8.2 Resettlement Action Plan

8.2.1 General

In accordance with survey proceeded after the Route -1 was selected, two (2) more homesteads have been included due to necessity to acquire some land for intersections and other highway concerned facility space. As a results, in total 53 homesteads are designated as to be affected by the Project. Majority householders wished for cash compensation and the RHD has taken a stance for cash compensation as a most preferable method to land compensation, as wished by few affected householders. So that an actual relocation site development will not be carried through discussion with the RHD.

8.2.2 Objectives of the Resettlement Action Plan

The Resettlement Action Plan (RAP) identifies the scope of the impact of the alignment and extent of losses; and outlines policy issues, mitigative measures and implementation framework. It is based on the findings of socio-economic and resettlement survey of the Project Affected Persons (PAPs) which is supplemented by additional field observations, discussion with RHD and concerned officials, primary and secondary stakeholders of the Project. The primary objective of the RAP is to provide guidelines for compensation payments, including provisions for payment of replacement land, restoration of income and livelihood of the affected people.

The PAPs will be provided with compensation for land, houses, shifting/transport allowance, house construction grant and subsistence allowance to compensate disruption and to sustain their income level and livelihoods. The land acquisition and resettlement operation will be carried out in consultation with the PAPs and all efforts will be made to minimize disruption during project implementation.

8.2.3 Land Acquisition and Resettlement in Bangladesh

1) Background

The first land acquisition law was enacted in 1824, known as Regulation I of 1824. The preamble to Regulation I of 1824 stated - "Where as it being necessary occasionally to require the surrender of the property of individuals, for purposes (general convenience to the community, it appears expedient distinctly to define the course of proceeding to be followed in such cases, in order, that works an arrangements of public utility may not be unduly impeded, and that at the same time, a just and full compensation may be secured to all persons, holding an interest in the property so

appropriated)- Provisions and scopes of this first land acquisition law were amended and expanded in 1850, 1857, 1863 and led to Act of 1894 which had been in force till the time of partition of British India in 1947. This law remains in force in Bangladesh with some modifications until it was replaced by Ordinance of 1982 which is the present day land acquisition law of the country.

2) The Ordinance and The Act

The Act of 1894 lacked provision for payment of compensation during acquisition. As a result, the requiring body often used to over-estimate land requirements leading wastage and misuse of land at the cost of the owners.

The Acquisition and Requisition of Immovable Property Ordinance II of 1982 provided certain safeguards for the owners as far as payment of compensation is concerned, also against wastage and misuse of land. Under this ordinance the Deputy Commissioner (DC) or any other District Officer has been empowered to acquisition is property in his jurisdiction whenever it appears to him that the property in question needed or likely to be needed for public purpose or in pubic interest. The only property immune to this ordinance is that used by the public for the purpose religious-worship, graveyard, cremation ground and cemeteries. The Ordinance was amended in 1993 to increase the premium on calculated market value of property from twenty percent to fifty percent and in 1994 to amend some sections of Ordinance II of 1982 and make provisions for payment of crop compensation to the tenant cultivators.

The DC after examining the claim of compensation will make an award of compensation for the property. The DC will also divide the compensation among all other sharers, if any. In determining the amount of compensation, the DC will take into consideration the following factors:

a) Market value at the date of publication of the notice to acquire the land in question; the market value is determined/calculated on the basis of average value of similar properties in the vicinity during the twelve months preceding the date of publication of the said notice;
b) Compensation for standing crops or trees of the land/property at the time of taking its possession by the DC;
c) Dislocation from his other properties, if any;
d) Injuries/adverse effect on his other properties or his income;
e) Reasonable cost of shifting the residence or place of business;

f) Diminution of the profits of the property in between the period of date of service of notice and date of taking possession of the property by the DC;

g) In addition, an additional amount of 50% of the market value (as amended in 1993) so calculated will be awarded to the dispossessed person in consideration of the compulsory nature of the acquisition.

After an award is made, the DC will make the payment of the entire amount of compensation in full before the land/property in question is acquired and taken possession of. The DC, with the prior approval of the Government, can revoke all the proceedings in respect of acquisition of any property at any time before the payment of compensation, if the requiring body/person fails to deposit the amount with the Deputy Commissioner within two months of receipt of the estimate of the award of compensation.

The acquired property can not be used for any other purpose than that for which it is acquired. If the land remains unutilized after acquisition or is used for other purpose, the land will be liable to be surrendered to the Deputy Commissioner.

The Ordinance provides for the provision of arbitration when an affected party does not accept the award of compensation made by the DC. An affected party who does not accept the award has the right to apply to the Arbitrator within 45 days from the date of serving the notice of the award seeking revision of the award. The Arbitrator is a Judicial Officer not below the rank of Subordinate Judge.

The Arbitrator can revise the amount of compensation in favour of the applicant or update that awarded by the DC. When the amount of compensation is enhanced, an additional compensation up to maximum 10% can be offered for payment. Both the parties have the right to file an appeal with the Arbitration Appellate Tribunal against the award of the Arbitrator. The decision of the Arbitration Appellate Tribunal will be final and the procedure for the award of payment will be similar to that of the Arbitrator.

The 1989 Act

The Emergency Property Acquisition Act 1989 was passed by the Government to acquire private property swiftly on emergency basis in order to control flood and tidal waves, bores and river erosion and to take permanent measures against such natural calamities. The main features of this Act were that (i) within 10 days (of the Government Order) the acquired land must be transferred to the DC and that (ii) the

affected people will receive compensation within 7 days of submission of demand notice (for the acquisition of the property in question).

The 1989 Act does not replace the 1982 Ordinance and has been applied to the Jamuna Multipurpose Bridge Project in most of the components, to ensure quick acquisition. The 1989 Act was a temporary Act and has ceased to function in 1994.

3) Administrative Instructions

In order to implement the provisions of the law, land acquisition process involves certain administrative instructions. These instructions are carried out through the following tiers of implementing instruments:

a) All cases of acquisition exceeding 50 bigha project must be approved by the Government.
(Note: 1 bigha = 33 decimal = 0.33 acre, 1 decimal = 40.47 m^2)

b) Central Land Allocation Committee (CLAC) comprising the Minister in-charge of land and concerned Secretaries is entrusted with the responsibility of considering all land allocation cases of above five acres but below 10 acres in the Metropolitan City of Dhaka.

c) Divisional Land Allocation Committee (DLAC) formed at the Divisional level is entrusted with the responsibility of considering and disposing of land allocation cases of above two acres but not exceeding 16.66 acres.

d) District Land Allocation Committee formed at the District level is entrusted with the task of land allocation cases within the respective district not exceeding two acres of land.

4) Implementation and Institutional Aspects

The administration of the Divisions, District and Thana comes under the direction of the Ministry of Establishment headed by the President. The officers have the responsibility for revenue collection, administration of land laws, maintenance of law and order, criminal justice and administration of general laws and programs.

The Divisional Commissioner is entrusted with the responsibility for collection of revenue, administration of land laws, criminal/ justice, and all general laws affecting the population within his jurisdiction. Further, he holds the responsibility of coordinating the work of different ministries active in broad functional areas of the

Government. For issues relevant to land acquisition the Divisional Commissioner also works under the direction of the Ministry of Land.

5) The Deputy Commissioner and Land Acquisition

The Deputy Commissioner is the Chief Executive Officer at the District level. Deputy Commissioner includes an Additional Deputy Commissioner and any other officer authorized by the Deputy Commissioner to exercise any power conferred perform any duty imposed on the Deputy Commissioner by or under the Acquisition and Requisition of Immovable Property Ordinance 1982. The same definition applies to the office of the DC under the Emergency Property Acquisition Act of 1989.

6) Acquisition of land for development purposes

Under the Ordinance II of 1982, the Government can acquire any private property (except places for religious worship, graveyard and cremation ground) for public purpose or in public interest.

The organization requiring land for development and public purposes will make the estimate for minimum requirement. Meticulous examination of the amount of land required must be made before a proposal is vetoed. Any proposal for acquisition of land for a project over 50 bighas (16.66 acres) must have government approval. The land requiring organization will also have to deposit (with the Deputy Commissioner) compensation money in advance to be determined by the DC on the basis of average recorded value. Land so acquired cannot be used for a purpose other than that for which it was acquired or left unutilized.

The concerned land requiring organization will submit the proposal for acquisition to the Deputy Commissioner of land for public or development purposes. The Deputy Commissioner will scrutinize the proposal and see if the land requested for will be necessary for the purpose. Accordingly, he will get it processed through the District Land Allocation Committee and put the Land Acquisition Office into operation.

