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PROJECT PERFORMANCE ASSESSMENT REPORT

BELIZE

ROADS AND MUNICIPAL DRAINAGE PROJECT

(LOAN 4575-BEL)

June 23, 2008

Sector Evaluations Division
Independent Evaluation Group (World Bank)

Currency Equivalents

Currency Unit = Belize Dollar, BZ$
2000 (January) US$1 = BZ$2.00
2007 (September) US$1 = BZ$2.00

Abbreviations and Acronyms

CAS	Country Assistance Strategy
DfID	Department for International Development
EMP	Environmental Management Plan
ERR	Economic Rate of Return
GNP	Gross National Product
GOB	Government of Belize
IADB	Inter-American Development Bank
IBRD	International Bank for Reconstruction and Development
ICB	International Competitive Bidding
ICR	Implementation Completion Report
IDA	International Development Association
IRI	International Roughness Index
MIS	Management Information System
MMS	Maintenance Management System
MOF	Ministry of Finance
MOWTC	Ministry of Works, Transport and Communications
M&E	Monitoring and Evaluation
NCB	National Competitive Bidding
NGO	Non-governmental Organization
NPAPSP	National Protected Areas Policy and Systems Plan
NPV	Net Present Value
O&M	Operation and Maintenance
PAD	Project Appraisal Document
PEU	Project Execution Unit
QAG	Quality Assurance Group
RIMS	Roughton International Maintenance Management System
SAR	Staff Appraisal Report
TA	Technical Assistance
USAID	United States Agency for International Development
UNDP	United Nations Development Program

Fiscal Year

Government April 1 – March 31

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Borrower Performance: The extent to which the borrower (including the government and implementing agency or agencies) ensured quality of preparation and implementation, and complied with covenants and agreements, toward the achievement of development outcomes. The rating has two dimensions: government performance and implementing agency(ies) performance. *Possible ratings for Borrower Performance:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

Contents

This report was prepared by George T. K. Pitman, Consultant, who visited Belize in March 2008. Soon-Won Pak provided administrative support.

Principal Ratings

	*ICR**	*ICR Review**	*PPAR*
Outcome	**Satisfactory**	**Satisfactory**	**Moderately Unsatisfactory**
Institutional Development Impact**	Modest	Modest	———
Risk to Development Outcome	———	———	High
Sustainability***	Likely	Unlikely	———
Bank Performance	Satisfactory	Satisfactory	Moderately Unsatisfactory
Borrower Performance	Satisfactory	Satisfactory	Moderately Unsatisfactory

* The Implementation Completion Report (ICR) is a self-evaluation by the responsible Bank department. The ICR Review is an intermediate IEGWB product that seeks to independently verify the findings of the ICR.
**As of July 1, 2006, Institutional Development Impact is assessed as part of the Outcome rating.
***As of July 1, 2006, Sustainability has been replaced by Risk to Development Outcome. As the scales are different, the ratings are not directly comparable.

Key Staff Responsible

Project	*Task Manager/Leader*	*Division Chief/ Sector Director*	*Country Director*
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Preface

This is the Project Performance Assessment Report (PPAR) on the Belize Roads and Municipal Drainage Project (Loan 4575-BE). The Project, estimated at appraisal to cost US$18.39 million, was approved in September 2000 for an IBRD Loan of US$13.00 million. The project closed in September 2005 after a 15-month extension when US$0.57 million was cancelled. Total project costs at completion were US$19.36 million of which IBRD provided US$12.44 million and the government US$6.92 million.

This report is based on the review of the respective Memorandum and Recommendations of the President and Project Appraisal Document (PAD), credit and legal documents, project files at the World Bank's Headquarters, the Implementation Completion Report (ICR) and discussions with Bank staff in Washington.

An Independent Evaluation Group (IEG) mission visited Belize in March 2008 to discuss the effectiveness of the Bank's assistance with the Government, development partners, implementing agencies, Town Councils and beneficiaries. The cooperation and assistance of central government officials, management and staff of implementing agencies and other parties concerned are gratefully acknowledged.

The project was selected for assessment because there was a concern that follow-up on the institutional issues, as opposed to engineering issues, would be poor. It was also identified as a project with potential safeguard concerns.

Following standard IEG procedures, copies of the draft PPAR were sent to government officials for the review and comments. These comments are included as Annex D.

Summary

The *Belize Roads and Municipal Drainage Project* was the fourth IBRD Loan to Belize for infrastructure development focused on roads and highways. In addition the Belize City Infrastructure Project had financed street and drainage improvements as well as the city's capacity to maintain its infrastructure and ability to manage its solid waste and delivery of urban services. The Roads and Municipal Drainage Project – the project assessed in this report – was designed in a response to the government's request to continue assistance for improvements of road and municipal drainage infrastructure and to support the Ministry of Work's strategy to involve the private sector in road maintenance.

The objectives of the project were to (a) improve year-round traffic flows on the national road network by upgrading the road bypass connecting the Northern and Western Highways; (b) improve natural drainage and reduce floods and/or the impact of floods in the selected municipalities through priority storm-water drainage improvements; (c) assess the potential of private sector participation in road maintenance activities through the implementation of a pilot project; and (d) improve the management of the transport sector, including transport policy coordination among the different government ministries and agencies involved in transport, through the preparation of national transport sector and road safety strategies.

The outcome of the project is rated **moderately unsatisfactory**. Project objectives were and remain substantially relevant in general. However, too high a prominence was attached to the introduction of routine highway maintenance by the private sector when more pressing and important institutional reform and good governance issues were not addressed. Overall design was substantially relevant although a piecemeal approach to municipal drainage design lowered its effectiveness.

Year-round traffic flow increased following satisfactory completion of the bypass connecting the Northern and Western Highways. There has been considerable high-value property development induced by the improvements financed under the Project, including the upgraded road and the Burrell Boom Bridge which provides an additional emergency evacuation route in the event of a hurricane and coastal flooding. Reportedly the accident rate in Burrell Boom town declined following construction of the by-pass. In contrast the municipal drainage works are only modestly effective in reducing flooding because in several towns they formed part of a larger drainage network that remains incomplete. In addition, unplanned urban and housing development impinges on the drains and greatly changes the nature of the watershed being drained, effectively nullifying the improvements under the project.

The intent to pilot routine maintenance of Belize's highway network to the private sector was forestalled by reallocation of the funding for this component to the relief efforts following Hurricane Keith in 2000. Incorporation of such a component in the IADB's Southern Highway Project was also unsuccessful because the transport sector ministry resisted it. This is despite the fact that all donor-funded projects are implemented using private sector contacts.

The objective to rationalize transport management in Belize and improve institutional capability with the objective of increasing the efficiency of resource mobilization in the sector was not achieved. Consultants appointed by the Project produced a national transport strategy, a road safety strategy and plan, and an institutional development strategy for the road sector. It was expected that the institutional reform program would be initiated in late 2004 and be completed by 2009. After the project closed these recommendations were shelved. Nothing has been implemented since then.

The overall efficiency of the project is rated as modest. The economic benefits projected for the Burrell Boom Bridge were fully achieved, the risks to the benefit stream are low and the economic rate of return of this component is estimated to be about 27 percent. However, while there were modest flood reduction benefits resulting from municipal drainage improvements, the economic benefits are more difficult to estimate. The property valuation indicator is fraught with difficulty as an objective measure, particularly given the poor governance in Belize, and there are no data on the number of properties or people adversely affected by flooding. The efficiency of the institutional components is rated modest. Faulty contract preparation for drainage works increased project costs and reduced project scope. Long delays in contract execution were caused by the government's prevarication and macro-economic mismanagement. Institutional studies aimed at the reform of the transport sector were effectively wasted.

Bank and Borrower performance are rated **moderately unsatisfactory**. Risks to development outcomes are **high**. The country's 2001 macroeconomic crisis led to a severe reduction in public sector expenditure for operation of road and drainage infrastructure. Political risks therefore remain high. The absence of coordinated town planning and good regulation jeopardize the planning, design and implementation of comprehensive and integrated town plans for transport and drainage systems. While there is official recognition that this is a major development issue, the Belize government has been reluctant to change the *status quo*. There is thus a high risk that partial drainage solutions will continue to be implemented.

Experience with this project confirms five IEG lessons:

- Inadequate attention to local institutions and their governance arrangements may jeopardize achievement of urban development objectives. While it is tempting to think of infrastructure projects as being focused on engineering, the reality in Belize is that little of the infrastructure will be able to function because sound institutions and good governance are weak or absent.

- Technical Assistance in the form of strategies and plans for infrastructure investment may be ineffectual in the absence of government ownership and a defined medium-term fiscal framework within which to situate them. As this framework was missing in Belize the technical assistance was effectively wasted.

- Simple engineering solutions can deliver substantial development impacts even when there are adverse institutional and political circumstances. In this project the Burrell Boom Bridge greatly enhanced the capacity of Belize's road infrastructure, particularly for disaster management following hurricanes.

- Drainage and roads are component parts of town planning and cannot be planned independently or randomly. Although strong and well-coordinated planning institutions are pre-requisites for planning infrastructure investment for urban areas these were not available in Belize.

- Drainage systems cannot be designed piecemeal. They have to be designed within the context of a watershed, taking into account the future plans for that watershed in terms of land use, and be structured in such a way that they incrementally improve the drainage. The lack of comprehensive planning and poor sequencing of municipal drainage works in Belize demonstrated that an *ad hoc* approach will not work.

Vinod Thomas
Director-General
Evaluation

1. Background

1. Belize, located south of Mexico's Yucatan Peninsula on the Caribbean coast of Central America, attained independence from the United Kingdom in 1981. It occupies an area of about 23,000 square km including 450 cayes, or small islands. The population is growing rapidly, having risen from 229,000 in 1997 to almost 300,000 in 2006, the product of a high birth rate and large immigration from the LAC region. In mid-2004 the rural population was estimated at 51 percent of the total, one of the highest in the Americas. Over half the population lives in the north and along the coastal plain. The interior is sparsely populated. In 2002 about one-third of the population was classified as poor and 11 percent extremely poor.[1] Only half the population had access to an improved water supply. By Caribbean standards adult literacy was relatively low at 77 percent of the population in 2003.[2] Belize per capita GNP was estimated at US$4,165 in 2006.

2. Proximity and exports to US markets and preferential access to the EU as a member of the British Commonwealth, aided by a stable currency, has greatly facilitated economic growth.[3] The economy has traditionally been oriented towards agriculture which, together with forestry and fishing, accounts for about 13 percent GDP. Sugar is the principal crop and single largest export earner but has declined significantly to account for only 17 percent of exports in 2005 whilst in 1990 it accounted for 41 percent. Citrus occupies the Stann Creek valley in Central Belize and accounts for about one-fifth of total export value. Both these sectors have historically benefited from free trade with the EU and the USA but have begun to contract because duty free and quota free access to these markets is likely to cease by about 2010. The emphasis is now on non-traditional crops such as papaya, soya beans, cashews and marine products to fill the gap. Manufacturing accounts for 8 percent of GDP and employs less than 10 percent of the labor force. Much of manufacturing is centered on agricultural processing. Since the 1990s most state-owned enterprises have been privatized including water, electricity, telecommunications and ports. Privatization has not always run smoothly – telecommunications were renationalized in 2005. The service sector has been growing rapidly and now accounts for about two-thirds of GDP. Within the service sector tourism is the largest sub-sector and 656,000 tourists visited Belize in 2006.

3. Given the dominance of agri-business in the national economy, improving the road network was seen as a priority activity from the 1980s. Substantial upgrading of major roads has been continuous and has been funded mostly by bilateral and multi-lateral donors including the IADB, DFID, USAID, CDB and more recently by the EU, and the Taiwan government. In 1999 the road network was 2,900 km of which only 17 percent was paved. All main towns and villages are linked by road to the capital Belmopan and to Belize City. In 2003 the vehicle ownership rate was 16.2 vehicles per 1000 population and there were about 40,000 cars, over 3,000 buses and 4,200 goods vehicles and taxis.

