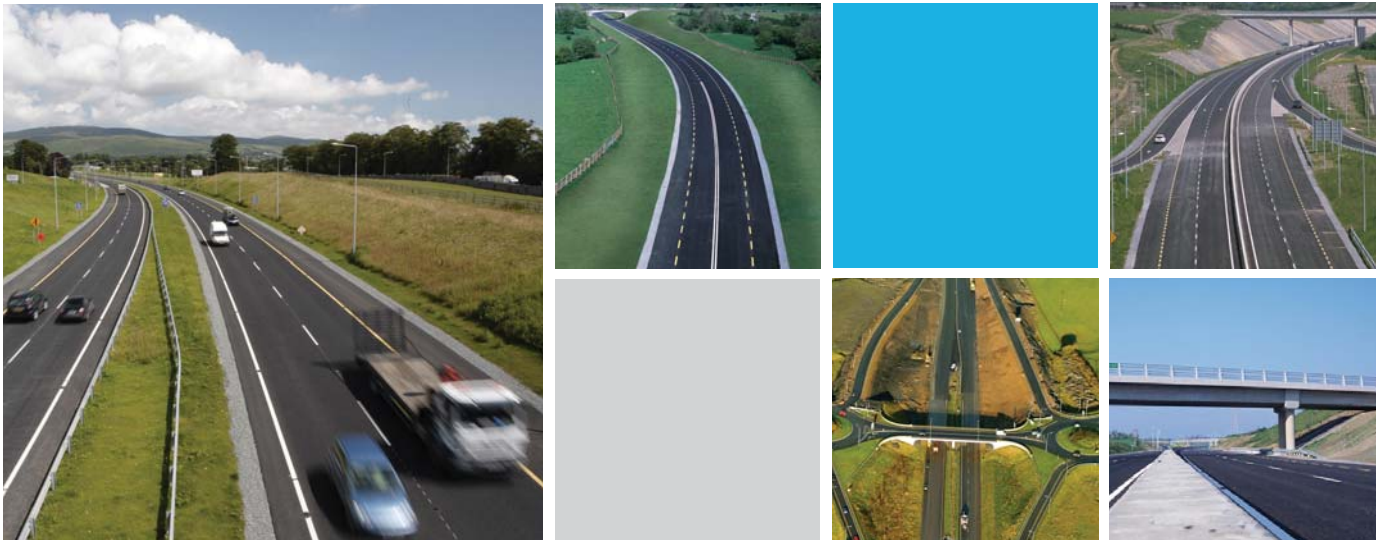


# NATIONAL ROADS AUTHORITY

## Project Appraisal Guidelines

Appendix 22 - Sample post project review



March 2008

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## **1. Introduction**

### **1.1 The Scheme**

This report presents a post project review of the N21 Road Improvement Scheme between Tralee and Ballycarty, Co. Kerry. The Project comprised the construction of approximately 2.9km of new N21 Single Carriageway Roadway; a roundabout in the townlands of Ratass and Manor East; three bridges in the townlands of (i) Ratass and Ballingowan, (ii) Manor East and (iii) Ballycarty; the culverting of existing streams crossing the proposed roadway; and minor ancillary and accommodation works associated with the scheme.

### **1.2 Department of Finance Guidelines for Post-Project Reviews**

The Department of Finance (DOF) Guidelines<sup>1</sup> indicate that it is the responsibility of the project Sponsoring Agency to carry out post project reviews. These should be carried out for all projects costing in excess of €30 million. Post project reviews should also be carried out on a representative sample of all projects generally. The sample should cover at least 5 percent of completed projects.

The Department indicates that there should be two separate focuses of post-project review namely:

- project outturn; and
- appraisal and management procedures.

With regard to the review of project outturn, the Department indicated that the aim here is to determine whether:

- The basis on which a project was undertaken proved correct;
- The expected benefits and outcomes materialised;
- The planned outcomes were the appropriate responses to actual public needs;
- The appraisal and management procedures adopted were satisfactory;
- Conclusions can be drawn applicable to other projects, to the ongoing use of the asset, or to associated policies.