7) Rehabilitation of Persons Affected by Land Acquisition

Prior to 1971, the Government had not considered the matter of resettlement of persons displaced by land acquisition. The Government had (in modification of all previous circular) issued an instruction to concerned organizations to the effect that whenever land was acquired for public purpose and the process involves displacement of persons, provisions should be made by the requiring bodies for the rehabilitation of the affected people.

The following procedures were to be observed while carrying out the above instruction.

a) The individual requiring organization does not have the resources to undertake the task of rehabilitation of displaced persons. The tasks, therefore, will be given to the Chief Engineer, Public Works Department/Housing and Settlement Directorate for Dhaka City. In case of remote areas like districts and sub-divisions, the responsibility will be given to the DC's and SDO's concerned. The DC's and the SDO's, as the case may be, should execute the rehabilitation scheme in consultation with the Local Government Engineers of the appropriate department.

b) The cost of the rehabilitation scheme and other details involved will be worked out by the requiring bodies at the-time of allocation of land by the concerned Land Allocation Committee or the District Site Selection Committee as the case may be.

c) The rehabilitation cost will be borne by the requiring body. This will help the executing authority to prepare plans and develop lands after acquisition and provide certain facilities in the settlement area like mosques, schools, roads, etc. at minimum cost.

d) The allottees, i.e. the displaced persons will be required to purchase their plots (land) by the compensation received by them.

New law: Act XIV of 1995

The Jamuna Multipurpose Bridge Project (Land Acquisition) Act 1995 was enacted on 9 July 1995 to help acquisition of land as per law for the project. Under this act, any person constructing structures or other establishments or modifying the class/type of land that is being acquired or may be acquired for the implementation of the project, with malafide intention of receiving excess compensation, will not be entitled any compensation. The Jamuna Multipurpose Bridge Project (Land Acquisition-compensation claim refusal) Rules 1995 was enacted on 17 December 1995, wherein it has been explained how to record the structures, other establishments and the type/class of land to be acquired for the project and determine those made with malafide intentions of receiving excess compensation. This new law was also applicable for the Jamuna Bridge Railway Link Project.

8.2.4 Land Acquisition and Resettlement Policy Framework

1) Government of Bangladesh and the Donor's Policies

Land acquisition and resettlement (LAR) policies for the Project are derived from two sets of sources. The first includes *The Acquisition and Requisition of Immovable Property Ordinance* (Ordinance II of 1982) and its subsequent amendments in 1993 and 1994 (Annex). The 1982 Ordinance governs all cases of acquisition and requisition by the government of immovable property (i.e., land, built structures etc.) for any public purpose or in public interest. In accordance with the Ordinance, the legal process is initiated by application by the requiring agency or department to the DC of the concerned District with a detailed map of the area and a land acquisition plan. The DC is empowered to permanently acquire and/or temporarily require the property in question and the owners affected by such acquisition are eligible to compensation for losses. In assessing the amount of compensation and value of the acquired property, the DC Office takes into consideration as number of factors such as review of land transaction in the locality over the past twelve months, and present market rate. The Ordinance was amended in 1993 to increase the amount of the premium for compulsory acquisition from 25% to 50% on the assessed value of the property and to match the market or replacement value. The 1994 amendment made provisions for payment of crop compensation to the tenant cultivators. The Ordinance, however, only recognizes the titled owner(s) of the property and the non-titled users (for example, renters, illegal occupants/squatters) are not eligible to any compensation.

2) Objectives and Principles of the Resettlement Action Plan

The land acquisition and resettlement plan for the Project has been prepared to ensure that those affected by the ROW for the Rupsha Bridge Project are not disadvantaged and can regain their lost income and livelihoods in a short period of time. Thus, the policies and approach adopted in this project meet the requirements and standards of the above involuntary resettlement policy. These are summarized below.

- Land acquisition and resettlement issues to be considered early on during the project design.
- Consultation meetings with PAPs and other stakeholders, including local government and other concerned officials, were held to include local inputs into the project design, this process will continue throughout the planning and implementation stage.

- All PAPs have been identified along the three alternative routes and their land, structures, and other assets have been enumerated; a complete census survey has been conducted to assess the impact and to propose mitigations.
- PAPs will be paid cash compensation for land at replaced market value. Also, cash compensation for structures, crops etc. at market rate. PAPs without land titles e.g. rented, sheltered or other types households in the possible cases may receive relocation and income restoration grant.
- The RAP includes provisions for other assistance such as shifting cost, house reconstruction grant and income restoration allowance as special compensation package.
- RHD will engage an NGO for implementation of the RAP; the Plan contains provisions for external monitoring of the resettlement operations.

RHD has applied similar approaches to compensation and resettlement of PAPs in others donor-funded rehabilitation projects.

3) Identification of Project Affected Persons their Losses and Compensation Issues

Compensation will be paid for all kinds of losses due to ROW acquisition for the RBP. The policy recognizes both *directly* and *indirectly* affected persons as eligible for compensation based on the nature of losses. For operational purposes, it is therefore, important to define and clarify the following concepts and issues associated with project impact and resettlement benefits.

a) Project Impact: Losses and Risks

While the amount of land acquisition is relatively modest, the social impact is significant due to small farm holdings coupled with the residential land mostly located in the urban area. The PAPs will not only lose their homestead and limited agricultural land but will require relocating due to the project. Further, the impacts may vary among the PAPs due to ownership, land tenure residential status. Nearly half of the households are either landless and/or sharecroppers and earn their livelihood primarily from wages and limited cultivation.

The affected households who would require relocation and other assistance may be broadly divided into two categories. First, the households who either own house plots and/or share residential plots with their parents. Second, the remaining households who live as tenants/ rentee on landlords' property or live on others land

as shelters. The households in the latter group though it seems that they will lose access to house plots. But actually these households are not permanent settler. As a result they will not be entitled to get the house plot. In that case these households will be entitled to get relocation assistance and income restoration grant only. The RAP has taken into account the various users of the ROW land, including rented and sheltered persons to mitigate against negative impacts. Table 8.2.1 identifies various risks against the nature of losses in developing compensation and resettlement measures as well as income restoration assistance.

Table 8.2.1 Impact, Risks and Mitigation Measures

Type of Loss	Impacts & Risks	Mitigation Measures
1. Loss of different types of land due to ROW Road embankment acquisition	· May cause disruptions in existing land holdings and resource use · Loss of income from land · May cause negative impact without residual land	· Land for land or replacement land for residential/ other productive l use · Payment and compensation at the replacement/market value · Income restoration assistance
2. Loss of crops/trees/ plants on ROW	· Loss of income from standing crops · Loss of income from trees or perennial crops	· Cash compensation at the market rate of crops · Compensation in cash based on age, type and diameter of trees
3. Loss of residential structure due to ROW to acquisition	· Lack of housing & living quarters by the family members · Severe impacts on rented & sheltered families	· Shifting allowance for relocation as well as reconstitution grant.
4. Loss of industrial/ commercial structure due to ROW acquisition	· Loss of income from industry/ commerce · May cause loss of income	· Cash compensation at market value relocation as well as reconstitution grant. · Income restoration allowance for 90 days
5. Loss of work days/ employment due to dislocation	· May affected level of living and sustenance	· Employment in the embankment construction
6. Indirectly affected households	· Indirect impact on rented and sheltered households by the project	· One time cash grant for relocation and income restoration assistance.

8.2.5 Project Compensation Policy

The compensation policy covers losses of PAPs, both titled owners and non-titled persons, and is outlined below. While some losses are covered by existing GOB laws (loss of land by owners, structures, crops, tress); others have been developed to meet the policy standards in resettlement and are specific to the project.

1) Compensation by RHD /Government of Bangladesh - DC Office

All land acquisition-related compensation and payments for lost structures owned by PAPs will be paid by the Khulna DC Office to Entitled Persons (Eps) immediately after Gazette notification under 7(3) a (i.e., publication of the notice of award of compensation) of the Ordinance II of 1982. The DC Office will conduct a joint verification with RHD field staff of the listed properties (i.e., land and structures) on the alignment and complete the assessment for payments. RHD will allocate appropriate funds with the DC Khulna for payments of compensation.

- DC office will pay cash compensation for land to the titled owners under the Ordinance II of 1982. Since the cash compensation is typically less than the market value, additional cash grant will be made available to assist PAPs to buy replacement homestead land.
- Payment of compensation for structures (residential and commercial), trees and crops to owners will be made by the DC Office.
- Cash compensation to tenant farmers (who cultivate the land) for loss of standing crops, if any, in accordance with the 1994 amendment of the Ordinance II of 1982.

In accordance with the law, compensation by DC office is to be paid to the owners (male/female) of property only. However, it is recommended that all additional grants to be paid by RHD through the implementing NGO.

