2-3 Obligations of Recipient Country

2-3-1 Obligations of Government of Sri Lanka

In order to implement the Project, the Sri Lanka Government is required to undertake the measures and meet the obligations indicated in the table below.

Table 2.3.1 Responsibilities of Recipient Country

No.	Item	Contents	Cost (Mill. Rs.)
1	Tax exemption measures	All goods and services related to the Project which are subject to taxation in Sri Lanka shall be exempted. Legal procedure required for application of tax exemption shall be duly enforced by Sri Lankan side.	Required (internal domestic expenses)
2	Land for Project Implementation	Land acquisition shall not be required for access road and bridge construction. Some of the land is government property.	Not required
3	Temporary office, accommodations, storage, workshop	Rented ground for : 14,700 m^2 on the left bank 5,300 m^2 on the right bank	Not required
4	Sites for acquiring construction materials	Coarse aggregate: by purchase contract Fine aggregate: River sand from Mahabeli river Borrow material : from land owned by Sri Lanka government	Not required
5	Relocation of public facilities	• Left bank: High tension feeders and posts • Right bank: • Houses owned by sand supplier • Low voltage feeders at Police Dept. facilities	1.25 0.15 0.24
Total			1.64

2-3-2 Requests to the Government of Sri Lanka

The project bridge has been planned for use as a road bridge. In the period of construction, the existing bridge will be occasionally in common use, which is a dual-use railway-road bridge.

In order to implement construction safely and securely provide safe transit of vehicles, RDA is requested to inform the police, concerned organizations including bus and/or any other transportation company and the public of the traffic management plans.

1) Traffic regulations

- Obey the instructions of traffic conductors in the construction work zone
- Obey the posted speed limits in the construction work zone. Road lanes and road widths will temporarily be regulated during access road construction.

2) Instructions to the river sand supplier

To ensure that operations for collecting river sand upstream do not affect construction, RDA is requested to direct suspension of sand collection operations during the construction and provide pertinent instructions to the river sand suppliers upstream of the project bridge.

2-4 Project Operation and Maintenance Plan

2-4-1 Maintenance method

For effective utilization of RDA's limited available funds, maintenance methods mainly comprising daily and periodic inspections will be employed to ensure early detection of damage and early countermeasures, thereby preventing major damage to the bridge main body and accessories, such as scouring of abutments by river water, collapse of river embankments, collapse of slopes, etc.

① Daily inspection

Inspection vehicle(s) will be used for inspections of the route concerned about once a month for visual appearance inspections of the road surface, shoulder, and slope. The conditions noted will be recorded in the form of records to be delivered to the engineer. The inspection crew will consist of three persons per vehicle, including an inspector, recorder, and driver.

② Periodic inspections

When the river water level has lowered after the rainy season, periodic inspection will be made of the river embankment and river bed scouring condition. The inspector will survey the damage condition and establish a repair plan.

On the basis of these inspection results, the engineer will judge the necessity of repairs and implement necessary repairs early to prevent worsening.

2-4-2 Maintenance System

It is necessary that the maintenance organization in the RDA follow the road maintenance plan.

① A daily inspection group will be established in the RDA. The group members are as follows:

- Engineers : 1 person
- Inspector, recorder, driver : 3 persons
- Inspection vehicles : 1 unit

・Record maintenance person : 1 person (concurrent)

② A repair group will also be established, to rapidly meet the needs for minor repairs indicated by the daily inspections.

③ A maintenance manual will be developed for planned training of inspectors and recorders by the dispatched specialist.

④ The daily inspection records will be entered into a database to facilitate appropriate estimates of the required maintenance costs.

⑤ Drawings of the project will be stored for future rehabilitation work.

⑥ Thorough checking for scouring around existing piers at the end of rainy season.

⑦ Enforcement of regulations prohibiting speeding and overload vehicles.

2-5 Project Costs Estimation

2-5-1 Construction Cost

1) Cost Estimate

The total costs of the Project by the Japan's Grant Aid are summarized in Table2.5.1. This cost estimate is provisional and will be further examined by the GOJ for the approval of Grant. In addition, these approximate project costs will not be quoted as the Maximum Amount of Japan's Grant Aid in the Exchange of Notes immediately just as they are.

Approximate Project Costs : Japanese Yen 1,080 million

Table 2.5.1 Approximate Project Costs

(Bridge Length: 302m, Approach roads length: 428m)

Project costs (million Japanese Yen)	
Bridge and approach road construction	975
Detailed design and Construction supervision	105

2) Condition of Estimation

- Time of estimate: August 2004
- Exchange rate: 1US$ = JPY109.97 (at the above-mentioned time)
  1Rs = JPY1.12 (at the above-mentioned time)
- Implementation period: Detailed design and construction period are shown in the Implementation schedule (i.e. 24 months excluding tendering stage).
- Others: On Condition that the Project is implemented under the Japan's Grant Aid Scheme.
  The above-mentioned exchange rate is to be reviewed by the GOJ

3) Cost Borne by Sri Lanka Government Side

Approximate costs required for measures undertaken by the GOS side are shown in Table 2.5.2.

Table 2.5.2 Approximate Costs to be borne by Sri Lankan Government Side

Items	Cost (Rs.)
Left bank: Relocation of High tension feeders and posts	1,250,000 Rs. (1.40 million yen)
Right bank: Relocation of Houses owned by sand supplier	150,000 Rs. (0.17 million yen)
Right bank: Relocation of Low voltage feeders at Police dept. facilities	240,000 Rs. (0.27 million yen)
Total Amount	1,640,000 Rs. (1.84 million yen)

* The above-mentioned costs are estimates subject to review.

2-5-2 Operation and Maintenance Cost

Operation and maintenance costs for next 10 years after the bridge opened to traffic are shown in Table 2.5.3.

Project Bridge Length : 302 m (Approach road :428 m)
Carriageway Width : 7.4m (Concrete Pavement)
Sidewalk Width : 1.5m x2 (Concrete Pavement)

It is assumed that routine maintenance will be executed every year and periodic maintenance every 8th year after the start of operation.

Table 2.5.3 Operation & Maintenance for Project Road

Period	Works	Specification	Unit Price (Rs)	Unit	Quantity	Years	Total（Rs.）
Routine Maintenance (Approach road) (every year)	Repair of pavement	1.0% of total area / year	1,870	m2	34	9	572,200
	Drainage repair	0.1% of total piece / year	538,000	each	0.026	9	125,900
	Slope repair	0.5% of total area / year	3,070	m2	13	9	359,200
	Sub-total for Routine maintenance (for 9 yeas)						1,475,600
Periodic Maintenance (Bridge/Approach road) (10th year)	Repair of pavement	10% of total area	1,870	m2	336	1	628,300
	Railing & curve	5% of total length	10,500	m	30	1	315,000
	Drainage repair	5% of total number	538,000	each	1.3	1	699,400
	Slope repair	5% of total area	3,070	m2	130	1	399,100
	Sub-total for Periodic maintenance (per time)						2,041,800
Operation & Maintenance Cost		10% of the Sub-total	1	lot		1	204,200
10 years Total Operation & maintenance Cost (Average maintenance cost per year)							3,303,300 (330,300)

The average annual maintenance cost for the Project bridge is estimated at 330,300 Rs. (370,000 Japanese yen), an amount equivalent to approximately 4.2% of the total budget of the Polonnaruwa Office. This cost should, therefore, not be a heavy burden on RDA.

2.6 Environmental and Social Consideration

2.6.1 Present Status of the Natural Environment around the Manampitiya Bridge Site

1) Climatic Region

Sri Lanka is biogeographically highly diverse, ranging from dry climate of the east to moist tropical climate of the south-west, also containing lowlands to montane areas of above 2,000 m in elevation. The island is also affected by the south-western monsoon from May to September and the north-eastern monsoon from November to March and that environmental condition is highly variable from one place to another (Table 2.6.1 and Figure 2.6.1). Average annual rainfall of the country is from 1,250 to 1,900 mm, but there is a high geographical variation having some wet highlands that can reach about 5,000 mm. Polonnaruwa District (2,686 km^2) and Batticaloa (3,293 km^2) belong to the arid zone (IL) to dry zone (DL).