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<sup>1</sup> Guidelines for the Appraisal and Management of Capital Expenditure Proposals in the Public Sector. Department of Finance, February 2005, as amended by the Value for Money Circular of January 2006.

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## 1.3 The Methodology Used

The overall approach to the post project review used in this report was to identify the relevant stages in the scheme and to establish the key questions that would address the requirements of the DOF guidelines. The relevant stages are:

- Scheme conception
- Scheme planning
- Scheme implementation
- Scheme operational performance

The following aspects were evaluated in the review:

### Scheme Conception

- The history of the scheme
- The establishment of need
- The objectives set for the scheme

### Scheme Planning

- Quality of traffic analysis and forecasting
  - Traffic modelling approach appropriate
  - Traffic growth rates benchmarked against recent trends
  - Traffic growth rates compatible with NRA guidelines or National Roads Needs Study (NRNS) projections
- Quality of route selection process and preliminary design processes
  - Sufficient options studied
  - Adequacy of route selection criteria
  - Use of CBA to inform route selection
  - Validity of road capacity decisions
- Quality of project appraisal processes
  - Application of CBA at relevant decision points
  - Relevant modelling approach used (COBA or other)
  - Appropriate parameter values as per Guidelines or NRNS
  - Sensitivity testing undertaken
- Compliance with procurement, EIS and other statutory requirements
  - EU and National rules adhered to
- Adequacy of consultation processes
  - Number of consultation exercises

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### **Scheme Implementation**

- Scheme management structures in line with DOF guidelines
  - Steering group, Project co-ordinator, Design team leader
- Quality of monitoring reports
  - Frequency
  - Coverage
- Scheme budget compliance
  - Compare the following budget costs: at draft CPO/EIS stage; at Preliminary Design CBA stage (if different); at construction contract stage; and at final account.
- Scheme schedule compliance
  - Contract time of completion versus actual time; road opening date versus actual completion date
- Quality of scheme scope, value and risk management
  - Active management of scope changes
  - Risk management actively pursued
  - Opportunities for value management pursued

### **Scheme Operational Performance**

- Extent of achievement of Scheme objectives
- Predicted versus actual traffic volumes
- Implications for validity of ex-ante appraisal
- Traffic operation and road safety outcomes

## **1.4 Layout of the Report**

This report addresses each of the four review elements in turn, beginning with a discussion of the scheme conception. A summary of the findings is then presented.

## **2. Scheme Conception**

### **2.1 Background**

The scheme forms an upgrading of part of the road leading from Tralee to Limerick. The Operational Programme for Transport (1994-1999), identified the N21 (from Tralee to Ballycarty to Limerick) as a strategic route in the south-west. The Kerry County Development Plan, 1996 stated that Kerry County Council had drafted a Road Development Plan for the period 1993 to 2000. In order to facilitate the key role that the road network plays in the physical and economic development of the county, it was the policy of the County Council to develop and maintain the road network of the county to the best modern standards consistent with present and expected traffic flows and the resources available for that purpose. To this end one of the Council's objectives was the Improvement/Realignment of the N21 from Ratass (on the outskirts of Tralee) to Ballycarty. The road investment programme for County Kerry is designed to increase the capacity and safety of National Primary Routes such as the N21.

Kerry County Council published a Compulsory Purchase Order in 1995 for a Dual Carriageway between Ratass and Ballycarty which would service both the N21 and N22 National Primary accesses to Tralee. During the Public Local Enquiry, it emerged that part of the lands proposed to be acquired under that Compulsory Purchase Order conformed to a residual alluvial forest, a priority habitat under Directive 92/43 EEC. An independent assessment was commissioned by the EU and following consideration of this report into the potential environmental effects of the road improvement scheme, particularly on Ballyseedy Wood, Kerry County Council and the National Roads Authority decided to review the project as originally designed. Kerry County Council re-evaluated the scheme and then proposed to construct two independent accesses to Tralee for both the N21 and N22 National Primary Routes in conjunction with a ring road for Tralee. These reviews and reassessments have delayed this project for a number of years.