2) Compensation by RHD / Government of Bangladesh – Implementing NGO

Payments for losses not covered by the GOB laws will be paid by RHD/GOB to meet the requirements in involuntary resettlement. These payments will be processed, prepared, and delivered by the implementing NGO to be hired by the Project for resettlement implementation. These additional measures have been designed to assist the PAPs in restoring their lost income and livelihood.

- Additional cash grant to match the market value for homestead land by the directly affected households. The implementing NGO will work with PAPs to identify suitable replacement land at reasonable prices or alternatively assist them in other possible ways to restore their lost income and livelihood.
- Transfer grants or relocation assistance @ 10% of the assessed value of the structures by the DC office or a minimum lump sum grant of Tk. 2000 which ever is higher has been proposed to pay to each households (owner of the structure). In

case of the rented, sheltered or others households, one time cash grant of Tk. 2,000 has been proposed to be given by the RHD/NGO. In addition, all PAPs will be allowed to take the salvaged materials for rebuilding purposes at the new sites. Beside these, a lump-sum house reconstruction grant @ 10% of the assessed value of the structures also has been proposed for the owner of the structure.

- House construction grant @ 10% of the assessed value of the structure by the DC office of minimum grant of Tk. 3,000 which ever is higher.
- Cash grant of Taka 6,300 (Taka 70/day x 90 days) to PAPs (head of household only) for loss of income or wages due to dislocation and disruption of work. This is applicable to all affected household who are required to relocate due to implementation of the project.

3) Entitlement Matrix

The Entitlement Matrix presented in Table 8.2.2 outlines the various losses, methods of identification of EPs, compensation benefits and the results of actions in terms of restoration of income and livelihood of the affected people in the Project.

Table 8.2.2 Entitlement Matrix

No.	Nature of Loss	Application	Definition of EP	Entitlements	Results of Action
1	Loss of agricultural land by owners	Land located on the RoW of the alignment	User of the land with ownership records	Cash compensation at market value	Restoration of land and source of income for livelihood
2	Loss of access to land by tenant/ sharecroppers	Land located on the RoW of alignment	Renter/user of the land under contract-both formal and informal	One time cash grant @ Tk. 5000 per family	Cash income to lost crops
3	Loss of trees	Trees on ROW	Persons who own the land where the tress are located	Compensation at the market value, based on age of trees	Cash compensation for losses
4	Loss of homestead land as well as structures residential, commercial/shops by owner	Residential land and structure on alignment ROW	Legal owner of the land and structure	Compensation at the market value, based on age of trees	Reconstruction of location
5	Loss of structure/ housing facilities by the sheltered/ rented households	House/structure on the embankment ROW	Tenants renting/ sheltering the properly as identified by the social survey	One time cash grant for relocation	Relocation to new places
6	Loss of residence by squatters and illegal occupants	Residential structure on the ROW alignment	Illegal occupant land on ROW as identified by the social survey	Compensation for the Lost structure (if owner) as per assessed value/price, and transfer grant	Reconstruction of house in new site.
7	Loss of employment/ work opportunity	Head of the affected households on the ROW	Head of affected house- holds as recorded in the survey	One time cash grant of Taka 6300 as wage loss for 90 days	Assistance to regain lost income and livelihood.

8.2.6 Land Acquisition Implementation Procedure

After finalization of the exact route and ROW of the alignment out of the three routes RHD will initiate the process regarding land acquisition for the Project. In completion of the Land Acquisition Plan, it will be submitted to the DC Khulna. Table 8.2.3 identifies various steps of the tentative land acquisition activities and the procedures. Land acquisition procedure organization chart shows on Figure in Appendix.

Table 8.2.3 Land Acquisition (LA) Implementation Procedure

No.	Activity	Agency
1	Topographic survey and collection of preliminary data covering RoW land use, identification of plots (For finally selected route)	RHD- Project Staff
2	Socio-economic survey of the AP and submission of the draft RP(All routes)	Project Consultants
3	Preparation and submission of land acquisition proposal (For finally selected route)	RHD- Project Staff
4	Joint Verification by DC-RBP	D.C. Khulna and RHD- Project Staff
5	Preparation of award and cost estimate of LA	D.C. Khulna
6	Allocation of fund for compensation	RHD
7	Payment of compensation for land, structure, tree, crop etc.	D.C. Khulna
8	Hand over of land to RHD for construction	D.C. Khulna

8.2.7 Resettlement Action Plan

The scope of resettlement, particularly relocation of affected households due to ROW impact, is limited to only 53 households in Route-1. Under the situation PAPs of the different routes clearly expressed their relocation preferences in the socio-economic and resettlement survey. Of the households under Route-1 who would need relocation, majority said that they would remain within the "same village" . The preference is to remain within the vicinity of the present residence to enable the PAPs cultivation of residual land, and to maintain kinship and other social ties.

1) Concerns About Land Acquisition and Resettlement

When asked about any specific concern involving land acquisition and resettlement, 41.5% of the PAPs of Route-1listed fair compensation for lost properties, followed by timely payment of compensation 34.0%, respectively for the assets of Route-1. Respondents also listed assistance during relocation, replacement land and loss of income as important concerns.

2) Planning Relocation Options/Strategies

Based on the responses by the affected households and consultation with the local self-government and community leaders, the following relocation strategies have been developed. As indicated earlier, majority of the respondents clearly expressed their opinion in favor of on-site "relocation" with in the same village. Only a few affected households in Route-1, expressed preference for relocation to resettlement site. As such, it is not desirable to develop a resettlement site. In that case, NGO will assist those PAPs to find out replacement land in the area. Instead, PAPs will be assisted in the relocation process and be paid all eligible compensation -- compensation for land, structures, relocation, transfer grant, house construction grant and income restoration allowance -- in advance so that relocation is completed prior to construction work.

- On-Site "-Relocation"

  On-site "relocation" is the most preferred option of the PAPs and the most practical as well. The affected households may use part of the residual land (not acquired by the embankment ROW) for rebuilding and relocation. On-site relocation also reduces social disruption and allows PAPs to maintain existing social networks. As a result, the impact of relocation will be minimal and many affected households need not buy new land for relocation.

- Relocation of tenant and other types of households

  There are rented and other types (sheltered) of households who do not have their own house plots. But they are residing in the present place of residence on rental basis or any other arrangement temporarily. As such they will be given relocation and income restoration grant as they can relocate in new place as they did before.

3) Gender Issues in Resettlement

Women are actively involved in many different economic activities and contribute to the subsistence economy of the households. Their economic participation in the household is expected to remain unaffected due to on-site relocation. Of the affected households, 4 households respectively of Route-1 are headed by women. These households may need additional assistance and help for relocation. Particular attention in the form of additional assistance (one-time cash grant of Tk. 2,500 per households) will be given to attend their needs during the relocation as well as post relocation period.

4) Resettlers / Host Relations

The resettlement strategies in the Project preclude any resettler-host conflict, because the resettlers will either remain on-site or move within the same village thus maintaining their pre-existing social ties and networks. Therefore, no conflict or tension is anticipated. In fact, as a cultural practice of the area it is expected that people will mutually help each other even by providing land free of cost for settlement. Several of the affected households indeed live on house plots owned by others. If required, the EA and/or implementing NGO will conduct meetings with local villagers to avoid any conflict.

5) Occupational Preference in Post-Relocation Period

In order to restore lost income and livelihoods, the PAPs indicated in the survey their occupation preferences, which are shown in below. Majority of the PAPs prefer, the occupation as they did before, for livelihood and to restore their lost incomes in all the routes. The rest expressed preference for employment and new business.

Occupational Preference in Post-Resettlement Period

i) Same as before	77.4 %
ii) Employment in the Rupsa Bridge Project	7.5 %
iii) Job in the town	3.8 %
iv) New business	7.5 %
v) Do not know	3.8 %
Total	100.0 %

6) Income Restoration Assistance and Allowances for Lost Income

Households requiring relocation may suffer due to loss of work opportunities and lost income caused by dislocation. In addition to payment of all eligible compensation for lost assets, the following strategies consisting of additional grant and access to employment shall be taken so that PAPs can regain and improve their livelihoods.

- Allowances for Lost Income

The RAP has provision for allowance for lost income for a period of 90 days due to dislocation and relocation. The primary objective of this additional assistance is to allow the displaced PAPs to relocate and settle in. Further, this allowance is an assured source of income to support and sustain during the relocation and post-relocation period. A large majority of the PAPs have expressed their preference to continue their occupation as before in post-resettlement period.