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1. Living Standards Measurement Survey 2002
2. In comparison Jamaica is 79 percent, Barbados 95 percent whilst Mexico is 64 percent.
3. The exchange rate has been pegged to the US dollar at a fixed rate of BZ$2.00 per US$ since 1976.

4. Bank involvement in Belize's transport sector was initiated in 1983 with the approval of the first road maintenance and rehabilitation project.[4] This supported a four-year program to strengthen the Ministry of Works and Transport's maintenance capacity through technical assistance and maintenance equipment. Many of the institutional reform initiatives promoted by this project were not supported by higher levels of government and achievements were modest. A repeater project was approved in mid-1988 and this continued the earlier support with a greater focus on road maintenance management, including two pilot projects to introduce routine maintenance by contract.

5. While one of the pilot projects for the maintenance of the northern highway was successful, that for the southern highway was completed by MOWT's direct works unit under force account. Subsequently the Bank approved a US$20 million loan for the Belize City Infrastructure Project. This financed street and drainage improvements, improved maintenance capability, management of solid waste and improvement of urban service delivery. As with the road maintenance projects, institutional development was partial. A major limitation was the shortage of qualified and skilled personnel. In 1996 the Bank provided technical assistance to the government to design improved roads and municipal drainage infrastructure and to support greater private sector participation in road maintenance activities. Subsequently the Town Councils for the six largest municipalities asked the Belize Social Investment Fund to include drainage improvements. Since the overall cost would have captured the majority of SIF's budget the Bank agreed to finance the stand-alone Roads and Municipal Drainage (RMD) Project, the subject of this assessment.

2. The Project

Objectives, components and costs

6. The overriding goal was to assist the government's five-year 1999 National Poverty Elimination Strategy and Action Plan (NPESAP) that included improved provision of infrastructure to connect rural and urban areas thus facilitating access to markets and growth. To achieve this the project identified four objectives:

- Improve year-round traffic flows on national roads by upgrading the road bypass connecting the Northern and Western Highways;
- Improve the natural drainage and reduce the impact of floods in selected municipalities;
- Assess the potential of private sector participation in road maintenance activities through the implementation of a pilot project; and
- Improve the management and coordination of the transport sector through preparation

4. The first Bank loan to Belize was in the infrastructure sector. It consisted of a Road Maintenance and Rehabilitation Project (Loan 2273-BEL, US$5.3 million, May 1983). This project was followed by the Second Road Maintenance and Rehabilitation Project (Loan 2945-BEL, US$5.6 million, May 1988). These loans provided for rehabilitation works on the sections of the national road network, engineering studies and related supervision, acquisition of equipment and spare parts for maintenance operations, and technical assistance for training. These loans were followed by the Belize City Infrastructure Project (Loan , US$20 million, November 1993).

of national transport sector and road safety strategies.

These objectives were straightforward and were supported by four main components. Table 1 summarizes objectives, related components and costs.

Table 1: Belize Roads and Municipal Drainage Project: Objectives, components and costs

Objectives	Components	Project Costs US$ millions	
		Planned	Actual
1. Improve year-round traffic flows on national roads by upgrading the road bypass connecting the Northern and Western Highways	**1. Burrell Boom Road Improvements over 20 km**	**7.40**	**9.62**
	• Upgrade the existing gravel road to an 8.7 meter wide two-lane asphalt road built over an embankment above flood level	*6.80*	*8.68*
	• Construct a new diversion road to bypass the Burrell Boom Village		
	• Upgrade the Burrell Boom Bridge by replacing the existing bridge with a new two-lane steel girder and composite cast in situ concrete using existing piers and abutments	*0.60*	*0.94*
2. Improve the natural drainage and reduce and/or the impact of floods in selected municipalities	**2. Drainage-related works for selected municipalities**		
	• Finance priority drainage interventions in six towns located in five of Belize's districts from north to south as follows: Corazal, Orange Walk, Benque Viejo, San Ignacio/Santa Elena, Dangriga and Punta Gorda	**5.00**	**5.63**
3. Assess the potential of private sector participation in road maintenance activities through a pilot project	**3. Maintenance by contract at a Ministry of Works and Transport (MoWT) District**	**1.15**	**0.0**
	• Implement a pilot project that will finance the implementation of roads maintenance by contract (MBC) in one of the country's seven districts		
	• Provide technical assistance; financing for physical work including two periodic maintenance exercises carried out by contractors measured on a unit price basis; and procurement of two light vehicles and three computers.		
4. Improve the management and coordination of the transport sector through preparation of national transport sector and road safety strategies	**4. Institutional strengthening studies, supervision and training program**	**2.61**	**3.06**
	• Provide technical assistance comprising studies, engineering services and training for MoWT staff including: National transport strategy/transport database: National safety strategy; Road maintenance and financing options; Protection of environmentally sensitive areas; Drainage maintenance management plan; Burrell Boom road/bridge supervision; Pilot project and drainage works design, supervision and evaluation; Support to the Project Execution Unit (PEU) and incremental staff costs; and Training programs for environmental education, raising public awareness and training fro public officials/contacts and MoWT.		
	Front-End Fee	**0.13**	-
	Price and Physical Contingencies	**2.10**	
	Total Cost	**18.39**	**18.43**

7. **Burrell Boom Bridge.** The northern highway from Yucatan, Mexico, is connected to the western highway and southern highways that link to Guatemala and the

southern districts of the country via Belize City. Located on the prominent Belize River deltaic peninsula, a low-lying mangrove swamp, Belize City has rapidly grown in area since the early 1980s and houses a fifth of the nation's population. Urban expansion was accomplished through a continuous process of land reclamation that involved cutting mangroves, excavation of surrounding highland areas and infilling of low-lying wetlands. The scarcity of land led to overcrowding in the city center, intense traffic congestion and one of the highest accident rates in the Americas.[5] To reduce the impact of transiting traffic, the government constructed the Burrell Boom Bridge bypass flanking the city to the north-west in the 1950s. However, the bridge was in the center of Boom Town and subsequently became a traffic bottleneck. Additionally the road foundation became compacted from years of use and only modest maintenance, and this created a drainage problem. The works proposed by the project (a new bridge and a bypass realigned over much of its length) relocated the majority of the traffic to the east of the town center. The new bridge was designed to accommodate higher probable flood levels and discharge and the approach roads were increased in width and grade to allow greater vehicle speed.

8. **Improving drainage and minimizing urban flooding.** Under the two earlier Bank-financed road projects infrastructure rehabilitation was carried out in Belize City. This included the rehabilitation of the urban section of the Northern Highway and a section of the Central American Boulevard that had deteriorated due to damage caused by insufficient drainage in the city and poor maintenance of the roads and canals. Persistent flood problems and related damage were successfully addressed through the Belize City Infrastructure Project that was completed in 1999. Consequently the project was designed to expand improved drainage and to minimize flood risks to the remaining six urban areas covering 53,000 people. These included three coastal towns: Corozal in the north, Dangriga in the center and Punta Gorda in the south; and three inland towns in the north and east: Orange Walk, St Ingnacio/St Elena, and Bianco Viejo.

9. **Private sector participation.** This had long been an objective of Bank infrastructure projects in Belize. While private sector participation had been successfully mainstreamed in the MOWT for donor-financed projects, routine road maintenance tasks were undertaken under force account using departmental staff and equipment. The Bank's view was that the government should contractually devolve these routine activities to the private sector, thereby increasing efficiency and reducing costs. This would distance MOWT from operational tasks and refocus its attention on sector policy, planning and management. The pilot project was designed to demonstrate that local capability existed and was cost-effective.

10. **Institutional strengthening** was aimed at improving the management of the transport sector and coordination of the different government entities involved in transport. Within MOWT this included strengthening its selection, planning and programming functions, improving road safety, and improving the national and local institutions responsible for municipal drainage.

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5. This was about 20,000 people per square kilometer. While Belize City accounts for 34% of the country's vehicle fleet in the mid-1990s, nationally it accounted for about 75% of all traffic accidents and fatalities: annually there were about 262 traffic-related deaths and over 500 traffic-related injuries.

IMPLEMENTATION ARRANGEMENTS

11. The arrangements were straightforward. MoWT was responsible for overall project coordination with concerned ministries and departments (for example the Department of Environment) and with the Ministry of Finance. A specialist unit of the MoWT, the Project Execution Unit (PEU), was given full responsibility for planning implementation, procurement and management of the international consultants engaged to undertake the detailed design and supervision of contractors. The PEU was created earlier to implement the IADB Southern Highway Project and retained sole responsibility for donor-funded projects. Appraisal of the capacity of the PEU to implement the project and procurement was found to be satisfactory subject to augmenting its staff capacity and updating its computers and equipment.

IMPLEMENTATION EXPERIENCE

12. Soon after project approval Hurricane Keith inflicted considerable damage on the northern half of the country.[6] The hurricane lingered for three days off the coast and brought large volumes of torrential rain. Thus the Bank's first two supervision missions were concerned with determining the impact of this hurricane on the proposed project and the reallocation of $US1.15 million for emergency reconstruction. At the same time it was realized that the hydraulic design of the Burrell Boom Bridge needed amendment to increase its discharge capacity. With these changes in place the project became effective at the end of January 2001. The hurricane also brought about greater discussion among the development partners dealing with infrastructure, and in March the private sector pilot project was folded into the IADB Southern Highways Upgrading Project. The Bank also considered reallocating funds from the ongoing Institutional Development Fund and design of a supplemental loan to rebuild 2 km of the main western highway between Belize City and the airport. Both ideas were dropped in 2003 as the country's macro-economic crisis deepened.

13. Delays stalled progress and increased costs. In the first year only the Burrell Boom Bridge and related works and Dangriga Drainage Works were implemented. In Dangriga the drainage works ran into land acquisition problems that stalled part of the work, problems that also occurred elsewhere, and remained unresolved for the rest of the project. Underestimation of the quantity of civil works or omissions that were revealed after the award of contracts caused unforeseen cost increases. To stay within budget MoWT ordered reduction in the extent of drainage improvements constructed. These delays allowed unit prices to increase above appraisal estimates and civil works had to be reduced in several towns to stay within budget. Additionally, Belize suffered a shortage of steel reinforcement in 2003-04 that led to a substantial increase in its price.

14. After 2001 the Treasury issued notice to MoWT that non-essential infrastructure works should be delayed because of difficulties with the growing public sector debt. Contracts for the remaining five towns were stalled until the middle of 2003 and

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6. Hurricane Keith hit Belize over the period September 30-October 2, 2000. It had sustained wind speeds of 120 to 216 km/hour. According to the National Emergency Management Organization and IADB surveys the total damage cost the economy US$262 million. Damage to tourism accounted for 23% of these estimates; roads and bridges 20.5%; and agriculture 16%. Two further Hurricanes of lower magnitude and a tropical storm also affected Belize over the next two years.

construction in Benque Viejo was further delayed until 2005. Shortage of counterpart funds became serious after 2003 and slowed construction as contractors had little capacity to continue work without regular interim payments. Eventually the international consultants retained to supervise the civil works refused to certify final accounts or release maintenance manuals pending receipt of long-overdue accounts. As a result, the last contract for Benque Viejo (2005) was supervised directly by the PEU.

15. The institutional studies got off to a very late start (2004) and were only completed at the end of the project. Deliberations were still being conducted on the recommendations emanating from these studies during the preparation of the ICR.

16. The various delays in awarding contracts caused those for Corozal and Orange Walk to be terminated before their completion even though the project was extended 15 months. This was engendered by the Bank's frustration over the government's procrastination induced by its growing macroeconomic crisis that came to a head in 2005. As a result, US$0.57 million was cancelled at project closure.