Table 2.6.1 Climatic region and biological features

Climatic Region	Ecological Features
1. WU: Wet highlands	Vegetation: Montane evergreen forest, Altitude: 1,500～2,500 m, Annual rainfall: 2,500～5,000 mm, No dry months
2. WM: Sub-montane wetlands	Vegetation: Sub-montane evergreen forest, Altitude: 1,000～1,500 m, Annual rainfall: 2,500～5,000 mm, No dry months
3. WL: Lowland wetlands	Vegetation: Tropical (lowland) wet evergreen forest (dipterocarps), Altitude: 0～1,000 m, Annual rainfall: 2,500～5,000 mm, No dry months
4. IM: Intermediate zone	Vegetation: Moist evergreen forest, Altitude: 0～1,000 m, Annual rainfall: 1,900～2,500 mm, Less than 3 dry months
5. IU: Intermediate highlands	Vegetation: Dry *patanas*, Altitude: 1,000～1,500 m, Annual rainfall: 1,900～2,500 mm, Less than 3 dry months
6. IL: Arid zone	Vegetation: Tropical thorn scrub with isolated trees, Altitude: 0～100 m, Annual rainfall: Less than 1,250 mm (mainly October to January)
7. DL: Dry zone	Vegetation: Dry mixed evergreen forest, Altitude: 0 ～ 500 m, Annual rainfall: Less than 1,250～1,900 mm (October to January), 4～5 dry months

Source: Biodiversity Conservation in Sri Lanka, 1998

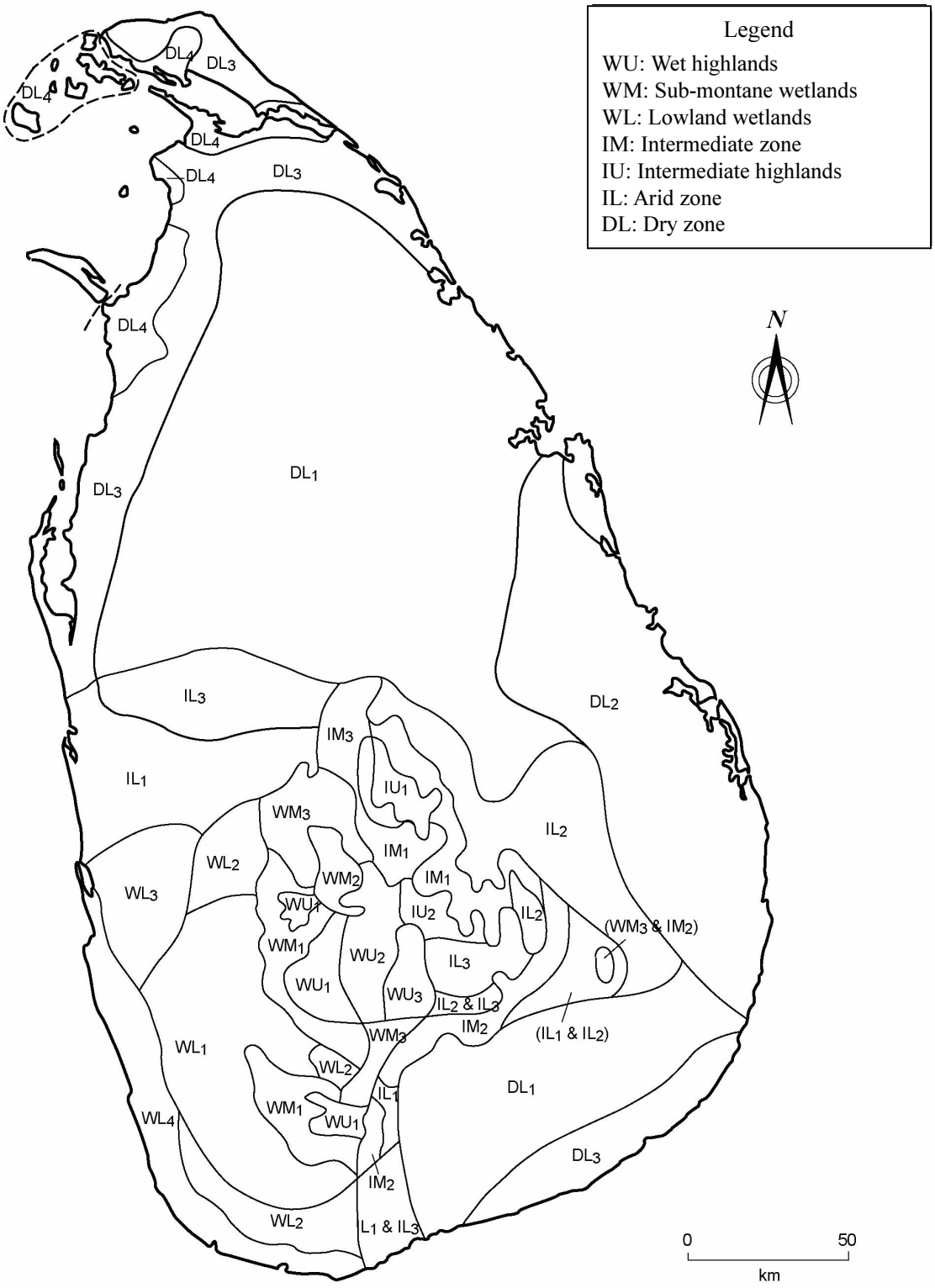

Figure 2.6.1 Climatic classification in Sri Lanka
Source: Survey Department, 1996, Sri Lanka

2) National Park

There are 15 national parks under the management of the Department of Wildlife Conservation (DWC) in Sri Lanka. Manampitiya bridge site is located within the Flood Plains National Park (173.5 km^2), and upstream of the site along the Mahaweli River is also designated as Wasgomuwa National Park. There are other forms of protected areas in Sri Lanka, and national park is the second most important area for conservation such as shown in the following table.

Table 2.6.2 List of protected area under the management by the DWC

Protected Area	Main Regulation	Number
1. Strict Natural Reserve: SNR	No entry without permission. Research can be conducted but requires a permission and supervision from the DWC.	3
2. National Park: NP	No entry without permission, but it is allowed to enter with permission for the purposes of education, research, sightseeing and observation of wildlife.	15
3. Natural Reserve: NR	Research activity is allowed under the supervision by the DWC. Conventional human activities are allowed.	4
4. Sanctuary: SA	Conventional land use is allowed in private lands such agriculture and residence, but those activities are not allowed in state lands.	56

Source: Fauna and Flora Protection Ordinance, 1993, Department of Wildlife Conservation

Note: Jungle Corridor: JC, Refuge, Marine Reserve, Intermediate Zone have been legitimized but there is no area that has been designated.

3) Flora and Fauna around the Project Site

There is little data available on fauna and flora around the project site so that the existing species of plants and animals are presented here using the IEE report[1]. It is almost certain that there is no significant natural vegetation remaining around the area since it has been largely altered with human activities. Large trees such as *Terminalia* and *Ficus* species and dwarf vegetation including *Calotropis* are the most common vegetation, and rare or endangered plant species have not been observed around the site.

Since the natural condition of the habitat around the site has been already deteriorated due to human activities, rare or endangered animal species have not been recorded in recent years. The national park holds about 50 to 70 free-ranging Asian elephants, but

[1] Draft Initial Environmental Examination Report (IEER) (2004), July, RDA (Green Tech Consultants)

these animals are not considered as residents and disperse from one place to another[2]. Animal species mainly observed around the site are listed in Table 2.6.3, but the elephants are not usually observed around the bridge site.

