass Schemes should be designed and constructed as a standard two-lane carriageway road.

1.6 Continued Traffic Studies

- 1.6.1 The Road Design Office, Mayo County Council in conjunction with the National Roads Authority will continue to monitor traffic flows on the N5 and N17 National Primary Routes on an annual basis.

1.7 Improvement to the existing N5 and N17

- 1.7.1 Initial investigations were made into the feasibility of improving the existing N5 and N17. In providing a road to the standard necessary to comply with the requirements of safety, capacity and geometric standard, as specified in the *NRA National Road Needs Study* and the *National Development Plan*, it quickly became clear that this option be ruled out on the above grounds.
- 1.7.2 The main obstacle in improving the existing N5 and N17 is the high degree of ribbon development and single dwellings along the existing road.

1.8 Road Type/ Design Criteria/ Junctions/ Design Speed

- 1.8.1 The mainline of the N5 Charlestown Bypass and the N17 Charlestown Bypass shall be a standard single carriageway. It will consist of two 3.75m carriageways with a 3.0m hardshoulder and 3m grass verge on each side (see Figure 6.1 Page 49). Side slopes shall be constructed at a slope of 1m in the vertical to 2m in the horizontal. The intersection between the N5 Charlestown Bypass and the N17 Charlestown Bypass shall be a cloverleaf junction with left turns only onto and off each of the mainline routes.
- 1.8.2 Design criteria shall be based on the *NRA Design Manual for Roads and Bridges*.
- 1.8.3 In general the minor roads are of low traffic volumes and considerations of providing at-grade junctions, diverting roads or providing underpasses were made. The more heavily trafficked routes – Airport Road, Mullenmadoge Road, etc -have been examined with regard to providing grade-separated junctions. The considerations that were taken into account when deciding the necessity for a grade-separated junction were:
- (a) Vertical alignment of the proposed road,
 - (b) Traffic volumes,
 - (c) Topography,
 - (d) Socio-economic impacts,
 - (e) Environmental considerations.
 - (f) Safety
- 1.8.4 The design speed for the proposed N5 and N17 Charlestown Bypasses is 100kph. For any necessary realignment of the minor roads a 60 kph design speed was applied.
- 1.8.5 All interchanges shall be designed in accordance with the *NRA Design Manual for Roads and Bridges* and shall be partial cloverleaf junctions or single quadrant links.

1.9 Drainage

- 1.9.1 It is anticipated that the preferred route will impinge on the existing drainage of its surrounding catchment's area in a relatively similar manner as any other solution. The disturbance of the existing essential drainage will require reinstatement, as is reasonably practicable, to limit this impact.
- 1.9.2 Consultation and guidance from affected bodies such as the North West Regional Fisheries Board, Western Regional Fisheries Board, Dúchas, landowners, Group Water Schemes etc. will be an essential part of the design process in order to identify and prevent any anticipated negative impact on spawning beds, protected species, private wells, groundwater catchments etc. Oil interceptors, soak ways and any other engineering solutions will be investigated and implemented, if necessary, to redress any negative impact.

1.10 Minor Roads

- 1.10.1 There is one Regional Road R376 in the study area. This Regional Road connects the Knock International Airport to the N17 National Primary at Lurga Upper and was realigned in 1996.
- 1.10.2 All the other roads in the Study Area are Local Primary, Secondary or Tertiary Roads. These roads service the local farming and residential community. See attached Drawing Nos. **MO 0010 310 12 & MO 0017 310 09** for the location of all roads.
- 1.10.3 In deciding on the preferred route for the N5/N17 Charlestown Bypasses, due consideration of each minor road's importance, both to the individual and to the local communities was taken into account. In conjunction with the road's AADT, location, uses and other expert opinion, a decision will be made on how each road will be modified. These modifications may take the form of the following:
- (a) A slight horizontal realignment to create an appropriately safe junction with the proposed road.
 - (b) An adjustment to the vertical alignment to accommodate an overbridge or underpass.
 - (c) A major horizontal realignment to tie into an adjacent county road in an attempt to reduce the number of accesses onto the proposed road and
 - (d) The total re-routing of the existing road where it has being severed by the proposed road.
- 1.10.4 If an existing Local Road is to be modified it will be designed in all aspects to the *NRA DMRB*.

1.11 Construction Phasing

- 1.11.1 All options considered for the N5 ran relatively removed and independent of the existing N5 alignment over the majority of their journeys. While some options for the N5 crossed the existing N5 in the Charlestown area, all route options interfered with the N5 at their relative extremities. It was possible, at specific locations, to merge some of the route options into the existing N5 and phase the construction. However, there seems to be no justification or merit in considering this as it would seriously jeopardise safety and reduce capacity. As a result, it is believed that all route options could and should be constructed independently of the existing N5.
- 1.11.2 All options considered for the N17 ran relatively removed and independent of the existing N17 alignment over the majority of their journeys. The route options for the N17 did not interfere with the existing N17 except at their relative extremities. Consequently phased construction of the N17 was not considered at route option stage.
- 1.11.3 All options for both the N5 and N17 intersected one another and the construction of a cloverleaf interchange was considered at these locations.
- 1.11.4 All route options for the N5 intersected the existing N17 and a partial cloverleaf interchange was considered at these locations.
- 1.11.5 All route options for the N17 intersected the existing N5 and a partial cloverleaf interchange was considered at these locations.
- 1.11.6 The construction of the route options for the N5 Charlestown Bypass would be considered as a single viable scheme at route option stage. The design and construction of the N5 should take into account the future construction of the N17 Charlestown Bypass.
- 1.11.7 The construction of the route options for the N17 Charlestown Bypass would be considered as a single viable scheme at route option stage. The design and construction of the N17 would be dependant upon the N5 Charlestown Bypass being already constructed.

1.12 Pedestrians/Cyclists

- 1.12.1 The provision of either pedestrian and/or cyclist facilities along the proposed road will be considered similarly for all route options both in its function, design and extent. The Charlestown, Curry and Carracastle hinterland is mainly rural in nature and there seems to be little evidence of any major pedestrian or cyclist usage that warrants the provision of such facilities. It should be noted that the high traffic volumes currently being experienced on the existing National Primaries discourages

pedestrian and cyclist usage. As a result these facilities may extend only within both urban and village areas and there will be no separate pedestrian/cyclist facility adjacent to the new road. However, the existing N5 and N17 when they are reclassified will provide a natural route for cyclists.

1.13 Common Beginning and End Route Elements

- 1.13.1 When the route options were being considered for the N5, it soon became clear that any route for the N5 Charlestown Bypass Scheme would have specific terminus points on the existing N5 at the eastern of the Swinford Bypass and on the existing N5 in the Carracastle area in Co. Mayo or County Roscommon.
- 1.13.2 When the route options were being considered for the N17, it soon became clear that any route for the N17 Charlestown Bypass Scheme would have specific terminus point on the existing N17 at Lurga Cross Roads in Co. Mayo. The northern terminus point for the N17 was located on the existing N17, south of Curry Village in Co. Sligo. The purpose of this terminus point location was to ensure a viable scheme for the N17 Charlestown Bypass while at the same time, not prejudicing the route selection process being undertaken by Sligo Co. Co. for the Tubbercurry Bypass.

CHAPTER TWO

N5 ROUTE OPTIONS CONSIDERED

2.0 Route Options N5

2.1 Constraints Study

- 2.1.1 Following the outcome of the National Roads Needs Study, where it indicated that a new road was required for sections of the N5 between Westport and Longford, a Constraints Study Report was published in June 2000. This study was initiated to determine what physical, procedural or legal constraints exist which may affect the design of the N5/N17 Charlestown Bypass Schemes. For this study an investigation into the locations of all dwellings, watercourses, known archaeological sites, and areas of ecological interest was carried out either by existing mapping, windscreen surveys or site visits. Data was collected on existing planning permissions, land holdings, accident and traffic information, and development zoning.

2.2 Route Options and Public Consultation

- 2.2.1 On consideration of the Constraints Study Report, various route options were considered and it was at this stage that the specific terminus sections in Swinford and Carracastle areas, as discussed previously, were decided upon.
- 2.2.2 Further investigation was done on land ownership, so that land ownership patterns could be highlighted. This facility assisted when deciding on route options so as to minimise severance.
- 2.2.3 Seven possible routes were identified as feasible at this stage. These options were presented to the public on 13th/14th December 2000 in the CBD Complex, Charlestown. The presentation involved a pictorial synopsis of the findings of the constraint study, the affects of the options on individual land holdings, and various statistics related to each route option. A brochure was produced and in it the public were given the opportunity, via a questionnaire, to respond to this stage of the scheme's development. Written submissions were also accepted. The closing date for receipt of completed questionnaires and submissions was extended from the 15th January 2001 to the 31st January 2001.
- 2.2.4 The seven route options presented to the public in 13th/14th December 2000 are briefly described in the following paragraphs. These options are shown on Drawing No. MO 0010 301 01.

2.3 Route Option A

- 2.3.1 This route option commences on the existing N5 at the eastern end of the Swinford Bypass, passing through the townlands of Cloonlara, Cloonaghboy, Drumshinnagh, Cuilmore, Cartron and Sonnagh. It continues into County Sligo and passes north of Charlestown through the townlands of Cloonlaughil, Sandyhill and Bellaghy. It crosses the existing N17 National Primary Route and re-enters County Mayo in the townland of Lavy More and continues north of the existing N5 through the townlands of Lavy More, Cloonaweema, Clooncous, Gowel, Ballintadder and Barroe. It passes north of Carracastle through the townlands of Lissymulgee, Derrynanaff and Craggagh. It then enters County Roscommon east of Carracastle and continues through the townlands of Gortanure and Currinah. It rejoins the existing N5 in the townland of Currinah, in Co. Roscommon.
- 2.3.2 Route Option A is 19.2km long and passes through the townlands of Cloonlara, Cloonaghboy, Drumshinnagh, Cuilmore, Cartron, Sonnagh, Cloonlaughil, Sandyhill, Bellaghy, Lavy More, Cloonaweema, Clooncous, Gowel, Brackloonagh South, Ballintadder, Barroe, Lissymulgee, Calveagh Upper, Craggagh, Gortanure and Currinah in Co. Roscommon. It passes north of the existing N5 over its entire length.
- 2.3.3 It crosses the existing N17 at **Sandyhill** and crosses 18 local roads at various locations along its length.

- 2.3.4 The main structures on Route Option A are two Railway Overbridges and an Interchange Bridge for the intersection of the N5 and the N17. Local roads will necessitate the construction of a number of overbridge or underbridge structures at various locations along the length of the scheme.

2.4 Route Option B

- 2.4.1 This route option commences on the existing N5 at the eastern end of the Swinford Bypass. It follows the same route as **Option A** to the townland of Gowel. It then continues to the south of Option A through the townlands of Gowel, Ballintadder, Barroe, Cloonfane and Cashelduff. It passes north of Carracastle through the townlands of Lissymulgee, Park and Craggagh. It enters County Roscommon east of Carracastle and continues through the townlands of Gortanure and Currinah. It rejoins the existing N5 in the townland of Currinah, in Co. Roscommon.
- 2.4.2 Route Option 2 is 19.24km long and passes through the townlands of Cloonlara, Cloonaghboy, Drumshinnagh, Cuilmore, Cartron, Sonnagh, Cloonlaughil, Sandyhill, Clooncous, Gowel, Brackloonagh South, Ballintadder, Barroe, Cloonfane, Cashelduff, Lissymulgee, Park, Craggagh, Gortanure and Currinah. It crosses the existing N17 at **Sandyhill** and crosses 21 local roads at various locations along its length.
- 2.4.3 It passes north of the existing N5 over its entire length.
- 2.4.4 The main structures on Route Option B are two Railway Overbridges and an Interchange Bridge for the intersection of the N5 and the N17. Local roads will necessitate the construction of a number of overbridge or underbridge structures at various locations along the length of the scheme.

2.5 Route Option C

- 2.5.1 This route option commences on the existing N5 at the eastern end of the Swinford Bypass. It proceeds south of the existing N5 passing through the townlands of Cloonlara, Cloonaghboy, Cuilmore, Killaturly, Mullenmadoge, Cartron and Sonnagh. It rejoins the existing N5 in the townland of Sonnagh. It then passes south of Charlestown through the townlands of Lowpark and Ballyglass East crossing the existing N17 National Primary Route. It continues south of the existing N5 through the townlands of Lavy Beg, Bulcaun, Cloonmeen West, Gowel, Cloonfane, Fauleens, Cashelduff, Cranmore and Corragooly. It then continues into County Roscommon south east of Carracastle and passes through the townlands of Gortanure and Currinah. It rejoins the existing N5 in the townland of Currinah, in Co. Roscommon.
- 2.5.2 Route Option 3 is 18.17km long and passes through the townlands of Cloonlara, Cloonaghboy, Cuilmore, Killaturly, Mullenmadogue, Cartron, Sonnagh, Lowpark, Ballyglass East, Lavy Beg, Bulcaun, Cloonmeen West, Gowel, Cloonfane, Fauleens, Cashelduff, Cranmore, Corragooly, Gortanure and Currinah. It passes south of the existing N5 over its entire length.
- 2.5.3 It crosses the existing N17 at the townland of Ballyglass East and it crosses 17 Local Roads at various locations along its length.
- 2.5.4 The main structures on Route Option C are an Interchange Bridge for the intersection of the N5 and the N17 and an Interchange Bridge in Ballyglass East at the intersection of the existing N17. Local roads will necessitate the construction of a number of overbridge or underbridge structures at various locations along the length of the scheme.

2.6 Route Option D

- 2.6.1 This route option commences on the existing N5 at the eastern end of the Swinford Bypass. It proceeds north of the existing N5 passing through the townlands of Cloonlara, Cloonaghboy, Drumshinnagh, Cuilmore, Cartron and Sonnagh. It then crosses the existing N5 in the townland of Sonnagh and passes south of Charlestown through the townlands of Lowpark and Ballyglass East. It crosses the existing N17 in the townland of Ballyglass East. It continues south of the existing N5 through the townlands of Lavy Beg, Bulcaun, Cloonmeen West Cloonfane, Fauleens, Cashelduff, Cranmore and Corragooly. It passes into County Roscommon south east of Carracastle and continues through the townlands of Gortanure and Currinah. It rejoins the existing N5 in the townland of Currinah, in Co. Roscommon.

- 2.6.2 Route Option D is 18.15km long and passes through the townlands of Cloonlara, Cloonaghboy, Drumshinnagh, Cuilmore, Cartron, Sonnagh, Lowpark, Ballyglass East, Lavy Beg, Bulcaun, Cloonmeen West, Cloonfane, Fauleens, Cashelduff, Cranmore, Corragooly, Gortanure and Currinah. It passes south of the existing N5 over its entire length.
- 2.6.3 It crosses 18 Local Roads at various locations along its length.
- 2.6.4 The main structures on Route Option D are an Interchange Bridge for the intersection of the N5 and the N17 and an Interchange Bridge in Ballyglass East at the intersection of the existing N17. Local roads will necessitate the construction of a number of overbridge or underbridge structures at various locations along the length of the scheme.

2.7 Route Option E

- 2.7.1 This route option commences on the existing N5 at the eastern end of the Swinford Bypass. It follows the same route as **Option D** to the townland of Sonnagh. It crosses the existing N5 in the townland of Sonnagh and passes south of Charlestown through the townlands of Lowpark, Ballyglass West and Ballyglass East crossing the existing N17 National Primary Route in the townland of Ballyglass East. It continues south of the existing N5 through the townlands of Bulcaun, Cloonmeen West, Gowel, Cloonfane, Fauleens, Cashelduff, Cranmore and Corragooly. It passes into County Roscommon south east of Carracastle and continues through the townlands of Gortanure and Currinah. It rejoins the existing N5 in the townland of Currinah, in Co. Roscommon.
- 2.7.2 Route Option E is 17.90km long and passes through the townlands of Cloonlara, Cloonaghboy, Drumshinnagh, Cuilmore, Cartron, Sonnagh, Lowpark, Ballyglass West, Ballyglass East, Bulcaun, Cloonmeen West, Gowel, Cloonfane, Fauleens, Cashelduff, Cranmore, Corragooly, Gortanure and Currinah. It passes south of the existing N5 over its entire length.
- 2.7.3 It crosses the existing N17 in the townland of Ballyglass East and crosses 19 Local Roads at various locations along the length of the scheme.
- 2.7.4 The main structures on Route Option E are an Interchange Bridge for the intersection of the N5 and the N17 and an Interchange in Ballyglass East at the intersection of the existing N17. Local roads will necessitate the construction of a number of overbridge or underbridge structures at various locations along the length of the scheme.