### **2.2 Need and Objectives**

The need for the scheme can be outlined in two general categories: the deficiencies of the existing road, and the requirement to upgrade the road to a standard outlined in the county, regional and national policy objectives. These were outlined in detail in the Design Report compiled for the scheme.

Some of the main deficiencies in the existing road related to safety problems. These were caused by a substantial number of developments along the existing road and the associated direct access; hazardous, sub-standard sight distances; and an absence of hard shoulders along most of the route to reduce the risk to

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pedestrians and cyclists. Inadequate parking facilities also affected tourists. There was also a need to increase the capacity of the road: its width was substandard.

In terms of national policy, the National Road Needs Study 2000-2019 recommends that a minimum objective of 80 kph inter-urban travel speed be maintained on all 2-lane single carriageway roads in the National Network. Inter-urban speeds on divided roads would be higher. The Irish National Development Plan 2000-2006 foresaw a major investment programme in Economic & Social Infrastructure. In particular, road investment was required to reduce capacity deficiencies and journey times; improve inter-regional and intra-regional road transport infrastructure; offset the negative effects of peripherality; contribute to sustainable transport policies; and facilitate economic growth.

At a local level, the Kerry County Development Plan 1996 outlined the importance of road improvements, and had a stated policy to upgrade the National Primary Road network to the best modern standards and to maintain the carrying capacity and free-flow of traffic on these routes.

The objectives of the scheme were as follows:

- Implementation of the NRA strategy as outlined in the Road Needs Study to achieve interurban average travel speed of 80kmph. To meet the objectives of the National Development Plan 2000-2006 in terms of infrastructure development.
- Operation of the proposed road to be simple and uncomplicated thereby fulfilling its role as an inter-urban link.
- Elimination of the need for some agricultural, local commercial and local private traffic to have to use the National Primary Route thereby enhancing road safety.
- Maintenance of the existing road network between the townlands of Ratass and Manor West and Curraghleha East as an intact system thereby preserving local community links.
- Separation of the interurban and local traffic.

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### **3. Scheme Planning**

#### **3.1 Traffic Analysis and Forecasting**

Future year traffic forecasts were derived from a 2021 SATURN model developed as part of the Tralee Road Use and Transportation study (LUTS) and then growth of 0.7 per cent per annum was applied thereafter. Growth factors were derived from the National Roads Needs Study growth predictions for 2020 and 2030.

#### **3.2 Route Selection and Preliminary Design**

Prior to the development of route options, an analysis of the scheme constraints was undertaken and the output from this analysis was compiled in the Route Constraints Report: *Tralee Access and Ring Road Development – Route Constraints Report Road Design Section, Kerry County Council, 2000*. Identification and consideration of route constraints formed the basis for examining three route options - 1, 2 & 3 – that were studied for this scheme. The route options were appraised and ranked according to; Engineering, Economic (based on estimated scheme cost and on severance), and Environmental criteria. This analysis was provided in a report: *Ratass to Ballycarty - Route Appraisal and Selection Report Road Design Section, Kerry County Council, 2000*. Option 1 was chosen because it scored highest on the engineering and economic criteria. It was second to Option 2 on environmental criteria. Consultants then undertook an Environmental Assessment of this route.

From the evidence available, it appears that a project appraisal was not carried out at route choice stage.

#### **3.3 Project Appraisal**

In 2002, a cost benefit of the project was conducted using the COBA program. Construction was assumed to begin in 2004, with costs distributed over a three year period beginning with land acquisition in 2003. Land and construction costs were estimated at IR£8.697m. The new link was assumed to open in 2006, and to have a design life of 30 years. The base price year chosen was 1999.

The parameter values used in the cost-benefit were provided by the NRA relating to items such as Value of Time (working and non-working) and growth factors for the Value of Time were those contained in the NRA National Roads Needs Study. This is appropriate as in 2002, the Department of Transport had not yet promulgated standard parameter values. Accident costs were left as default values.