Table 2.6.3 List of fauna and flora around the project site

No.	Scientific Name	Common Name	Category
Fish			
1	*Anguilla bicolor*	Eel	IN. Co
2	*Amblypharyngodon melettinus*	Silver carplet	Co.
3	*Catla catla*	Catla	Co.
4	*Labeo dussumieri*	Common labeo	IN. Co
5	*Labeo rohita*	Rohu	Co.
6	*Puntius chola*	Swamp barb	IN. Co
7	*Puntius filamentosus*	Filamented barb	IN. Co
8	*Puntius sarana*	Olive barb	IN. Co
9	*Puntius ticto*	Tic-tac-toe barb	IN. Co
10	*Putius vittatus*	Silver barb	IN. Co
11	*Rasbora daniconius*	Striped rasbora	IN. Co
12	*Wallago attu*	Shark catfish	IN. Co
13	*Sarotherodon mossambicus*	Tilapia	Co
14	*Etroplus maculatus*	Orange chromide	IN. Co
15	*Etroplus suratensis*	Pearl spot	IN. Co
16	*Awaous grammeppomus*	Scribbled goby	IN. Co
17	*Channa punctata*	Spotted snakehead	IN. Co
18	*Channa striata*	Murrel	IN. Co
Bird			
1	*Cacomantis sonneratii*	Banded-Bay Cuckoo	Co
2	*Centropus sinensis*	Ati kukula	Co
3	*Corvus macrorhynchos*	Large-Billed Crow	Co
4	*Vanellus malabaricus*	Yellow-Wattled Lapwwing	Co
5	*Psittacula kramerii*	Rose-Ringed Parakeet	Co
6	*Gallus lafayetii*	Sri Lanka Junglefowl	Co
7	*Phalacrocorax carbo*	Great Cormorant	Co
8	*Ceyx erithacus*	Black-Backed Kingfisher	Co
9	*Alcedo atthis*	Common Kingfisher	Co
10	*Acridotheres tristis*	Common Mynah	Co
11	*Pavo cristatus*	Indian Peafowl	Co
12	*Ninox scutulata*	Brown Hawk-Owl	Co
13	*Loriculus beryllinus*	Ceylon Lorikeet	Co
14	*Oriolus xanthornus*	Black-Hooded Oriole	Co
Mammal			
1	*Suncus murimus caerulescens*	Indian Grey Musk Shrew	Co
2	*Ratus ratus kandianus*	Sri Lanka House rat	Co
3	*Mus mesculus cstanus*	Indian House Mouse	Co
4	*Herpestes edwardsii lanka*	Grey Mongoose	Co
5	*Funambulus palmarum*	Sri Lanka Palm-Squirrel	Co
6	*Macaca sinica*	Toque Monkey	Co
7	*Lepus nigricolli sinhal*	Sri Lanka Black Naped Hare.	Co
8	*Sus scrofa cristatus*	Indian wild boar	Co
9	*Elephas maximus maximus*	Asian Elephant	Th
10	*Ratufa macroura*	Sri Lanka Giant Squirrel	Co
12	*Bandicota indica indica*	Indian Bandicoot	Co
13	*Tragulus meminna*	Indian Spotted Chevrotain	Co
14	*Suncus murimus caerulescens*	Indian Grey Musk Shrew	Co

Th: Threatened, IN: Indigenous, Co: Common
Source: IEE report (2004), RDA (Green Tech Consultants)

[2] Personal communication with Mr. Taufic, DWC in Polonnaruwa

4) Water Quality

According to the IEE report prepared by the RDA, water quality of the Mahaweli River and underground water around the site is generally within the range of Sri Lankan standards (Table 2.6.4). The level of phosphate in the underground water was found higher compared with the standard level.

Table 2.6.4 Water quality of the Mahaweli River and underground water

	Parameter	Mahaweli River	Underground	Standard*
1	PH	8.5	8.01	6.5 – 9.0
2	Dissolved Oxygen (mg/l)	5.1	3.95	-
3	Conductivity (μs/cm)	223	612	3,500
4	Nitrate (μg/l)	0.41	5.5	10 (mg/l)
5	Phosphate (μg/l)	11.63	386.01	2 (mg/l)
6	Water hardness m mol/l	0.28	1.08	-
7	Total Alkalinity mg/l	1.9	4.5	-

*: Sri Lankan standards of SLS 624 (1983 & 1984)
Source: IEE report (2004), RDA (Green Tech Consultants)

2.6.2 Present Status of the Socio-economic Condition around the Manampitiya Bridge Site

Changes in the population size of the Polonnaruwa and Batticaloa Districts are summarized in Table 2.6.5. The people living in these districts are likely to receive the most direct and indirect benefit from the Project so that the number of beneficially is estimated at 904,000 people.

Table 2.6.5 Changes in the population size (1999～2002) Unit : 1,000

Province	District	1999	2000	2001	2002	2003
1. North-central	Polonnaruwa	355	360	359	363	368
2. Eastern	Batticaloa	490	499	486	522	536
Total		845	859	845	885	904

Source: Economic and Social Statistics of Sri Lanka, 2003, Central Bank of Sri Lanka

North-central Province having Polonnaruwa is an important granary area in Sri Lanka. Paddy production of each province is shown in the following table, and the North-central Province has the highest production of all provinces. However, the poverty ratio of the province is rather high (see Table 2.6.6).

Table 2.6.6 Changes in the paddy production (1998～2001) Unit：kg/ha

Province	1998	1999	2000	2001	2002
1. Western	2,657	2,596	2,603	2,988	2,955
2. Southern	3,522	3,173	3,012	3,591	3,677
3. Sabaragamuwa	2,898	2,722	2,884	3,923	3,937
4. North-western	3,441	3,184	3,660	3,420	3,317
5. Central	3,486	2,692	2,860	3,872	3,690
6. Uva	3,725	3,314	3,702	4,255	3,935
7. North-central ・Plonnarura	4,377	3,716	3,889	4,769	4,578
8. Eastern ・Batticaloa	3,622	3,573	3,559	3,820	3,895
9. Northern	2,465	2,576	2,778	2,544	3,001
Average	3,634	3,672	3,856	3,954	3,867

Source：Statistical Abstract 2000, Department of Census and Statistics

Due to the location, fishery appears to be economically more important than that of agriculture in Batticaloa. General attributes of fishery in different areas of Sri Lanka are shown in Table 2.6.7, and the numbers of village and household in Batticaloa are the highest throughout the nation. However, the fishery production of the area is one of the lowest compared with that of other areas (Table 2.6.8). These trends in the socio-economic condition of Batticaloa indicate that the income level of the average household in the area is rather lower than the other fishing areas.

Table 2.6.7 The number of fishing village and fishing household (1996)

Area	No. of Fishing Village	No. of Fishing Household
1. Batticaloa	195	13,526
2. Colombo	34	2,308
3. Negombo	79	10,081
4. Galle	169	5,047
5. Tangalla	57	4,982
6. Kalutara	62	3,584
7. Kalmunai	90	13,064
8. Matara	61	4,654
9. Puttalam	112	9,681
10. Chilaw	63	8,042
11. Trincomalee	116	7,629
Total	1,038	82,598

Source: Statistical Abstract 2000, Department of Census and Statistics

Table 2.6.8 Changes in the fishery production (1995～1999) Unit : tons

Area	1995	1996	1997	1998	1999
1. Batticaloa	8,360	8,590	9,100	10,100	10,900
2. Colombo	2,550	2,320	2,800	3,230	2,920
3. Negombo	30,570	27,150	27,750	29,720	29,820
4. Galle	21,430	23,230	24,400	24,750	24,980
5. Tangalla	23,260	23,170	27,100	31,220	32,990
6. Kalutara	28,910	24,760	25,400	28,530	29,970
7. Kalmunai	7,290	6,040	6,500	8,320	8,960
8. Matara	29,930	29,290	30,400	33,750	34,450
9. Puttalam	27,020	23,090	24,100	27,310	27,930
10. Chilaw	24,550	22,610	22,900	23,950	24,260
11. Trincomalee	9,130	10,450	8,800	12,850	14,770
12. Northern provinces*	4,500	5,600	5,500	6,220	6,500
Total	217,500	206,300	214,750	239,950	248,450

Source: Statistical Abstract 2000, Department of Census and Statistics
*: Including Jaffna, Mannar, Mulathivu, Killinochchi

Poverty ratio of each province is shown in the following table. Although Polonnaruwa belongs to a highly productive area for paddy, the poverty ratio is higher than the national average. There are no data available for Batticaloa, but it is highly likely that its poverty ratio is higher than the average as well. As presented in Section 2.6.3, upgrading transportation facilities including basic infrastructure development has a significant potential to support future regional socio-economic development in the region including Polonnaruwa and Batticaloa.