2.8 Route Option Number F

- 2.8.1 This route option commences on the existing N5 at the eastern end of the Swinford Bypass. It proceeds south of the existing N5 passing through the townlands of Cloonlara, Cloonaghboy, Cuilmore, Mullenmadoge and Cartron. It then passes south of Charlestown through the townlands of Tomboholla, Sonnagh, Lowpark, Ballyglass West and Ballyglass East, crossing the existing N17 National Primary Route in the townland of Ballyglass East. It continues south of the existing N5 through the townlands of Lavy Beg, Bulcaun, Cloonmeen West, Gowel, Cloonfane, Fauleens, Cashelduff, Cranmore and Corragooly. It passes into County Roscommon south east of Carracastle and continues through the townlands of Gortanure and Currinah. It rejoins the existing N5 in the townland of Currinah, in Co. Roscommon.
- 2.8.2 Route Option F is 17.96km long and passes through the townlands of Cloonlara, Cloonaghboy, Cuilmore, Mullenmadogue, Cartron, Tomboholla, Treanacally or Hagfield, Sonnagh, Lowpark, Ballyglass West, Ballyglass East, Lavy Beg, Bulcaun, Cloonmeen West, Gowel, Cloonfane, Fauleens, Cashelduff, Cranmore, Corragooly, Gortanure and Currinah. It rejoins the existing N5 in the townland of Currinah, in Co. Roscommon.
- 2.8.3 It crosses the existing N17 in the townland of Ballyglass East and crosses 16 Local Roads at various locations along the length of the scheme.
- 2.8.4 The main structures on Route Option E are an Interchange Bridge for the intersection of the N5 and the N17 and an Interchange in Ballyglass East at the intersection of the existing N17. Local roads will necessitate the construction of a number overbridge or underbridge structures at various locations along the length of the scheme.

2.9 Route Option Number G

- 2.9.1 This route option commences on the existing N5 at the eastern end of the Swinford Bypass. Proceeds south of the existing N5 passing through the townlands of Cloonlara, Cloonaghboy, Cuilmore, Killaturly, Mullenmadoge, Trouthill or Knockbrack and Cartron. It follows the same route as **Option F** thereafter.
- 2.9.2 Route Option G is 18.12km long and passes through the Townlands of Cloonlara, Cloonaghboy, Cuilmore, Killaturly, Mullenmadogue, Trouthill or Knockbrack, Cartron, Tomboholla, Treanacally or Hagfield, Sonnagh, Lowpark, Ballyglass West, Ballyglass East, Lavy Beg, Bulcaun, Cloonmeen West, Gowel, Cloonfane, Fauleens, Cashelduff, Cranmore, Corragooly, Gortanure and Currinah. It passes south of the existing N5 over its entire length.
- 2.9.3 It crosses the existing N17 in the townland of Ballyglass East and crosses 15 Local Roads at various locations along the length of the scheme.
- 2.9.4 The main structures on Route Option G are an Interchange Bridge for the intersection of the N5 and the N17 and an Interchange in Ballyglass East at the intersection of the existing N17. Local roads will necessitate the construction of a number of overbridge or underbridge structures at various locations along the length of the scheme.
- 2.9.5 See Drawing No. MO 0010 301 01: N5 Charlestown Bypass Route Options showing the routes described above.

Table 9: Summary of N5 Route Options

Route Option	Length (km)	No. of Local Roads	No. of Structures
A	19.2	18	16
B	19.237	21	16
C	18.17	17	13
D	18.15	18	14
E	17.9	19	13
F	17.96	16	12
G	18.12	15	12

Route Options Public Consultation and Further Studies

2.10 Results of Public Consultation

- 2.10.1 A total of 268 people attended the Route Options Public Consultation over the two days in Charlestown in December 2000. A total of 135 people or groups of people responded to the questionnaire or submitted written comments with regard to the N5 Charlestown Bypass Road Project.
- 2.10.2 A large majority of respondents felt that a new road was necessary. They have seen a huge increase in the traffic volumes, especially in heavy goods vehicles, in the last number of years and have difficulty entering and leaving the existing road safely. The respondents who felt that a new road was not necessary believed that the money should be spent on widening or improving the existing road and improving public transport in the area. There were concerns expressed that a new road would spoil the surrounding countryside and would damage the commercial life of Charlestown.
- 2.10.3 Route Options F and G were the route options that most people preferred. The reasons cited were that it would cause less disruption to communities and landholdings.
- 2.10.4 Most people objected to particular routes due to its proximity to their own lands or the affect the route option would have on severing their holding or community. There were also worries expressed with regard to noise and air pollution.

2.11 Further Route Options Considered

- 2.11.1 Following the public consultation The Regional Design Office of Mayo County Council reviewed the information gathered during the route options consultation process. Due to the Route Options Public Consultation, and subsequent submissions from the public, it became apparent early on that alterations to sections of some of the presented routes were necessary. This has led to the design of Route **Option H**.

2.12 Route Option H

- 2.12.1 This route commences in the townland of Cloonlara, at the eastern end of the Swinford Bypass and proceeds south and east through the townlands of Cuilmore, Mullenmadoge, Trouthill or Knockbrack, Ballyglass, Bulcaun, Cloonmeen West, Cloonfane, Cranmore, Gortanure and rejoins the N5 in the townland of Currinah, in Co. Roscommon.
- 2.12.2 Route Option H is 18.21km long and passes through the townlands of Cloonlara, Cloonaghboy, Cuilmore, Killaturly, Mullenmadogue, Trouthill or Knockbrack, Cartron, Tomboholla, Treanacally or Hagfield, Sonnagh, Lowpark, Ballyglass West, Ballyglass East, Lavy Beg, Bulcaun, Cloonmeen West, Gowel, Cloonfane, Fauleens, Cashelduff, Cranmore, Corragooley, Gortanure and Currinah in Co. Roscommon. It crosses the existing N17 in the townland of Ballyglass East and crosses 9 local roads. It passes south of the existing N5 over its entire length.
- 2.12.3 The main structures on Route Option H are an Interchange Bridge for the intersection of the N5 and the N17, an Interchange in Ballyglass East at the intersection of the existing N17 and an Interchange Bridge for access to Carracastle. Local roads will necessitate the construction of a number overbridge or underbridge structures at various locations along the length of the scheme. **See Drawing No. MO 0010 310 12: N5 Charlestown Bypass Preferred Route for details of this route.**

CHAPTER THREE

N17 ROUTE OPTIONS CONSIDERED

3.0 Route Options N17

3.1 Constraints Study

3.1.1 Following the outcome of the National Roads Needs Study, where it indicated that a new road was required for the section of the N17 between Galway and Sligo, a Constraints Study Report was published in June 2000. This study was initiated to determine what physical, procedural or legal constraints exist which may affect the design of the N5/N17 Charlestown Bypass Schemes. For this study an investigation into the locations of all dwellings, watercourses, known archaeological sites, and areas of ecological interest was carried out either by existing mapping, windscreen surveys or site visits. Data was collected on existing planning permissions, land holdings, accident and traffic information, and development zoning.

3.2 Route Options and Public Consultation

3.2.1 On consideration of the Constraints Study Report, various route options were considered and it was at this stage that the specific terminus sections at Lurga Cross Roads and Curry Village, as discussed previously, were decided upon.

3.2.2 Further investigation was done on land ownership, so that land ownership patterns could be highlighted. This facility assisted when deciding on route options so as to minimise severance.

3.2.3 Six possible routes were identified as feasible at this stage. These options were presented to the public on 13th / 14th December 2000 in the CBD Complex, Charlestown. The presentation involved a pictorial synopsis of the findings of the constraint study, the affects of the options on individual land holdings, and various statistics related to each route option. A brochure was produced and in it the public were given the opportunity, via a questionnaire, to respond to this stage of the scheme's development. Written submissions were also accepted. The closing date for receipt of completed questionnaires and submissions was extended from the 15th January 2001 to the 31st January 2001.

3.2.4 The four route options and two sub-options presented to the public in 13th / 14th December 2000 are briefly described in the following paragraphs. These options are shown on Drawing No. MO 0017 301 01.

3.3 Route Option 1

3.3.1 This route option commences 500m south of Lurga Cross roads on the existing N17 National primary route in the townland of Lurga Lower. It proceeds east of the existing N17 passing through the townlands of Lurga Upper, Lurga Lower and Temple. It crosses the existing N17 and passes west of Charlestown through the townlands of Treanacally or Hagfield, Ballyglass West, Lowpark and crossing the existing N5 National Primary in the townland of Sonnagh. The route passes into County Sligo and continues through the townlands of Cloonlaughil and Sandyhill. It rejoins the existing N17 in the townland of Bunnacrannagh, south of Curry Village, in Co. Sligo.

3.3.2 Route Option 1 is 8.60km long and passes through the townlands of Lurga Upper, Lurga Lower, Temple, Treanacally or Hagfield, Ballyglass West, Lowpark, Sonnagh, Cloonlaughil, Sandyhill and Bunnacrannagh. It passes west of the existing N17 for almost it's entire length.

3.3.3 It crosses the existing N5 in the townland of Sonnagh and crosses 7 Local Roads at various locations along the length of the scheme.

3.3.4 The main structures on Route Option 1 are one Railway Overbridge, an Interchange Bridge for the intersection of the existing N5 and the new N17 and an Interchange Bridge between the New N5 and the New N17. Local roads will necessitate the construction of a number overbridge or underbridge structures at various locations along the length of the scheme.

3.4 Route Option 2,2A

- 3.4.1 This route option commences 500m south of Lurga Cross roads on the existing N17 National primary route in the townland of Lurga Lower. It proceeds east of the existing N17 passing through the townlands of Lurga Upper, Lurga Lower and Cashel. It passes east of Charlestown through the townlands of Temple, Puntabeg, Bulcaun, Lavy Beg, Lavy More and Cloonaweema, crossing the existing N5 National Primary Route in Lavy More. It then crosses the Black River into County Sligo and continues through the townland of Bunnacranagh. It rejoins the existing N17 in the townland of Bunnacranagh, south of Curry Village, in Co. Sligo.
- 3.4.2 Route Option 2 and Option 2A are 8.10km and 9.10km long, respectively and pass through the Townlands of Lurga Upper, Lurga Lower, Temple, Treanacally or Hagfield, Ballyglass West, Lowpark, Sonnagh, Cloonlaughil, Sandyhill, Bunnacranagh and Curry. Both routes pass east of the existing N17 over their entire length.
- 3.4.3 The routes cross the existing N5 in the townland of Lavy More and cross 8 Local Roads at various locations along the length of the scheme.
- 3.4.4 The main structures on Route Option 2, 2A are an Overbridge Bridge for the intersection of the existing N5 and the new N17 and an Interchange Bridge between the New N5 and the New N17. Local roads will necessitate the construction of a number of overbridge or underbridge structures at various locations along the length of the scheme.

3.5 Route Option 3,3A

- 3.5.1 This route option commences 500m south of Lurga Cross roads on the existing N17 National primary route in the townland of Lurga Lower. It proceeds east of the existing N17 passing through the townlands of Lurga Upper, Lurga Lower and Cashel. It passes east of Charlestown through the townlands of Temple, Bracklagh, Bulcaun, Lavy Beg, Lavy More and Cloonaweema, crossing the existing N5 National Primary Route in Lavy More. It then crosses the Black River into County Sligo and continues through the townland of Bunnacranagh and Curry. It rejoins the existing N17 in the townland of Bunnacranagh, south of Curry Village, in Co. Sligo.
- 3.5.2 Route Option 3 and Option 3A are 8.0km and 9.10km long, respectively and pass through the Townlands of Lurga Upper, Lurga Lower, Cashel, Temple, Bracklagh, Bulcaun, Lavy Beg, Lavy More, Cloonaweema, Bunnacranagh and Curry. Both routes pass east of the existing N17 over their entire length.
- 3.5.3 The routes cross the existing N5 in the townland of Lavy More and cross 11 Local Roads at various locations along the length of the scheme.
- 3.5.4 The main structures on Route Option 3, 3A are an Overbridge Bridge for the intersection of the existing N5 and the new N17 and an Interchange Bridge between the New N5 and the New N17. Local roads will necessitate the construction of a number of overbridge or underbridge structures at various locations along the length of the scheme.

3.6 Route Option 4

- 3.6.1 This route option commences 500m south of Lurga Cross roads on the existing N17 National primary route in the townland of Lurga Lower. It proceeds east of the existing N17 passing through the townlands of Lurga Upper, Lurga Lower and Cashel. It passes east of Charlestown through the townlands of Temple, Bracklagh, Bulcaun, Lavy Beg, Lavy More and Cloonaweema, crossing the existing N5 National Primary Route in Lavy More. It then crosses the Black River into County Sligo and continues through the townland of Bunnacranagh and Curry. It rejoins the existing N17 in the townland of Bunnacranagh, south of Curry Village, in Co. Sligo.
- 3.6.2 Route Option 4 is 7.20km long and passes through the Townlands of Lurga Upper, Lurga Lower, Cashel, Temple, Bracklagh, Bulcaun, Lavy Beg, Lavy More, Cloonaweema, and Bunnacranagh. The route passes east of the existing N17 over its entire length.

- 3.6.3 It crosses the existing N5 in the townland of Lavy More and cross 10 Local Roads at various locations along the length of the scheme.
- 3.6.4 The main structures on Route Option 4 are an Overbridge Bridge for the intersection of the existing N5 and the new N17 and an Interchange Bridge between the New N5 and the New N17. Local roads will necessitate the construction of a number of overbridge or underbridge structures at various locations along the length of the scheme.
- 3.6.5 See Drawing No. MO 0017 301 01: N17 Charlestown Bypass Route Options showing the routes described above.

Table10: Summary of N17 Route Options

Route Option	Length (km)	No. of Local Roads	No. of Structures
1	8.6	7	8
2	8.1	8	10
2A	9.1	8	12
3	8	11	12
3A	9.1	11	13
4	7.2	10	9

Route Options Public Consultation and Further Studies

3.7 Results of Public Consultation

- 3.7.1 A total of 268 people attended the Route Options Public Consultation over the two days in Charlestown in December 2000. A total of 50 people or groups of people responded to the questionnaire or submitted written comments with regard to the N17 Charlestown Bypass Scheme.
- 3.7.2 A large majority of respondents felt that a new road was necessary. They have seen a huge increase in the traffic volumes, especially in heavy goods vehicles, in the last number of years and have difficulty entering and leaving the existing road safely. The respondents who felt that a new road was not necessary believed that the money should be spent on widening or improving the existing road and improving public transport in the area. There were concerns expressed that a new road would spoil the surrounding countryside and would damage the commercial life of Charlestown.
- 3.7.3 Route Option 1 was the route that most people preferred. The reasons cited were that it would cause less disruption to people and cut across bogland.
- 3.7.4 Most people objected to particular routes due to its proximity to their own lands or the affect the route option would have on severing their holding or community. There were also worries expressed with regard to noise and air pollution.

3.8 Further Route Options Considered

- 3.8.1 Following the public consultation The Regional Design Office of Mayo County Council reviewed the information gathered during the route options consultation.
- 3.8.2 Due to the Route Options Public Consultation, and subsequent submissions from the public, it became apparent early on that alterations to sections of some of the presented routes were necessary. Preliminary horizontal and vertical alignment designs in the vicinity of Lurga Cross Roads (in the vicinity of an accident location) indicated that a new terminus point for the southern end of the N17 in Lurga should be considered. Also, in February 2001, Sligo County Council held a public Consultation in relation to a modified Preferred Route for the Curry / Annaghmore / Tubbercurry Bypass Scheme. This indicated that a new terminus point for the northern end of the N17 Bypass of Charlestown should be examined with a view to coinciding with the Preferred Route alignment for the Sligo Scheme. Both these considerations led to the design of Route **Option 5** for the N17 Charlestown Bypass.