Monitoring and Evaluation

17. **Design.** Key performance indicators and a logical framework were included in the project appraisal report. These were supplemented by detailed input and output tables prepared as part of the civil engineering works and the environmental impact assessments. In consequence the focus of the M&E effort was on measuring progress and outputs. While expected outcomes and impacts of the engineering interventions were defined, several lacked objectively verifiable indicators. For example, the measure of the efficacy of better drainage was to be a rise in property values. This measure, however, was not market-based but depended on official property valuations that were known to be inaccurate and subject to political manipulation to minimize tax liability. There were no verifiable indicators developed to measure the impact of institutional strengthening on MoWT's efficiency and productivity.

18. **Implementation.** On the whole this was excellent for the inputs and outputs. Little attention was paid to tracking outcomes and impacts.

19. **Utilization.** This was high in terms of reporting financial and engineering progress and in mitigating temporary adverse environmental impacts during construction. Almost no attention was given to measuring the outcomes of the project. This was the result of extremely tight counterpart funding during the second half of the project, delayed implementation, and negligible record-keeping by municipalities after civil works were completed and handed over to municipalities. **The overall rating for M&E is modest.**

3. Project Evaluation

Relevance of Objectives and Design

20. **The objectives were and remain highly relevant.** The project was highly

relevant to government's policies to stimulate growth through high levels of public investment, particularly for essential infrastructure that benefits the relatively poor. These policies were formalized in the five-year National Poverty Elimination Strategy and Action Plan (approved by the Cabinet in August 1999) that formed the basis for the Bank's 2002 Country Assistance Strategy for the period 2000-2005. And the CAS supported, *inter alia*, economic growth through promotion of private sector participation, enhanced and more effective roads, reduction of flood damage, better governance and more effective public-sector institutions. The Government's Medium-Term Economic Strategy (2003-05) reemphasized the role that inadequate road infrastructure played in reducing the competitiveness of Belize's agricultural sector through increased transport costs and the difficulties of maintaining year-round flow of products to international markets.

21. The drainage improvement objective was and remains relevant. Belize lies in the heart of the hurricane belt and is periodically affected by major storms and hurricanes with an average return period of 7.5 years. Annual rainfall varies from 1270 mm in the north to over 4318 mm in the south. Hurricanes cause serious damage to crops, infrastructure, housing and tourism facilities. Flash flooding is a major problem particularly in urbanized areas. The capital, Belmopan, was built 80 km west of Belize City in the mid-1960s in response to Hurricane Hattie that devastated the former capital.[7]

22. The main sources of growth in Belize - tourism, sugar, bananas, citrus, forestry and aquaculture - are based on natural resources that require all-weather access to markets, processing areas and ports. Provision and maintenance of roads and highways are thus key components of the nation's infrastructure. Good quality roads are also imperative to natural disaster management particularly since much of the coastal land is below sea level and prone to frequent flooding. Within towns the financing of critical road and drainage works to reduce property damage and remove obstacles to commercial development was and remains highly relevant. This enables functioning of rural market centers and augments efforts to improve public health: these include speedier access to medical facilities and reduction of water-related vectors for diseases such as malaria.

23. **The institutional objective was and remains highly relevant.** Eleven different organizations participated in Belize's road and transportation sector regulated by six Acts of Parliament. While the MoWT was nominally in charge of sector activities, there was little effective coordination on either policy or management of the sector because of overlapping mandates and responsibilities. A major constraint was the lack of a comprehensive development plan for the sector and few common criteria to rank priorities for both investment and normal operation and maintenance activities. A primary weakness was the lack of modern technical capacity, a problem exacerbated by annual budget allocations that met only part of the MoWT's requirements, causing it to ration its involvement. As a result special investment and local needs were frequently met by local industries and/or municipalities on an *ad hoc* basis without consultation with MoWT.

24. **Overall design is rated as modestly relevant**. The design of the Burrell Boom

7. The location of Belmopan was chosen to minimize environmental risks and in the master plan great care was given to design of its road and drainage to minimize the possibility of disruption and floods.

Bridge and bypass was and remains highly relevant. The feasibility study included comprehensive engineering and economic analysis, and an environmental impact statement. Together they clearly demonstrated the new bridge was the best of the alternatives proposed. It had a clear and positive impact on national road capacity and road safety concerns, and reduced costs to the sugar industry.

25. In contrast, the design of the municipal drainage component was and remains only modestly relevant. The primary reason is that lending ceilings compromised the engineering design. The total cost of investment in drainage for all phases was estimated at US$10.8 million and with the other components total project cost would have been US$23.4 million. However, concerns over growing national debt caused the Bank to impose a ceiling on overall lending to Belize of US$30 million for a maximum of three projects at any one time, or about US$10 million per project. In 2000 the ongoing Social Investment Fund had a loan of US$7 million. An Education Project planned for 2002 was provisionally allocated a loan of US$10 million. This left a balance of US$13 million for a project in the period 2000-2001 – and this was the maximum amount approved for the project (Table 2.) For these reasons the Bank financed only about half of the required costs for drainage investments. Because the government wanted to assist all six towns, this resulted in a budget that was spread too thinly and only parts of the required drainage systems were constructed.

Table 2: The municipal drainage loan amount was squeezed by the loan ceiling

Component	Total Cost ** US$ million	Bank Share (%)	Loan Amount US$ million	Loan Balance US$ million
Loan Ceiling	-	-	-	13.00
Burrell Boom Bridge	8.48	65	5.50	7.50
Roads Maintenance Initiative	1.15	65	0.75	6.75
Institutional Strengthening	2.74	100	2.74	4.01
Balance left for Municipal Drainage				4.01
Amount Financed for Municipal Drainage	5.73	65	3.72	0.19
Total	18.10	-	12.71	-

Source: IEG calculations ** this includes contingencies and excludes the front-end fee and goods (US$0.29 million)

26. Similarly, the institutional studies were too narrowly focused on the transport sector and their relevance was modest. Roads and drainage are critical components of urban and town planning and they have to be integrated not only within the urban fabric, but also designed to cater for future expansion and changes of land use. Yet land use planning and zoning was and remains notable by its absence and development remains *ad hoc* and driven by political champions. Just as importantly, municipal institutions were and remain only modestly effective. The experience of the recently-completed Belize City infrastructure project demonstrated there was a clear need for comprehensive planning and implementation of infrastructure improvement particularly for the rehabilitation of streets, canals, drains, and management of coastal zones, traffic, solid and liquid wastes. It was also well known that local municipal institutions were seriously challenged by political partisanship, difficulties in revenue generation and their low capacity for routine operation and maintenance (O&M). Relevance of institutional design

is thus rated modest.

Efficacy

Objective 1: Year-round traffic flows on national roads were improved by upgrading the road bypass connecting the Northern and Western Highways. Efficacy is rated high.

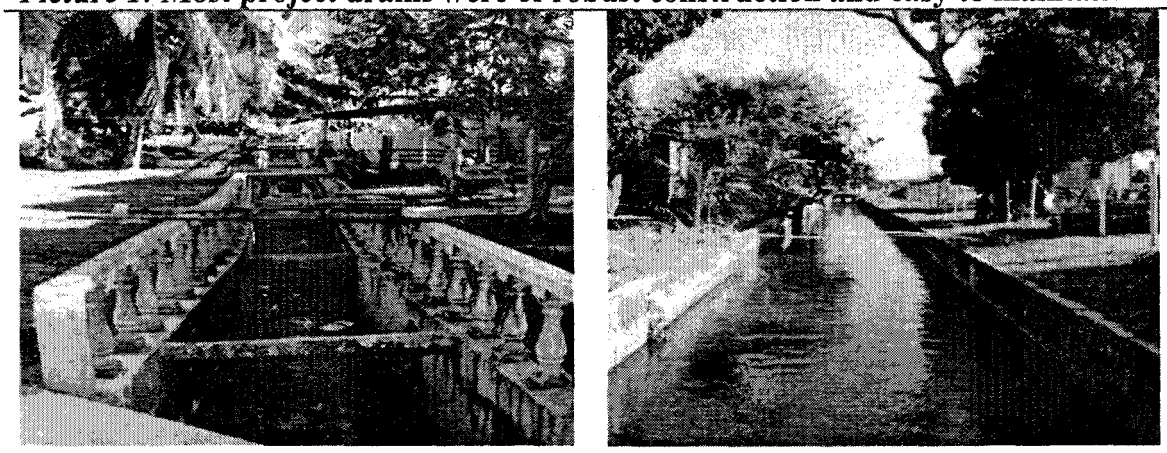
27. The Burrell Boom Bridge and 11.8 km bypass were completed on schedule and now provides an alternative north-south all-weather link across the Belize River. Traffic lanes are 3.5m wide and are in good condition. Shoulders,1.5m in width, which allows vehicles to stop clear of moving traffic, are of good quality and well maintained. A 250 m-long floodway was installed to minimize damage risk to the road embankments and the bridge abutments during major floods. Verge and lateral drain maintenance is regular and visibility on well-graded bends remains good.

28. Vehicular traffic has increased from 600 to over 1,000 vehicles a day and the distance between Belmopan and the airport was decreased by 10 km. Travel time savings per vehicle are more than 30 minutes on average. There has been no report of flooding since the road was reconstructed and the road is passable in all conditions.

Objective 2: Natural drainage of municipalities was improved but floods remain a problem. Efficacy is rated modest.

29. The project's drainage works were substantially completed except in Corozal, Orange Walk and, to a lesser extent, in Dangriga. The quality of the civil works is generally good. The robustness of lined drains makes the structure easy to maintain and these work well if cleaned regularly (Picture 1.) Unlined drains, however, are difficult to maintain because of lateral inflow, siltation, and vegetative growth (Picture 2.)

Picture 1: Most project drains were of robust construction and easy to maintain



(a) Main drain in Benque Viejo **(b) Main drain in Dangriga**

Source: IEG March 2008.

30. Meetings of the IEG mission with the Town Councils and inspection of the towns' drainage demonstrated, however, that project works are only modestly effective in reducing flooding. This is for three reasons. First, a fragmented approach: the project's drains are part of a larger drainage network that remains incomplete (Table 3). Second,

unplanned urban and housing development either impinges on the drains or greatly changes the nature of the watershed being drained, reducing the effectiveness of improvements under the project. And third, inadequate municipal budgets for preventative maintenance of urban roads and drainage threatens longer-term sustainability of both investments (Picture 3.) Details of drainage improvements and problems for each municipality are given in Annex B.

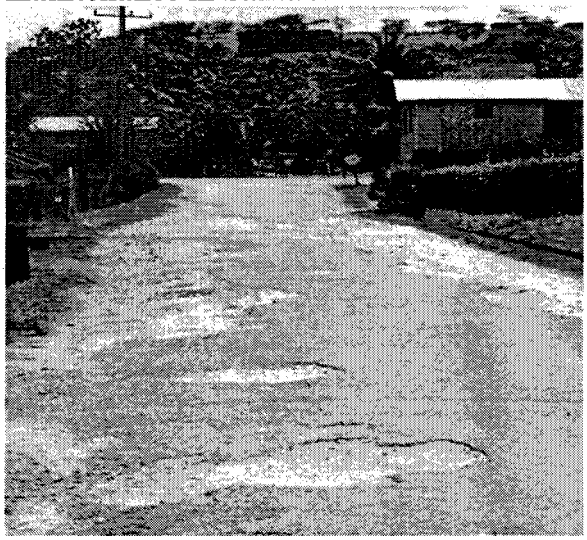
Table 3: Planned drainage works were only partially implemented

	Cost of Drainage Works (BZ$ million)				*Flooding*	
Municipality	**Planned**	**Appraised**	**Actual**	**Actual to Planned**	**Still Present?**	**Severity**
Benque Viejo	0.75	0.75	1.88	119%	Yes	***
Dangriga	6.74	6.74	5.50	86%	Yes	**
St Ignacio	3.2	3.2	0.85	44%	Yes	**
Orange Walk	3	3	0.99	37%	Yes	***
Punta Gorda	1.5	1.5	0.58	31%	Yes	****
Corozal	6.7	6.7	1.46	16%	Yes	****
Total/average	21.89	21.89	11.26	49%	-	-

Source: IEG based on PAD and ICR The severity rating: ** = modest; *** = substantial; **** = high

Picture 2: Unlined drains in Corozal are difficult to maintain

Picture 3: Inadequate municipal road maintenance in Santa Elena



Source: IEG March 2008.