Table 2.6.9 Poverty ratio of each province Unit: %

Province	1990/91	1995/96
1. Western	20.1	12.2
2. Southern	32.6	32.5
3. Sabaragamuwa	36.7	40.0
4. North-western	33.6	30.4
5. Central	33.5	35.4
6. Uva	38.1	33.9
7. North-central	39.0	26.1
・Plonnarura	34.1	27.3
8. Eastern	-	-
・Batticaloa	-	-
9. Northern	-	-
Average	30.4	26.7

Source: Statistical Abstract 2000, Department of Census and Statistics
*: Poverty line is defined as families with the Engel's coefficient more than 50%, and that amount is less than Rs. 743/adult/month

2.6.3 Needs of the Project : Socio-economic Importance of the Region

It has been noted that the development approach focusing on integrated spatial development is more efficient than sectoral approach[3]. Therefore, the Department of National Physical Planning of Sri Lanka has divided the nation into some economic regions and smaller areas to promote regional development in the National Physical Planning Policy. Therefore, the following five metropolitan regions have been suggested in the Policy. Polonnaruwa is in the Trinco-Anudharapura Metroplitan Region, and Batticaloa is located in the Ampara-Batticaloa Metropolitan Region.

- Colombo Metropolitan Region
- Trinco-Anuradhapura Metropolitan Region
- Ampara-Batticaloa Metropolitan Region
- Hambantota Metropolitan Region
- Jaffna Metropolitan Region

Furthermore, 15 Metro Urban Centers[4] have been identified within the Metropolitan Regions as the core areas for regional development, and of which, 9 cities including Polonnaruwa and Batticaloa are selected as major "thrust" areas for accelerating the initial development. These cities would be the major areas in the settlement structure of the country in the next 30 years. Therefore, Polonnaruwa, Batticaloa and the following center cities are expected to play major roles in the regional development.

1. Colombo
2. Anuradhapura
3. Trincomalee
4. Dambulla
5. Jaffna
6. Hambantota
7. Ampara

Manampitiya Bridge crossing over the Mahaweli River is located at about 10 km east of Polnnaruwa. The bridge was originally constructed in 1922 so that it is physically deteriorated, and its specifications and design are not suitable for the modern society. Consequently, the bridge is considered as one of the major bottlenecks limiting the socio-economic development of the region, particularly between the Polnnaruwa of the North-central Province and the Batticaloa of the Eastern Province.

[3] National Physical Planning Department. National Physical Planning Policy. Volume 1, September 2002

[4] Metro Urban Centers include Negombo-Katunayake, Gampaha-Nittambuwa, Biyagama-Sapugaskanda, Homagama-Padukka, Horana-Bandaragama and Matugama-Agalawatta

Manampitiya Bridge is on the national road "A 11," extending from Maradankadawala to Trikkandimadu (129.4 km), that is classified as "A class" road[5] in Sri Lanka. Although the bridge is on the main artery of distributing goods and services in the area, it is a rail-cum-road and that significantly delays road traffic since it is closed for vehicles when a train crosses the bridge. A train closes the bridge for six times in a day, and four trains crossing the bridge scheduled at about 7:45, 9:05, 12:50 and 13:50 are particularly obstacle to the traffic[6].

Furthermore, the existing bridge allows only one way traffic at a time since it is too narrow for two vehicles crossing simultaneously. The daily traffic volume was estimated over 3,000 vehicles in 2000, and it seems to be increasing at present. Upgrading the linkage between Polonnaruwa and Batticaloa is, therefore, extremely important for the regional development so that the construction of an additional bridge exclusively used by vehicles is highly demanded.

2.6.4 Guidelines for Environmental Considerations of the Project

1) Environmental Guidelines for the Project

There is a high demand for the Project, but it is predicted that there will be some environmental impact with the construction of such a new highway bridge. Therefore, potential negative impact should be identified in advance and prepare appropriate mitigation measures to reduce the impact. From this point of view, the Project needs to satisfy the requirements by the Sri Lankan EIA guidelines[7] and JICA's environmental guidelines[8].

2) Environmental Guidelines of Sri Lanka

i) Project Approving Agency (PAA) for the Project

According to the National Environmental Act (NEA), all prescribed projects (PP) that require an environmental impact assessment need an environmental permit before the implementation of a project. Such a permit is to be granted by the Central Environmental Authority (CEA) or a Project Approving Agency (PAA). As for the

[5] "A class" roads are the main arteries (trunk road) or long distance routes connecting the national capital with provincial capitals and also connecting these provincial capitals (Geometric Design Standards of Roads, RDA 1998).
[6] Data (No. E-16), "a time table of train" gathered by the JICA's preliminary study mission (modified).
[7] Guidence for Implementing the Environmental Impactg Assessment Process No. 1, A general Guide for Project Approving Agencies (PAA), 2003, CEA
[8] Guidelines for environmental and social considerations, JICA, April 2004.

Manampitiya Project, the DWC is the PAA, because the project site is located within a protected area, the Flood Plains National Park. DWC has the following responsibilities as the PAA for the Project:

- To ensure the project implementing agency (RDA) observes environmental regulations including the NEA and others.
- To promote public participation in the process of the project formation.
- To evaluate different mitigation measures to identify suitable plans to reduce the impact.
- To make recommendations and to make necessary arrangements for implementation of the mitigation measures as the progress of the Project.
- To ensure the conditions attached with an environmental permit are properly observed by the implementation agency (RDA), and to advise if necessary.

ii) Initial Environmental Examination (IEE) for the Project

Environmental study consists of an Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) in Sri Lanka. IEE is a quick impact assessment, which is required for a project with less impact compared with a project that is subject to an EIA. As for the Project, the DWC has determined that the Project is subject to an IEE since the level of potential impact of the Project is predicted as not serious. Therefore, the DWC prepared a specification of an IEE and requested the RDA to conduct such a study in June 2004[9]. Then, the RDA selected a consultant to conduct the study for the Project in July 2004[10].

One of the outstanding features of the Sri Lankan guidelines is that public participation is strongly encouraged in the stage of scoping. PAA organizes formal and informal meetings to prepare a specification of an environmental study, and the process and outcome of the study should be made available to the public.

3) JICA's Environmental Guidelines

i) Basic Policy and Principles

JICA's guidelines for environmental and social considerations came in effect in April 2004. Basic policy of the guidelines is to achieve democratic approach of

[9] Department of Wildlife Conservation. IEE Terms of Reference Notice. 8 June 2004

[10] Memorandum of Understanding for Initial Environment Examination (IEE) for the proposed New Highway Bridge at Close Vicinity of the Existing Rail Cum Road Bridge at Manampitiya across Mahaweli Ganga. Road Development Authority, Ministry of Highways. July 2004.

decision-making process in the development of a project by ensuring stakeholder participation, information transparency, accountability and efficiency in addition to respect human rights. Basic principles of the guidelines are as follows:

- A wide range of environmental and social impacts should be addressed.
- Mitigation measures reducing negative impacts should be implemented at an early stage of a project.
- Follow-up activities should be carried out after the completion of a project.
- JICA shares responsibility on accountability for the implementation of a project.
- Stakeholders should participate in the decision-making processes regarding environmental and social considerations.
- Information with environmental and social considerations should be disclosed to ensure accountability and to promote participation of various stakeholders.
- Organizational capacity should be enhanced to carry out appropriate environmental and social considerations.

ii) Requirements for the Project, Grant Aid Scheme

The JICA's guidelines indicate that proposed projects are to be classified into three categories of A, B and C. The classification is made based on potential impact according to project description and site description. Projects classified as Category A are likely to have significant adverse impacts. Projects classified as Category B are likely to have less adverse impacts than those of Category A projects. Category C projects are likely to have minimal or no adverse impacts.