3.9 N17 New Terminal Points

- 3.9.1 Subsequent to the route options Public Consultation held in December 2000, preliminary horizontal and vertical alignments were prepared for each route option. Junction treatment was also being considered for the Scheme as a whole. All route options presented at the public consultation commenced at Lurga Cross Roads. This crossroads consists of the N17 to the north and south, the former arterial road, T11 to Ballyhaunis (known locally as the Old Ballyhaunis Road) to the east and a local road to the northeast. All route options would have utilised the existing N17 south of this junction. The N17 alignment south of this junction is an alignment constructed in the 1970's. The N17 alignment north of this junction is known locally as the Ballyhaunis Road and it together with the alignment south of this junction was classified as the N17.
- 3.9.2 During this preliminary design phase three options were considered for this location, which would have utilised the existing N17 south of this junction. The options considered were
1. A staggered at grade intersection for the Old Ballyhaunis Road
 2. An underbridge for the Old Ballyhaunis Road
 3. An Interchange Bridge with access ramps for the Ballyhaunis Road

The following **Table 11** outlines the Advantages and Disadvantages of each Option considered.

Table 11: Advantages and Disadvantages

	Advantages	Disadvantages
Option 1	1. Utilises existing N17 2. Minimal land acquisition	1. Creates a staggered junction 2. Recent accident history 3. Local Post Office and National School located east of existing N17 i.e. Community Severance. 4. Number of existing houses onto N17 would not be reduced. 5. Land holdings severed by existing N17. 6. T-junction to Airport to remain
Option 2	1. Utilise existing N17 2. Improve site conditions at accident location. 3. Minimise community severance.	1. Raise existing road levels by up to 7m 2. Visual impact on adjacent houses. 3. No link between Ballyhaunis Rd and N17 4. Land acquisition south of the junction. 5. Land holdings severed by existing N17. 6. T-junction to Airport to remain
Option 3	1. Utilise existing N17 2. Improve site conditions at accident location. 3. Minimise community severance. 4. Link between Ballyhaunis Rd and N17	1. Raise existing road levels by up to 7m 2. Visual impact on adjacent houses. 3. No link between Ballyhaunis Rd and N17 4. Land acquisition south of the junction. 5. Land holdings severed by existing N17. 6. T-junction to Airport to remain.

3.9.3 The disadvantages of utilising Lurga Cross Roads as a terminal point for all route options far out weigh the advantages.

3.9.4 As a result of this assessment, a new terminal point for the southern end of the N17 was located further south at the intersection of Local Road L-19051-0 and the existing N17. A smooth transition from the existing to the new alignment could be achieved at this location.

3.9.5 In February 2001, Sligo County Council held a public consultation for the modified Preferred route for the N17 Curry/Annaghmore/Tubbercurry Scheme. An Interchange for Curry Village was included as part of the Scheme together with a proposal to upgrade an existing Local Road as an Access Road into Curry. The Curry Interchange was selected as the common terminal point for both the N17 Charlestown Bypass Scheme and the N17 Curry/Annaghmore/Tubbercurry Scheme. The access road into Curry ensured the viability of both Schemes. The establishment of the new terminal points for the N17 Charlestown Bypass Scheme led to the development of Route **Option 5**.

3.10 Route Option 5

3.10.1 This route option commences 900m south of the existing access into Knock International Airport in the townland of Lurga Upper and proceeds north through the townlands of Lurga Lower, Cashel, Puntabeg, Bulcaun, Lavy More, Cloonaweema, Bunnacranagh, Curry and Drunbaun in Co. Sligo. This route will rejoin the existing N17 north of Curry in County Sligo via a proposed Interchange Bridge and Link Road as indicated by Sligo Co. Co. in their Second Public Consultation. The route indicated overlaps Sligo Co. Co. preferred route by a distance of approximately 2km.

3.10.2 Route Option 5 is 12.30km long and passes through the Townlands of Lurga Upper, Lurga Lower, Cashel, Temple, Bracklagh, Bulcaun, Lavy Beg, Lavy More, Cloonaweema, Bunnacranagh, Curry and Drumbaun. The route passes east of the existing N17 over its entire length.

- 3.10.3 It crosses the existing N5 in the townland of Lavy More and crosses 10 Local Roads at various locations along the length of the scheme.
- 3.10.4 The main structures on Route Option 5 is an Overbridge Bridge for the intersection of the existing N5 and the new N17, an Interchange Bridge between the New N5 and the New N17 and an Interchange Bridge east of Curry Village. Local roads will necessitate the construction of a number of overbridge or underbridge structures at various locations along the length of the scheme. See Drawing No. MO 0017 310 09: N17 Charlestown Bypass Preferred Route for details of this route.

CHAPTER FOUR

PRELIMINARY REPORTS

4.0 Preliminary Reports

4.1 Introduction

- 4.1.1 Mayo County Council have awarded a Multi-Framework Contract to four Consulting Engineer Companies for the provision of Engineering Services. Via the call-off procedure Parkman Carlbro Punch was allocated to provide services for the N5 and N17 Charlestown Bypass Schemes. As part of the Route Selection they were commissioned to provide a number of reports from various environmental experts to assist Mayo County Council in its selection of the preferred route for the proposed N5 and N17 Charlestown Bypass Schemes.
- 4.1.2 Each of the environmental contributors were invited, as part of their study brief, to assess the quality of the study area from their perspective, to identify specific areas/species of interest and also areas/species that would be regarded as being very vulnerable, to assess the potential impacts each of the route options may generate on these areas and to categorise, in order of preference, the option regarded as most suitable from their perspective.

4.2 Environmental Study

- 4.2.1 Parkman Carlbro Punch were commissioned to carry out an assessment of the potential impacts the various route options may cause to the aquatic habitat quality of the surface waters in the Broad Study Area for the Charlestown Bypass.
- 4.2.2 As part of the Constraints Study Mayo County Council commissioned Dr. Cilian Roden to carry out a preliminary desktop ecological analysis of the Broad Study Area. This work was undertaken during May 2000. The analysis is contained in a report entitled "*Report on Sites of Ecological Interest in the Charlestown By – Pass Study Area*" and is included in the Constraints Study Report published in June 2000.
- 4.2.3 The Report identifies the geology, land use, habitats together with a fen and marsh present in the Broad Study Area. Under Sites of Conservation it states: -

"Only one area is designated as an SAC. This is the large raised bog in the extreme north east of the map (Gowlaun Bog Duchas Site No. 502). However this site is just outside the limits of the study area. Other more or less intact raised bogs are shown on Map 1. Map 2, which is reproduced from Hammond 1979, shows the extent of both intact and cut over bogland. In general terms intact bog, which is now a threatened habitat and a listed vegetation type for preservation by the EU should not be disturbed. A small lake and fen just north of the N5 at Cuilmore may be of value, a detailed survey should be conducted, should the proposed route cut across it. While the road is unlikely to destroy any of the streams in the area, great care should be taken in bridging these waterways and they should be protected from oil, or sediment. A small area of planted timber along the N5 west of Carracastle is designated as the John Healy Forest Park. This area is not of great conservation value but is obviously of emotional and historical interest." (*N5 / N17 Charlestown Bypass Constraints Study Report*, Appendix A).

- 4.2.4 The Report concludes: -

"It is generally thought that few areas of ecological interest are found in the corridor under consideration (e.g. Praeger, 934). However a more detailed Environmental Impact Statement must be prepared when a definite route is decided on, at this point preferably in the growing season of April to September – should be undertaken. This applies especially to areas of bogland and the glacial sand deposits on the slopes of the elevated ridge in the south of the study area." (*N5 / N17 Charlestown Bypass Constraints Study Report*, Appendix A)

4.3 Traffic Study

- 4.3.1 Parkman Carlbro Punch commissioned Count on Us Ltd to carry out surveys of traffic on both the existing N5 and N17 National Primaries. The results of these traffic surveys and analysis are contained in report entitled “*Mayo County Council N5 and N17 Bypasses Charlestown Traffic Analysis Report*”.

Conclusions of Traffic Study

1. Highway Standards

Traffic flows on the existing N5 are around 4900 AADT and on the N17 around 5400 AADT of which 75%, 3675 for the N5 and 4100 for the N17 is through traffic. This is expected to increase very rapidly given the current very high rate of traffic growth and will justify a road of single carriageway with hard shoulders standard. Given the traffic forecasts, the proposed highway standards will provide sufficient capacity well beyond the design year.

2. Junction Proposals

The junction proposals are still to be finalised and may depend on the alignment of the new roads. At this stage priority junctions at each point where the existing N5 and N17 become new roads would be sufficient, with a large roundabout where the new roads meet. Provision for a grade separated junction to be built at this point should be made. Other roads may be stopped off or become part of the larger junctions.

3. Traffic Flows

The Bypasses are expected to have a capacity of 11,600 AADT. This figure is from the National Roads Needs Study Table 4.3 for a rural single carriageway with hard shoulders (2 x 3.75 + 2 x 3) with a level of service D. It is therefore expected that the new route will have sufficient capacity beyond the design year.

4.4 Underbridge Cost Study

Parkman Carl Bro Punch were commissioned by the NRA and the Design Team to prepare a report on the use of standardised low cost underbridges to take local roads beneath new national roads, thereby maintaining access along the local road without providing a potentially unsafe access to the national road. The following conclusions arise from this report: -

- Local Roads account for 85% of the Irish Road Network. Accordingly, it is likely that all new national roads will intersect at frequent intervals with the local network.
- These intersections need to be dealt with in a safe manner while still minimising the severance effects on the local community of the new national road. One way of doing this is to provide standardised low cost underbridges to take the local roads under the new road.
- No formal standardised classification of local roads exists, but they can be classified as Local Primary, Local Secondary or Local tertiary based on the origin and destination of individual roads.
- Current practice, dealing with the intersection of local and national roads, in other EU countries is similar to Ireland in that no formal standard for addressing the intersections exists, but local roads are separated from the national wherever possible.
- Due to reasonably low traffic flows on the majority of local roads, reduced clearance envelopes are recommended for local roads as follows:
 - Local Primary Roads - 8.0m wide x 5.3m high.
 - Local Secondary Roads - 6.0m wide x 5.3m high.
 - Local Tertiary Roads - 4.5m wide x 4.5m high
- In order to gain full advantage of the standardisation of these underbridges, the use of precast concrete is advocated. Accordingly, the three recommended structural forms for standard underbridges are as follows: -

Precast Concrete Box Structure.
Precast Concrete Arch Structure.
Precast Pretensioned Concrete Beams with Reinforced Earth Abutments

- Notwithstanding the requirements of BS 5489 Part 7 : 1992, it is recommended that lighting only be considered for structures over 50m in length. Various mitigation measures should be considered for structures between 25m and 50m in length such as the use of reflective strips and high reflectivity paint on the internal walls. Pedestrian guardrails as specified in Advice Note BA 48/93 should be provided to the tops of headwalls and wingwalls.

4.5 Archaeology

- 4.5.1 **Mayo County Council commissioned** Parkman Carl Bro Punch to carry out an archaeological assessment.

4.6 Bridge Feasibility

- 4.6.1 Mayo County Council commissioned Parkman Carl Bro Punch to carry out a bridge feasibility study for all of the bridges on the various route options. In the report, *Bridges Feasibility Report, N5 Charlestown Bypass / N17 Charlestown Bypass: Road Schemes*, each bridge type was categorised, given a brief description, assessed both financially and aesthetically and where necessary appropriate environmental mitigation measures were recommended.

CHAPTER FIVE

SELECTION OF PREFERRED ROUTES

5.0 Selection of Preferred Route

5.1 Introduction

- 5.1.1 Before a preferred route can be selected each route option's advantages and impacts have to be evaluated. Below each route together with any further route options considered following the public consultation, are examined in order to identify the preferred route. Each route option is assessed under the various headings outlined in paragraph 5.2 below. Preference is given to the route with most advantages and least number of impacts. The following **Table 12** on Page 37 summarises each option's advantages and impacts of the N5 Charlestown Bypass Scheme and allows for their comparison. The following **Table 13** on Page 41 summarises each option's advantages and impacts of the N17 Charlestown Bypass Scheme and allows for their comparison.

5.2 Criteria used for Selection of Preferred Routes

- 5.2.1 **Horizontal Alignment:** The *NRA Design Manual for Roads and Bridges* outlines four categories of curves used in the design of horizontal alignments for various design speeds. The categories of curves are **Band A**, **Band B**, **Band C** and **Band D**. For a 100 kph design speed, the curve radii corresponding to the various bands are as follows: -

4. **Band A** represent curves with a curve radii greater than 8160m. Curve radii of this size are regarded as straights with optimum Overtaking Sections.
5. **Band B** represent curves with a curve radii greater than 2880m and less than 8160m. The lower limit of this band is considered to be the minimum radius for use in designing Overtaking Sections.
6. **Band C** represent curves with a curve radii greater than 1020m and less than 2880m. These curves are classified as mid range curves and provide long sections with dubious Overtaking Sections.
7. **Band D** represents curves less than 1020m radius.

It is a paramount principle that horizontal design should concentrate only on **Band A** and **Band B** curves for clear Overtaking Sections, and **Band D** curves for clear Non-Overtaking Sections. The use of **Band C** curves is a Departure from Standard.

Preference is given to the least number of **Band C** and **Band D** curves.

- 5.2.2 **Vertical Alignment:** The *NRA Design Manual for Roads and Bridges* outlines the principles for the design of vertical alignments. The vertical alignment shall be coordinated with horizontal alignment to ensure the most efficient overtaking provision. On level Overtaking Sections, the vertical curvature shall be sufficient to provide for Full Overtaking Sight Distance (FOSD) in accordance with Manual. However, for Non-Overtaking Sections and climbing lanes, the use of large crest curves is unnecessary and is not recommended. Therefore the FOSD Value best represents the co-ordination between horizontal and vertical alignments and no preference is given in relation to the vertical alignment at this stage.

- 5.2.3 **Full Overtaking Sight Distance (FOSD):** Full Overtaking Sight Distance (FOSD) is the sight distance required for overtaking vehicles using the opposing traffic lane on single carriageway roads. Sufficient visibility for overtaking shall be provided on as much of the road as possible, especially where daily traffic flows are expected to approach the maximum design flows. Preference is given to the option with an Overtaking Value greater than 40%.

- 5.2.4 **Houses and Farm Buildings:** The average width between fences for a standard two lane road is approximately 50m depending on the depth of cut and fill along the route option i.e. 25m on either side of the proposed centreline. Any house or farm buildings falling within this 50m corridor is deemed necessary for the construction of the road. Preference is given to the least number of houses and farm buildings that fall within the 50m wide road corridor.
- 5.2.5 **Ecology:** Habitat types, including woodlands, loughs, streams and rivers in the vicinity of each route were assessed. The overall number of ecological features of interest traversed by each route option is outlined in the table below. It should also be noted that protected ecological sites do not occur within the study area. Preference is given to the route option with the least number of ecological features affected.
- 5.2.6 **Land Holdings:** The total number of land holdings along each route was identified. A preliminary assessment of the effect on each holding was carried out. The general criteria used were as follows: -
- (a). up to 10% severance = slight effect
 - (b). up to 25% severance = moderate effect
 - (c). up to 50% severance = severe effect

Preference is given to the route option with the least number of land holdings severely affected and the least number of holdings affected overall.

- 5.2.7 **Noise:** Best practice guidelines for noise assessment of route options rely on the number of properties identified in noise bands up to 300m from the centreline of each route. Preference is given to the options which have the least number of properties in the 0 - 50m band, and the least number of properties overall. This is to ensure that the least number of residences experience a change in noise levels (climate).

Each route option was assessed for the number of properties within the following noise bands: -

- (a). 0m to 50m band width
- (b). 50m to 100m band width
- (c). 100m to 200m band width
- (d). 200m to 300m band width

- 5.2.8 **Archaeology:** For the purpose of route option assessment all archaeological sites and monuments in the Record of Monuments and Places listed within 300m of the route corridor were noted.