7) Employment opportunity in the Project

The implementation of the project will require a huge unskilled labour daily for a steady period of about one year. It is expected that the rate of daily wages will also go up from Tk. 70 to Tk. 90 or more. Further, many commercial opportunities will develop during and after the construction of the bridge and approach roads. Thus, the construction work will greatly benefit the PAPs and will help restore their income and livelihoods.

- Women's Work Group in the Construction of the Bridge Project

  Women have traditionally been involved in different construction and maintenance work including earthwork in Bangladesh. This project will bring new opportunities to work and earn a sustained income over a good period of time. The implementing NGO will organize the women in groups as teams for the project work. RHD will encourage the contractors to hire women in the recruitment of local laborers for this purpose. Income from construction work will help the affected households restore their income and perhaps improve it in a short period of time.

8) Resettlement Cost

The resettlement cost estimate in Table 8.2.4 includes all costs regarding resettlement preparation, compensation, relocation, transfer costs, resettlement allowance, and administrative costs such as hiring of implementing NGO, and monitoring of the implementation arrangements. The total estimated budget for the RAP is Tk.203 million for Route-1, (for details, see Table 8.2.5 and 8.2.6 in Appendix).

Table 8.2.4 Resettlement Cost Estimates for Route 1

No.	Item	Taka
1	Land including registration cost	152,332,000
2	Structure	4,665,000
3	Standing Crops	2,130,000
4	Trees & Perennial Crops	2,005,000
5	Relocation/Transfer grant	466,500
6	Relocation Assistance for rented/other households	60,000
7	House construction Grant	466,500
8	Loss of Income/Wages	334,000
9	Assistance for female headed Households	10,000
10	Additional cost grant to match market value for purchase of land	1,510,000
11	Administrative cost for RHD resettlement unit	2,000,000
12	NGO contract for implementation of RAP (estimated)	4,500,000
13	Contingencies	6,000,000
	Grand Total	203,479,000

8.2.8 Recommendation

1) Community Participation and Resettlement Implementation

The survey team held meetings with the affected people and provided information about the alignments and its possible impacts in terms of land acquisition and relocation. This is evident from the data collected during the socio-economic survey and resettlement impact assessment of the Project. All the PAPs and the local people have been informed and aware about the project.

The census data also provide strong support and positive public response toward the project. Responses shown below indicate that the Project would benefit the people and the area by improving their economic condition, which is, followed by the improved communication network and creating additional employment opportunities.

Project Affected Persons (PAPs) Response to the project Option

i)	Improve economic condition of people	77.4 %
ii)	Employment opportunity during construction	9.4 %
iii)	Improve communication net work	13.2 %
iv)	Others	0.0 %

a) Steps to Ensure Community Participation

Further steps will be taken to keep the PAPs informed about the land acquisition plan, compensation policy and entitlements associated with relocation and restoration of income. First, RHD will provide information displays in project sites and affected areas. Second, RHD/implementing NGO will prepare and distribute leaflets and brochures outlining the resettlement policy and compensation packages for the PAPs in the Project. Third, during the implementation stage, Resettlement Advisory Committee will be formed by involving the stakeholders. Fourth, PAPs will be involved in the Grievances Redress Committee to review and resolve any dispute concerning compensation and other resettlement benefits. Finally, there will be continuous on-site consultation during the implementation stage to ensure that the PAPs receive their due entitlements.

b) Resettlement Organization and Framework

RHD, is a Government body, responsible for providing improved communication net works throughout the country. For the construction of the Rupsha Bridge,

Project Director, RBP, will be responsible for coordinating and monitoring project activities. At the field level, responsibility for implementing the Project rests with the Executive Engineer -RBP (EE-RBP).

Since RHD is technically not responsible for land acquisition (done by DC office) and resettlement, there are limited experience and institutional mechanisms for resettlement planning and implementation within the existing set up. RHD fully recognizes the complexity of the resettlement management and operations and lack of personnel within RBP with any relevant experience. RHD, in accordance with the agreement with the Donor, will hire an experienced NGO to implement the RAP. RHD will contract out clearly defined components of RAP such as public information campaign, issuance of ID cards, payment of eligible entitlements for shifting, income restoration assistance, relocation of households -- entitlements not covered by the land acquisition/GOB laws. The selected NGO will also work in close cooperation with the DC office in Khulna in the delivery of all land, structure, and crop-related compensation. In the past, RHD has used services of NGOs in some donor funded Projects. Involvement of NGOs in resettlement projects have shown to be very positive in terms of transparency, consultation, institutional strengthening, safeguarding rights of the disadvantaged people and long-term sustainability of resettlement activities.

c) Recommended Procedures for NGO Selection

RHD may consult with the Association of Development Agencies in Bangladesh (ADAB) in the recruitment of the NGO for the tasks. A list of some experienced NGOs may be suggested by the Project Consultants and these list may be submitted to ADAB for review and/or additions for short listing and approval by the RHD.

The NGO to be selected for the tasks must have proven experience in resettlement planning and implementation. Specially, the selected NGO must have (i) demonstrated capacity to mobilize the required trained and experience field staff, (ii) experience in the implementation of resettlement plan, (iii) demonstrated experience in computerizing resettlement-related database, and (iv) experience in resettlement survey, planning, monitoring and evaluation. A local NGO (with the above qualifications) or an NGO with local field office in Khulna region would be in a better position to carry out the tasks because of local presence.

- Resettlement Advisory Committee

The implementing NGO will form Resettlement Advisory Committee (RAC) to involve the local populations in the implementation process. The Advisory Committee shall consists of the EE as chair, with representation from various stakeholders, including women member of the Local Government. Institution or other socio-cultural organization of the area .The field-level Team Leader of the NGO will act as member-secretary of the committee. The Committee will provide local inputs to the implementation process and assist the implementing NGO in performing its tasks. Thus, the Advisory Committee will ensure local participation in the implementation of the RAP.

- Grievances Redress Committee

The Land Acquisition and Requisition Ordinance II of 1982 has specific provisions for dispute resolution concerning assessment and payments of compensation for land and other assets by the DC Office. Unresolved cases, primarily dispute over ownership rights, are sent to formal courts for decisions. For resettlement related cases, a Grievances Redress Committee (GRC) will be formed locally for any grievances involving resettlement benefits, relocation, and other assistance. The GRC will include officials, PAPs representative, community/local government representatives, and implementing NGO. GRC procedures will be publicized locally through community meetings and pamphlets so that PAPs are aware of their rights and procedures for grievances redress.

- Implementation of the Resettlement Action Plan

A time-bound implementation schedule for the Project has been prepared in accordance with the project construction schedule. The overall schedule of implementation is based on the principle that (i) all PAPs are paid their due resettlement benefits, including income restoration assistance and (ii) relocation of PAPs will be synchronized to achieve these objectives.

2) Monitoring and Evaluation

a) Monitoring and Evaluation in Resettlement Operations

Monitoring and evaluation (M&E) are critical activities in resettlement operations. Resettlement monitoring is a continuous process of data collection, analysis and reporting about the progress of work against set objectives or expectations.

b) nternal and External Monitoring

The internal monitoring will deal with all aspects of land acquisition and resettlement at the Project as well as field levels. The Project management, particularly the Head of Social Development Unit (SDU), will be responsible to monitor the progress of resettlement activities at the Project level, which include

- information campaign and consultation with the PAPs;
- status of land acquisition and compensation payments;
- compensation for lost structures and assets;
- relocation of PAPs; and
- payment of income restoration assistance.

The benchmark for project level monitoring will come from land acquisition and the census survey. The implementing NGO will conduct field level monitoring and assess the daily operation of land acquisition and resettlement activities. The mechanisms to be used in the field level monitoring include

- review of PAP files;
- informal sample survey of PAPs;
- key informant interviews;
- in-depth case studies; and
- community public meetings.

The external monitoring will be conducted through the Donor's review mission by an international resettlement specialist on an intermittent basis during the implementation of the Project. External monitoring involves review of resettlement implementation, verification of the results of internal monitoring in the field, and consultation with PAPs, officials, and community leaders for preparing review reports.

The specific tasks and methodology for external monitoring shall include

- review of pre-project baseline data on PAPs;
- identification and selection of an appropriate set of indicators for gathering and analyzing information on resettlement impacts;
- use of various formal and informal surveys for impact analysis; and
- an assessment of the resettlement efficiency, effectiveness, impact and sustainability, drawing lessons as a guide to future resettlement policy making and planning.

The external monitoring will commence in the first quarter of the Project implementation and shall continue through the implementation of the Project.

a) Time Frame and Reporting Requirements

During the implementation phase, the Head of SDU, will prepare monthly reports on the progress of resettlement activities and forward copies of the reports to the Donor. A format for resettlement implementation monitoring shall be devised for monthly monitoring and data collection by field officials. The international resettlement specialist will conduct review and monitoring missions during the implementation stage and will report to the Donor and RHD on the progress of all aspects of land acquisition and resettlement activities. RHD will prepare a final report at the end of the Project activity. The report should provide evidence whether adverse effects of the Project have been mitigated adequately or at least pre-project standard of living and income have been restored as a result of the resettlement plan.