As stated in the following section of this report, the JICA's Preliminary Study Mission classified the Manampitiya Project into Category B since it is located in a national park. As presented in a previous section of this report, the DWC determined that an IEE is sufficient enough to meet the requirements of the Sri Lankan guidelines. Therefore, the IEE should also satisfy the JICA's guidelines in addition to meet the requirements by the Sri Lankan guidelines. Specific requirements of the IEE include the following items:

- IEE should be completed prior to the Basic Design (B/D) study.
- The quality of environmental and social considerations addressed in the IEE should be sufficient for the Sri Lankan guidelines.
- An environmental permit should be granted by the PAA (DWC).
- Appropriate public participation should be taken to meet the requirements by the JICA's guidelines so that any additional environmental study is not necessary.

- The results of the IEE should be made available to the public via web-site, at JICA's library and/or JICA's local office.

2.6.5 Specific Requirements on Environmental and Social Considerations

1) Conclusions by the JICA's Preliminary Study Mission

According to the report[11] prepared by the JICA's preliminary study mission on the Project in March 2004, the RDA agreed to meet the requirements by the JICA's environmental guidelines. The study mission recommended that the Project should not proceed unless appropriate environmental and social considerations are taken. The following specific environmental issues are stipulated in the preliminary study report:

- Any adverse impact on wild elephants should be reduced.
- Resettlement and land acquisition may not be a problem due to its location (within the national park), but impact on the sand mining activity around the site should be studied.
- Impact on water quality (e.g. erosion and sedimentation) of the Mahaweli River should be minimized with the application of appropriate construction methods.
- Public information campaign (public consultation) to the people around the site should be carried out.
- An environmental monitoring plan should be prepared and implemented accordingly.

2) Policy of JICA based on the Conclusions by the Preliminary Mission

Based on the above conclusions by the JICA's preliminary study mission, Headquarters of JICA (Grant Aid Management Department) developed the fundamental policy of the B/D study on the Project in June 2004. Main check items by the B/D study team are as follows:

- RDA should complete an IEE report in July 2004 so that the B/D study team would obtain a copy of the report and analyze the results if there is any further issues to be addressed to satisfy the requirements by the JICA's guidelines.
- The B/D study team should confirm the schedule of an environmental approval that is to be granted by the DWC.
- The B/D study team should confirm an implementation schedule of public consultation

[11] Preliminary study report for the "Rehabilitation plan on narrow and old bridges on the main roads of Sri Lanka," JICA Preliminary Study Mission, Grant Aid Management Department, JICA, March 2004.

with the stakeholders around the bridge site.
- Although resettlement and land acquisition are not serious issues with the Project, the B/D study team should confirm these issues.
- For potential obstacles including the pump facility and police quarters, the B/D study team should confirm if they need to be relocated or not (confirm the schedule if relocation is required).
- The B/D study team should check potential adverse impact of the Project, particularly on fauna including wild elephants, flora around the site and water quality of the Mahaweli River.

2.6.6 Findings / Confirmation by the Basic Design Study Team

Considering the conclusions of the JICA's preliminary study mission and the basic policy of JICA for the Project presented in the previous section of this report, the B/D study team confirmed the following items during the Study.

1) Status of the IEE conducted by the RDA

i) Schedule of the IEE

The RDA conducted the IEE with the specification prepared by the DWC (Attachment 1), and a final report of the IEE was completed at the beginning of August 2004 (Table 2.6.10). The RDA applied for an environmental permit to the DWC at the middle of August 2004, and an approval (No. W1/6/1/9/159) was granted by the DWC on 10 September 2004 (Attachment 2).

Table 2.6.10 Schedule of the IEE (Year 2004)

Activity	Schedule
1. Making a contract (Memorandum of Understanding: MOU) with a contractor, Green Tech Consultants[12]	July 14
2. Preliminary IEE to be submitted to the DWC	July 23
3. Preliminary comments by the DWC	July 28
4. Final IEE report to be prepared	Middle of August
5. Full application for an environmental permit is prepared by the RDA and submitted to the DWC	End of August
6. An environmental permit to be granted by the DWC	September 10

[12] Memorandum of Understanding for Initial Environment Examination (IEE) for the proposed New Highway Bridge at Close Vicinity of the Existing Rail Cum Road Bridge at Manampitiya across Mahaweli Ganga. Road Development Authority, Ministry of Highways. July 2004.

ii) Schedule of the Public Consultation

With a series of discussions with the RDA regarding environmental and social considerations stipulated in the JICA's environmental guidelines, many staff members of the RDA have recognized their responsibilities for considering public will as the project owner. It is inevitable that the Project be explained, particularly to the local people who may be affected so that they can express their views and ideas. Although this kind of public orientation / consultation was not included in the IEE specification[13] that was prepared by the DWC, the RDA agreed to address this issue locally with cooperation of the DWC.

It has been identified that the people who are involved in the sand mining activity around the bridge site are likely to receive the most direct impact from the Project. The Chief Engineer of the RDA office in Polonnaruwa has, therefore, organized orientation / consultation meetings inviting leaders, labors and other people associated with the sand mining activity around the site. Schedule of such meetings took place as shown in the following table.

Table 2.6.11 Schedule of the Public Consultation by the RDA (Year 2004)

Activity	Schedule
1. Consultation meeting with the leaders of sand mining groups	July 22
2. Consultation meeting with the general workers of sand mining	July 23
3. Discussions including specialists from the consultant (Green Tech Consultants) for IEE.	July 24

2) Borrow Pits and Quarry Sites

Construction materials of the Project will be collected at existing quarry sites and borrow pits located outside the national park. Therefore, additional environmental impact from the Project on this aspect seems to be negligible. The B/D study team confirmed the locations of the following sites in the field:

- Quarry sites: Lakshauyana and Kalahagala
- Borrow pits: Manampitiya and Aralaganwila

[13] Department of Wildlife Conservation. IEE Terms of Reference Notice. 8 June 2004

3) Impact on Fauna and Flora

The B/D study team conducted a field inspection, and it was noted that surrounding areas of the bridge site are open area that are heavily utilized by people already. As presented in Section 2.6.1 3), no natural habitat for wild elephants remains in the area so that the construction work is unlikely to cause direct or serious adverse impact on the animals around the site. Although, reliable data are not currently available since the DWC has not conducted a systematic census on biological diversity in the national park, it is unlikely that endangered and/or endemic species of wildlife exist in the area.

4) Water Quality of the Mahaweli River

As presented in Section 2.6.1 4), it was confirmed that the water quality of the Mahaweli River is generally within the range of the Sri Lankan standard. The level of suspended solid was not a problem, particularly in the dry season.