Each route option was assessed for the number of archaeological sites and monuments within the following bands: -

- (a). 0m to 50m band width – “**directly affected by the route option**”
- (b). 50m to 100m band width – “**close to the route option**”
- (c). 100m to 300m band width – “**not directly affected by the route option**”

Preference is given to the options which have the least number of archaeological sites and monuments in the 0 - 50m band.

Cost Comparison: The cost for each route option was estimated using the NRA unit cost figures for road construction, the NRA Underbridge Cost Study and Tender prices for bridge structures on the Knock / Claremorris Bypass Phase 1. A breakdown of the unit construction cost for the various elements is as follows: -

1. The estimated unit cost / km to provide a standard two lane single carriageway is IR£2.1million/km.
2. The unit cost of an Interchange Bridge is IR£0.75 million.
3. The unit cost of an Overbridge is IR£0.50 million.
4. The unit cost of an Underbridge is IR£0.25 million.
5. The unit cost of a Railway Bridge is IR£0.50 million.
6. The unit cost of a River Bridge is IR£0.25 million.

Preference is given to the route option with the lowest Unit Cost per Km.

Bridges / Junction Strategy: The provision of at grade junction intersections involves minor road traffic having to join or cross the major road when there are gaps in the major road traffic streams. It is therefore essential that both minor and major road drivers have adequate visibility in each direction to see the oncoming major road traffic in sufficient time to permit them to make their manoeuvres safely. As well as having adverse safety implications, poor visibility reduces the capacity of turning movements.

Even though visibility considerations can be incorporated into the design of the facility, road accident statistics published by the National roads Authority indicate that approximately 18% of all fatal accidents occur at road layouts consisting of T – junctions and cross roads.

Taking into account the safety implications for road users and those accessing the new facility, the Design Team adopted the strategy of minimising the number of T – junctions and cross roads on to any route option.

This strategy has led to the development of proposals to incorporate Interchange Bridges for major roads, together with Overbridges / Underbridges for Local Roads.

Preference is given to the route option with the lowest estimated Bridge Costs.

5.3 N5 - Route Option A

- 5.3.1 Route Option A is estimated to cost IR£46.57m and is one of the most expensive options. This is mainly due to the length of the route option, the cost of bridge structures and cost of the treatment of major and minor road junctions.
- 5.3.2 Route Option A is one of the longest options in the study. Route Option A has 6 horizontal curves and the FOSD Value (Full Overtaking Sight Distance) is 82%. Ground conditions encountered by Route Option A include raised intact bog, which are now a threatened habitat and a listed vegetation type for preservation by the EU.
- 5.3.3 Route Option A has the least affect on existing property in that no houses or farm buildings would be acquired. The number of properties affected in the 0 – 50m and 0 – 300m noise bandwidths are 34 and 185, respectively. The number of land holdings severely affected by the route option is 27 and the total number of landholdings affected is 148.
- 5.3.4 With regard to the ecology, the number of ecological features affected by Route Option A is 22.
- 5.3.5 The affect of Route Option A on the landscape would be least acceptable as it would be cutting through low-lying, flatter wetland to the north of the existing N5. It would be difficult to integrate this option into its surroundings and limit visual impact through mitigation in a flat open landscape.
- 5.3.6 The number of archaeological sites affected by Route Option A is 2 and it has the least impact of all the route options, on known archaeological sites.

5.4 N5 - Route Option B

- 5.4.1 Route Option B is estimated to cost IR£46.65m and is the most expensive option. This is mainly due to the length of the route option, the cost of bridge structures and cost of the treatment of major and minor road junctions.
- 5.4.2 Route Option B is one of the longest options in the study. Route Option B has 11 horizontal curves and the FOSD Value (Full Overtaking Sight Distance) is 72%. Ground conditions encountered by Route Option B include raised intact bog, which are now a threatened habitat and a listed vegetation type for preservation by the EU.
- 5.4.3 No houses but 2 farm buildings would be acquired by this option. The number of properties affected in the 0 – 50m and 0 – 300m noise bandwidths are 25 and 170, respectively. The number of land holdings severely affected by the route option is 23 and the total number of landholdings affected is 164.
- 5.4.4 With regard to the ecology, the number of ecological features affected by Route Option B is 21.
- 5.4.5 The affect of Route Option B on the landscape would be least acceptable as it would be cutting through low-lying, flatter wetland to the north of the existing N5. It would be difficult to integrate this option into its surroundings and limit visual impact through mitigation in a flat open landscape.
- 5.4.6 The number of archaeological sites affected by Route Option B is 2 and it has the least impact of all the route options, on known archaeological sites.

5.5 N5 - Route Option C

- 5.5.1 Route Option C is estimated to cost IR£44.16m and is one of the least expensive options. This is mainly due to the length of the route option, the cost of bridge structures and cost of the treatment of major and minor road junctions.
- 5.5.2 Route Option C is one of the shorter options in the study. Route Option C has 7 horizontal curves and the FOSD Value (Full Overtaking Sight Distance) is 73%. Ground conditions encountered by this route option includes cutover bog land and glacial fill deposits.
- 5.5.3 Three houses and 6 farm buildings would be acquired by this option. This route option has the largest number of properties affected in the 0 – 50m and 0 – 300m noise bandwidths at 47 and 246, respectively. The number of land holdings severely affected by the route option is 20 and the total number of landholdings affected is 169.

- 5.5.4 With regard to the ecology, the number of ecological features affected by Route Option C is 18.
- 5.5.5 The affect of Route Option C on the landscape would be acceptable as landform and landcover can be utilised to reduce its visual impact and will enable this route to be integrated through migratory planting in keeping with the locality.
- 5.5.6 The number of archaeological sites affected by Route Option C is 5 and it is one of the options with a moderate impact on known archaeological sites.

5.6 N5 - Route Option D

- 5.6.1 Route Option D is estimated to cost IR£44.62m and is one of the least expensive options. This is mainly due to the length of the route option, the cost of bridge structures and cost of the treatment of major and minor road junctions.
- 5.6.2 Route Option D is one of the shorter options in the study. Route Option D has 8 horizontal curves and the FOSD Value (Full Overtaking Sight Distance) is 71%. Ground conditions encountered by this route option include a fen, cutover bog land and glacial fill deposits.
- 5.6.3 One houses and 7 farm buildings would be acquired by this option. This route option has one the largest number of properties affected in the 0 – 50m and 0 – 300m noise bandwidths at 38 and 211, respectively. The number of land holdings severely affected by the route option is 32 and the total number of landholdings affected is 158.
- 5.6.4 With regard to the ecology, the number of ecological features affected by Route Option D is 17.
- 5.6.5 The affect of Route Option D on the landscape would be moderately acceptable, as it will run through the foreground of extended views from the south across an expanse of low-lying wetland to higher ground in the north, which rises up from the plain.
- 5.6.6 The number of archaeological sites affected by Route Option D is 5 and it is one of the options with a moderate impact on known archaeological sites.

5.7 N5 - Route Option E

- 5.7.1 Route Option E is estimated to cost IR£43.59m and is one of the least expensive options. This is mainly due to the length of the route option, the cost of bridge structures and cost of the treatment of major and minor road junctions.
- 5.7.2 Route Option E is the shortest route option in the study. Route Option E has 10 horizontal curves and the FOSD Value (Full Overtaking Sight Distance) is 76%. Ground conditions encountered by this route option include a fen, cutover bog land and glacial fill deposits.
- 5.7.3 No houses and 11 farm buildings would be acquired by this option. This route option has one the largest number of properties affected in the 0 – 50m and 0 – 300m noise bandwidths at 34 and 221, respectively. The number of land holdings severely affected by the route option is 45 and the total number of landholdings affected is 164.
- 5.7.4 With regard to the ecology, the number of ecological features affected by Route Option E is 14 and it has the least affect on ecology.
- 5.7.5 The affect of Route Option E on the landscape would be moderately acceptable, as it will run through the foreground of extended views from the south across an expanse of low-lying wetland to higher ground in the north, which rises up from the plain.
- 5.7.6 The number of archaeological sites affected by Route Option E is 4 and it is one of the options with a moderate impact on known archaeological sites.

5.8 N5 - Route Option F

- 5.8.1 Route Option F is estimated to cost IR£42.97m and is the least expensive option overall. This is mainly due to the length of the route option, the cost of bridge structures and cost of the treatment of major and minor road junctions.

- 5.8.2 Route Option F is one of the shorter options in the study. Route Option F has 9 horizontal curves and the FOSD Value (Full Overtaking Sight Distance) is 83%. Ground conditions encountered by this route option includes cutover bog land and glacial fill deposits.
- 5.8.3 Three houses and 2 farm buildings would be acquired by this option. This route option has the largest number of properties affected in the 0 – 50m and 0 – 300m noise bandwidths at 36 and 183, respectively. The number of land holdings severely affected by the route option is 21 and the total number of landholdings affected is 154.
- 5.8.4 With regard to the ecology, the number of ecological features affected by Route Option F is 19.
- 5.8.5 The affect of Route Option F on the landscape would be acceptable as landform and landcover can be utilised to reduce its visual impact and will enable this route to be integrated through migratory planting in keeping with the locality.
- 5.8.6 The number of archaeological sites affected by Route Option F is 11 and it is one of the options with the most impact on known archaeological sites.

5.9 N5 - Route Option G

- 5.9.1 Route Option G is estimated to cost IR£43.30m and is one of the least expensive options overall. This is mainly due to the length of the route option, the cost of bridge structures and cost of the treatment of major and minor road junctions.
- 5.9.2 Route Option G is one of the shorter options in the study. Route Option G has 10 horizontal curves and the FOSD Value (Full Overtaking Sight Distance) is 79%. Ground conditions encountered by this route option includes cutover bog land and glacial fill deposits.
- 5.9.3 Two houses and 2 farm buildings would be acquired by this option. This route option has one of the least number of properties affected in the 0 – 50m and 0 – 300m noise bandwidths at 23 and 155, respectively. The number of land holdings severely affected by the route option is 14 and the total number of landholdings affected is 171.
- 5.9.4 With regard to the ecology, the number of ecological features affected by Route Option G is 19.
- 5.9.5 The affect of Route Option G on the landscape would be most acceptable as landform and landcover can be utilised to reduce its visual impact and will enable this route to be integrated through migratory planting in keeping with the locality. It also runs further the south with improved opportunities for limiting views from development associated with the existing N5.
- 5.9.6 The number of archaeological sites affected by Route Option G is 11 and it is one of the options with the most impact on known archaeological sites.

5.10 N5 - Route Option H (Preferred Route)

- 5.10.1 Route Option H is estimated to cost IR£43.49m and is one of the least expensive options overall. This is mainly due to the length of the route option, the cost of bridge structures and cost of the treatment of major and minor road junctions.
- 5.10.2 Route Option H is one of the shorter options in the study. Route Option H has 8 horizontal curves and the FOSD Value (Full Overtaking Sight Distance) is 68%. Ground conditions encountered by this route option includes cutover bog land and glacial fill deposits.
- 5.10.3 One house and no farm buildings would be acquired by this option. This route option has the least number of properties affected in the 0 – 50m and 0 – 300m noise bandwidths at 12 and 151, respectively. The number of land holdings severely affected by the route option is 24 and the total number of landholdings affected is 138.
- 5.10.4 With regard to the ecology, the number of ecological features affected by Route Option H is 22.
- 5.10.5 The affect of Route Option H on the landscape would be most acceptable as landform and landcover can be utilised to reduce its visual impact and will enable this route to be integrated through migratory planting in keeping with the locality. It also runs further the south than Option G over portion of its

length and would enhance the opportunities for limiting views from development associated with the existing N5.

- 5.10.6 The number of archaeological sites affected by Route Option H is 6 and it is one of the options with a moderate affect on known archaeological sites.

5.11 N17 - Route Option 1

- 5.11.1 Route Option 1 is estimated to cost IR€21.31m and is one of the least expensive options overall. This is mainly due to the length of the route option, the cost of bridge structures and cost of the treatment of major and minor road junctions.
- 5.11.2 Route Option 1 is one of the shorter options in the study. Route Option 1 has 6 horizontal curves and the FOSD Value (Full Overtaking Sight Distance) is 42%. Ground conditions encountered by this route option include raised intact bog, which are now a threatened habitat and a listed vegetation type for preservation by the EU.
- 5.11.3 No house and 3 farm buildings would be acquired by this option. This route option has a significant number of properties affected in the 0 – 50m and 0 – 300m noise bandwidths at 17 and 99, respectively. The number of land holdings severely affected by the route option is 10 and the total number of landholdings affected is 35.
- 5.11.4 With regard to the ecology, the number of ecological features affected by Route Option 1 is 9.
- 5.11.5 The affect of Route Option 1 on the landscape would be least acceptable as it runs roughly parallel to the Mullaghanoe River with slightly higher ground to either side of the corridor.
- 5.11.6 The number of archaeological sites affected by Route Option 1 is 5 and it is the option with the most impact on known archaeological sites.

5.12 N17 - Route Option 2

- 5.12.1 Route Option 2 is estimated to cost IR€21.01m and is one of the least expensive options overall. This is mainly due to the length of the route option, the cost of bridge structures and cost of the treatment of major and minor road junctions.
- 5.12.2 Route Option 2 is one of the shorter options in the study. Route Option 2 has 2 horizontal curves and the FOSD Value (Full Overtaking Sight Distance) is 72%. Ground conditions encountered by this route option includes cutover bog land and glacial fill deposits.
- 5.12.3 Four houses and 3 farm buildings would be acquired by this option. This route option has one of the least numbers of properties affected in the 0 – 50m and 0 – 300m noise bandwidths at 13 and 82, respectively. The number of land holdings severely affected by the route option is 9 and the total number of landholdings affected is 40.
- 5.12.4 With regard to the ecology, the number of ecological features affected by Route Option 2 is 7.
- 5.12.5 The affect of Route Option 2 on the landscape would be acceptable with little differentiation between it and the other options on the basis of landscape and visual impact.
- 5.12.6 The number of archaeological sites affected by Route Option 2 is 4.

5.13 N17 - Route Option 2A

- 5.13.1 Route Option 2A is estimated to cost IR€23.61m and is one of the most expensive options overall. This is mainly due to the length of the route option, the cost of bridge structures and cost of the treatment of major and minor road junctions.
- 5.13.2 Route Option 2A is one of the longer options in the study. Route Option 2A has 4 horizontal curves and the FOSD Value (Full Overtaking Sight Distance) is 75%. Ground conditions encountered by this route option includes cutover bog land and glacial fill deposits.
- 5.13.3 Five houses and 3 farm buildings would be acquired by this option. This route option has one of the least number of properties affected in the 0 – 50m and 0 – 300m noise bandwidths at 13 and 76, respectively. The number of land holdings severely affected by the route option is 11 and the total number of landholdings affected is 38.
- 5.13.4 With regard to the ecology, the number of ecological features affected by Route Option 2A is 8.

- 5.13.5 The affect of Route Option 2A on the landscape would be acceptable with little differentiation between it and the other options on the basis of landscape and visual impact.
- 5.13.6 The number of archaeological sites affected by Route Option 2A is 3.

5.14 N17 - Route Option 3

- 5.14.1 Route Option 3 is estimated to cost IR£21.30m and is one of the least expensive options overall. This is mainly due to the length of the route option, the cost of bridge structures and cost of the treatment of major and minor road junctions.
- 5.14.2 Route Option 3 is one of the shortest options in the study. Route Option 3 has 5 horizontal curves and the FOSD Value (Full Overtaking Sight Distance) is 63%. Ground conditions encountered by this route option includes cutover bog land and glacial fill deposits.
- 5.14.3 Four houses and 2 farm buildings would be acquired by this option. This route option has a significant number of properties affected in the 0 – 50m and 0 – 300m noise bandwidths at 14 and 87, respectively. The number of land holdings severely affected by the route option is 9 and the total number of landholdings affected is 37.
- 5.14.4 With regard to the ecology, the number of ecological features affected by Route Option 3 is 4.
- 5.14.5 The affect of Route Option 3 on the landscape would be acceptable with little differentiation between it and the other options on the basis of landscape and visual impact.
- 5.14.6 The number of archaeological sites affected by Route Option 3 is 2 and it is one of the options with least impact on known archaeological sites.