8.3 Landscape Conservation Plan

8.3.1 Objectives of Landscape Conservation Plan

The government of Bangladesh as well as people in greater Khulna area has desired for the Rupsa Bridge for more than 30 years. Hence it is necessary to take into consideration the Rupsa Bridge existence itself as a symbolic monument of the project, especially a landscape in harmony with the bridge surroundings, landscape view from the bridge and further more an amicable space establishment for local people in the study area.

The objectives of landscape conservation plan of the study are thus to appeal the significance of the Rupsa Bridge development and also enhance the effective ness of the poject as a monumental existence.

8.3.2 Objective Area for Landscape Conservation Plan

Site survey was carried out along three alternative routes to obtain the information on existing conditions from the viewpoints of landscape conservation issues related to construction of the Rupsa Bridge as well as the Southern Section of Khulna Bypass (SSKB).

There exist largely expanded paddy and watercourse, number of homestead and settlement groves with rich contexts, which are all representative for urban and suburban to rural house styles and alleys of the existing environment of the area. And these are the typical landscape of the objective area. In recognition of the existing environmental resources and potentials,

the planning of SSKB should go for an optimum selection for conservation and potential towards the landscape plan considerations. The location of three route alternatives is shown in Fig. 8.3.1.

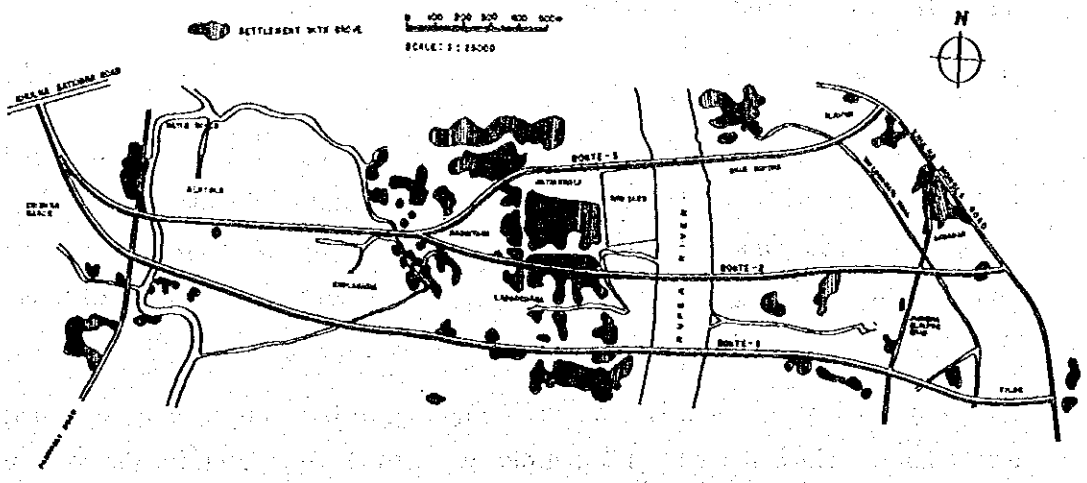

Fig. 8.3.1 Location of Three Route Alternatives

8.3.3 Existing Landscape along Alternative Routes

1) Alternative Routes and General Overview of Landscape

Alternative routes are planned generally to avoid dense settlement area and to pass through agriculture land and undeveloped area in between Khulna–Satkhira road and Khulna–Mongla road. Following sub-sections are major points in consideration of the aesthetic value of landscape, physical node as recognized as cross section of major local roads and water course, also some typical homestead landscape points which represented the study area.

- Khulna – Satkhira Road to Pankhali Road and Hatia River

The control point of the route is located within agriculture land and small shrub and grass along Khulna-Satkhira road. Direction to the Rupsa River, landscape of a vast stretched agriculture land and watercourses are the scenic characters in this vicinity. The Pankhali road has rich foliaged roadside trees in continuous rows. Generally paddy is dominant land use adjacent to the road at the section. Amicable settlement groves distribute in some sections within agriculture land and watercourse through Pankhali road.

The vicinity of Hatia river is observed a covering bank area with well-grown up sage plants, and few group of shrubs and some independent standing trees are found, but expanded paddy and water surface are governed toward Kholabaria area to Harintana area. The Fig. 8.3.2 shows a sketch view toward settlement grove in long distance over paddy at Pankhali road.

- Harintana Area

There exist dominant agriculture land use based on small settlements, scattered from over the agriculture land in Harintana area. One of the typical suburban landscapes is, some mass of settlement groves with distinguished tall palms crown make picturesque scenery on horizontally stretched paddy, water surface of rivers and canals.

The homestead of this area is generally composed of bamboo hut type so called Kucha houses, chicken shed and sometimes with cowshed representing the country life style. Route 3 and Route 2 are separated in this section at Harintana point. Silhouette of grove with palms makes the landscape scenery quite attractive. Fig. 8.3.3 shows suburban homestead scenery from the village road.

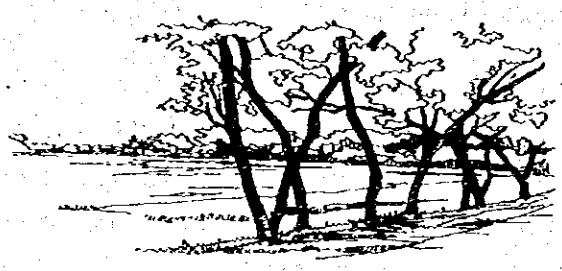

Fig. 8.3.2
Settlement Groves over Paddy through Roadside Trees at Pankhali Road.

Fig. 8.3.3
Village Homestead Group and Groves in Harintana

Near to the Labanchara area, there is a distinctive double row of coconut palm planted on the banks enclosing in about 120 meter by 400 meter large rectangular paddy block where the Route 1 passes through. This existing natural resource shall be conserved and utilized for establishing better landscape quality on the route. Another significant landscape is that water, wide range of scene with canal and river, makes attractive looks in keeping harmony with silhouette of groves of

small settlement. Fig. 8.3.4 shows double row of coconut palm near to the Labanchara area.

- Matiakhali Area

The Route 3 is planned to pass the Matiakhali area where characteristics of more urbanized settlement area are found. Linear-pattern alley is formed parallel to the Rupsa River, which stretch toward north to south direction. These alleys are 300 meters to 350 meters long and connect with other crossing roads.

Alleys are distributed at 30 meters to 70 meters intervals. Homesteads in the Matiakhali area are permanent and semi-permanent houses, called locally Pucca house and Semi-Pucca house. Bamboo hut type houses, called Kucha houses, also exist together with these Pucca and semi-Pucca houses along these alleys. Fig. 8.3.5 shows a sketch of alley façade with homestead houses at the Route 3 section.

Fig. 8.3.4
Double Row of Palms
along Bank of Paddy

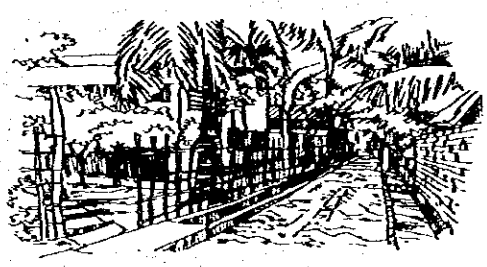

Fig. 8.3.5
Clearly Formulated Alleys
and Homestead Façade

- Labanchara Area

The Route 2 and the Route 1 pass through the Labanchara area where a character of suburban type settlement is linear formulated alleys, furnished with brick paving, and these alleys facilitate to access to homestead. Paddies are interlocked within the settlement area in some portion. Semi-permanent houses are quite often observed through these long stretched alleys.

Homesteads along with canal are quite attractive for their cluster composition of Kucha houses within each individual homestead property, and courtyard and pond are surrounded by some numbers of Kucha house.

There exist peaceful daily life of homestead at the center of the courtyard over the water surface of the canal, and children are playing in a group and housewives are washing and drying.

Waterfront at the homestead in this area is one of the representative landscape of the vicinity, accompanying picturesque scenery of balance and continuity of water surface expansion, alley at the water margin of canal, form of trees and palms. Fig. 8.3.6 shows a sketch of the typical canal side alley and homestead of Route 2.

The Route 1 has rather scattered and less dense resettlement compared with the Route 2. However, the linear type alleys are also formulated but not in bigger scale as observed in the Route 2. These linear alleys are rather short in length and intermittent. Half portion of these alleys is still unfurnished with brick paving.