5) Evaluation and Comments on the IEE by the DWC

The environmental permit (No. W1/6/1/9/159) granted by the DWC indicates that the implementation of the Project is subject to the following conditions.

i) General Conditions

- The project should be concluded within 2 years unless upon written application within 30 days prior to this date Department of Wildlife Conservation extends this time.
- Construction activities within the Flood Plains National Park are not allowed from 6:00 p.m. to 6:00 a.m.
- All labor camps and machinery units must be placed outside the National Park and outside the 60 m reservation on either side of the Mahaweli Ganga.
- Necessary approval should also be obtained from the Mahaweli Authority of Sri Lanka prior to commencement of the construction activities.

ii) Conditions during the construction period

(Ecological impact)

- Existing high canopy cover (if any) of the project area within the wildlife reserve should not be cleared.
- Any of the existing valuable trees should not be damaged or removed.
- The disturbed areas within the 60 m on either side of the Mahaweli Ganga (environmental sensitive reservation of the river) should also be replanted with

indigenous plant species and horticulture species for conservation and to improve the aesthetic beauty of the site. Suitable plant species are recommended to introduce in the affected areas of the river banks.

- No borrow areas should be allowed in the Flood Plains National Park and 60 m reservations on either side of the Mahaweli Ganga.

(Social impact)

- The people living inside the project area should be relocated according to the National Resettlement Policy prepared by the Ministry of Agriculture, Land, Livestock and Irrigation.
- The project proponent shall employ as many as possible from the local areas. Preference shall be given to the residents living around the area.

(Noise control)

- The noise levels at the boundaries of the construction site shall not exceed the stipulated limits stated in schedule III of the National Environmental (Noise Control Regulations No. 1 of 1996) as per Gazette extra ordinary No. 924/12 dated 23 May 1996 (Tables 2.6.12 and 2.6.13).

Table 2.6.12 Allowable Noise Level at **LAeq'T**[*1]

Area	LAeq'T	
	Day	Night
Low Noise Zone	55	45
Medium Noise Zone	63[*2]	50
High Noise Zone	70	60
Silent Zone	50	45

*1 : LAeq'T – means the equivalent sound level determined over a time interval T
*2 : Noise level should not exceed 60 dB (A) inside houses during day time.
Source: Noise Control Regulations, 1996

Table 2.6.13 Allowable Noise at **LAeq'T**[*1] in Industrial Area

Area	LAeq'T	
	Day	Night
Rural Residential Area	55	45
Urban Residential Area	60	50
Noise Sensitive Area	50	45
Mixed Residential Area	63	55
Commercial Area	65	55
Industrial Area	70	60

*1 : LAeq'T – means the equivalent sound level determined over a time interval T
Source: Noise Control Regulations, 1996

2.6.7 Overall Evaluation and Further Issues to be Confirmed

1) Recommendations in the IEE

The IEE report recommends the following measures to be taken during the construction period:

- Avoid disturbing the water flow in the river during the rainy season (October to February).
- Collection of the construction materials should be concentrated during the dry season.
- Cofferdam should be constructed in sections not to disturb the natural flow of water.
- Cofferdam should be dismantled prior to the rainy season.

Furthermore, an environmental monitoring plan still has to be prepared, and the following check items are recommended for monitoring in the IEE report:

- Cofferdam should be constructed in sections upon requirements for the construction purposes.
- Removing the cofferdam by the end of September.
- Garbage from a labor camp site should be properly treated and not to be washed away even in an occasion of flood.
- Removing vegetation should be minimized, and when it is unavoidable, indigenous plant species should be used for planting.
- Pile of soils should be compacted to prevent from erosion.

2) Overall Evaluation on the IEE by the B/D Study Team

i) Overall Evaluation of the Environmental Considerations

Considering the recommendations made in the IEE report as well as the comments by the DWC, it is predicted that the level of negative impacts on the natural environment and social environment are not serious. Furthermore, quality of the environmental and social considerations of the Project generally satisfies the requirements of the JICA's guidelines. However, public consultation and mitigation measures to reduce impact on the people who are involved in the mining activity are rather weak. More specific comments on the IEE report are presented in the subsequent section.

ii) Public consultation

The JICA B/D team specifically stressed the importance of public consultation and that the RDA agreed to conduct the consultation separately from the IEE (Table 2.6.6-2), and the outcome would be included in the IEE report. However, the IEE report does not seem to address details of the outcome of the consultation.

iii) Summary of the Check Items in the JICA's Guidelines

Check items of the JICA's guidelines have been confirmed and summarized in the table 2.6.14. The Project does not involve serious problem with respect to the environmental and social considerations of the guidelines. Further issues to be confirmed are presented in the following section, but they are unlikely to become detrimental issues to the Project.

Table 2.6.14 Summary of the check items in the JICA's Guidelines

Check Item*	Finding / Present Status
1. Sector	Roads, railways and bridges
2. Project description	Construction of a new highway bridge, approximately 300 m
3. New project / On-going project	New project
4. Location of the project site	In the Flood Plains National Park (protected area), managed by the DWC.
5. Consistency with the higher program / policy	National Physical Planning Policy (2002) National Physical Planning Department: Upgrading the linkage between Polonnaruwa and Batticaloa, which are designated as center cities to initiate regional development.
6. Alternative plans considered	Three locations (A, B and C) for a bridge were compared and the most economical with the least negative impact plan has been adopted.
7. EIA status	IEE is requested with a specification by the project approving agency, DWC in June 2004. The IEE was conducted and approved by the DWC on 10 September 2004 (No. W1/6/1/9/159).
8. Other permit required	A permit from the Mahaweli Authority
9. Stakeholder meeting	RDA organized stakeholder meetings from 22-24 July 2004 inviting primarily the people who involve the sand mining in the Mahaweli River around the bridge site.
10. Type of potential social impact	- Involuntary resettlement: a few households - Pumping station: National College of Education - Relocation of the use of area by the people who involve in the sand mining activity. - Logging: small scale including branch trimming of the Bo tree (need a permit from the DWC)
11. Level of negative impact on natural environment	Negligible impact on the ecosystem since the area has been largely altered by human activities and that natural vegetation does not almost remain.
12. Level of negative impact on social environment	Limited impact on social aspect since: - The number of involuntary resettlement household is small. - The sand mining activity is illegal, and the DWC is planning to regulate it even if the project is not implemented. - Logging the Bo tree might be a serious issue but impact on the tree has been minimized, and it has been said that trimming some branches may not be a social issue.
13. Information disclosure	Methods need to be confirmed.

*: Wording in the check items have been modified referring to the JICA's Guidelines

Attachment 1 TOR for the IEE prepared by the DWC

Department of Wildlife Conservation
Terms of Reference IEE Report for the

Proposed New Highway Bridge at Close Vicinity of the Existing Rail Cum Road Bridge at Manampitiya across Mahaweli Ganga.

Project Proponent	-	Road Development Authority
Project Approving Agency	-	Department of Wildlife Conservation
Validity Period of the TOR	-	This terms of reference is valid only for 18 months from the date of issue. The Supplemental Report should be submitted within the validity period
Study Area	-	The study should cover the 200 m corridor on either side of the Centre line of the proposed trace.

Outline of the Report

Executive Summary

1) Introduction
2) Description of the proposed bridge and alternatives.
3) Site description & the description of the existing environment.
4) Anticipated environmental (Hydrological & Ecological impacts of the proposed Bridge)
5) Measures to mitigate or manage environmental consequences.
6) Monitoring Programme.
7) Conclusion and Recommendations

Annexes

i) Terms of Reference
ii) Source of data and information.
iii) References
iv) List of prepares and their work allocation.
v) Complete set of relevant maps, tables, charts, layout plans and other details

Executive Summary

This section should be a concise discussion of the salient features of the proposed bridge, the existing environment of the project site and it environs, key environmental impacts and measures proposed to mitigate the environmental impacts.

1.0 Introduction

1. 1 Objective of the report
1.2 Extent and scope of the study

1.3 Methodologies adapted in IEE Report preparation
1.4 Justification of the proposed bridge
1.5 Investment and funding sources
1.6 Applicable laws regulations, standards and requirements covering the proposed project
1.7 Approvals needed for implementation of the proposed activity from relevant agencies (Attach required copies of same)
1.8 The conditions laid down by the government agencies in granting environmental clearance for the project (eg. SLLRDC etc.)