5.15 N17 - Route Option 3A

- 5.15.1 Route Option 3A is estimated to cost IR£23.86m and is one of the most expensive options overall. This is mainly due to the length of the route option, the cost of bridge structures and cost of the treatment of major and minor road junctions.
- 5.15.2 Route Option 3A is one of the longer options in the study. Route Option 3A has 6 horizontal curves and the FOSD Value (Full Overtaking Sight Distance) is 67%. Ground conditions encountered by this route option includes cutover bog land and glacial fill deposits.
- 5.15.3 Six house and 2 farm buildings would be acquired by this option. This route option has a significant number of properties affected in the 0 – 50m and 0 – 300m noise bandwidths at 16 and 83, respectively. The number of land holdings severely affected by the route option is 9 and the total number of landholdings affected is 34.
- 5.15.4 With regard to the ecology, the number of ecological features affected by Route Option 3A is 6.
- 5.15.5 The affect of Route Option 3A on the landscape would be acceptable with little differentiation between it and the other options on the basis of landscape and visual impact.
- 5.15.6 The number of archaeological sites affected by Route Option 3A is 1 and it is one of the options with least impact on known archaeological sites.

5.16 N17 - Route Option 4

- 5.16.1 Route Option 4 is estimated to cost IR£18.62m and is the least expensive option overall. This is mainly due to the length of the route option.
- 5.16.2 Route Option 4 is one of the shorter options in the study. Route Option 4 has 4 horizontal curves and the FOSD Value (Full Overtaking Sight Distance) is 63%. Ground conditions encountered by this route option includes cutover bog land and glacial fill deposits.
- 5.16.3 Five houses and one farm building would be acquired by this option. This route option has a significant number of properties affected in the 0 – 50m and 0 – 300m noise bandwidths at 13 and 96,

respectively. The number of land holdings severely affected by the route option is 8 and the total number of landholdings affected is 35.

- 5.16.4 With regard to the ecology, the number of ecological features affected by Route Option 4 is 4.
- 5.16.5 The affect of Route Option 4 on the landscape would be most acceptable with little differentiation between it and the other options on the basis of landscape and visual impact. This alignment is most acceptable as it avoids a cluster of archaeological sites by merging with the existing N17 further to the south.
- 5.16.6 The number of archaeological sites affected by Route Option 4 is 1 and it is one of the options with the least impact on known archaeological sites.

5.17 N17 - Route Option 5 (Preferred Route)

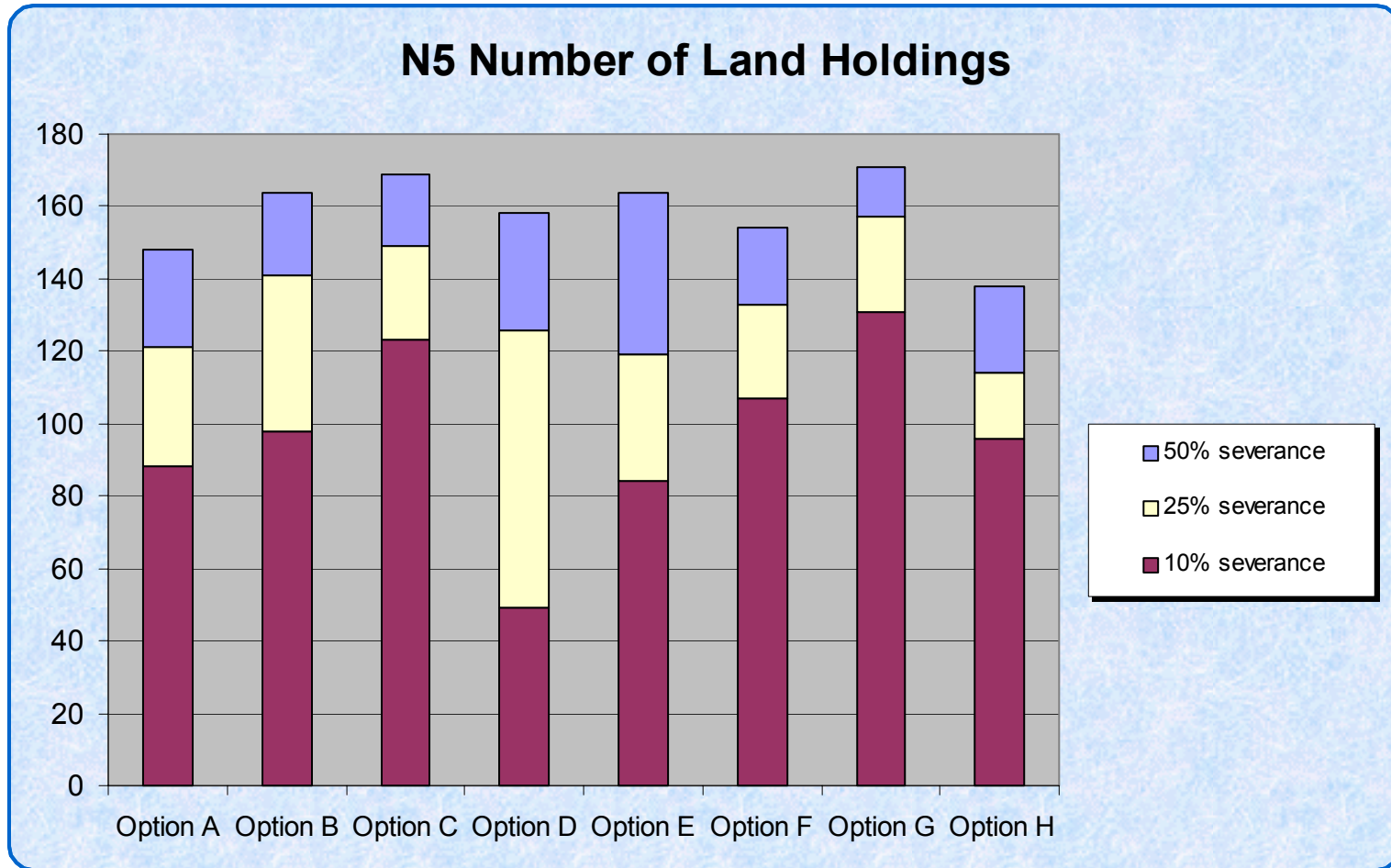
- 5.17.1 Route Option 5 is estimated to cost IR€30.08m and is the most expensive option overall. This is mainly due to the length of the route option (it is significantly longer than the other options - 12.3 km in length), the cost of bridge structures and cost of the treatment of major and minor road junctions. The unit cost per km of this option is the lowest of all the options considered.
- 5.17.2 Route Option 5 is the longest option in the study. Route Option 5 has 10 horizontal curves and the FOSD Value (Full Overtaking Sight Distance) is 74%. Ground conditions encountered by this route option includes cutover bog land and glacial fill deposits.
- 5.17.3 One house and no farm buildings would be acquired by this option. This route option has the least number of properties affected in the 0 – 50m and 0 – 300m noise bandwidths at 4 and 71, respectively. The number of land holdings severely affected by the route option is 10 and the total number of landholdings affected is 63.
- 5.17.4 With regard to the ecology, the number of ecological features affected by Route Option 5 is 12.
- 5.17.5 The affect of Route Option 5 on the landscape would be most acceptable with little differentiation between it and the other options on the basis of landscape and visual impact. While the alignment is longer than the other route options, it avoids archaeological sites and also has minimal impact on established communities between Lurga and Curry.
- 5.17.6 The number of archaeological sites affected by Route Option 5 is 1 and it is one of the options with the least impact on known archaeological sites. The Access Road to Ballaghy has one archaeological site

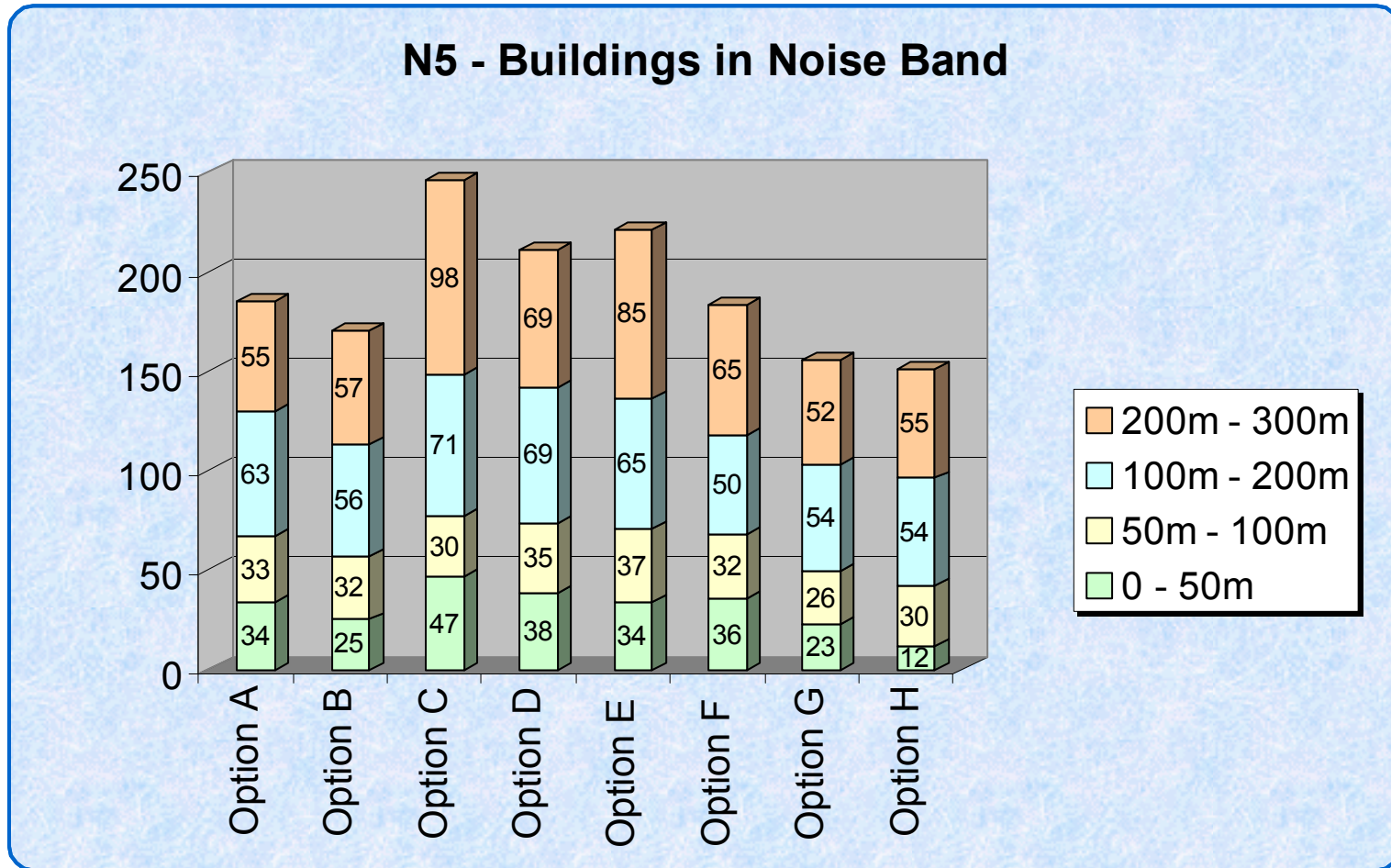
5.18 Route Option Comparison for each Scheme

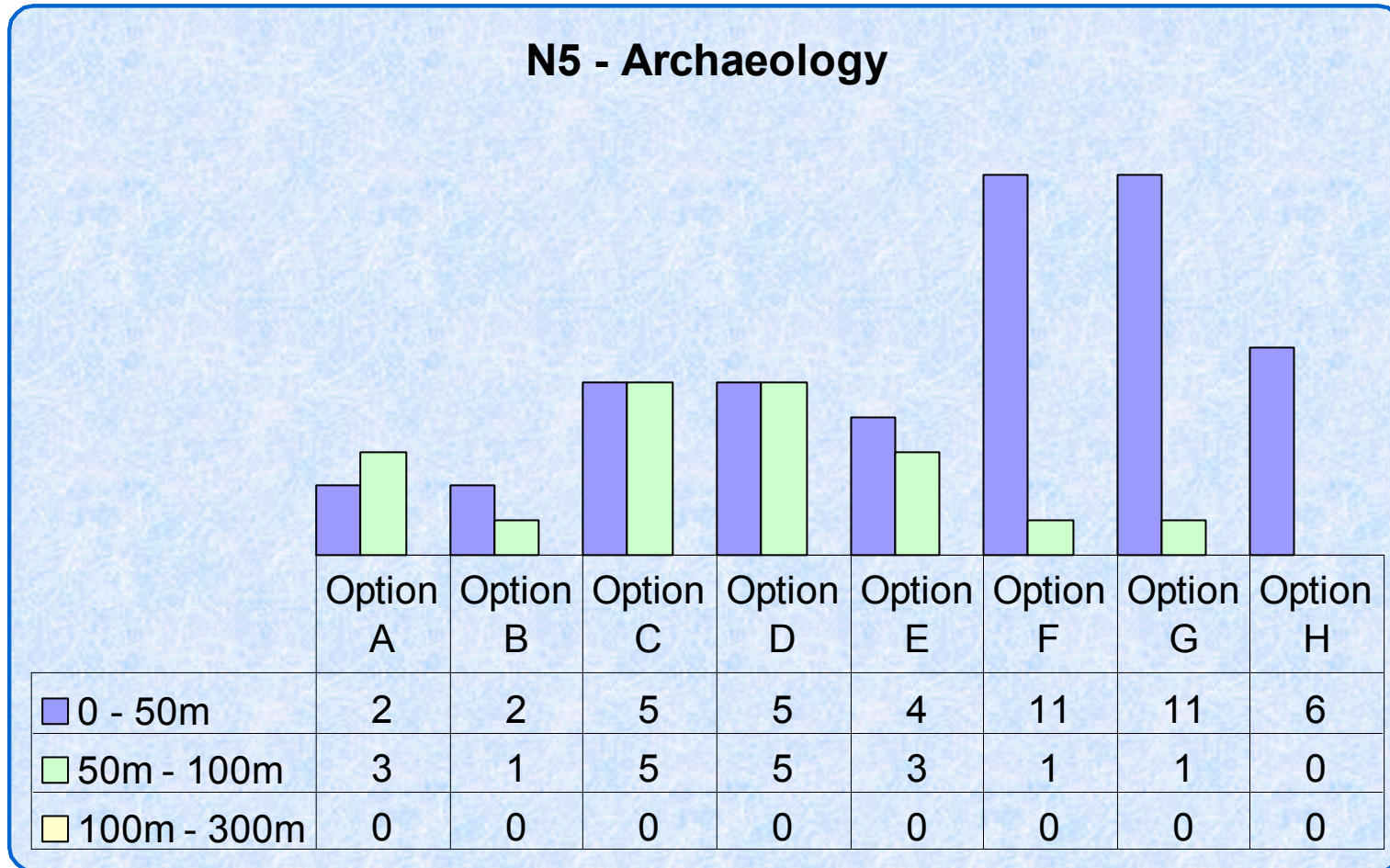
- 5.18.1 **Table 12** overleaf briefly describes the advantages and impacts of each route option in tabular format for the N5 Charlestown Bypass Scheme. **Table 13** on Page 41 briefly describes the advantages and impacts of each route option in tabular format for the N17 Charlestown Bypass Scheme.