Most of the settlement area adjacent to paddy and homestead has pond and rich grove. Homestead grove mainly consists of number of coconut palms and banana for daily life, and others area fuel wood, fruit trees. Bamboo is not so often planted generally. Fig. 8.3.7 shows recently build Kucha house -small homestead on the Route 1.

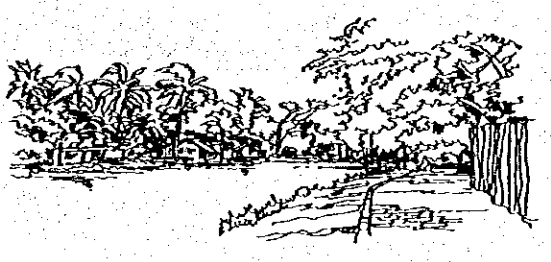

Fig. 8.3.6
Homestead and Alley along with Canal at Route 2

Fig. 8.3.7
Small Size Homestead with Bamboo Stake Fence and Unpaved Alley

- Dyke Road at West Bank of the Rupsa River

Along the dyke road, there exist rows of small commercial shops area and public facilities in some locations. Large area of the shipyard enclosed by solid fence is located in between the Route 3 and the Route 2. Along the riverbank area there are some seafood processing factories and steel mill distributed rather in large scale.

The land use along dyke road at Route 2 and 1 crossing is open space of agriculture land at western side and at eastern side where small commercial shops are found. The elevation of dyke road is 2 to 3 meters higher from the ground level. Fig. 8.3.8 and Fig. 8.3.9 show a sketch of the dyke road at the crossing point of Route 1 and Route 2 respectively.

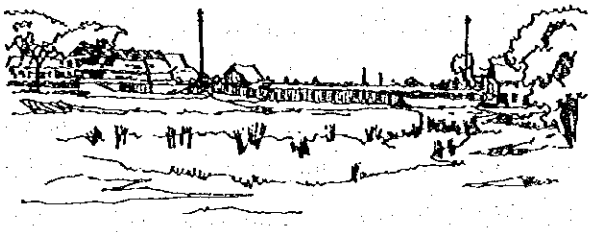

Fig. 8.3.8
Dyke Road on West Bank
over Agriculture Land

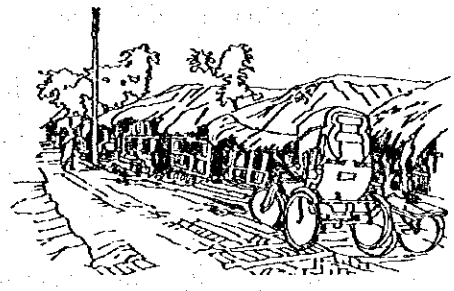

Fig. 8.3.9
Kucha Houses with Commercial
Shops along Dyke Road

- Dyke Road on East Bank of the Rupsa River

  Along the dyke road on the east bank of the Rupsa River, Major industrial factories such as shrimp and seafood processing facilities in Khulna are found. There exist more facilitates compared other routes. The dyke road is getting narrower towards the Route 1.

- Molonghata Canal and Jabusha-Elaipur Road

  Landscape characteristics of the Molonghata canal and its surroundings are mainly paddy, so that suburban or countryside scenery is found. This is one of the typical scenes of expanded agriculture land and ponds for shrimp farming; and the Route 1 site is also distributed with same scenery. Existence of settlement grove is few and extended flat agriculture land is observed as landscape character. Horizontal view of the whole area comes to appear in panoramic effectiveness; Quite clear and potential viewpoint towards the Rupsa Bridge will be obtained. Fig. 8.3.10 shows a vicinity rural landscape at Elaipur road

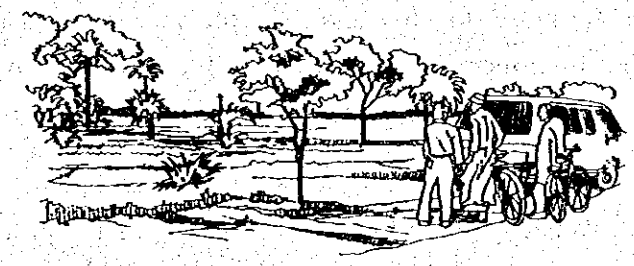

Fig. 8.3.10 Roadside View toward Khulna - Mongla Road at Elaipur Road

- Khulna - Mongla Road

  Khulna - Mongla Road has significant row of grown-up trees on both sides with rich provision of shadowy foliage. This green bountiful roadside trees play as a major landscape objective role. And expanded panoramic view of the paddy field at the western side provide quite suburban amicable atmosphere from the road level. Along the expansion of paddy field stretches, some groves in settlement area would produce good accent to domestic landscape. The eastern side of the road is with a continuous massive grove consisting of dense foliaged trees and shrubs. Settlement huts, houses and some public buildings exist together with the grove and hidden within the groves.

  The row of roadside tree made significant effect on the through the Khulna-Mongla Road, and thus scenic potential of them become a valuable natural resources in connection with the at-grade intersection layout.

8.3.4. Objectives of Landscape Preservation

The objective area has rich context of natural environmental resources as representative landscape characteristics such diverse form of settlement groves, variety of species of trees planted creates each silhouette of their foliages, expansion of agriculture land in harmony with water surface of rivers, canals and ponds.

Hence, the objectives of major landscape preservation are that these settlement groves and rows of trees at roadside areas should be kept in their proper location. Maximum preservation of these resources which local people have been contributed establishing them for long span of time should be considered for utilization of existing landscape resources and enhancement of landscape in the surroundings

Utilization of the existing landscape is one of the most effective ways to enhance the existence of new road and bridge as for more attractive and amicable objects together with much social and functional benefit born from them, and the benefit will distribute to the local people. It would also turned to be quite big establishment of landscape as memorial symbols to the project as well.

The Study comprises approximately 10km long road including of 1.4km long Rupsa Bridge. Through the route, following locations shall be identified in landscape consideration through the route.

1) The Rupsa Bridge
2) Access roads to the Rupsa Bridge

3) Intersection at the Khulna-Mongla Road
4) Intersection at the Khulna-Satkhira Road
5) Sections parallel to the existing row of coconut palm grove and irrigation canals

Objective items of the landscape design shall be as follows.

1) The Rupsa Bridge

   a. Staircase with bicycle pulling slope at the crossing points of dyke roads
   b. Balcony adjoin to the bridge at the staircase top as observation point of surroundings
   c. Lighting

2) Access Roads to the Rupsa Bridge

   a. Landscape furnishings under the bridge
   b. Planting
   c. Lighting

3) Intersection at Khulna-Mongla Road

   a. Grading and landscaping as aesthetic identification
   b. Planting
   c. Lighting

4) Intersection at the Khulna Satkhira Road

   a. Landscaping as aesthetic identification
   b. Planting
   c. Lighting

5) Sections parallel to the existing row of coconut palm grove and irrigation canals

   a. Conservation of the existing landscape potential

Some of the major landscaping images are obtained considering existing natural environmental resources and following sketches present image of each major landscaping subject.

Balcony adjoined staircase is tend to be a symbolic monument of the project, pair of the staircase will be installed at both ends of main section of Rupsa Bridge. Height of stair will be 14.3 meter from the Dike Road level and stair width will be 2.7 meter. Each step consists of 15 cm in rise and 35 cm in run for safety walk up and down as

well as slope for bicycle pulling, and landing area has about 3.6 meter in length for observation platform. Structural columns of the stair will incorporate some modern Bangladesh features as a symbolic appearance or landmarks in the vicinity. Fig. 8.3.11 shows an Image of staircases of the Rupsa Bridge at the Dike Road points.

Intersection at the Khulna-Mongla Road shall be landscaped with slightly mounded grading for location identity of the intersection and it shall create clear silhouette group of palms planting for establishing amicable landscape to the drivers as well as local people. Fig. 8.3.12 shows an image of the intersection landscaping.