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The key results of the project appraisal were as follows (1999 values discounted to 1999):

PVC	IR£6.7m
PVB	IR£18.8m
Net present value:	IR£12.1m
Benefit-cost ratio:	2.8
IRR:	13.5 per cent

### **3.4 Compliance with Procurement, EIS and other Statutory Requirements**

#### **3.4.1 Procurement Process**

The Cost Estimate for this scheme exceeded €6.3 million, and accordingly, the tender documents for this scheme were prepared for electronic tendering in accordance with National Roads Authority policy. Prior Information and Contract Notices were advertised in the Official Journal of the European Communities (OJEC). The contract was advertised for tender on 13th June 2003 and the closing date for receipt of tenders the 8th August 2003. A total of sixteen tenders were received by Kerry County Council on or before the closing date. The tenders were subsequently opened and recorded in the presence of relevant officials and a nominee of Kerry County Council.

The suitability of tenderers, and in particular the lowest tenderer, was assessed on technical and financial grounds using the NRA Suitability Questionnaire. The lowest tender received for this Contract was that of Denis Moriarty The Kerries Ltd. totalling €7,300,820.49 including VAT at 13.5%. Furthermore, having regard to the rate clarifications received at the post-tender meeting, together with the recommendations received from Malone O'Regan & McGillicuddy Consulting Engineers, Kerry County Council were satisfied with the tender sum as submitted by Denis Moriarty The Kerries Ltd. and the contract was awarded.

The tender procedure along with a full and documented explanation was reported in the Tender Report of August 2003, prepared by Kerry County Council-Kerry National Road Design Office.

#### **3.4.2 Environmental Impact Statement**

The overall scheme area and in particular the chosen route were examined for requirements in the terms of statutory proceedings and EIA. The proposed scheme was subject to the following requirements: Part X Local Government Planning & Development Regulations 1994- 1999 (as amended); Section 73 Roads Act 1993 and the CPO Housing Act 1966.

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There is no mandatory or statutory requirement for an EIS under the Roads Act 1993; however as part of the route constraints and overall scheme design, consultants, RPS Consultants Ltd, were commissioned to undertake a detailed environmental assessment of the chosen route. The EIA was contained in the report *N21 Road Improvement Scheme: Ratass to Ballycarty-Environmental Assessment of the Preferred Route: Final Report December 2000*.

### **3.5 Adequacy of Consultation Processes**

This scheme predates the NRA Project Management Guidelines, therefore, the public consultation process was carried out in accordance with the Part X Planning Process. Notice of the proposed scheme was placed in newspapers in late 1999, and plans and particulars of the proposed scheme were available for inspection for a period of one month at both the Road Design Office in Castleisland, and County Buildings in Tralee. In January 2000, a report was compiled by the Local Authority in Accordance with Part X of the Local Government (Planning and Development) Regulations 1994 as amended. It summarised issues with respect to the proper Planning and Development of the area in which the proposed development would be situated, raised by persons or bodies who made submissions or observations and County Council responses thereto.

## **4. Scheme Implementation**

### **4.1 Scheme Management Structures**

The scheme was project managed by Kerry National Road Design Office, with individual site supervision staff all approved by the National Roads Authority.

### **4.2 Quality of Monitoring Reports**

Scheme monitoring reports are a vital input to scheme management. Three site progress reports were supplied and examined. The three reports examined are comprehensive. They monitor both contract and project details under such elements as progress, programme, finance, testing & lab reports, outstanding issues, health & safety, and environmental issues.

### **4.3 Quality of Scope, Value and Risk Management**

A formalised risk assessment and management process was not in place for this project. However, the process of managing project risk throughout the development and implementation of the project is inherent in the structures and approach adopted throughout the project cycle.

- Establishment of a Steering Committee for the project. That Committee meets on a regular basis, reviews key issues on the scheme and decides on key aspects of the project following consideration and analysis of the issues concerned. Integral to that is a qualitative approach to risk management;
- Review and approval processes adopted by NRA. The Project Management Guidelines in operation since 2000 have built up 'hold points' where approval from the NRA is required before the project can proceed. Part of this approval process involves the NRA reviewing and assessing the project in its totality with the risks and issues associated with the project becoming a part of that consideration.
- A rigorous process is in place for the development of the contract requirements for the construction phase. This is a key point in the process where risk is determined to lie with either the Employer or the Contractor. The NRA centrally reviews and updates its forms of contract to take on board lessons learned on other projects and the benefit of that experience is brought to bear on the relevant project. Equally, the final tender documents are required to be approved by the NRA prior to tender issue.
- During the construction stage the process of risk management during the contract distils in many ways to optimally managing the construction contract. This is achieved through having dedicated site teams reporting to

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a steering committee. Reporting arrangements include monthly reports which track project cost, variation cost, claim situations, progress and similar. The NRA itself is also an integrated part of this process with a Senior Project Manager assigned responsibility to monitor and assist the optimal delivery of the scheme.