N5 CHARLESTOWN BYPASS SCHEME MATRIX								
Route Option	Option A	Option B	Option C	Option D	Option E	Option F	Option G	Option H
No. of Horizontal Curves	6	11	7	8	10	9	10	8
Radius<1000m	0	0	0	0	0	0	0	0
Radius >1000m<=2880m	2	4	2	6	5	0	1	2
Radius>2880m	4	7	5	2	5	9	9	6
No. of Vertical Curves	9	9	6	12	7	9	9	17
Minimum Gradient	0.5	0.5	0.1	0.5	0.926	0.5	0.5	0.312
Maximum Gradient	1.65	0.6	0.795	3.18	1.519	2.3	1.6	2.7
Passing Sight Distance								
>580m	82%	72%	73%	71%	76%	83%	79%	68%
Ecological Features	21	22	18	17	14	19	19	22
Land Holdings	148	164	169	158	164	154	171	138
10% Severance	88	98	123	49	84	107	131	96
25% Severance	33	43	26	77	35	26	26	18
50% Severance	27	23	20	32	45	21	14	24
Number of Houses	0	0	3	1	0	3	2	1
No. of Farm Buildings	0	2	6	7	11	2	2	0
Buildings in Noise Band								
0 - 50m	34	25	47	38	34	36	23	12
50m - 100m	33	32	30	35	37	32	26	30
100m - 200m	63	56	71	69	65	50	54	54
200m - 300m	55	57	98	69	85	65	52	55
Total	185	170	246	211	221	183	155	151
Archaeology								
0 - 50m	2	2	5	5	4	11	11	6
50m - 100m	3	1	5	5	3	1	1	0
100m - 300m	0	0	0	0	0	0	0	0
Length km	19.2	19.237	18.17	18.15	17.9	17.96	18.12	18.21
Bridges								
Interchange Br	1	1	3	3	3	3	3	3
Overbridge	5	5	5	6	5	3	3	1
Underbridge	5	5	2	2	2	3	3	7
Railway Bridge	2	2	0	0	0	0	0	0
River Bridge	3	3	3	3	3	3	3	3
Bridge Costs(IR£ m)	IR£6.25	IR£6.25	IR£6.00	IR£6.50	IR£6.00	IR£5.25	IR£5.25	IR£5.25
Total Cost IR£ m	IR£46.57	IR£46.65	IR£44.16	IR£44.62	IR£43.59	IR£42.97	IR£43.30	IR£43.49
Unit Cost per Km IR£ m	IR£2.43	IR£2.42	IR£2.43	IR£2.46	IR£2.44	IR£2.39	IR£2.39	IR£2.39

Table 12

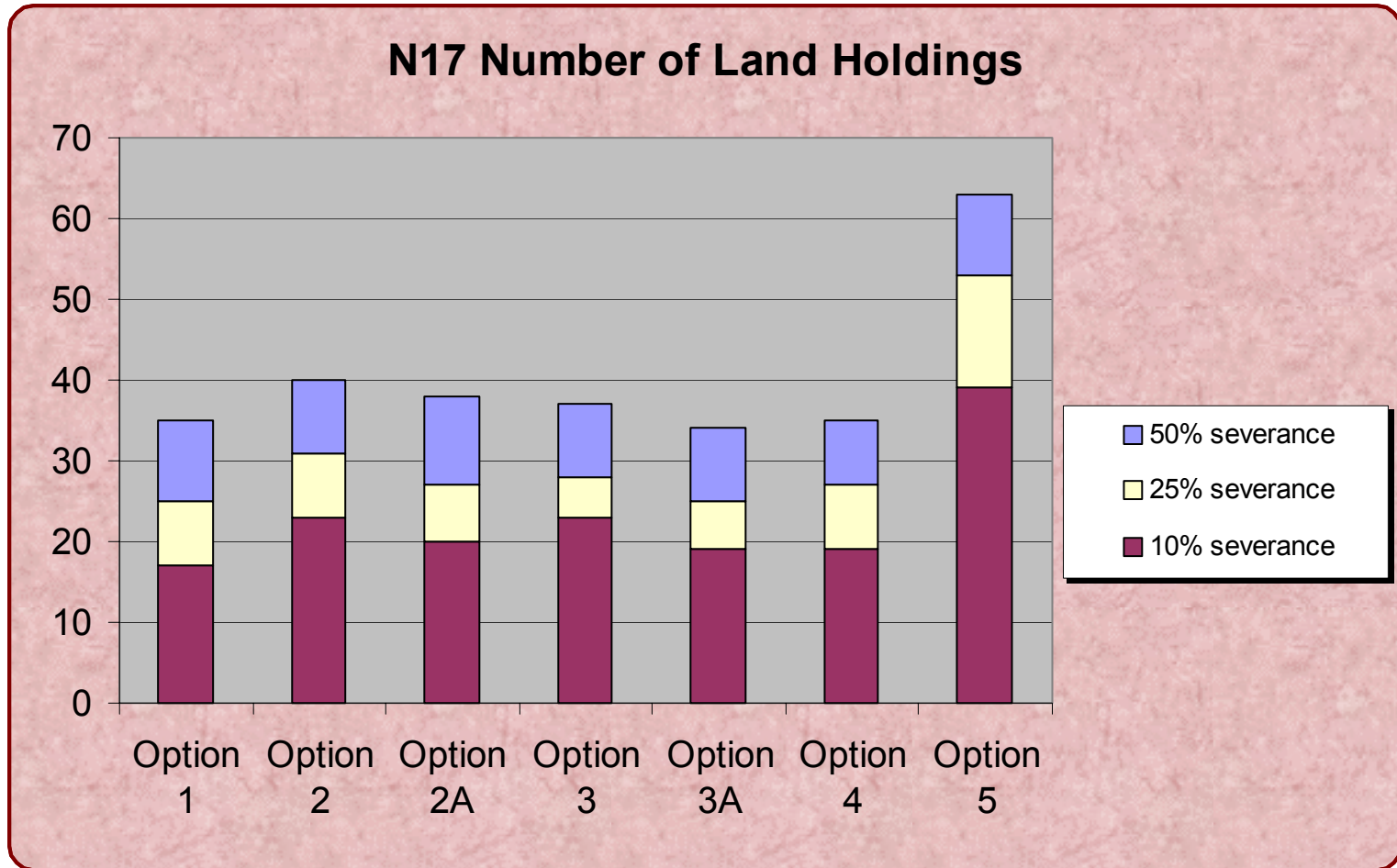


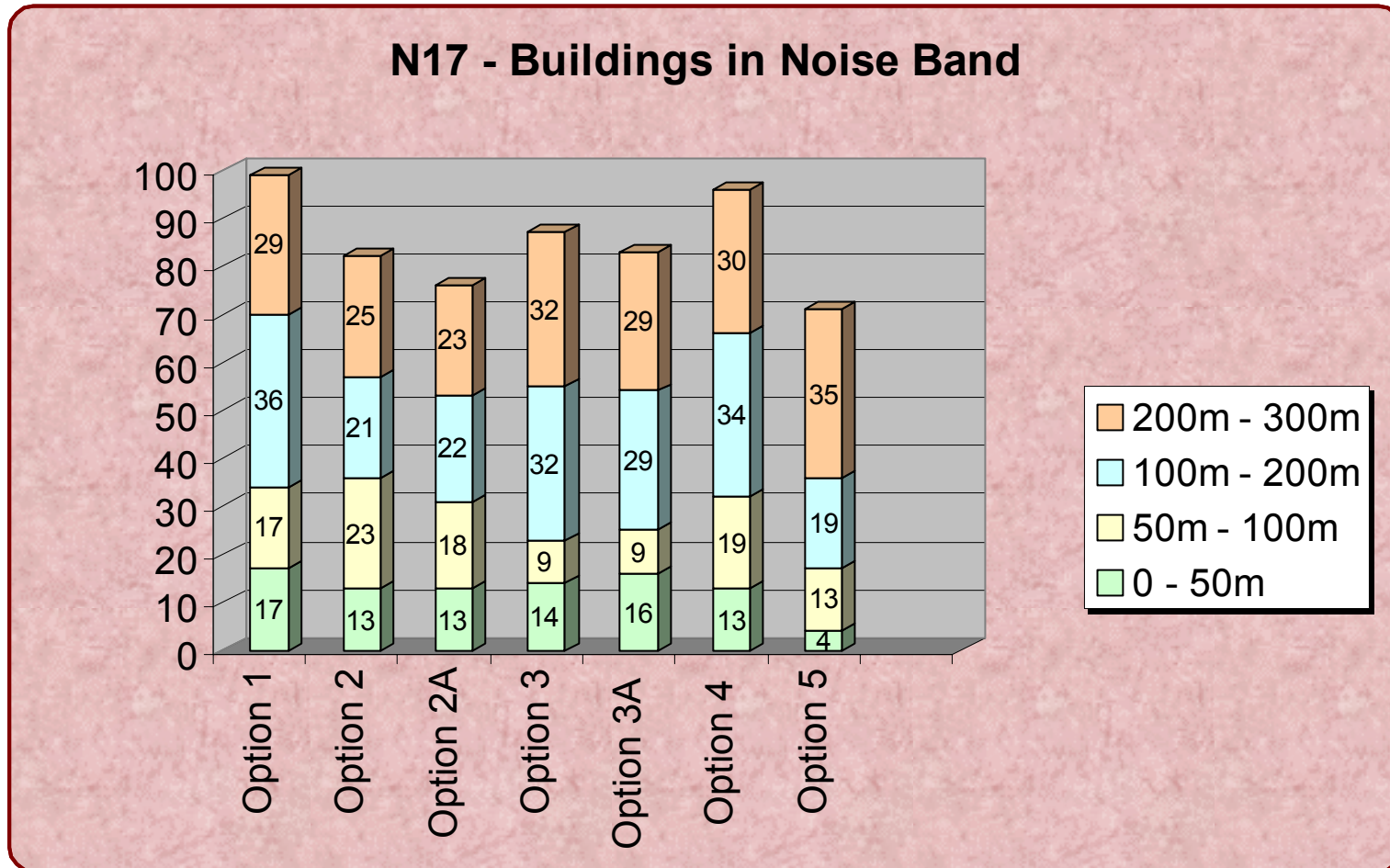


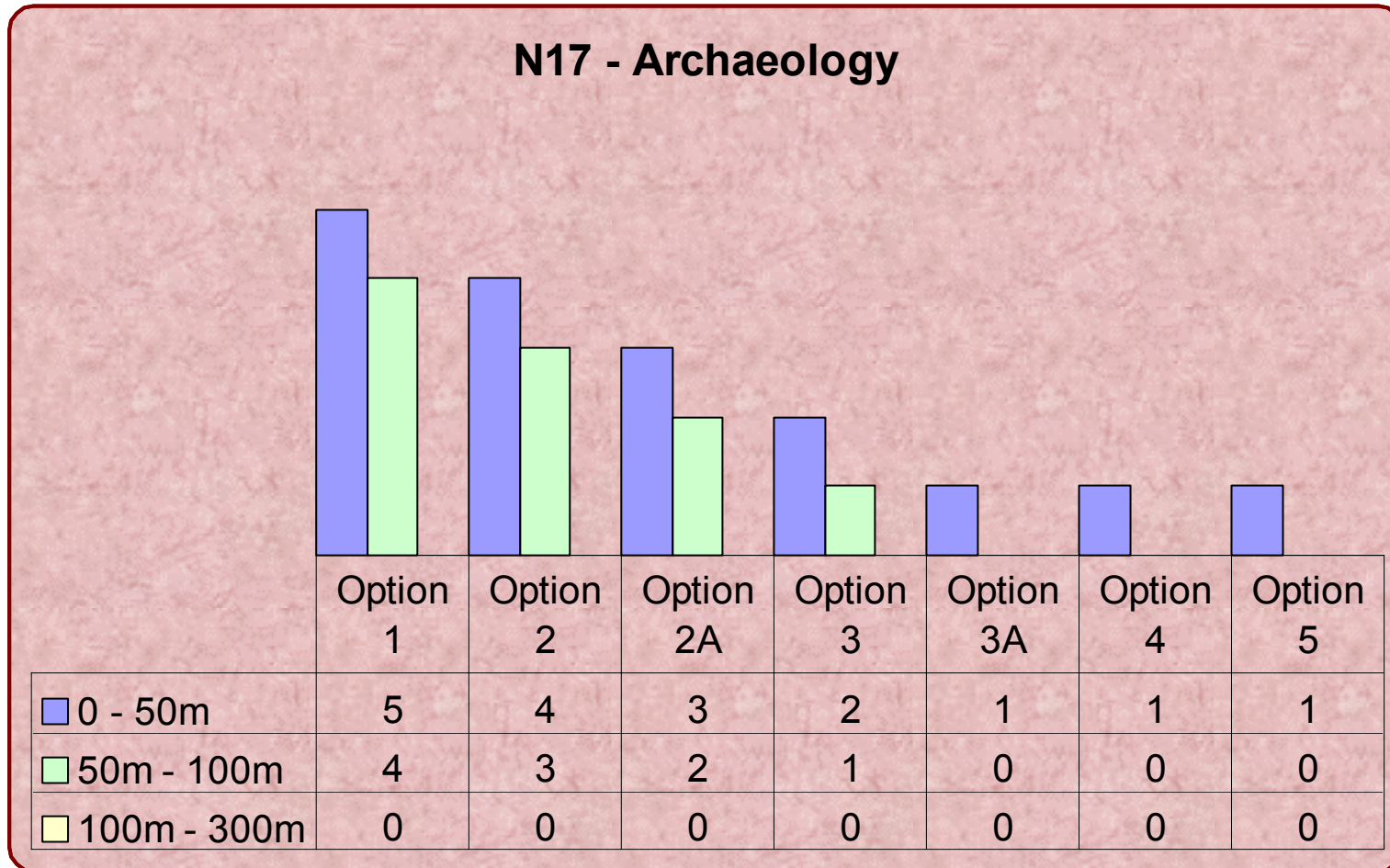


N17 CHARLESTOWN BYPASS SCHEME MATRIX							
Route Option	Option 1	Option 2	Option 2A	Option 3	Option 3A	Option 4	Option 5
No. of Horizontal Curves	6	2	4	5	6	4	10
Radius<1000m	0	0	0	0	0	0	1
Radius >1000m<=2880m	6	0	2	5	6	4	2
Radius>2880m	0	2	2	0	0	0	7
No. of Vertical Curves	7	6	5	7	7	7	13
Minimum Gradient	0.5	0.69	0.82	0.72	0.5	0.69	0.5
Maximum Gradient	4.6	5	5	4.8	4.81	4.8	4.7
Passing Sight Distance							
>580m	42%	72%	75%	63%	67%	63%	74%
Ecological Features	9	7	8	4	6	4	12
Land Holdings	35	40	38	37	34	35	63
10% Severance	17	23	20	23	19	19	39
25% Severance	8	8	7	5	6	8	14
50% Severance	10	9	11	9	9	8	10
Number of Houses	0	4	5	4	6	5	1
No. of Farm Buildings	3	3	3	2	2	1	0
Buildings in Noise Band							
0 - 50m	17	13	13	14	16	13	4
50m - 100m	17	23	18	9	9	19	13
100m - 200m	36	21	22	32	29	34	19
200m - 300m	29	25	23	32	29	30	35
Total	99	82	76	87	83	96	71
Archaeology							
0 - 50m	5	4	3	2	1	1	1
50m - 100m	4	3	2	1	0	0	0
100m - 300m	0	0	0	0	0	0	0
Length km	8.6	8.1	9.1	8	9.1	7.2	12.3
Bridges							
Interchange Br	1	1	1	1	1	1	2
Overbridge	2	3	3	3	3	2	3
Underbridge	2	5	7	7	8	5	4
Railway Bridge	1	1	1	1	1	1	0
River Bridge	2	0	0	0	0	0	1
Bridge Costs (IR£ m)	IR£3.25	IR£4.00	IR£4.50	IR£4.50	IR£4.75	IR£3.50	IR£4.25
Total Cost IR£ m	IR£21.31	IR£21.01	IR£23.61	IR£21.30	IR£23.86	IR£18.62	IR£30.08
Unit Cost per Km IR£ m	IR£2.48	IR£2.59	IR£2.59	IR£2.66	IR£2.62	IR£2.59	IR£2.45

Table 13







Preferred Routes - Details

5.19 Introduction

- 5.19.1 **Table 12** (Page 37) briefly describes the advantages and impacts of each route option in tabular format for the N5 Charlestown Bypass Scheme. **Table 13** (Page 41) briefly describes the advantages and impacts of each route option in tabular format for the N17 Charlestown Bypass Scheme. A preference is assigned in accordance with the criteria described in Section 5.2 [*Criteria used for Selection of Preferred Routes*] of this Report. The route option that receives the most preferences is deemed to be the Preferred Route.
- 5.19.2 The details of these proposals are outlined in 5.20 and 5.21 hereunder:

5.20 N5 Preferred Route Selection

- 5.20.1 Option A and Option B, over their entire length are located north of the existing N5 while Option D and Option E, west of Charlestown are also located north of the existing N5. It can immediately be seen from **Table 12** that Route Option E is the least acceptable route option in the study. Route Option E would have a severe impact in the area on the grounds that it will have a significant impact on communities and a large number of properties. The geometry is to a lesser standard than some of the other options. It will have a severe impact on an area of significant conservation value, especially a fen which has been highlighted in the "*Report on Sites of Ecological Interest in the Charlestown By – Pass Study Area*" by Dr. Cilian Roden. The advantages of Route Option E do not overcome these disadvantages; therefore, Route Option E can be eliminated.
- 5.20.2 In consideration of the reasons for eliminating Route Option E, similar results are evident in the analysis of Route Option D. The route has similar geometry to Option E. While it is marginally less severe in its impact on the communities and properties, it is more expensive than Option E. It will also have a severe impact on an area of significant conservation value, especially a fen, which has been highlighted in the "*Report on Sites of Ecological Interest in the Charlestown By – Pass Study Area*" by Dr. Cilian Roden. The advantages of Route Option D do not outweigh the disadvantages. Therefore route D can be eliminated.
- 5.20.3 In consideration of the reasons for eliminating Route Option D and Route Option E, similar results are evident in the analysis of Route Option A and Route Option B. Although Route Options A and B have a similar geometry to Route Options D and E, and a lesser impact on communities and properties, they are the most expensive of the route options under consideration. They will also have a severe impact on an area of significant conservation value, especially the raised intact bog, which has been highlighted in the "*Report on Sites of Ecological Interest in the Charlestown By – Pass Study Area*" by Dr. Cilian Roden. Even though Route Options A and B have some advantages over Route Options D and E, these do not overpower the advantages of the remaining route options to be considered. As a result Route Option A and Route B are eliminated from further consideration.
- 5.20.4 Route Options C, F and G are the remaining route options from the initial route options public consultation. But as discussed in previous chapters variations of the routes as a result of submissions from the public and information gathered during the public consultation, it was deemed necessary for a complete study of the route options that an alternative route option be sought. This led to the design of Route Option H and is included in the scheme matrix.
- 5.20.5 The Scheme Matrix is now reduced to four route options and a preference is assigned to each route option in accordance with the criteria outlined in paragraphs 5.2.1 to 5.2.8. **Table 14** overleaf briefly describes the advantages and impacts of each of the remaining route options and assigns a preference to each route option under the various criteria.

N5 CHARLESTOWN BYPASS - SCHEME MATRIX REDUCED

Route Option	Option C	Option F	Option G	Option H	Preference
No. of Horizontal Curves	7	9	10	8	
Radius<1000m	0	0	0	0	Option C
Radius >1000m<=2880m	2	0	1	2	Option G
Radius>2880m	5	9	9	6	
No. of Vertical Curves	6	9	9	17	
Minimum Gradient	0.1	0.5	0.5	0.312	
Maximum Gradient	0.795	2.3	1.6	2.7	
Passing Sight Distance					
>580m	73%	83%	79%	68%	Option F
Ecological Features	18	19	19	22	Option C
Land Holdings	169	154	171	138	Option H
10% Severance	123	107	131	96	
25% Severance	26	26	26	18	
50% Severance	20	21	14	24	Option G
Number of Houses	3	3	2	1	Option H
No. of Farm Buildings	6	2	2	0	Option H
Buildings in Noise Band					
0 - 50m	47	36	23	12	Option H
50m - 100m	30	32	26	30	
100m - 200m	71	50	54	54	
200m - 300m	98	65	52	55	
Total	246	183	155	151	Option H
Archaeology					
0 - 50m	5	11	11	6	Option C
50m - 100m	5	1	1	0	
100m - 300m	0	0	0	0	
Length km	18.17	17.96	18.12	18.21	Option F
Bridges					
Interchange Br	3	3	3	3	
Overbridge	5	3	3	1	
Underbridge	2	3	3	7	
Railway Bridge	0	0	0	0	
River Bridge	3	3	3	3	
Bridge Costs (IR£ m)	IR£6.00	IR£5.25	IR£5.25	IR£5.25	Option H
Total Cost IR£ m	IR£44.16	IR£42.97	IR£43.30	IR£43.49	
Unit Cost per Km IR£ m	IR£2.43	IR£2.39	IR£2.39	IR£2.39	Option H

Table 14

- 5.20.6 The number of preferences received by Route Option H is seven, Route Option C is three, Option G is two and Option F is two. The preferences for Option H far outweigh the preferences for the other route options.
- 5.20.7 Therefore, Route Option H is selected as the preferred route for the N5 Charlestown Bypass Scheme.
- 5.20.8 A more detailed investigation and design of Route Option H will now be carried out to bring the scheme to Compulsory Purchase Order stage. Route Option F or any of the other options will not be reconsidered unless an impact is discovered in Route Option H, which cannot be mitigated and is significant enough to outweigh all the disadvantages of any of the other options.

5.21 N17 Preferred Route Selection

- 5.21.1 From **Table 13** (Page 41), it can be seen that Route Option 1 is the least acceptable route option presented at the public consultation. Route Option 1 would have a severe impact in the area on the grounds that it will have a significant impact on communities and on a large number of properties. It will also have a severe impact on sites of archaeological and conservation value, especially the raised intact bog, which has been highlighted in the *“Report on Sites of Ecological Interest in the Charlestown By – Pass Study Area”* by Dr. Cilian Roden. The advantages of Route Option 1 do not overcome these disadvantages. Therefore Route Option 1 is eliminated from further consideration.
- 5.21.2 Route Options 2, 2A, 3, 3A and 4 are the remaining route options from the initial route options public consultation. But as discussed in previous chapters variations of the routes following submissions from the public and information gathered during the public consultation, it was deemed necessary for a complete study of the route options that an alternative route option be sought. This led to the design of Route Option 5 and is included in the scheme matrix.
- 5.21.3 The Scheme Matrix is now reduced to six route options and a preference is assigned to each route option in accordance with the criteria outlined in paragraphs 5.2.1 to 5.2.8 of this report. **Table 15** overleaf briefly describes the advantages and impacts of each of the remaining route options and assigns a preference to each route option under the various criteria.
- 5.21.4 The number of preferences received by Route Option 5 is six, by Route Option 4 is four, by Route Option 2 is two, by Route Option 2A is one and Route Option 3A is one.
- 5.21.5 Therefore, Route Option 5 is selected as the preferred route for the N17 Charlestown Bypass Scheme.
- 5.21.6 A more detailed investigation and design of Route Option 5 will now be carried out to bring the scheme up to Compulsory Purchase Order stage. Route Option 5 or any of the other options will not be reconsidered unless an impact is discovered in Route Option 5 which cannot be mitigated and is significant enough to outweigh all the disadvantages of any of the other options.

N17 CHARLESTOWN BYPASS - SCHEME MATRIX REDUCED

Route Option	Option 2	Option 2A	Option 3	Option 3A	Option 4	Option 5	Preference
No. of Horizontal Curves	2	4	5	6	4	10	
Radius<1000m	0	0	0	0	0	1	Option 2
Radius >1000m<=2880m	0	2	5	6	4	2	Option 2
Radius>2880m	2	2	0	0	0	7	
No. of Vertical Curves	6	5	7	7	7	13	
Minimum Gradient	0.69	0.82	0.72	0.5	0.69	0.5	
Maximum Gradient	5	5	4.8	4.81	4.8	4.7	
Passing Sight Distance							
>580m	72%	75%	63%	67%	63%	74%	Option 2A
Ecological Features	7	8	4	6	4	12	Option 4
Land Holdings	40	38	37	34	35	63	Option 3A
10% Severance	23	20	23	19	19	39	
25% Severance	8	7	5	6	8	14	
50% Severance	9	11	9	9	8	10	Option 4
Number of Houses	4	5	4	6	5	1	Option 5
No. of Farm Buildings	3	3	2	2	1	0	Option 5
Buildings in Noise Band							
0 - 50m	13	13	14	16	13	4	Option 5
50m - 100m	23	18	9	9	19	13	
100m - 200m	21	22	32	29	34	19	
200m - 300m	25	23	32	29	30	35	
Total	82	76	87	83	96	71	Option 5
Archaeology							
0 - 50m	4	3	2	1	1	1	Option 5
50m - 100m	3	2	1	0	0	0	
100m - 300m	0	0	0	0	0	0	
Length km	8.1	9.1	8	9.1	7.2	12.3	Option 4
Bridges							
Interchange Br	1	1	1	1	1	2	
Overbridge	3	3	3	3	2	3	
Underbridge	5	7	7	8	5	4	
Railway Bridge	1	1	1	1	1	0	
River Bridge	0	0	0	0	0	1	
Bridge Costs (IR£ m)	IR£4.00	IR£4.50	IR£4.50	IR£4.75	IR£3.50	IR£4.25	Option 4
Total Cost IR£ m	IR£21.01	IR£23.61	IR£21.30	IR£23.86	IR£18.62	IR£30.08	
Unit Cost per Km IR£ m	IR£2.59	IR£2.59	IR£2.66	IR£2.62	IR£2.59	IR£2.45	Option 5

Table 15

CHAPTER SIX PREFERRED ROUTES

6.0 Preferred Routes

6.1 Introduction

- 6.1.1 This chapter describes in detail the Preferred Route Options and discusses, in general aspects particular to them.
- 6.1.2 The Preferred Routes for the N5 and the N17 are shown in Maps MO 0010 310 12 and MO 0017 310 09 respectively.

Figure 6.1

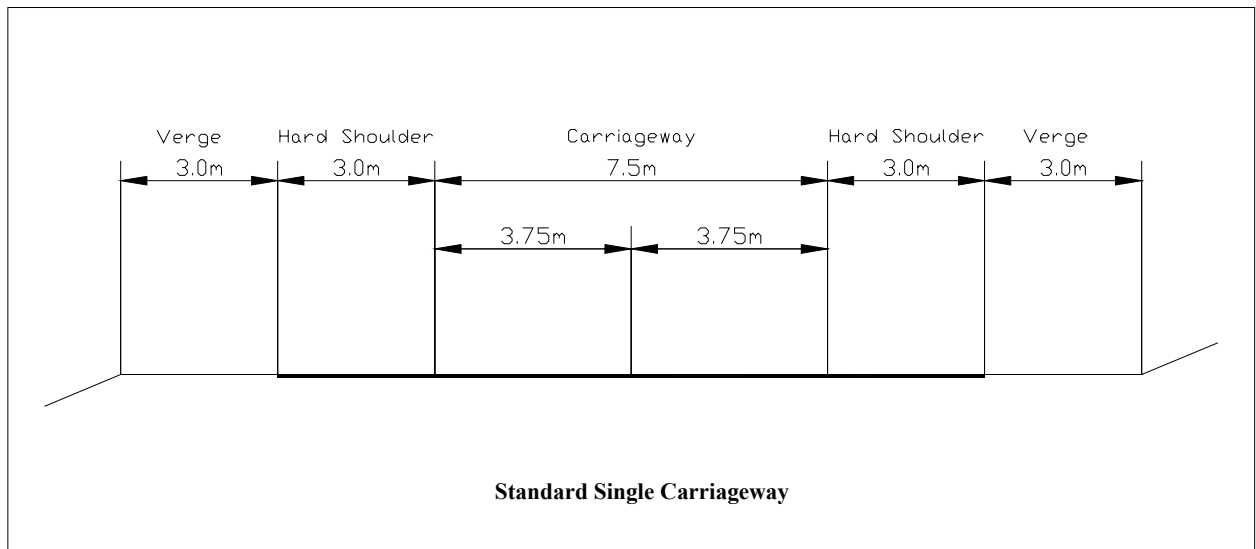
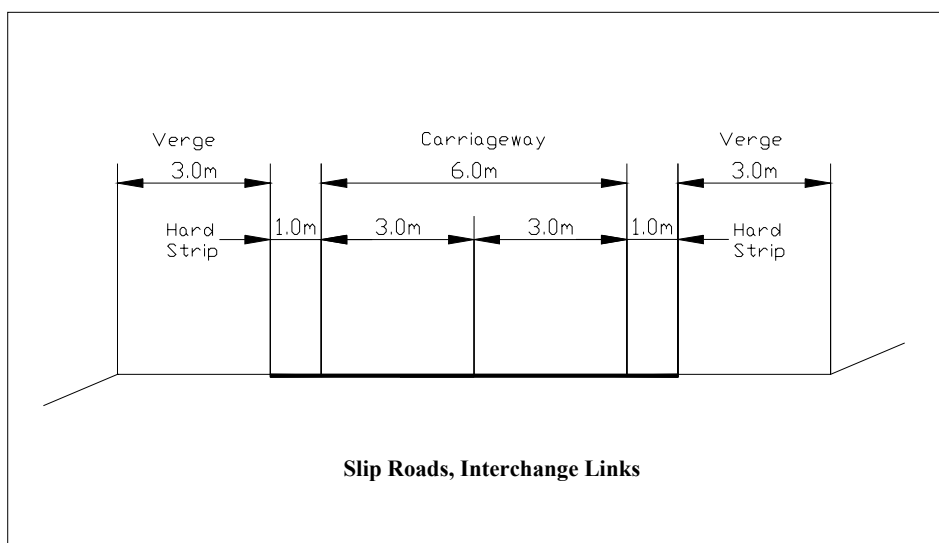


Figure 6.2



6.2 N5 Preferred Route Option H

6.2.1 This section describes in detail the Preferred Route Option H and discusses the aspects particular to it. Any known mitigation factors from the Preliminary Environmental Assessment, junction issues and EIS considerations are dealt with in this section

6.3 Description

6.3.1 The new road will start from the existing N5 at the eastern end of the Swinford Bypass in the townland of Cloonlara. The cross-section of the road will be 7.5m carriageway with 2 No. 3m hardshoulders and 3m grass verges on either side (see Figure 6.1, page 49).

6.3.2 The new road leaves the existing N5 at Cloonlara by way of a right hand curve of radius 1020m and proceeds southeast along a straight for 2 km to Ch. 2700m. It crosses Local Road L-13032-0 at Ch. 1500m where a road closure is proposed on the north side of the proposed N5. It then crosses Local road L-5334-0 at Ch. 1800m where an overbridge is proposed.

6.3.3 It then proceeds from Ch. 2700m on a left hand curve of radius 2880m, where it crosses Local Road L-5335-0 (Mullenmadoge Road) at Ch. 3700m. An overbridge is proposed at this location.

6.3.4 It then proceeds northeast along a straight to Ch. 5200m, where it crosses the townland boundaries of Cartron and Trouthill or Knockbrack.

6.3.5 It then proceeds east on a right hand curve of radius 3200m, where it crosses the townland boundaries of Sonnagh and Tomboholla upto Ch. 6700m. It crosses Local L-1304-0 (Bushfield Road) on an underbridge at Ch. 6640m.

6.3.6 It then proceeds east from Ch. 6700m by way of a left hand curve of radius 3000m and a straight to Ch. 9600m. It crosses at grade Local Road L-13043-0 at Ch. 7460m, the Bracklagh River at Ch. 7740m and the existing N17 at Ch. 8100m in the townland of Ballyglass East. A road closure is proposed on the north side of the proposed N5 for Local Road L-13043-0 and an Interchange Bridge is proposed to carry the existing N17 over the proposed N5. Access and exit ramps, to and from the proposed N5 to the existing N17 will be located north and south of the proposed N5 and east of the existing N17. The new N5 and the new N17 intersect at Ch. 9600m (N5/N17 Interchange) in the townland of Bulcaun. A cloverleaf junction with left turns only is proposed at this new intersection of the N5 and N17.

6.3.7 The new N5 then proceeds east from the N5/N17 Interchange on a right hand curve of radius 6000m and a straight to Ch. 12200m in the townland of Cloonfane. It crosses over Local Road L-5339-0 (Cappulcorragh Road), through the townlands of Cloonmeen West and Gowel and over Local Road L-5338-29 (Cloonfane Road) on an underbridge.