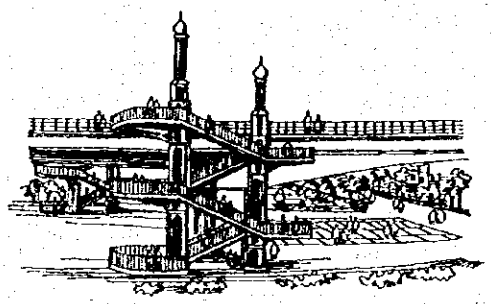

Fig. 8.3.11
Image Sketch of Staircase
at Dike Road

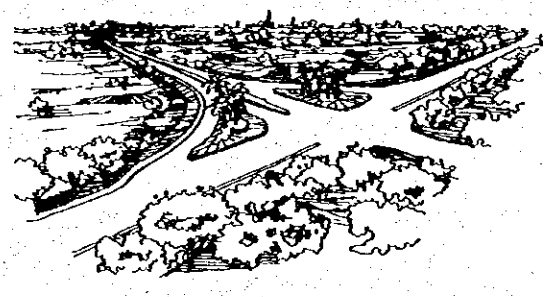

Fig. 8.3.12
Image Sketch of Intersection
at Khulna-Mongla Road

Sections parallel to the existing row of coconut palm grove at Labanchara shall be conserved as existing landscape potential and supplemental planting shall be made for enhancement of environment along the route. Fig. 8.3.13 shows a proposed landscape to the route.

Most of area along the route has naturally rural landscape resources such as expanded agriculture land, waters course and settlement groves in keeping natural harmony. The route will pass through under these environments spread in both sides of the Rupsa River. Fig. 8.3.14 shows a general landscape represented in the study area.

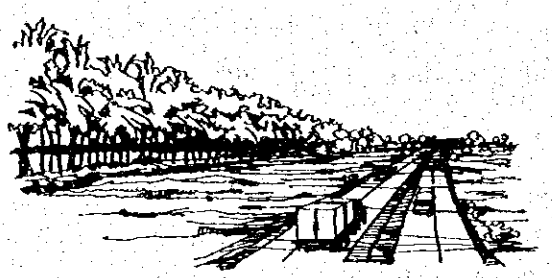

Fig. 8.3.13
Landscape of Row of Palms
and the Proposed Route

Fig. 8.3.14
Image Sketch of Representative
Landscape in the Study Area

8.4 Landscape Plan

Through Feasibility study result, the Route - 1 has been selected among other tow alternative routes.

Landscape plan shall be expected to enhance and reinforce of the Route-1 environment in harmony with existing conditions. Introducing landscaping into focus area will serve this function of potential node of traffic flow as well as community transition.

8.4.1 Objective Landscape Focus Areas

Most preferable locations as focus landscape cores have to be selected in the Route-1. And also these locations which are activated as a traffic node of convenience, transition core for motor vehicle driver as well as community daily activities are to be selected. The locations, which have representative locality identification and potential of symbolic place, shall be considered for selection. Moreover, such representative places has to establish new location identity and satisfy local characteristics. And existing natural environmental potential and homestead heritage should respectively be preserved.

Above items of objective locations shall meet with following each five locations as the intersection at Khulna – Satkhira road and Khulna – Mongla road, two locations of the Bridge stair case and Plaza at both ends of the main bridge, location of rows of Palm trees planted area at border of Laban Chara and Harintana

8.4.2 The Rupsa bridge; Bridge Staircase

Balcony adjoined staircase is tend to be a symbolic monument of the bridge project, pair of the stair case shall be installed at both ends of main section of Rupsha bridge.

Followings shall be major description of function and dimension of the staircase, and Fig. 8.3.15 Drawing shows the Bridge staircase.

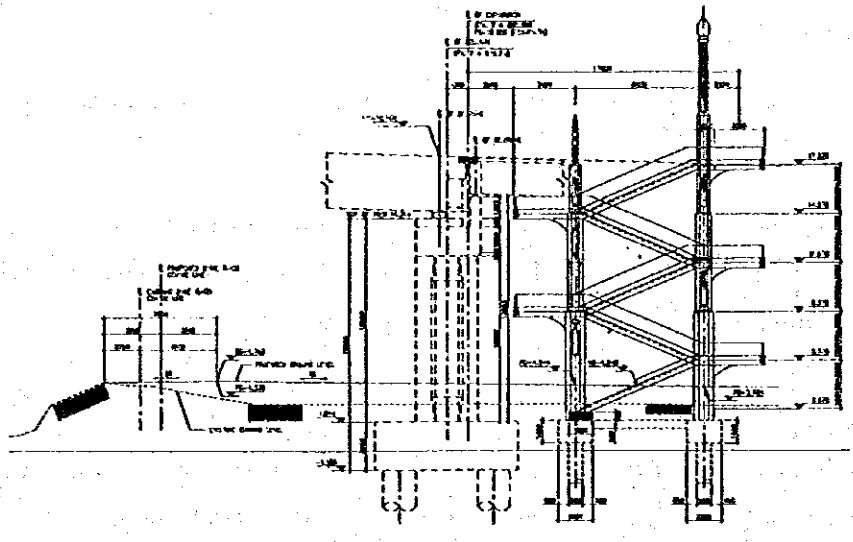

Fig. 8.3.15 Elevation of the Bridge stair case

Function of the staircase:

- Community pedestrian's easy and safety access to the bridge top from the dike road access way
- Convenience for bicycle users to pull up and down on sloped lane in the staircase for meeting with present and future bicycle use tendency.
- Landing areas of the staircase as to be used view observation balcony for points of interest.
- Top landing area, as a balcony shall adjacent with the pedestrian sidewalk of the bridge.
- Whole silhouette of the staircase with column post as to be symbolic monument of the Rupsha Bridge to reflect some Bangladesh design feature.
- Staircase shall neither part of bridge super structure nor sub-structure but it shall be independent structure adjacent the bridge.

Stair case:

- Height of the stair shall be approximately 14.3 meters from the ground level height.
- Over all width of the staircase shall be 8.0 meters and Length shall be 15.7 meters.
- Inside efficient width of stairs is 2.7 meters and 30 cm sloped lane facilitated for bicycle pulling in center, so that each 1.2 meters width of stairs are at both side. Dimension of 60 cm is minimum width for single pedestrian's pass and 1.2 meters width is safety enough space for when bicycle puller and pedestrian meet at same time. Width of 30 cm slope lane is good enough for single bicycle wheel moving.

- Each stair consists of 15 cm riser and 35 cm tread for safety walk up and down, also gradient of slope comes to1:2.33 ratio or 23.2° for easy pulling up of bicycle.
- Each unit of the stairs height between landing areas to upper landing area shall be 3 meters for pedestrian's safety move up and down. Since the gradient of stair is less steep in comparing with ordinal case. Numbers of step of the stair shall be 20.

Balcony:

- Five (5) balconies are facilitated on the bridge staircase and top balcony level is equal to the bridge sidewalk level at 14.3 m from the ground level. Each level of balcony to other balcony apart 3.0 m in height.
- Balcony as a landing area is a half circle shape and it has 2.7 meters width as same as stair's width, this area is enough space for bicycle turning round ready for pull up and down. As for a design reference, maximum dimension of bicycle is 176 cm in length and 58 cm in width.

Column:

- Staircase column has hexagonal cross section with 1.2 meters at bottom, 1.0 meter at mid location and 0.8 meter at top location.

Hand railing:

- Hand railing shall be fixed at 1.07 meters high on the landing and tread level as same height of the bridge railing height due to safe guard and prevent pedestrian's falling down.

Lighting:

- Top of main column shall have symbolic tower and it shall be light up, top of the sub column shall have pole for lighting the balcony area
- Lighting fixtures shall be installed on the column, due to light each landing areas and staircases for securing pedestrian's safety flow as well as prevention of criminals and aesthetic performance of the staircase.

Surface water drainage system:

- Inner side of the balcony and both sides of the stair case hall have open drainage through top balcony to lower balcony.
- Water catch trap shall be installed at each inner corner of the balcony and lead to vertical rain leader where is installed column side.

- Catch basins are installed at bottom of the column on the ground, discharged surface water lead to drainage pipe in the ground into the outside drainage system.

8.4.3 Access road to the Bridge: Bridge stair plaza

Bridge stair plaza is composed of the space of the Dyke road intersection to the bridge staircase, which is open exposed and the sheltered space which is under the bridge deck between both staircases. This plaza space has o play unified function with stair case, peoples who cross over the bridge and transit to other vehicle, who are going to make various activities. The plaza is ready to be used as a place for their diversified activities. Fig. 8.3.16 Drawing shows the Bridge stair plaza.