31. Only half the required drainage was constructed under the project because of financial constraints. In Corozal (population 18,000) the project covered only 43 percent of the required drainage, but omitted works that would have improved drainage of the Skelton Town and White Cocal subdivisions. Even then the extent of work was reduced to stay within budget because delays allowed appreciable unit cost escalation. This resulted in the construction of higher than designed elevations to the North East Magoon drains and a reduced section to the South East Magoon Drain. According to the Town

Council and IEG interviews between one and two thousand households suffer periodic flooding (Box 1), somewhat worse than before the project, mainly due to unplanned and infill development.

Box 1: Flooding in Corozal

Martha Costiano lives with her extended family of 18 in the White Cocal Area. "Every time there is heavy rain the local area floods up to 0.6 m depth and the water may remain for 6 to 8 weeks. The car bodyshop next door can't function and my neighbors in the back had to stay out for two months." Inspection showed an unlined drain (not part of the project) had collapsed on one side of the road and the road culvert was partially blocked.

In the Skelton Town area, Mansfield Philips' yard is flooded 0.2 to 0.6 m mainly because the local drainage is blocked. Although there was flooding before, it is now worse because the better-off families are raising their plot levels and this concentrates the flood waters in the lower-lying areas.

Source: IEG interview 12 March, 2008.

32. In Orange Walk (population 22,000) the project mitigated the flooding problem within the town but new and unplanned developments have created new flood-prone areas. Project improvements to the open-lined drain linking the upstream Dunn Street works with the eastern drainage lagoon were, however, not constructed and the existing drain is in danger of collapse due to poor maintenance by the Town Council (Picture 1). Elsewhere in the town the project drains are well-maintained.[8]

33. Despite these improvements in Orange Walk there are new drainage problems caused by unplanned development. The Area Representative independently obtained ministerial permission to develop a housing subdivision in the low-lying area to the south of San Lorenzo Road and this is subject to seasonal flooding.[9] This is the result of a stand-off between the developer and Town Council because the latter will not assume responsibility for the provision of drainage and roads in an area of high flood risk that the Council deems inappropriate for housing.

34. In Dangriga (population 16,000) flooding was reduced, but not as much as planned. The drainage system was well constructed, self-cleansing was only partially achieved and flooding is still a problem. A major north-south drain and its sluice gate were not completed because the landowner refused to sell at the government's valuation.[10] A compulsory purchase order was not pursued because of political pressure. The outfall gate of the northern drain failed shortly after the warranty period and water now backs up causing about 0.6 m depth of flooding that affects approximately 200 households in the poorest area (Wegierale) of town.[11] In the southern part of the town the sea outfall for the Lakeland drain was not constructed, the existing outfall is completely silted, ponding in the drain causes a health hazard, and periodic flooding is exacerbated by unplanned housing development.

35. The required drainage works in San Ignacio-Santa Elena (population 21,000) were only partially covered by the project. According to residents, flooding is now worse

8. A 3 to 4 m section of the new project drain beneath Cinderella Street collapsed twice in the period 2004-05. This was repaired by the MoWT.

9. The area includes 120 units of Social Housing and was constructed in 2003-04. At the time of IEG's visit it was 80% occupied.

10. For the the southern half of the Penn Street Drain

11. IEG interviews with the Mayor, Administrator and Clark of Works. Dangriga, 17 March 2008. The sluice gate is on the outfall of the John Creek Canal that drains to the north.

than before in one of the two areas targeted for improvement. The main problem, as in Dangriga, was the government's inability to acquire private land for the downstream drainage works.

36. Project works at Benque Viejo adjacent to the border with Guatemala were fully completed to a very high standard. Despite this, the town has subsequently experienced two major floods and "flooding is now worse than before the project" with considerable property damage.[12] Continued flooding is caused by three problems. The main drain has been constricted by property extension. A critical drain link on the secondary drain is missing because (according to the Town Council) the design was made without local consultation. And third, an inadequate Town Council budget for O&M has precluded repair of a covered main drain that connects project works.[13]

37. In the southern-most town, Punta Gorda (population 6,000), drains were planned for both northern and southern areas of the town but only the first-phase northern drain was constructed. The project drain greatly increased the drainage capacity and the flooding problem to the north has been mitigated. The situation in the south has deteriorated further and about 400 households are affected by flooding 1.5 to 2 m in depth. The causes are unplanned development,[14] blocking of the natural SE Magoon drain by heavy vegetation and blockage of its outlet by a sandbar.

Objective 3: Private sector participation in road maintenance activities was not achieved because of exogenous events

38. The intent to replace MoWT's direct work on road maintenance under force account was forestalled by Hurricane Keith. Incorporation of this objective in the IADB Southern Highway Project was also unsuccessful. The primary reason is that the budget for routine road maintenance is MoWT's largest source of discretionary income that is fungible across all its activities excepting capital investment. MoWT is also of the firm belief that road maintenance by the private sector is considerably more expensive and would result in less maintenance being done given the small budget allocated.[15] They also believe it carries risks that the work would not be undertaken by skilled professionals and

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12. IEG discussion with the Mayor and Town Council, March 14, 2008 The worst problem is where the eastern open drain passes under Churchill Street. Here the original bridge was replaced by twin culverts "the culvert is smaller than the concrete drain and the flow of water brings down garbage that clogs the narrower opening; before the project the flood depth on the street was only 0.3 m, now reaches 1 to 1.5 m."

13. This drain flows for about 200 m through the high school yard and now backs up during heavy rain causing flooding to the school yard and church opposite. This drain was constructed by the Social Investment Fund and links upstream and downstream drains later constructed by the project. The cause of the flooding is unclear but the MoWT is of the opinion that construction of SIF drain was substandard and that partial collapse may have occurred in the hidden portions.

14. The unplanned development was for a large shopping boulevard promoted by a minister in the former government. The finance came from another project managed by the MoWT, the Port Authority Customs House building. The alignment of the shopping boulevard's drains was not tailored to existing drains and the drains were made much deeper. As a result when it rains it forms a lake rather than a drain as the outlet is too low. Sometime after the problem became apparent an engineer from Belmopan was dispatched to solve the problem but the budget allocated was insufficient to complete the redesign.

15. Discussions with MoWT indicate that their costs are based on actual expenditures per task and materials but do not take into account plant depreciation, interest payments on investment, full maintenance costs, replacement investment or management overheads. MOWT staff stated that they quoted US$

that the paperwork and contracting procedures would make it less responsive in reacting to maintenance needs. This latter point is particularly important as the geographic allocation of road maintenance is determined by Area Representatives, not by needs independently determined and programmed on technical criteria.[16]

39. Until recently these arguments persuaded politicians that the *status quo* was acceptable, but circumstances have recently changed. Deferred maintenance has put 40 percent of the MoWT's inventory of heavy equipment out of working order. The majority of MoWT's operating plant was sold by the outgoing government just before the 2008 election and replacement costs are estimated to be about US$13 million.[17] Thus the MoWT is physically unable at present to continue with road maintenance without a large injection of capital expenditure. The new minister is reportedly more sympathetic to the engagement of the private sector for routine road maintenance. The potential certainly exists. Second-hand engineering plant is readily available from the USA and many Belizian contractors are well equipped. All the civil engineering contracts financed by donors (excepting those in the less-developed south) were able to engage local private-sector contactors for road and drainage construction and the work has proved to be of satisfactory quality.

Objective 4: Preparation of national transport sector and road safety strategies was successfully completed but it did not improve the management and coordination of the transport sector. Efficacy is rated negligible.

40. Consultants appointed by the Project produced a national transport strategy, a road safety strategy and plan, and an institutional development strategy for the road sector. Preparation of these documents occurred from mid-2003 and reported in mid-2004 after extensive consultation and workshops involving all levels of government. The objective was to rationalize transport management in Belize and improve institutional capability with the objective of increasing the efficiency of resource mobilization in the sector.

41. The principal recommendation was that the Ministry of Works should change its name and become the Ministry of Transportation (MoT) that deals with all transport, land, marine and air. At the same time the existing public works, architectural and non-transport-related services currently carried out by the MoWT would be transferred to other line agencies, as would its vehicle and plant maintenance facilities. A key reform accompanying this institutional change would be the outsourcing of physical maintenance of sector infrastructure to the private sector. The existing MoT would lose its moving traffic violation function that would be transferred to the national police and its non-moving violations function would be transferred to municipalities.[18] Licensing, vehicle

16. Members of the Belize Parliament are known as Area Representatives. This observation summarizes statements made by Town Councils, central government officers and regional staff of the MoWT.

17. During the 6-month period before the elections the CEO and Chief Engineer were transferred out of MOWT and were only recently reinstated by the new government. The sale of the MOWT's plant in this pre-election period is under judicial investigation.

18. Under its former set-up, the MoT was a subunit of the MoW. In this role it was responsible for vehicle registration, issuance of driver's and road service permits and licenses, and prosecution of moving and non-moving traffic violations.

registration and permits, and vehicle inspection would be transferred to a new Motor Vehicle Licensing Department. Existing autonomous airport and harbor boards would be retained, but policy and strategic planning issues would fall under MoT's jurisdiction. Similarly, national coordination and management of road safety would become the responsibility of a new Road Safety Unit. In the medium term the MoT would develop a five-year strategic plan for coordinated development of the sector and its own staffing capacity. To track progress a system of formal annual work plans and reports of accomplishments would be prepared.

42. The chief administrator of the MoT, a Permanent Secretary in the Civil Service, would be replaced by a competitively-appointed professional Chief Executive Office under a renewable three-year contract. This was intended to end the system of politically-appointed incumbents and provide stable management of the sector. The CEO would lead a Chief Engineer and team of Directors responsible for infrastructure, project execution, finance and corporate services. The PEU would be retained and take the lead in developing and implementing the national transport strategy.

43. **Implementation of the transport strategy and its components was not achieved.** It was expected that the institutional reform program would be initiated in late 2004 and be completed by 2009. After the project closed these recommendations were shelved except for the appointment of the CEO. In a major ministerial reorganization that took place in 2007-08, the Department of Transportation (DoT) was transferred to the new Ministry of Health, Local Government, Transport and Communications and the MoWT became the Ministry of Works (MoW). IEG was informed that one reason for the transfer of DoT was strong political opposition to centralizing licensing and permit functions and removing the revenues from the Belize City administration that manages the system. Also the government is under strong pressure to devolve the vehicle licensing and permit system to cash-strapped municipalities country-wide (paras 60 and 61 below).

44. **In the meantime national roads continue to deteriorate**. MoWT's annual allocation from the national budget covers less than half of that required for highway maintenance.[19] Thus it has great difficulty in maintaining the 3,302 km of national highways and gives these priority over the 964 km of municipal and village roads and drains. Road condition surveys show that while the length of excellent blacktop and gravel road surface quality increased by 2 and 9 percent respectively between 2004-05 and 2007-08, this was offset by a decreasing share of roads being classified as good (10 percent) and a matching increase in the fair category (Table 4). Essential maintenance cannot be done and key transport infrastructure is deteriorating (Picture 4 and 5).