2.0 Description of the Proposed Bridge

2.1 Details of proposed bridge (exact trace designs)
2.2 Extent of the project area
2.3 Location (Local Authority, District Secretariat and Divisional Secretariat)
2.4 Location map of reasonable scale indicating project site and protected areas, residential areas, plantations, paddy fields, homestead and surrounding developments.
2.5 Project layout plan (This should include access roads to site, housing units, recreational sites, commercial complexes {if any) etc.)
2.6 Construction programme (Timing and duration of all project activities from preconstruction to full operation)
2.7 Methodology of construction (land clearing, excavation, earth moving, quantities of raw material including soil, and metal)

3.0 Description of the Existing Environment

3.1 Physical Environment

Topography and Hydrology

- List of existing irrigation of drainage/ flood protection schemes retention areas, marshlands and/ or any other water bodies encountered.
- Topographical description of the area
- Drainage capacity of existing waterways and flood ways across the proposed trace.
- Existing ground levels with respect to MSL along the trace.
- Ground water quantity, levels and present uses.
- Surface water quantity, present uses of surface water/s including water supply intakes.

Geology and Soil

- General geology of the area (using on inch geological maps)
- Soil types and distribution
- Mineral resources if any (utilized and potential)

Ambient Air Quantity and Noise

- Existing air quantity, noise and vibration levels (concentrating on specific areas such as schools, hospitals, etc.)

3.2 Ecological Resources

- Existing natural terrestrial and aquatic habitats and their ecological significance to the ecosystem.
- A brief summary of existing flora and fauna (aquatic and terrestrial)
- Rare, endemic species (as a comparison with the distribution of them in other parts of the country)
- Animal movements pathways and their significance
- Reserved areas (within or in proximity to study area)

3.3 Socio-Economic Aspects

- Existing settlements and present land use forms
- Demographic characteristics
- Land and property ownership
- Communication facilities
- Water supply and sanitation sources
- Agricultural pursuits
- Present road network
- Other existing infrastructure facilities
- Current development trends and growth (both planned and unplanned)
- Housing (numbers and socio economic status)

4.0 Anticipated Environmental Impacts

This chapter should show the overall effects on the individual environmental components during construction and operation of the project. Impacts should include the foreseeable direct and indirect, long and short-term effects. Significant and non-significant impacts should be tabulated in and appropriate matrix.

4.1 Hydrological impacts

4.1.1 Erosion, siltation and sediment runoff:

- Excessive corrosion/sediment runoff from cut-and fill areas
- Effects to water ways and adjacent lands

4.1.2 Water Quality Impacts

- Impacts on surface water (Quantity and quality due to change of flow regimes and pollutants)

4.1.3 Impacts on Irrigation and Flood Protection Works

4.1.4 Impacts on Flood Plains

- Impacts on the flood discharge characteristics of rivers and streams.
- Future flood water levels, with respect to MSL and flood problems in the area as a result

of future development activities
- Change in ground water levels in wetlands

4.2 Impacts due to land clearing, excavation, earth moving and removal of vegetation

4.3 Impacts due to fill material
- Impacts due to extraction of sand soil and metal

4.4 Ecological Impacts

4.4.1 Impacts on Ecosystems

- Impacts on rare, endangered, threatened and endemic species
- Encroachment of people into ecologically sensitive areas

4.4.2 Impairment of fisheries and other beneficial water uses

4.5 Impacts on Environmental Aesthetics (Due to the lack of resurfacing/ replanting of exposed areas, blocking of scenic views, or inattention to the aesthetic appearances of the structures etc.)

4.6 Land Use Impacts

- Fragmentation and of fertile agricultural lands
- Loss of paddy, coconut, rubber lands and other crops and loss of production.

4.7 Social Impacts

- Community severance (e.g. isolation of neighborhoods, socio-economics groups)
- Generation of new development (e.g. housing and industries)
- Change of property values and nature of compensation values decrease.
- Change in travel patterns and accessibility (e.g. vehicular traffic commuters, bicycles and pedestrians)
- Change of accessibility to and demand for schools, religious institutions, police, fire protection and business etc.
- Impacts on other modes of transportation and transportation facilities.

4.8 Relocation Impacts (if any)

- Households to be relocated (A socio-economic profile of them should also be given)
- A list of business and industries to be displaced.
- Availability of relocation sites and impacts on them
- Cost/benefits of relocation. (e.g. Loss/ gain in patrons, change in travel/ delivery times etc.)

4.9 Impacts on historical/cultural monuments / areas:

5.0 Measures to Mitigate or Manage Environmental Consequences

- The report should propose measure to minimize/ mitigate the impacts and outline the effectiveness of the proposed measures that are to be provided.
- A relocation plan and compensation package should be prepared including availability of decent, safe, sanitary, and affordable housing of the displaced.

6.0 Monitoring Programme

This section should specify the aspects required to be monitored in order to access the effectiveness of the proposed mitigatory measures and environmental impacts during pre-construction, construction and operational stages of the proposed project.

7.0 Conclusion and Recommendation

The acceptability of the proposed bridge.

Attachment 2 Environmental Permit by the DWC (10 September 2004), Permit No. W1/6/1/159)

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வன ஜீவராசி பாதுகாவல் திணைக்களம்
Department of Wildlife Conservation
අංක 18, ග්‍රෙගරි පාර, කොළඹ 07.
இல. 18, கிறகெரி வீதி, கொழும்பு 07.
No. 18, Gregory's Road, Colombo 07.

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ඔබේ අංකය / உமது இல. / Your No.

දිනය / திகதி / Date /09/2004

General Manager,
Road Development Authority.

Proposed New Highway Bridge at close Vicinity of the Existing Rail Cum Road Bridge at Manampitiya Across Mahaweli Ganga.

This is to inform you that the Department of Wildlife Conservation after studying the IEE Report of the proposed " New Highway Bridge at close Vicinity of the Existing Rail Cum Road Bridge at Manampitiya Across Mahaweli Ganga" and Reviewing the comments from the TEC members and your responses to such comments, has decided, in forms of regulations 9 (1) of the National Environmental (procedure for the approval of projects) Regulations No. 1 of 1993 to grant approval for the implementation of the above project subject to the following conditions.

1.0 General

1.1 The project should be concluded within 2 years unless upon written application within thirty days prior to this date Department of Wildlife Conservation extends this time.

1.2 Construction activities within the Flood Plains National Park are not allowed from 6.00 p.m. to 6.00 a.m.

1.3 All labour camps and machinery units must be placed outside the National Park and outside the 60 m reservation on either side of the Mahaweli Ganga.

1.4 Necessary approval should also be obtained from the Mahaweli Authority of Sri Lanka prior to commencement of the construction activities.

2.0 Mitigation of impacts during construction phase of the project.

2.1 Ecological resources

2.1.1 Existing high canopy cover (if any) of the project area within the wildlife reserve should not be cleared

2.1.2 Any of the existing valuable trees should not be damaged or removed

2.1.3 The disturbed areas within the 60 m on either side of the Mahaweli Ganga (Environmental sensitive reservation of the river) should also be replanted with indigenous plant species and horticulture spices for conservation and to improve the aesthetic beauty of the site Suitable plant species are recommended to introduce in the affected areas of the river banks.

2.1.4 No borrow areas should be allowed in Flood Plains National Park and 60 m reservations on either side of the Mahaweli Ganga.

කාර්යාල / அலுவலகம் / Office 94-011-2694241
ෆැක්ස් / தொலைநகல் / Fax 94-011-2698556
ඊ-මේල් / மின்னஞ்சல் / E-Mail director@dwlc.lk, dg@dwlc.lk
අධ්‍යක්ෂ ජනරාල් / பணிப்பாளர் நாயகம் / Director General 94-011-2698080
අධ්‍යක්ෂ (පරිපාලන) / பணிப்பாளர் (நிர்வாகம்) / Director (Admin.) 94-011-2698559
අධ්‍යක්ෂ (මෙහෙයුම්) / பணிப்பாளர் (தொழிற்பாடுகள்) / Director (Operation) 94-011-2678751

2.2 Mitigation of Social Impacts

2.2.1 The people living inside the project area should be relocated according to the National resettlement policy prepared by the Ministry of Agriculture, Land, Livestock and Irrigation.