- In addition to other support services, the NRA also has in place a Cost Management Unit which since 2000 also assists local authorities in cost estimation and claim cost management.
- The NRA utilises its own procurement and claims management experience to assist in dealing with contractual issues and disputes. Part of that assistance can and does include the services of the NRA's legal advisors.

#### **4.4 Scheme Schedule**

The main contract start date on site was October 2003. The Scheme was anticipated to be complete in April 2005, and was completed on schedule in that month. The time for completion was 18 months.

#### **4.5 Scheme Budget Costs**

In March 2006, the Draft Initial Financial Review of Projects completed indicated that the Total Scheme Estimate at Construction Contract Award (in mid-2003) was €13.649m. The Projected Final Outturn Cost in 2006 was €13.195 (or 3.3 per cent less).

In August 2007, €15,185,643.00 had been spent on the project. This included expenditure of €624,250.00 on the recent conciliation agreement with the Roadworks Contractor in full and final settlement of the Main Contract Final Account.

The forecast scheme outturn cost was between €15,382,143.00 and €15,482,143.00. The cause for this variation in forecast scheme cost was an estimate of between €135,000.00 and €235,000.00 for legal fees associated with a property arbitration case, which have been referred to legal cost accountants for determination.

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## 5. Scheme Operational Performance

### 5.1 Achievement of Objectives

Discussions with the NRA have confirmed that the road has achieved its objectives. The road is now inherently safer than before due to its improved design and features. Furthermore, the project has resulted in improved interurban speeds. The new road has a speed limit of 100kph along most of its length, which reduces to 60kph at the western end on the approach to Tralee.

### 5.2 Predicted versus Actual Traffic Volumes

The table below shows the AADT values predicted in the COBA report for 2006, and compares these with the actual AADT volumes resulting from the average of a three-day traffic count conducted in May 2006.

**Table 1: Comparison of Predicted and Actual Traffic Volumes, 2006**

Location	Predicted AADT	Actual AADT	Divergence (%)
Ballycarty to Tralee	17,893	16,148	-10%

Sources: Kerry NRDO & Scheme Traffic Figures Post Opening 2006

The actual traffic volumes are falling slightly short of those projected in the project appraisal.

### 5.3 Implications for Ex-ante Appraisal

Obviously the Benefit to Cost Ratio will fall based on the shortfall of traffic below that projected in the Project Appraisal. However, the post project completion counts were conducted 13 months after completion. It is possible that the rate of increase in traffic volumes will accelerate in the near term. Furthermore, the benefit to cost ratio of the project was 2.8:1 and total benefits were projected to be IR£ 18.8m (1999 prices discounted to 1999); it is still likely, even with a shortfall of traffic in the future beyond that predicted in the COBA appraisal, that the economic rate of return would still be satisfactory.

### 5.4 Traffic Operation and Road Safety Outcomes

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The new road is of a safer design than previously and higher interurban speeds have also been achieved. The NRA reports that the recommendations of the post project road safety audit have all been implemented.

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## 6. Conclusions

The planning and implementation of the scheme was undertaken in a satisfactory manner. Traffic volumes are less than those predicted, but not on a scale that would result in a poor economic return.

The scheme was delivered on time. The scheme comprised a remeasurement contract.

An Agreement was reached at Conciliation with the Roadworks Contractor in full and final settlement of the Main Contract Final Account. The Contract Outturn Cost was €8,859,528.40 including VAT @ 13.5%, an increase of 21.35% on the tender sum (€ 7,300,820.49 including VAT @ 13.5%).