45. Clearly MoWT has problems in allocating its resources to maximize national benefits – it may be better to maintain a larger proportion of roads in the good category than having only a few excellent quality roads. Generally the assessed condition of the

19. MoWT estimates that the average cost for full maintenance of the national road network in 2008-09 is US$3,151/km. Actual maintenance expenditure, for example, was US$1,488/km in 2004-05 and US$1,459 in 2006-07. A substantial share of the MoWT maintenance budget is spent every year on the construction/maintenance of farm access and short "sugar" roads to allow access to sugar groves – essentially a government subsidy to the farm lobby. Politicians strongly favor cane roads: government land is leased for cane production; once developed cane leases can be quickly converted to an absolute title.

wearing course and road drainage showed little change between 2005 and 2008. Over 90 percent of blacktop roads were classified as being in good to excellent condition for both wearing course and drainage. In contrast gravel roads are at high risk of serious damage from deferred maintenance – only 22 percent had good to excellent wearing courses, whilst only 14 percent had good to excellent drainage. Visual inspection indicates that the dominant maintenance intervention is limited to road patching, particularly on the heavily traveled western and northern highways. This is consistent with the large stock – more then 40 percent of the inventory – of unserviceable plant in MoWT's regional depots, and retrenchment of field staff.

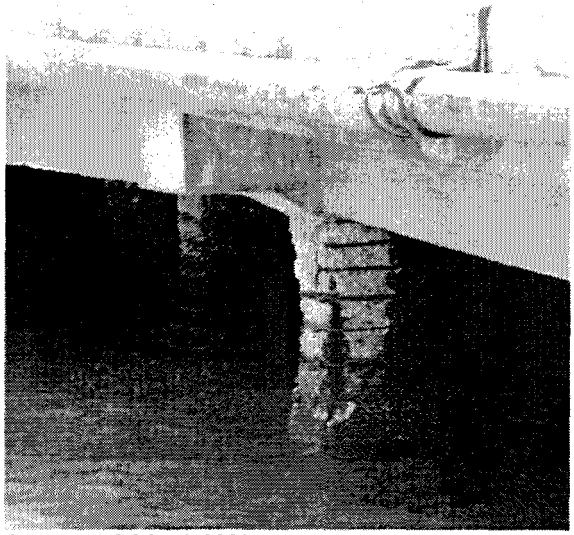
Table 4: The Belize road system has expanded but maintenance is a problem

	Blacktop (km)		Gravel (km)		Earth (km)	
Surface Condition	***2004-05***	***2007-08***	***2004-05***	***2007-08***	***2004-05***	***2007-08***
Excellent	54	64	45	309	5	na
Good	493	424	501	299	6	na
Fair	99	170	1,776	1,794	90	na
Poor	6	8	67	357	6	na
Bad	-	-	43	43	56	na
Total	652	416	2,432	2,802	163	138
National Share	20%	18%	75%	76%	5%	6%

Source: IEG analysis of MoWT's ROMAPS Reports 2005 and 2008.

na = not available

Picture 4: The main road bridge into Dangriga were condemned as unsafe in 2005 – no action has been taken to date



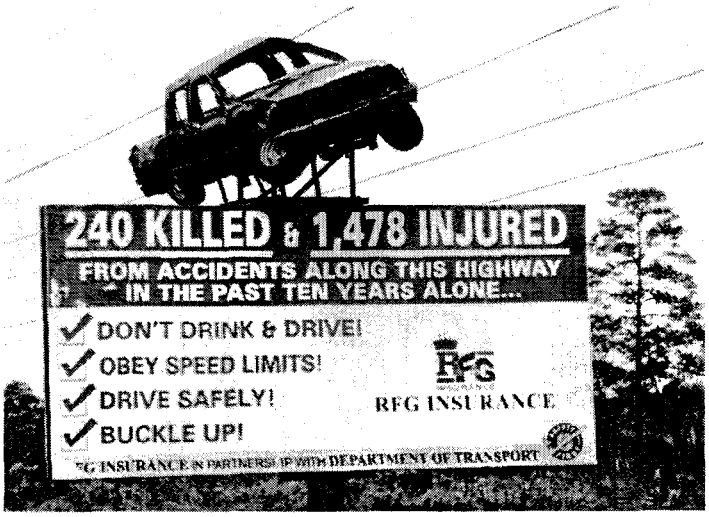
Picture 5: Patch maintenance is the norm – the main Northern Highway between Belize City and the international airport

Source: IEG March 2008.

46. **Road safety is still a problem.** Despite the recommendations of the road safety strategy inadequate infrastructure, signage and policing have not been addressed and cross-sectoral coordination remains a problem – an issue not helped by the 2006-07 ministerial reorganization. Road deaths have decreased by a third since 2002 but remain

high by international standards. In 2005 there were 2,349 traffic accidents and 56 deaths – a fatality risk rate of 19 per 100,000 of population (Picture 6). The budget for road safety became increasingly constrained (Table 5) given the estimated annual 10 percent growth of vehicular traffic.[20] Deteriorating road infrastructure exacerbates the safety problem: the condition of road shoulders on blacktop roads followed a similar pattern to that of road surfaces, but was worse for the narrower gravel roads where only 6 percent were in good or better condition.

Picture 6: Traffic safety on the Western Highway 1998-2007– the main link between Belize City and Belmopan



Source: IEG March 2008.

47. **Protection of environmentally sensitive areas was achieved.** Dangriga's Graa-Graa lagoon was established as a co-managed protected area through formal agreement between the *Friends of Graa-Graa* and the government that was signed in April 2003 and ran for five years.[21] In Punta Gorda it had originally been believed that very rare *Zamia Pieta* plant habitat would be destroyed by some of the project works and the projects' study of this was given a lower priority when initial surveys showed that the plant was more common than originally thought. Even so, the Bank's environmentalist pushed the government to complete the studies which they did reluctantly (given the increasingly dire state of public finances) at the end of the project.

Table 5: Overall budgets for road safety and critical activities declined while revenues from licensing and registration grew steadily (BZ$ 000)

	FY2004	FY2005	FY2006	FY2007	FY2008
Budget Road Safety & Traffic Regulation	566	446	522	542	187
Budget Traffic Census	13	3.0			
Budget Traffic Safety Week	15	1.9			
Budget Traffic Signs & Posts	21				
Total Road Safety Budget	***616***	***451***	***521***	***541***	***186***
Revenue Motor Driver's Licenses	970	1,283			
Revenue Vehicle Registration	3,819	4,270	4,691	5,115	5,210
Total Revenue	***4,788***	***5,553***	***6,058***	***6,602***	***6,746***

Source: Ministry of Finance, Directorate of Budget and Finance

20. Vehicle ownership grew by 22 percent between 2001 and 2002 and then fell off as indicated by the vehicle registration data.

21. The agreement was brokered utilizing a small GEF grant independently of the project.

Efficiency

48. **Overall efficiency is rated as modest.** The economic benefits projected for the Burrell Boom Bridge were fully achieved and the risks to the benefit stream are low. The economic evaluation carried out at the time of the ICR remains robust under current conditions and the economic rate of return of 27 percent is justified. There has been considerable high-value property development induced by the upgraded road, but there was no baseline or impact monitoring that would enable these to be taken into account. Although IEG was informed that the accident rate in Burrell Boom town had declined following construction of the by-pass, there were no data available to confirm these statements. And finally, the bridge provides an additional emergency evacuation route in the event of a hurricane and coastal flooding.

49. The economic benefits of the drainage component are more difficult to estimate. The property valuation indicator is fraught with difficulty as an objective measure. There are no data on the number of properties of people adversely affected by flooding. Clearly the ICR's analysis overlooked the residual flooding problems that were not tackled by the project because it offered only a partial solution. It is also exceedingly difficult to separate the effects of the partial engineering solution on flooding from the adverse impact that unplanned and unregulated housing development has had on low-lying areas in the project towns. Given these attribution difficulties, the ERR was not re-estimated. Qualitatively it is rated as modest.

50. There are no formal indicators to measure the efficiency of the institutional components or project management. While the project did get off to a quick and efficient start for the first two municipal drainage contracts, subsequent contracts were delayed by the government's prevarication and the macro-economic crisis. Because of these extensive delays, civil engineering costs were increased and works had to be cut back to fit available funding. The detailed engineering design was also not efficient as many expensive discrepancies were discovered after the contracts had been let, thus requiring trimming of the contracts' scope. The more global institutional studies aimed at the reform of MoWT, and the establishment of the MoT, were conducted efficiently. However this investment had minimal impact since no action resulted from this investment. Overall the efficiency of institutional components is rated as negligible.

Outcomes

51. Outcome ratings are based on the foregoing discussion that assessed relevance of the projects' objectives and design, and the efficacy and efficiency of efforts to achieve them. The outcome of objective 3 is not assessed for the reasons already given. Table 6 summarizes the conclusions.

Risks to Development Outcomes

52. **Risks to development outcomes are rated as high.** From 1998 until 2007 the Peoples' United Party (PUP) formed the government and maintained a substantial majority until 2003. Since then the PUP reputation has been severely damaged by rising

national debt and acute fiscal problems. Over the period 2001-07 the Cabinet was reshuffled ten times, creating difficulties for consistent good economic management and governance. Since 2006 the PUP has lost its majority in local government elections and the United Democratic Party (UDP) has taken control of all nine municipalities. In March 2008 the government lost the General Election to the UDP. How the new government addresses the governance challenges posed by the previous government, and how deeply rooted they are in the public sector is not yet known. Therefore political risks remain high.

Table 6: Project Outcome Rated on Achievement of Project Objectives

Objectives	*Overall Relevance*	*Efficacy*	*Efficiency*	*OUTCOME*
1. Improve year-round traffic flows on national roads by upgrading the road bypass connecting the Northern and Western Highways	High	High	Substantial	
2. Improve the natural drainage and reduce and/or the impact of floods in selected municipalities	Substantial	Modest	Modest	
3. Assess the potential of private sector participation in road maintenance activities through a pilot project	Modest	Not rated	Not rated	
4. Improve the management and coordination of the transport sector through preparation of national transport sector and road safety strategies	High	Negligible	Negligible	
Overall Outcome rating	***Substantial***	***Modest***	***Modest***	***Moderately Unsatisfactory***

53. During its time in office the PUP government embarked on a policy of reducing taxation and increasing public investment and promoting the expansion of private sector credit through the state-owned Development Finance Corporation (DFC). Weak regulatory oversight and fiscal laxity increased the level of DFC's bad debt to almost 50 percent of its total loans. According to the IMF, total public sector debt including government guaranteed debt tripled between 1999 and 2004 to 102 percent of GDP. Under IMF pressure the government restructured 98 percent of its public commercial external debt in 2006 for 22-year bonds maturing in 2029. In addition to restructuring, the government severely restrained most forms of public expenditure and this led to a credit squeeze and shrinkage of the budgets for operation and maintenance of the country's infrastructure. This credit squeeze is likely to continue during the new government's honeymoon period. In the absence of central government reforms and pressure, there remains a high risk that municipalities will not increase their taxation base and become willing to take responsibility for the physical maintenance of their roads and drainage infrastructure. Therefore there is a substantial risk that underfunding of essential operations and maintenance will continue.

54. MoWT is caught on the horns of a dilemma. Its earlier resistance to institutional reform and privatization of its maintenance functions places it at a severe disadvantage in the new environment in which it has been divested of its construction plant. It cannot discharge its responsibilities in the short to medium-term without utilizing the capacity of the private sector for routine maintenance. Yet successful use of the private sector, if properly regulated, may provide a clear demonstration that the reforms promoted are institutionally viable. In these circumstances the risk that the MoWT's resistance to reform will continue is modest.

55. **Unplanned Development.** Town planning is notable by its absence in Belize despite a comprehensive array of laws and regulations. The lack of systematic physical planning and a longer-term framework has caused poor coordination of new investment with that already existing, and this has created redundancy, contradictions and gaps that jeopardize sustainability of municipal drainage systems.

56. Seven or more different Ministries are involved in land use and administration with considerable jurisdictional overlaps. The Ministry of Natural Resources is responsible for the administration of the Land Utilization Act and development of Special Development Areas. Housing development planning responsibilities are shared by the Ministries of Housing, Urban Development, Cooperatives and Local Government. The Ministry of Environment and Tourism is responsible for environmental legislation and administration of protected and tourist sites. The MoWT is responsible for managing construction of municipal roads. The Ministry of Economic Development is responsible for managing development concessions. The Ministry of Finance is responsible for financing housing and development operations. The Ministry of Fisheries manages coastal zones.