6.3.8 It then proceeds east-southeast by way of a right hand curve of radius 5000m and a straight through the townlands of Fauleens, Cranmore and Corragooly in Co. Mayo and onto the County Boundary. It crosses Local Roads L-53392-0 at Ch. 13200m, L-13084-0 at Ch. 13740, across the Carracastle River at Ch. 14400m, Local Road L-1308-0 (Cranmore Road) at Ch. 14760m and the County Boundary at Ch. 15900m.

6.3.9 An overbridge is proposed to carry the Cranmore Road over the proposed N5. Access to Carracastle will be by means of an Interchange and a single quadrant link, located east of the Cranmore Road.

6.3.10 It then proceeds east from the County Boundary by way of a left hand curve of radius 3000m and then rejoins the existing N5 by means of a right hand curve of radius 1020m in the townland of Currinah, in Co. Roscommon. It crosses the Gortanure Road at Ch. 16100m, where road closures are proposed both north and south of the proposed N5.

6.3.11 All on/off access ramps at interchanges will generally have a cross-section consisting of a 6m carriageway with 2 No. 1m hard strips and 2 No. 3m grass verges (see Figure 6.2, page 49).

6.3.12 All Local Road diversions will have a cross-section similar to that of the existing road being diverted.

6.3.13 See attached Drawing No. MO 0010 310 12: Preferred Route for details of this route.

6.4 N17 Preferred Route Option 5

- 6.4.1 This section describes in detail the Preferred Route Option 5 and discusses the aspects particular to it. Any known mitigation factors from the Preliminary Environmental Assessment, junction issues and EIS considerations are dealt with in this section

6.5 Description

- 6.5.1 The new road will start on the existing N17 in the vicinity of the intersection of Local Road L-1905-0 and the existing N17 in the townland of Lurga Upper at Ch. 2800m. The cross-section of the proposed road will be 7.5m carriageway with 2 No. 3m hardshoulders and 3m grass verges on either side (see Figure 6.1, page 49).
- 6.5.2 The new road leaves the existing N17 by way of a right hand curve of radius 1900m and proceeds northeast towards the townland boundary of Lurga Upper and Tawnyinah Lower at the Ch. 3700m.
- 6.5.3 An Interchange and access road to Knock International Airport will be located at Ch. 3700m. A partial cloverleaf junction with left turns only will be provided at this location. The cross-section of the Access Road will consist of a 6m carriageway with 2 No. 1m hard strips and 2 No. 3m grass verges (see Figure 6.2, page 49).
- 6.5.4 It then proceeds north by way of a left hand curve and a straight to Ch. 5500m in the vicinity of the Old Ballyhaunis Road. A climbing lane on the right hand side (left hand side as you travel south) of the proposed road will extend from approximately Ch. 3700m to Ch. 5500m. The cross-section of the proposed road over this length will consist of a 7.5m carriageway, 3.7m climbing lane, one 3m hardshoulder, one 1m hard strip and 2 No. 3 grass verges. It will cross over Local Road L-1906-15 (Old Ballyhaunis Road) by means of an underbridge at Ch. 5460m. Local Road L-1906-15 (Tawnyinah Road) will be diverted to Local Road L-1906-15 (Old Ballyhaunis Road) at this point.
- 6.5.5 The new N17 will then proceed north-northeast from Ch. 5500 by way of three horizontal curves to Ch. 8900m in the townland of Bulcaun at the location of the proposed N5/N17 Interchange. The curve radii are 3000m (RHC), 3400m (LHC) and 4000m (RHC).
- 6.5.6 It intersects Local Road L-5336-28 (Cashel Road) at Ch. 6400m, where an overbridge will carry the local road over the new N17.
- 6.5.7 The new N17 will then cross over Local Roads L-1309-0 (Lecarrow Road) and L-5338-0 (Puntabeg Rd.) by means of underbridges at chainages 7420m and 7800m, respectively.
- 6.5.8 A cloverleaf junction with left turns only, is proposed at the intersection of the new N5 and new N17 in the townland of Bulcaun. The new N17 will cross over the new N5 at this location.
- 6.5.9 It then proceeds north from the N5/N17 Interchange by way of a left hand curve of radius 4500m, where it intersects Local Road L-5339-0 (Cappulcorragh Road) and the existing N5 in the townland of Lavy More. The Cappulcorragh Road is diverted for a length of 200m towards the existing N5 at this location. The existing N5 is carried over the new N17 at Ch. 9400m by means of an overbridge.
- 6.5.10 The new N17 then proceeds north from Ch. 9440m by way of a straight, and two right hand curves of radii, 3000m to the Curry Interchange at Ch. 14100m.
- 6.5.11 It crosses over Local Road L-1305-0 (Doocastle Road) by means of an underbridge, where left hand turns only to access and egress ramps will be provided.
- 6.5.12 It then crosses Local Road L-13059-0 (Cloonaweema Road) at grade where a road closure is proposed on the east side of the proposed N17. At the west side the Cloonaweema Road will be realigned to join the Doocastle Road.
- 6.5.13 The new N17 crosses the Black River into Co. Sligo at Ch. 11200m. It then intersects Local Road L-8913-0 (Broher Road) at Ch. 11800m, where an overbridge to carry the local road over the new N17 is proposed.
- 6.5.14 It crosses over Local Road L-8912-0 (Curryfule Road) at Ch. 12500m by means of an underbridge and the Owengarve River at Ch. 13660m by means of River Bridge. It is proposed to divert Local Road L-8510-0 at Ch. 13460m north towards the Owengarve River, where an underbridge will be incorporated into the River Bridge structure to accommodate this local road.

- 6.5.15 The new N17 intersects Local Road L-4504-0 north of Curry Village, where it is proposed to locate the Curry Interchange. The new N17 will cross over the local road, by means of an overbridge. The local road will be realigned to access / link road standard. The cross-section of the proposed Access Road will consist of a 6m carriageway with 2 No. 1m hard strips and 2 No. 3m grass verges. A roundabout is proposed at the western (Curry Village) end of this access road.
- 6.5.16 All on/off access ramps at interchanges will generally have a cross-section consisting of a 6m carriageway with 2 No. 1m hard strips and 2 No. 3m grass verges (see Figure 6.2, page 49).
- 6.5.17 All Local Road diversions will have a cross-section similar to that of the existing road being diverted.
- 6.5.18 The Access Road to Ballaghy will commence at the intersection of Local Road L-8915-0 and the existing N17 in Ballaghy (Co. Sligo) and end on the Doocastle or Ballymote Road, 600 metres west of the new N17 in Co. Mayo. The overall length of this road is 1.2 km and the cross-section will consist of a 6m carriageway with 2 No. 1m hard strips and 2 No. 3m grass verges (see Figure 6.2, page 49).
- 6.5.19 See attached Drawing No. MO 0017 310 09: Preferred Route for details of this route.

6.6 Aspects of Preferred Route(s)

- 6.6.1 The number of issues that arose in the preliminary environmental investigations mainly dealt with mitigation measures relating to ecology, and visual impacts. Whereas these issues have already been raised further studies will be done in the EIS.
- 6.6.2 At the various public consultation meetings, the issue of access to and development onto the new roads was raised by a number of participants. Mayo County Council has not granted permission for new developments onto improved sections of the National Primary Network in the county, e.g. N5 Turlough Bypass and N5 Swinford Bypass. Therefore, the precedent is there to prevent direct access onto the N5 / N17 Charlestown Bypass Schemes. **But, due to the infrastructural importance of this area, it may be necessary to safeguard the National Road Network by way of a Protected Road Scheme in accordance with the Roads Act, 1993. This option will be investigated further.**
- 6.6.3 The *Report on Sites of Ecological Interest in the Charlestown By-Pass Study Area [See Appendix A : Constraints Study Report]* gave general recommendations for minimising potential impacts to the stream habitats. But again further investigation into each particular stream location shall be done and mitigation measures specific for each location shall be recommended in the EIS.
- 6.6.4 **The Constraints Study Report prepared by Mayo County Council highlights the importance of the rivers in the Broad Study Area from fisheries point of view and that sensitive design would be required. The fisheries board will be consulted before and during the construction of particularly sensitive river crossings.**
- 6.6.5 The known recorded monument (RM) sites to be directly effected by Route Option H (the Preferred Route) are RM 58 in Cloonaghboy Td (possible enclosure or fort), RM 53 Ballyglass East Td (Fulachtai Fia) and RM 33 in Cashelduff Td (possible enclosure or fort). A RM (enclosure or fort) in the townland of Gortanure in Co. Roscommon may be affected by the northern acquisition line of the proposed road. The acquisition line will impact 2.5m from the southern edge of the enclosure. If no workspace is provided at this location the acquisition line will be 2.5m away from the southern rim of the enclosure. However, archaeological material may extend underground into the land acquired for the proposed scheme.
- 6.6.6 One known recorded monument (RM) site (enclosure) to be directly effected by the N17 Charlestown Bypass (Route Option 5) is located at Ch. 11480 m in Bunnacranagh Td, Co. Sligo. The eastern acquisition line of the proposed road will be 5.25 m from the western edge of the enclosure (fort). However, archaeological material may extend underground into the land acquired for the proposed scheme.
- 6.6.7 **The known recorded monument (RM) site to be directly effected by the Access Road to Bellaghy is located at the intersection of the Access Road and the existing N17 in Ballaghy, Co. Sligo. The southern acquisition line of the proposed road will be 2.0 m from the northern edge of the enclosure (fort). However, archaeological material may extend underground into the land acquired for the proposed scheme.**

- 6.6.8 At the Public Consultations, members of the public brought possible unrecorded archaeological sites, which may be affected by the proposed scheme, to the attention of the design engineers. Two of the unrecorded archaeological sites may include children's burial grounds in the townlands of **Cloonmeem West** (N5 Charlestown Bypass) and Lurga Lower (N17 Charlestown Bypass). These unrecorded archaeological sites will not be directly affected by the proposed scheme.
- 6.6.9 The landtake adjacent to the known Recorded Monuments as listed above should be pre-development tested by a qualified archaeologist under licence from the National Monuments Service, Dúchas as soon as access to the relevant lands is possible.
- 6.6.10 An archaeologist appointed to carry out the Cultural Heritage Section of the EIS will address the effect of the proposed schemes on the recorded monument sites and unrecorded sites. This assessment will include a desktop study; a field walk of the entire route, a study of all available aerial photography and underwater surveys. It may discover additional previously unrecorded archaeological sites.
- 6.6.11 It is desirable that all known archaeological sites or possible sites on the preferred route be fully archaeologically excavated and resolved well in advance of commencement of the main construction works. It is also desirable that a fencing and topsoil removal/earthworks contract be prepared and started well in advance of the commencement of the main construction works. Suitably qualified archaeologists must monitor this programme of topsoil removal/earthworks. Any new archaeological sites uncovered during this phase of topsoil removal/earthworks should be archaeologically resolved prior to the commencement of the main construction works. The above practice will avoid delays and associated extra costs to the proposed scheme.

6.7 Representations

- 6.7.1 A number of organisations have made representations regarding the N5 /N17 Charlestown Bypass Schemes. At all times they have been kept informed of each stage of the development of these schemes. The issues raised at these meetings and correspondences have mainly been about community severance, Access to Ballaghy and the Bypass of Curry. The Regional Design Office has meet with delegations, made presentations and has met with delegations on site at various locations including Lurga and Cuilmore. The following is the list of parties communicated with on the issues raised by these Schemes: -

- North Western Regional Fisheries Board
- Irish Rail
- Knock International Airport
- Irish Aviation Authority
- Ballaghy Residents
- Curry Residents
- T. J. Grady Ltd
- Irish Farmers Association
- Elected Representatives, Swinford Electoral Area, Mayo
- Elected Representatives, Tubbercurry Electoral Area, Sligo

6.8 Public Consultation Preferred Routes

- 6.8.1 The Public Consultation for Preferred Routes was held on 3rd / 4th / 5th / 6th July 2001 in Curry, Carracastle and Charlestown. Notices were placed in the local press and announced on local radio.
- 6.8.2 A briefing session for Councillors from the Swinford Electoral Area was held on Monday 2nd July 2001 at 4.00 p.m. in the Regional Design Office, McHale Retail Park, Castlebar.
- 6.8.3 Design staff from Mayo County Council and environmental specialists from Parkman Carl Bro Punch were in attendance at all the public consultation meetings. Staff from Sligo County Council was in attendance at the public consultation in Curry and a member of staff from Roscommon County Council attended the consultation in Charlestown.
- 6.8.4 A total of 359 people attended the Preferred Route Public Consultations over the four days in Curry, Carracastle and Charlestown during the first week of July 2001. Following the public consultations, members of the public have called into the Regional Design Office for further consultations and to make submissions.
- 6.8.5 Matters arising from the public consultations are as follows: -
- Identification of additional forts and children's burial grounds.
 - Identification of wells and sources of group water schemes adjacent to or in close proximity to the preferred routes.
 - Identification of possible new layout of the ramps at the Ballyglass Interchange.
 - Additional traffic on the Doocastle Road.
 - Realignment of existing Doocastle Road into Charlestown.
 - Suitability of junction radii and curve radii on the Doocastle Interchange Ramps for abnormally long loads.
 - Direct access from Bellaghy to new N17.
 - Noise levels in Cuilmore, Trouthill and at Ballyglass Interchange.
 - Degree of land severance – severance of residential holdings.
 - Access to preferred routes for commercial developments.
 - Access to farmlands at Puntabeg.
 - Re-routing of local road at Puntabeg.
 - Severance of community in Clonnaweema.
 - Roundabout in Curry Village on the western end of Link Road to proposed Interchange.
 - Construction Phasing of MCC Schemes and SCC Scheme
 - Knock Airport - implications for airport development and safety.
 - Moving offline for sections of existing N17.
 - Options considered at Lurga.
 - Affect on commercial activities, especially petrol filling stations
- 6.8.6 Following the Preferred Route Public Consultation, The Regional Design Office of Mayo County Council reviewed the information gathered during the preferred route public consultation.
- 6.8.7 Due to the Preferred Routes Public Consultation, and subsequent submissions from the public, it became apparent that alterations were necessary to some sections of the preferred routes and associated access roads and interchange ramps. These alterations will be considered at Detailed Design Stage.

CHAPTER SEVEN

COSTS – OPTIONS AND PREFERRED ROUTE

7.0 Costs

7.1 Costs Breakdown

- 7.1.1 The route options were compared using the NRA unit cost figures. Each route option was broken down with regard to road section, junction type and bridge structures.
- 7.1.2 The mainline section will be a standard two-lane carriageway construction. The estimated cost of standard two-lane road (S2) is taken from the NRA unit costs. The unit cost used is IR£2.1 million/km.
- 7.1.3 Any roundabout uses the unit cost of IR£400,000. Any Interchange Bridge uses the unit cost of IR£750,000.00
- 7.1.4 Any underbridge uses the unit cost of IR£250,000.00
- 7.1.5 Any overbridge (for local roads) uses the unit cost of IR£500,000.00
- 7.1.6 Any Railway Bridge uses the unit cost of IR£500,000.00
- 7.1.7 Any River Bridge uses the unit cost of IR£250,000.00
- 7.1.8 The calculation of the Total Cost follows the NRA calculation method.

7.2 N5 Route Options Cost Comparison

- 7.2.1 In Section 5.18, **Table 12** (Page 37) shows estimated cost for each route option.
- 7.2.2 Route Option F is the least expensive option of all the route options. Comparing the cost of Route Option F and Route Option H, the Preferred Route, the difference in cost is due to the shorter length of Route Option F. However the unit cost per km is the same for both schemes (i.e. IR£2.39million / km).

7.3 N17 Route Options Cost Comparison

- 7.3.1 In Section 5.18, **Table 13** (Page 41) shows estimated cost for each route option.
- 7.3.2 Route Option 4 is the least expensive option of all the routes. Comparing the cost of Route Option 4 and Route 5, the Preferred Route, the difference in the cost is due to the shorter length of Route Option 4 and the lower Bridge Costs associated with it. However the Preferred Route is the least expensive on a unit cost per km basis (i.e. IR£2.45million / km).

N5 / N17 CHARLESTOWN BYPASS SCHEMES

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