2.2.2 The project proponent shall employ as many as possible from the local areas. Preference shall be given to the residents living around the area.

2.3 Noise from the construction activities

The noise levels at the boundaries of the construction site shall not exceed the stipulated limits stated in schedule III of the National Environmental (Noise Control Regulations No. 1 of 1996) as per Gazette extra ordinary No. 924/12 dated 23rd May 1996

We wish to draw your attention to regulation 17 which states.

17. i A project proponent shall inform the appropriate Project Approving Agency of

(a) any alteration to a proscribed project approved under regulations 9 (i), and 13 (i); and o

(b) the abandonment of such approved project

ii The project proponent shall where necessary obtain fresh approval in respect of any such alterations that are intended to be made to such project. The Project Approving Agency shall in consultation with the authority determine the scope and format of the supplemental report required to be submitted for such alterations.

iii The project proponent shall, where a project is abandoned, restore the project site to a condition as specified by the project approving agency.

Dayananda Kariyawasam,
Director General of Wildlife Conservation.

Cc. – (1) Secretary, Ministry of Highways - For information Pl.
(2) Director General, Central Environmental Authority - -do-
(3) Director General, Mahaweli Authority of Sri Lanka - -do-

CHAPTER 3

PROJECT EVALUATION & RECOMMENDATIONS

CHAPTER 3 PROJECT EVALUATION AND RECOMMENDATIONS

3-1 Project Effect

This project covers the bridge location along National Highway 11 whose rehabilitation is under way as a part of urban infrastructure development activities in the northern middle and eastern provinces in accordance with the Sri Lanka Government's basic concept of pursuing a "Comprehensive Regional Development Approach," and includes implementation of the following services:

- Construction of a new highway bridge at Manampitiya (bridge length 302 m)
- Construction of the access roads (246 m on the left bank and 182 m on the right bank) to this bridge

1) Direct effects

Direct effects in the region covered by this project are summarized in Table 3.1.1.

Table 3.1.1 Direct effects of the project

Present status and issues	Proposed countermeasures	Expected effects and degree of improvement
① In order to use the existing bridge as a railway-highway bridge, which means it is closed to vehicles while a train is passing. As a result, traffic bottleneck occurs.	The new highway bridge will be constructed on the upstream side of the existing bridge.	The new bridge will eliminate traffic bottleneck and access throughout the year.
② Narrow width of the existing bridge is restricted alternating vehicular crossing. As a result, vehicle retention time waiting for passage of oncoming vehicles is increasing.	The bridge is planned to be wide enough for two lanes to enable two-way traffic.	The new bridge will eliminate the vehicle retention time. As a result, movement of passenger and physical distribution will be assured and will expand transport volume.
③ The track on the existing bridge is improved as a modified simple road deck. As a result, runs performance and safety feature are poor while crossing the bridge.	The new highway bridge and approach road are planned as a straight and a continuity alignment.	Separated from the railway bridge, the new bridge will assure traffic safety by ensuring a stable speed.

2) Indirect effects

Indirect effects from implementation of the project are summarized in Table 3.1.2.

Table 3.1.2 Indirect effects of the project

Present status and issues	Proposed countermeasures	Expected effects and degree of improvement
① Growth of social economic in grain belt has stagnated.	It will be improved to ensure smooth traffic flow as the new highway bridge.	Transport route will be improved between the System C area and the western area. As a result, the new highway bridge will contribute greatly to the social-economic development of its area.
② Serious delay of improvements in urban infrastructure.	It will be selected as an early development promotion area.	As regards the regional development policy, the progress of the peace process will promote rehabilitation of the northeastern area.

3-2 Project Recommendations

The most important challenge that Sri Lanka faces in the effort to develop and sustain effects of this project is to ensure implementation of complete management and maintenance operations after the opening of bridge service. It should be noted that a large number of national industries, including the important farm belt System C, are located along this route. These have a great effect on socioeconomic conditions in Sri Lanka. When the route to the western area is improved, regulations preventing overloaded vehicles from crossing the bridge must be set and enforced because their loads will damage the bridge structure. In addition, improvement of the road alignment, including the new bridge construction, may induce high-speed driving. Strict speed limits will be required and strengthened traffic regulation will be needed to ensure traveling safety.

As regards maintenance of the bridge structure and access roads, regular inspection and cleaning of the drainage facility and expansion joints are essential to maintenance of the integrity of the bridge structure — even though it is difficult to imagine that

damage could occur in the early period after the bridge opens. Moreover, the bridge as a whole must be checked for scouring around piers, etc. at the end of the rainy season and partial repairs must be made as needed to ensure longer service life of the bridge and access roads. These operations can be made more efficient and the completed work quality more uniform by introducing an inspection manual and check sheets for implementation of maintenance.

By rebuilding the existing Manampitiya bridge as a new highway bridge, traffic jams can be eliminated, resulting in secure all-weather traffic between Polonnaruwa and Batticaloa and improvement of the flow of people and goods. In addition, two-way traffic will become possible, eliminating vehicle retention, and separating the railway bridge will enhance road traffic safety.

Construction of the highway bridge in this project will not only contribute to elimination of the bottlenecks on the east-west trunk road, but it is also expected, as regards the regional development policy, the progress of peace process contibutes significantly to rehabilitation through development of the northeastern area (territory where antigovernment forces are strong). On the other hand, nine cities, including the principal cities of Polonnaruwa and Batticaloa along National Highway 11 on which this bridge is located, have been designated as key cities in the early development promotion area. Improvements and urban infrastructure development activities will be focused on these nine cities for the coming three decades. This is expected to contribute to medium- to long-term economic development.

Finally, the maintenance services to be implemented by Sri Lanka after the opening of the new bridge do not require excessively sophisticated technology. Sri Lanka can implement bridge operation and maintenance by using its own resources in terms of personnel and finances.
Consequently, implementation of the project under the Japanese grant aid is considered justifiable.

To make this project more effective, due attention must be paid to the following points:

(1) Thorough checking for scouring around existing piers at the end of rainy season

The location of the piers of the new bridge is planned as to lengthen the river flow direction relative to the piers of the existing bridge. The reason for this is to prevent scouring of the existing bridge's piers. Particularly during the swelling of the river in the rainy season, scouring, including riverbed scour, may occur around the existing bridge's piers due to changes in the flow caused by the existence of the new bridge piers on the upstream side. At the end of the rainy season, therefore, regular maintenance must be thorough, including checking of the river bed around the existing piers for any scouring.

(2) Enforcement of regulations prohibiting speeding and overloaded vehicles

It is naturally expected that smoother road alignment will lead to speeding and overloaded vehicles traveling on the bridge. Principal causes of damage to bridges and related structures are speeding vehicles hitting the structure and wear on the deck from overloaded vehicles. It is therefore necessary for the Polonnaruwa Office of the RDA to prevent speeding and overloaded vehicles by strengthening speed regulations and by installing vehicle platform scales.

(3) Environmental and Social Considerations

When executing a Japan's Grant Aid scheme, proper consideration must be given to the natural and social environment and the impacts on them minimized. As for the natural environment, when the IEE of the GOS determines there are no significant impacts, it is sufficient to prepare an EMP for construction and to adhere to this EMP when construction is being carried out.

As for the social environment, in order to realize a project design that will avoid involuntary resettlement, it is only necessary that the related facilities of the sand mining groups be slightly shifted. Note that these groups are operating illegally in the national park, but after discussions prior to the Project these groups have agreed to move its facilities upstream. Note that consideration is also being given to the bo tree orchard as well as to other social aspects in the design of the Project.