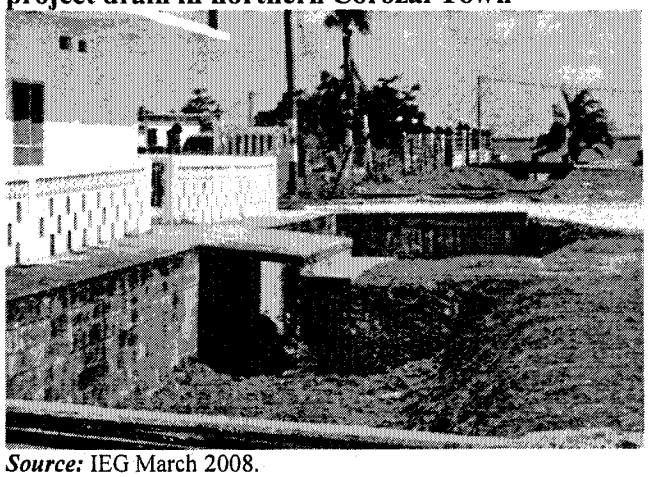
57. Complex and overlapping regional, district and town planning responsibilities has created institutional chaos. Ministries and politicians plan and execute projects in the rural and municipal areas with minimal central coordination. The Physical Planning Directorate of the Ministry of Natural Resources has only five staff looking after urban planning expansion, subdivisions and the monitoring of development for the whole of the Belize. Only two of Belize's towns have had formal plans approved.[22] Although subdivision guidelines have been prepared, these have not been approved by Parliament and planning remains on a case-by-case basis. Thus adherence to established procedures incurs substantial delays in planning approvals and leads to their abuse, particularly as enforcement capacity is missing. The situation is further complicated by Area Representatives who use their parliamentary privilege to bypass legislated planning procedures and obtain direct ministerial approval for local housing and commercial development. Fragmentation of the jurisdictional framework thus allows private

22. The 1981 Land Utilization Act clearly lays out procedures and consultation processes for subdivision of urban and rural land and demarcation of special development areas. Planning schemes, including regional, town planning, redevelopment and for housing are governed by the 1957 Town Planning Act. Within towns developers have to obtain permits from the Town Boards for building construction. Within these two pieces of legislation there is no consideration of zoning. Even so, only two of the six towns have any formal planning framework. The redevelopment plans for Corozal after being destroyed by Hurricane Janet in 1954, and for Dangriga following Hurricane Hattie in 196, was approved under the Town Planning Act. There has been no formal revision to these outdated plans.

developers to carry through their investments with little or no compliance with the existing laws and regulations.

58. There is also no effective control from the Town Councils. Areas outside the town boundaries are typically planned and developed by promoters utilizing political patronage and networks in Belmopan. Although many of the new subdivisions are adjacent to existing towns, Councils are not consulted either in the planning or design. To minimize development costs, promoters do not generally include public space for drainage or even consider it necessary. For example, until 2006 not even the minimum standards for main, secondary and service road widths were enforced by the Land Utilization Authority.[23] Understandably, Town Councils are reluctant to assume responsibility for servicing the roads and drains of ill-planned development as they do not have the technical capacity to mitigate the problems or financial ability to maintain the resulting infrastructure. Town councils cannot even maintain existing infrastructure and continue to look to central government agencies for financial support and technical/design services that are in short supply. Inability to fully staff building control functions means that strict application of building codes is lax (Picture 7), and even then the design quality is low (Table 7). It is no surprise that the municipality with the most problematic building encroachments on drainage is Benque Viejo, but even in the better areas there are still problems.

Picture 7: Lack of planning controls – obstructed project drain in northern Corozal Town



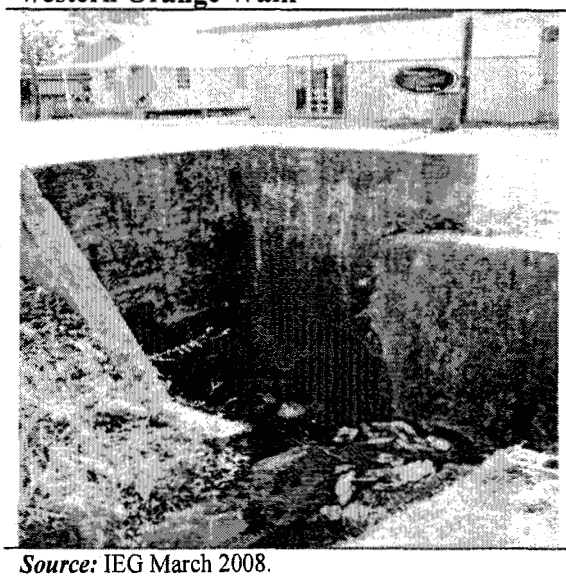
Source: IEG March 2008.

59. **Inadequate maintenance of municipal infrastructure poses substantial risks.** Municipal budgets allocated to maintenance of roadways and drainage cover only regular cleaning and, according to the maintenance staff in all the owns visited by IEG, are less than is needed. Preference is generally given to road and verge areas seen by the public - drains are generally out of sight and out of mind. Plastic trash poses the greatest cleaning problem as heavy rains quickly carry this to drains where it causes periodic blockages and flooding (Picture 8). Thus solid waste and garbage collection is also an essential

23. In most new development there was no zoning and road widths were typically 25 ft. Thus domestic, commercial and industrial activities had to use the same road for access. In consequence, while central Belmopan is the model of a well designed transport and drainage system, almost all of its new subdivisions are blighted by poor quality roads made worse by totally inadequate drainage. More blatantly, the former Belmopan City Council also sold off the safety and drainage buffer strip on the east side of Constitution Drive for commercial development in 2003-04. In 2007 the City Council attempted to sell off the west side but the government watchdog, the Land Utilization Authority Planning Committee revitalized since 2006, refused to approve this. Indeed, since late 2007 the LUAPC has imposed road standards: major highways 100 ft wide with 20 ft buffer strips; minimum road width 66 ft on secondary roads and 40 ft for tertiary roads. However, the remit of the LUAPC is limited only to road standards and there remains no consideration of drainage.

service to stop unregulated dumping in waste land and drains – a major problem in the past – and still a problem in several towns where ground-raising above flood levels is important (Picture 9). IEG's analysis of town budgets shows that between 14 and 20 percent of municipal revenue is spent on street cleaning, garbage collection, drains and culverts. Typically 55 to 65 percent of the remaining revenues cover staffing and benefit costs, and this leaves little revenue for other activities, including regulation and physical maintenance of infrastructure. Deferred physical maintenance of drains is thus accruing

Picture 8: Plastic trash threatens the effectiveness of drainage systems in western Orange Walk



Picture 9 : Fly dumping is allowed to raise building plot above flood level in the Skelton Town subdivision of Corozal

Source: IEG March 2008.

60. Town Councils, while having *de facto* responsibility for physical maintenance of roads and drains, make no financial provision for this as it is the legal responsibility of MoWT. The central government, recognizing the extra burden this places on municipalities, grants them annual fiscal transfers to cope with public service provision.[24] The subvention has been kept relatively small, however, to induce municipalities to become financially self-sufficient.

61. Improving local tax collection could enable coverage of physical maintenance. The main bone of contention is the municipalities' poor record on property tax whose collection rate varies between 20 and 45 percent.[25] Even at these low collection rates property taxes typically account for about a third of all municipal revenue (including fiscal transfers). Full collection of property taxes would provide substantial additional revenue. In Dangriga for example this would amount to an extra US$500,000 a year; in Orange Walk it would be US$440,000 a year – enough to subcontract physical

24. 2007-08 annual subventions ranged from US$104,300 (Benque Viejo) to US$200,000 (Orange Walk.)

25. The collection rate is the ratio of receipts to billings. Town Councils argue that increasing property tax collection would be difficult. The last property census and evaluation was conducted by government in 2001 and valuation is distorted by political considerations. Many properties are not registered and as much as a third of plots are vacant. Absentee landlords are difficult to tax. Local Magistrates are too few and national issues (e.g. income tax evasion, etc.) take priority. Improving local tax collection would require serious attention to issues of local governance and increasing the capacity of the legal system.

maintenance of infrastructure to the private sector. Pressure to move in this direction, however, would be strongly resisted by municipalities because of their bad experience with privatization of garbage collection (Box 2) In the meantime, the MOWT does provide very limited assistance to municipalities to redress deferred maintenance on an emergency basis.

Table 7: Belize's quality of building design is low, as is enforcement of codes

Municipality	Design Source (%)			Enforcement (%)		
	Architect or Engineer	Builders	Draftsmen	Application Rate	Monitoring	Application and Monitoring
Belmopan City	14	6	80	92	87	80
Corozal	11	16	73	75	70	53
San Ignacio	10	16	74	70	65	46
Belize City	12	6	82	69	64	44
Dangriga	8	4	88	68	63	43
Santa Elena	14	14	72	65	65	42
Orange Walk	13	14	73	62	57	35
Punta Gorda	6	15	79	52	47	24
Benque Viejo	12	26	62	<50	<40	<20
Average	***14***	***13***	***72***	***72***	***67***	***47***

Source: Chief Executive Officer Mr. Cadet Henderson. MOWT. March 2008.

Safeguards

62. **Environmental management was satisfactory.** The approach to environmental safeguard issues was based on the requirements of the Belizean EIA Regulations 1995 and World Bank guidelines. The potential environmental impacts were identified from a scoping study looking at the environmental characteristics of the study towns and the nature of the engineering works. The key environmental concerns were identified and studied in detail. The evaluation of the impacts was based on a qualitative assessment, using the criteria of direction of impact (adverse/beneficial); magnitude (high, medium, low); direct/indirect; duration (temporary or permanent); availability; and reversibility.

63. Construction of the works inevitably caused some nuisance to residents, pedestrians and other road users. There were potential environmental impacts on the source of materials and through the disposal of excess soil. Contrary to initial concerns excavation of drains had no impact upon the archaeological record in the towns of Corozal, Orange Walk and San Ignacio/San Elena. In Dangriga and Punta Gorda drain improvements had negligible impact on the loss of small areas of critical habitats and these quickly reestablished themselves. Studies helped to safeguard critical ecosystems and fauna (para 47).

64. Some of the problems identified in the EIA relate to wider issues than those just concerned with drainage improvements. Specifically, the environmental management plan identified a number of issues that needed to be taken up at a national level. These

were planning and control of land use, institutional strengthening of local government, and technical assistance in sanitation and solid waste disposal.

Box 2: Poor governance of private sector participation set a bad precedent

A private sector contract was awarded to collect municipal garbage in St Ignacio-Santa Elena in 1999. This contract was won by the brother-in-law of the previous PUP Minister of Finance who later became Minister of Home Affairs. The contract was initially for three years but was extended by the PUP-controlled Town Council until 2010. In 2003 a newly elected UDC Town Council tried to void the contract because of poor performance and high cost. Lawyers advised them this could not be done as the contact had neither performance indicators nor cancellation clauses. They were also advised that the contractor was awarded the garbage collection monopoly for the whole municipality.

The garbage contract costs the municipality US$208,200 a year or about 40 percent of municipal revenues (in other municipalities, costs are typically 60 or more percent less). The contract also allows the contractor to charge a small pick-up fee to each household. The PUP government subsidized almost half of the annual cost from the town's subvention that was paid directly to the contactor and this continued until 2006. When the UDC Town Council won the 2006 election the subvention was restored and the whole contact sum became due from the municipality.

The contract specifies 2 collections from every house each week. The 400 businesses pay the contractor directly (about another US$120,000 a year) for more frequent collections. By 2003 only one of the 2 garbage trucks was in operation and the municipality then had to employ 4 men to clean up illicit fly dumping. The high cost of the contract caused the municipality to cut back on street and drain cleaning; employees were put on half-time, and only half the contract sum was paid to the contractor. The debt built up. The contactor used the delayed payment not to do more work. In January 2008 the PUP government paid the contractor US$25,000 and deducted this from the subvention.

Even though the new UDC prime minister has promised to void the contract, the municipality will still remain liable for the repayment of debt backlog for some years to come.

Source: IEG interview with the St Ignacio Town Council. March 14, 2008.

Bank Performance

65. **Quality at entry is rated as unsatisfactory.** While the Bank correctly identified the range of infrastructure and institutional reforms needed for Belize's transport sector, it leaned too heavily towards the engineering aspects of project design. Both the Burrell Boom Bridge and the drainage improvements were relatively straightforward engineering interventions that could have been undertaken with little input from the Bank had the finance been available. The PEU had already demonstrated that it could efficiently design and manage straightforward engineering projects. Yet reform of the institutional setting for transport and drainage design was neglected until late in the project when the consultants were mobilized. Had the institutional analysis been conducted during appraisal, then it would have been evident that Belize's physical planning institutions were in disarray, uncoordinated and highly inefficient. The partial approach adopted for municipal drainage was clearly unsatisfactory. It would have also become apparent that financing for operation and maintenance of the sector was too dependent on central government grants and that municipalities needed to take a greater responsibility for these areas. This was a major lesson from the Belize City Infrastructure Project that was neglected.

66. Supervision was very proactive in response to the need for disaster management and mitigation following Hurricane Keith even though the other multilateral donors were

in a better position to help. Thus the Bank, despite its efforts, only played a minor role. The considerable effort to become involved in damage repair diverted the Bank's attention from pressing for action on the systemic institutional reform agenda and pushing harder to speed contract award and implementation. The flawed design of the municipal drainage component was exacerbated by the Bank's premature termination of the civil works in Corozal and Orange Walk. While one can understand Bank management's desire not to further extend Bank operations in Belize following the macro-economic crisis and the mitigation program recommended by the IMF, this only made a bad situation worse. **Supervision is rated moderately satisfactory. Overall Bank performance is rated moderately unsatisfactory.**

Borrower Performance

67. While the Government appeared to have high ownership of the project during appraisal, this quickly waned as its macro-economic performance deteriorated. While entertaining the Bank's institutional reform agenda, at the end it was indecisive and nothing was achieved. Performance was unsatisfactory.

68. Implementing Agency performance is rated as moderately satisfactory. Under the MoWT overall sector leadership and coordination remained weak MoWT successfully avoided reforming, and introducing private sector participation for road maintenance. Conversely, the PEU was and remains a highly professional engineering management unit that discharged its responsibilities well – the exceptions being the lack of attention to quantifying physical works and the problems this subsequently caused when awarded contracts had to be amended. While there were extensive delays for four of the six contracts, these were more the result of government's financial restrictions than PEU's inefficiency. **Taking both government and agency performance together the overall rating for Borrower performance is moderately unsatisfactory.**

4. Looking Forward and Lessons

69. The project clearly demonstrates that municipal drainage cannot be designed and implemented in a vacuum. Physically, drainage has to be planned on a watershed basis taking into account the expected changes to that watershed in the future. In municipal areas this requires that careful attention be given to urban planning and development and the changes in the land use. Factors that change the watershed hydrologic characteristics such as increased impermeable area, causeways, embankments and changes of land level have to be taken into account. Thus drainage design is an integral part of the three-dimensional urban planning process.

70. The design of sustainable drainage requires that there be strong coordination of the various aspects of urban and service provision planning and that one agency has the final say on design. The project also clearly demonstrated that the provision of public goods (such as drainage) is jeopardized by faulty "eminent domain" institutions. It also clearly demonstrated that a poor regulatory environment may allow private action by individuals to damage public sector infrastructure. The piecemeal approach of the project to municipal drainage also overlooked the fact that implementation of drainage should

start from the lowest elevation and spread upwards from there. As designed, some of the drainage infrastructure served to accelerate upstream runoff into lower-lying areas that had inadequate drainage, thus augmenting or shifting the location of flooding rather than minimizing it.

71. Good municipal management in Belize is hindered by lack of local autonomy, an inadequate tax base and planning decisions made independently and remotely in the capital. There are significant untapped local resources that could greatly increase revenues, which, if used wisely, could build local capacity to better manage municipal areas. A first step would be to update the property tax inventory using objective and standard criteria and keeping these up-to-date. Additional revenue would be collected if good governance was enhanced. Strengthened municipal magistrates courts would aid pursuit of the large proportion of people who avoid paying property taxes. This requires action from the center. Increased revenues could be sufficient to relieve central agencies of the burden of the physical maintenance of the municipal infrastructure. While this will clearly provide an opportunity to contract specialist maintenance to the private sector, considerable care has to be taken that the contracting arrangements are fair and transparent, contain performance and exit clauses and are free from political interference. These measures, if implemented, would broadly accord with the new government's policy to devolve more authority to local government. Facilitating such an effort would fit well with the Bank's comparative advantage and global experience. The proposal for the institutional reform of the MoWT is still valid – it only requires political will to implement it. Again, the Bank had a considerable comparative advantage in this area should it wish to become re-engaged.

72. Experience with this project confirms five IEG lessons:

- Inadequate attention to local institutions and their governance arrangements may jeopardize achievement of urban development objectives. While it is tempting to think of infrastructure projects as being focused on engineering, the reality in Belize is that little of the infrastructure will be able to function because sound institutions and good governance are weak or absent.

- Technical Assistance in the form of strategies and plans for infrastructure investment may be ineffectual in the absence of a defined medium-term fiscal framework within which to situate them, and government ownership. As this framework was missing in Belize the technical assistance was effectively wasted.

- Simple engineering solutions can deliver substantial development impacts even when there are adverse institutional and political circumstances. In this project the Burrell Boom Bridge greatly enhanced the capacity of Belize's road infrastructure, particularly for disaster management following hurricanes.

- Drainage and roads are component parts of town planning and cannot be planned independently or randomly. Although strong and well-coordinated planning institutions are pre-requisites for planning infrastructure investment for urban areas these were not available in Belize.

- Drainage systems cannot be designed piecemeal. They have to be designed within the context of a watershed, taking into account the future plans for that watershed in terms of land use, and be structured in such a way that they incrementally improve the drainage. The lack of comprehensive planning and poor sequencing of municipal drainage works in Belize demonstrated that an *ad hoc* approach will not work.

Annex A. Basic Data Sheet

BELIZE ROAD AND MUNICIPAL DRAINAGE PROJECT (LOAN 4575-BEL)

Key Project Data *(amounts in US$ million)*

	Appraisal estimate	Actual or current estimate	Actual as % of appraisal estimate
Total project costs	18.39	19.36	105
Loan amount	13	12.44	96
Cancellation	-	0.57	-

Cumulative Estimated and Actual Disbursements

	FY01	FY02	Fy03	Fy04	FY05	FY06
Appraisal estimate (US$M)	4.0	8.0	11.8	13.0	13.0	13.0
Actual (US$M)	3.5	7.4	9.4	11.0	11.7	12.5
Actual as % of appraisal	87	92	79	84	90	96
Date of final disbursement:	1/23/2006					

Project Dates

	Original	Actual
PCD	-	09/15/1998
Appraisal	-	12/16/1999
Board approval	-	09/05/2000
Effectiveness		01/30/2001
MTR		11/01/2002
Closing date	6/30/2004	09/30/2005

Staff Inputs *(Actual/Latest Estimate)*

Stage of Project Cycle	Staff weeks	US$ ('000)
Identification/Preparation	32.1	106.5
Appraisal/Negotiation	40.51	162.95
Supervision	62.78	399.8
ICR	3.2	29.4
Total	138.59	698.65

Mission Data

Date (month/year)	No. of persons	Specializations represented	Implemen. status	Devel. objectives
Identification/Preparation				
01/30/1998	4	SR. HIGHWAY ENGINEER (1); FINANCIAL ANALYST (1); CONSULTANTS (1); SENIOR ENVIRONMENTAL SPECIALIST (1)		
06/11/1998	5	SR. HIGHWAY ENGINEER (1); FINANCIAL ANALYST (1); SENIOR ENVIRONMENTAL SPECIALIST (1); TECHNICAL EVALUATION SPECIALIST (1); CONSULTANTS (1)		
Appraisal/Negotiation				
06/12/1999	5	SR. HIGHWAY ENGINEER (1); CONSULTANT (ROADS) (1); FINANCIAL MANAGEMENT SPECIALIST (1); TECHNICAL EVALUATION SPECIALIST (1); FINANCIAL ANALYST (1)		
11/22/1999	4	SR. HIGHWAY ENGINEER (1); CONSULTANT (ROADS) (1); FINANCIAL MANAGEMENT SPECIALIST (1); TECHNICAL EVALUATION SPECIALIST (1)		
Supervision				
01/07/2000	1	FINANCIAL MANAGEMENT SPECIALIST (1)	S	S
01/14/2000	9	SR. HIGHWAY ENGINEER (1); CONSULTANT (ROADS) (1); DRAINAGE EXPERT - CONSULTANT (1); ENVIRONMENTAL SPECIALIST (1); FINANCIAL ANALYST (1); TECHNICAL EVALUATION SPECIALIST (1); FINANCIAL MANAGEMENT SPECIALIST (2); URBAN SPECIALIST (1)	S	S
10/19/2000	4	SR. HIGHWAY ENGINEER (1); CONSULTANT (ROADS) (1); TECHNICAL EVALUATION SPECIALIST (1); TECHNICAL EXPERT (1)	S	S
02/06/2001	5	SR. HIGHWAY ENGINEER (1); TECHNICAL EVALUATION SPECIALIST (1); FINANCIAL MANAGEMENT SPECIALIST (1); ENVIRONMENTAL SPECIALIST (1); CONSULTANT (ROADS) (1)	S	S
06/25/2001	3	SR. HIGHWAY ENGINEER (1); DRAINAGE EXPERT-CONSULTANT (1); SOILS EXPERT-CONSULTANT (1)	S	S
06/30/2001	2	FINANCIAL ANALIST (1); ENVIRONMENTAL SPECIALIST	S	S

	Date (month/year)	No. of persons	Specializations represented	Implemen. status	Devel. objectives
			(1)		
	12/13/2001	4	SR. HIGHWAY ENGINEER (1); TRANSPORT ECONOMIST (1); DRAINAGE SPECIALIST - CONSULTANT (1); SOILS EXPERT -CONSULTANT (1)	S	S
	11/01/2002	4	DRAINAGE SPECIALIST (1); ENVIRONMENTAL SPECIALIST (1); TRANSPORT ECONOMIST (1); PROCUREMENT SPECIALIST (1)	S	S
	06/09/2003	1	ENVIRONMENTAL SPECIALIST (1)	S	S
	12/05/2003	2	SR. HIGHWAY ENGINEER (1); DRAINAGE EXPERT - CONSULTANT (1)	S	S
	05/25/2004	1	DRAINAGE EXPERT - CONSULTANT (1)	S	S
	11/10/2004	3	LEAD HIGHWAY ENGINEER (1); DRAINAGE SPECIALIST (1); ENVIRONMENTAL SPECIALIST (1)	S	S
ICR	09/02/2005	3	LEAD TRANSPORT SPECIALIST (1) ; ENVIRONMENTAL SPECIALIST (1); ECONOMIC CONSULTANT (1)	S	S

Other Project Data

Borrower/Executing Agency:

FOLLOW-ON OPERATIONS

Operation	Credit no.	Amount (US$ million)	Board date
None	-	-	-

Annex B. Drainage Assessment

1. **Corozal.** The project constructed 43 percent of the required drainage but omitted the 3rd Street North Canal that would have mitigated drainage poor drainage of the Skelton Town and White Cocal subdivisions. It also omitted drainage of the 1st Street South and 7th Avenue. Even then the extent of work in Corozal was less than appraised because the long delay in commissioning the works greatly increased costs at a time when the government's budget crisis was at its height. This resulted in the construction of higher than designed elevations to the North East Magoon drains and a reduced section to the South East Magoon Drain. According to the Town Council and IEG interviews between one and two thousand households suffer periodic flooding, somewhat worse than before the project mainly due to unplanned and infill development.

2. **Dangriga.** The drainage system was well constructed but self-cleansing was only partially achieved. The two rivers running west-east across the town were to be connected by a series of north-south collector drains with sluices that closed during the passage of river flood peaks. Following passage of the river flood the sluices were to be opened and the local flood water thus drained, the relatively high velocity outflow cleaning the drains. A major north-south drain and its sluice gate were not completed: the right of way for the southern half of the Penn Street Drain was not acquired before works started and the landowner refused to sell at the government's valuation. This drain does not self-cleanse and instead flows out through the John Creek outfall. However this outfall gate failed shortly after the warranty period and water backs up causing about 0.6 m depth of flooding that affects approximately 200 households in the poorest area (Wegierale) of town.[26] In the southern part of the town the sea outfall for the Lakeland drain was not constructed, the existing outfall is completely silted, ponding in the drain causes a health hazard, and periodic flooding is exacerbated by unplanned housing development.

3. **San Ignacio-Santa Elena.** The required drainage works in were only partially covered by the project and flooding is now worse than before in one of the two areas targeted for improvement. The excellent drainage constructed under the project in San Ignacio accelerates runoff down John Martinez Road where it was supposed to join an open drain. This drain was supposed to collect the runoff and channel it westwards through a citrus plantation to join a drain planned for Savannah Street that discharged into the Belize River. However, neither the west flowing collector nor the Savannah Street drain was constructed and drainage floods the lower end of John Martinez Road. The main problem, as in Dangriga, was the government's inability to acquire private land for the works. In contrast the covered drainage installed in Santa Elena works well and eliminated the flood problem. Although serious river bank erosion under the outfall on George Price Avenue threatened not only the drainage but also two properties, this was successfully remedied by the MOWT after project completion.

4. **Orange Walk.** The project mitigated the flooding problem in within the town but new and unplanned developments have created new flood-prone areas. Project improvements

[26]. IEG interviews with the Mayor, Administrator and Clark of Works. Dangriga, 17 March 2008.

to the open lined drain linking the upstream Dunn Street works with the eastern drainage lagoon were, however, not constructed. While the drainage functions the existing drain downstream of the project works lies on private property and is in danger of collapse due to poor maintenance by the Town Council. Elsewhere in the town the project drains are well-maintained.[27] West of town the San Lorenzo Road culvert and the north-south canal enlarged by the project functions well, particularly as the town has subsequently improved the San Antonio Road drain culvert. Despite these improvements the Area Representative independently obtained ministerial permission to develop a housing subdivision in the low-lying area to the south of San Lorenzo Road and this is subject to seasonal flooding.[28] This is the result of a stand-off between the developer and Town Council because the latter will not assume responsibility for the provision of drainage and roads in an area of high flood risk that they deem inappropriate for housing.

5. **Benque Viejo.** Project works were fully completed to a very high standard. Despite this the town has subsequently experienced two major floods and "flooding in now worse than before the project" with considerable property damage.[29] Three problem areas were identified. The worst is where the eastern open drain passes under Churchill Street. Here the original bridge was replaced by twin culverts "the culvert is smaller than the concrete drain and the flow of water brings down garbage that clogs the narrower opening; before the project the flood depth on the street was only 0.3 m, now reaches 1 to 1.5 m." The MOWT's view is that the culprit is subsequent constriction of the drain by property extension just downstream. The second problem is that the western drainage system was planned by MOWT without consultation. The Town Council maintains that, as a result, a critical section of drain is missing on George Street between Liberty and Guera Streets and that this causes local flooding. And third, a lined and covered drain that flows for about 200 m through the high school yard now backs up during heavy rain causing flooding to the school yard and church opposite. This drain was constructed by the SIF and links upstream and downstream drains later constructed by the project. The cause of the flooding is unclear but the MOWT is of the opinion that construction of SIF drain was substandard and that partial collapse may have occurred in the hidden portions. Inadequate budget for O&M has precluded repair to date.

6. **Punta Gorda.** The town covers land that rises gently from the coast. While the northern area drains directly to the sea, the southern portion initially drains southwestwards inland to a South East Magoon mangrove swamp and then to the sea. Although drains were planned for both northern and southern areas of the town, only the first phase northern drain was constructed. The project drain greatly increased the drainage capacity and the flooding problem to the north has been mitigated. The situation in the south has deteriorated further and about 400 households are affected by flooding 1.5 to 2 m depth. The causes are unplanned development, blocking of the natural SE Magoon drain by heavy vegetation and blockage of its outlet by a sandbar. The unplanned development was for a large shopping boulevard promoted by a minister in the former government. The finance came from another

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[27]. A 3 to 4 m section of the new project drain beneath Cinderella Street collapsed twice in the period 2004-05. This was repaired by the MOWT.

[28]. The area includes 120 units of Social Housing and was constructed in 2003-04. At the time of IEG's visit it was 80% occupied.

[29]. IEG discussion with the Mayor and Town Council, March 14, 2008

project managed by the MoWT, the Port Authority Customs House building. The alignment of the shopping boulevard's drains was not tailored to existing drains and the drains were made much deeper. As a result when it rains it forms a lake rather than a drain as the outlet is too low. Sometime after the problem became apparent an engineer from Belmopan was dispatched to solve the problem but the budget allocated was insufficient to complete the redesign.

Annex C. Key Informants

Name	Position	Agency/Organization
Government Officials		
Ms. Yonne Hyde	Chief Executive Officer	Ministry of Economic Development
Mr Duane Belisle	Director Project Preparation Unit	Ministry of Economic Development
Ms. Fayne Nicasio	Economist	Ministry of Economic Development
Hon. Anthony Martinez	Minister	Ministry of Works
Mr. Cadet Henderson	Chief Executive Officer	Ministry of Works
Mr. Lennox Bradley	Chief Engineer	Ministry of Works
Mr. Edgar Puga	Director	Project Execution Unit, Ministry of Works
Mr. Barrera	Director (Transport)	Ministry of Public Utilities, Transport, Communications and National Emergency Management
Mr. Adolfo Ramos	District Technical Superintendent	Ministry of Transport (Orange Walk)
Mr. Osorio	Director Budget and Finance	Ministry of Finance
Ms. Catherine Mendez	Director National Authorizing Office	Ministry of Finance (EU Liaison)
Mr. Jeavon Hulse	Director EIA and Compliance Unit	Ministry of Natural Resources and Environment
Mr. Aldo Cansino	Environmental Scientist	Ministry of Natural Resources and Environment
Ms. Karen Williams	Director (Physical Planning)	Ministry of Natural Resources and Environment
NGOs		
Mr. George Frazer	Ass General Secretary	National Trade Union Congress
Mr. Jaime Penti	President	Belize National Teachers' Union
Town Councils		
Mr. Hilberto Compos	Mayor	Corozal Town Council
Mr. Luis Brooks	Deputy Mayor	Corozal Town Council
Mr. Efrahaim Gomez	Public Works Manager	Corozal Town Council
Mr. Carlos Castillo	Town Administrator	Corozal Town Council
Mr. Philip Delaforte	Deputy Mayor	Orange Walk Town Council
Mr. Edu ardo Leiva	Town Administrator	Orange Walk Town Council
Mr. Roberto Urbina	Town Supervisor	Orange Walk Town Council
Mr. Floyd Peters	Senior Transportation Officer	Ministry of Transport (Orange Walk)

Mr. Joquin Haddad	Traffic Warden	Ministry of Transport (Orange Walk)
Ms. Vanessa Neal	Deputy Mayor	San Ignacio Town Council
Mr. Valan Hyde	Town Administrator	San Ignacio Town Council
Mr. Gerardo Marconi Sosa	Mayor	Benque Viejo Town Council
Mr. Salvador Iglesias	Town Councillor	Benque Viejo Town Council
Mr. Nickal Ruig	Town Councillor	Benque Viejo Town Council
Rev. Helmut Valcio	Pastor	Benque Viejo Town Council
Mr. Frank Mena	Mayor	Dangriga Town Council
Mr. Peter Parchue	Town Administrator	Dangriga Town Council
Mr. Alfredo Gangara	Building and Planning Manager	Dangriga Town Council
Mr. Carlos Galvez	Mayor	Punta Gorda Town Council
Mrs. Renee Pennell	Deputy Mayor	Punta Gorda Town Council
Mr. Glenford Hines Snr.	Acting Revenue Administrator	Punta Gorda Town Council
Mr. Eric Lopez	Works Foreman	Punta Gorda Town Council

Annex D. Borrower Comments

Fayne Nicasio
<faynenicasio@yahoo.com>
06/23/2008 06:17 PM

To Mhuppi@worldbank.org, Duane Belisle <devbelisle@yahoo.com>
cc
Subject comment on the Belize Municipal Drainage Project-performance arraisal

Ms. Monika Huppi

After reviewing the draft evaluation report on the Belize Municipal Drainage Project, the Ministry of Economic Development is satisfied. The documentation of the meetings with the ministry is accurate. On another note, we are requesting for a hardcopy of the report to be send The Ministry of Economic Development, Commerce, Industry and Consumer Protection; P.O. Box 42; Administration Building; Belmopan; Belize, Central America.

Also, please find attached comments from the Corozal and Punta Gorda Town Councils. The other Town Councils did not forward any comments. The other ministries will be forwarding their comments directly to your email address.

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Corozal Town Council

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20th. June, 2008

FROM: Corozal Town Council

TO: Sector Evaluation Division

Independent Evaluation Group (World Bank)

RE: Observations on *Roads and Municipal Drainage Project* as it pertains to Corozal Town

1. The project did not improve the natural drainage nor reduce the impact of heavy rains in the White Cocal Area and Skeleton Town. We still have several unlined drains which are difficult to maintain due to the Council's financial constraints.
2. The Council, with its very limited resources, has been able to provide some relief by offering landfill to residents and ensuring that all drains are maintained free of debris that would impede the flow of water.
3. Students in the above-mentioned areas are affected severely as it becomes very difficult for them to attend school when there is flooding in their areas. There are also several health risks
4. Attention needs to be given to the Third Street North Canal when trying to solve the flooding problem in the White Cocal Area and Skeleton Town.
5. The Port Saul Area also needs special attention before the rains come again.
6. The Council has been successful to a large extent in preventing fly dumping and closely monitors the dumping of garbage being done at the official dump site along the Consejo Road.
7. There needs to be accountability and transparency in whatever is done on behalf of the residents of any community. There must be the proper check and balances mechanisms in place.

Respectfully submitted,

Hilberto Campos

Mayor.

Punta Gorda Town Council

Tel: 722-2235 Fax: 702-2321

Email: pienicouncil@yahoo.com

23rd. June, 2008

FROM: Punta Gorda Town Council

TO: Sector Evaluation Division,
Independent Evaluation Group (World Bank)

RE: Observations on *Roads and Municipal Drainage Project* as it pertains to Corozal Town

- The Project was a success
- The household residents commended the assistance by WB to increase the drainage capacity in the northeastern Punta Gorda.

Presently projects

- Presently a boulevard is being constructed in the southeastern PG which will create a path for the outlet of the magoon drains in that area. However, the uncertainty of funds has the project floating in the air right now more so no budget is available
- This project should impact more than 500 households. Complaints have been overflowing as the residents fore see the need for proper drainage in the southeastern area of Punta Gorda also
- Rehabilitation project for West Street started in 2003 is still incomplete which included upgrading of concrete drains and side walks. If this project was completed this would have alleviated a significant amount of the flooding because the magoon drains pass directly through these sidewalks
- In the interim, Ministry of Works continues to support the councils by maintaining the drains. However, it can only be done one time a year due to the unavailability of funds.
- There is no money budgeted for the maintenance of drains not only in PG but also all other municipalities in which drains were constructed because of small revenue base

Yours Respectfully,

Carlos Galvez

Mayor