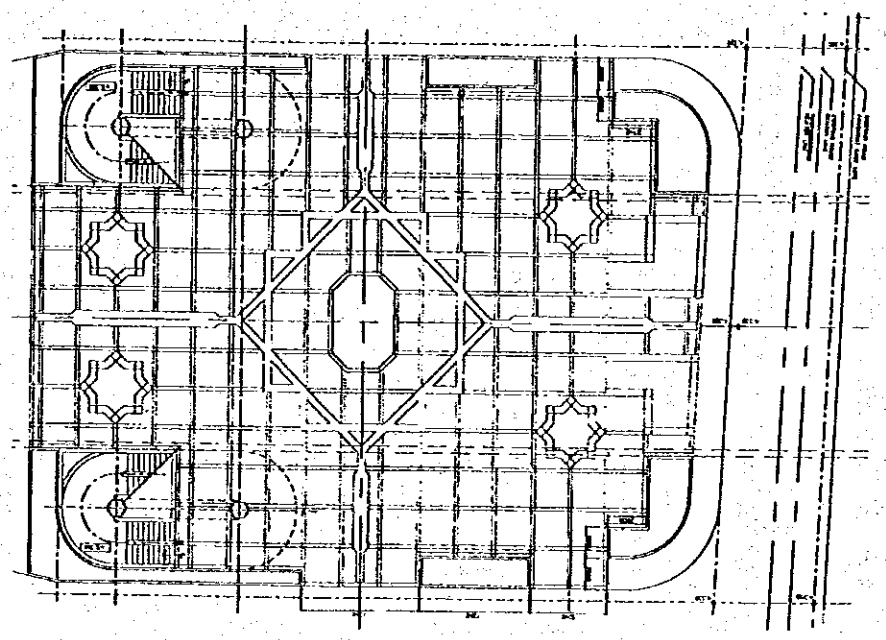

Fig. 8.3.16 Plan of the Bridge Stair Plaza

Also the plaza would become a dynamic activity space as a core of information center of daily community life. Symbolic plaza establishment is a necessity for convenience of cross over bridge as well as vicinity people's daily activity space.

Plaza space component:

Plaza space is composed of tow sub-space as access to the staircase and as multi purpose use public space with shelter. An access space to the staircase is an exposed area, allocated parallel at both side of the bridge. Sidewalk with planting area is facilitated at the Dike road intersection side for plaza space demarcation.

Paving:

Pavement of the plaza would perform an expanded space concept with symmetric graphic pattern incorporated with the column of the staircase which shall be provided with Islamic pattern enclaves on the hexagonal column faces.

Paving of Islamic graphic pattern would be formulated in corps with aesthetic area composition and special demarcation by the characteristic of the arabesque graphic pattern shall be ordered. This pattern could easily compose sub-division of the space by the pattern characteristics. Material of the plaza paving is concrete with brick, which can be utilized and effectively for performing graphic pattern of Islamic features on the expanded plaza space.

Planting area:

Identifiable planting at the front corners of the Dike road intersection and at access road sides would be performed as aesthetic silhouette palms with low height of ground cover plants on the planting area. In order to secure sight clearance for drivers and pedestrians, medium height of plants such as shrubs should not introduced as they block or disturb the eye sight. Group planting of Areca palm would be preferably planted and to be formed to provide aesthetic silhouette accordingly.

Planting area surrounded at the staircase would be planted with group of foliaged trees such as mahogany for shadow effects. Beside tree planting, low height of ground cover plants shall be planted on the planting area.

In order to keep low maintenance and operation, drought tolerant species shall be selected.

Lighting:

Four hexagonal concrete poles with lighting fixtures shall be installed at the plaza area for establishing comfortable and safety environment in night. The concrete lighting pole shall be 4.0 m in height and lighting fixture shall be mercury viper lamp with steal meshed protection grove.

Fence:

Small space of the ground under the first balcony of the staircase has a limited clearance height for peoples walk around, and this area should keep off peoples. This space would often be used illegal occupation by other purposes. Therefore this small area should be enclosed by steel fence. And design of the fence shall be similar to the hand railing on the staircase.

Surface water drainage:

Surface water drainage shall be of the following specifications. Slope gradient of the plaza shall be 0.7% from the Western Dike Roadside to staircase side at 1.0% from the Eastern dike Roadside to the staircase side. Exposed portion of the plaza area where the staircase located has a slope gradient of 1.0% from the sheltered under deck area to access road side for smooth rainwater discharge in monsoon season.

Rainwater from the bridge top and the staircase shall be collected on each catch basin through rain leader; catch basins are installed nearby the bridge pier and columns of the staircase within the plaza paving.

8.4.4 Road Intersections

Visual identification of the road intersection shall be quite essential for the motor vehicle drivers as well as local peoples. Establishment of the distinctive spatial identity shall be effected and landscaping shall be more natural way to create such a purpose.

Grading and aesthetic landscape identification:

Partial mound creation would be performed a slight variation of the ground level and it would make an atmosphere of amicable sense of arrival for the motor vehicle drivers.

1) Intersection at Khulna- Satkhira Road

Planting:

Introduction of planting is more effective for three-dimensional composition of the object. Scene of roadside trees at Khulna-Satkhira Road seems to be relatively simple look with scattered row of young trees.

Selection of planting species in this intersection would require a medium height shrubs group and some flowering blossom in season, so that it would be performed visual identification in comparing surrounding environmental condition. Hibiscus species would be performed a seasonal flower blossom shown distinctive identity of the intersection point.

Other portion at slight mounded ground shall be introduced solid sodding for smooth feature of the ground surface.

2) Intersection at Khulna - Mongla Road

Planting:

Introduction of planting trees is more effective for three-dimensional composition of the object. Scene of roadside trees at Khulna-Mongla Road seems to be densely foliaged trees with significant looks of the row.

Selection of tree species in this intersection will require a simple silhouette crown foliage tree type and palm, so that it would be performed visual identification in comparing surrounding large foliaged row of existing trees. Areca palm and Phoenix palm species shall give distinctive silhouette identification at this intersection point.

Other portion at mounded ground shall be introduced lower height shrub group for accent of the ground surface. Other space shall be furnished with solid sodding for smooth surface of the ground.

8.4.5 Vicinity point at Palm row grove planted area

Location where Southern Section of Khulna Bypass is passed through is having one of the most significant potential place, where palm grove with row vegetation act as an existing natural environmental resources and homestead heritage at border of Laban Chara and Harintana.

Conservation of the existing palm grove:

The Bypass is passed parallel through a area with parallel palms rows. The existing parallel grove should be preserved for conservation purpose. Meanwhile in some places where single row of palm would meet with the Bypass at cross section, minimum removal of affected coconut palms would be necessary.

CHAPTER 9
ECONOMIC AND FINANCIAL ANALYSIS

CHAPTER 9 ECONOMIC AND FINANCIAL ANALYSIS

9.1 Project Scenarios

9.1.1 Without the Project (Case 0)

The "without the Project" scenario was assumed as follows: the Rupsa ferry service would remain open; 17 km long Northern Section of Khulna Bypass (NSKB) which is scheduled to be developed by the KDA is considered to be a stand-alone committed project which would be completed by the year 2005; and other roads in the Project area would be developed in accordance with Road Network proposed by KDA Master Plan which spans the period to 2015.

The existing ferry facility comprises four ghats (two on each side of the river) and five ferries (two in operation and three on standby). The number of ferries in operation cannot exceed two without additional ghat facilities. In the vicinity of the existing ghats there is no space for additional ghats and road access. Therefore, the "without the Project" case assumes no expansion of the ferry facilities. Under the scenario of "no ferry expansion" (which is considered to be the most realistic scenario for Case 0), the maximum number of motorized vehicles crossing the river by ferry would be about 5,000 vehicles per day assuming a round-the-clock operation (24 hours). Beyond this limit, motorized vehicles would have to make relatively long detours to avoid the ferry.

9.1.2 With the Project (Case 1)

The "with the Project" scenario was assumed as follows: the Rupsa ferry service would remain open but only for passengers and non-motorized vehicles; the construction of the Rupsa Bridge and 10 km long Southern Section of Khulna Bypass (SSKB), which would connect with the NSKB to form an overall bypass solution; and the development of other roads in the Project area based on Road Network to 2015 of KDA Master Plan. Under Case 1, RHD would not operate the ferry service. Rather, it is likely that small-size private sector boats would use the four existing ghats to embark/disembark passengers and non-motorized vehicles. Accordingly, the five existing ferries could be transferred to other locations in the country depending on RHD's requirements.

9.2 Study Approaches

9.2.1 Economic Analysis Approach

The economic analysis compares Case 0 with Case 1. Financial costs were converted to economic costs as follows: in the capital expenditure cost estimates, the foreign exchange portion (imported goods and services) is assumed to be tax exempt - thus, the foreign exchange portion was treated as being the same for both financial and economic costs (border price); and in the local currency portion, estimated local taxes were excluded and local currency labor costs were reduced by a factor of 0.8 to reflect that unskilled labor and some types of semi-skilled labor are not scarce resources in Bangladesh. Some earlier government research suggests that the factor for unskilled labor might be as low as 0.65, but to be conservative a factor of 0.8 was used. Operation and maintenance costs were reduced by 0.8 to allow for local labor not being a scarce resource and to remove taxes on local materials.

In the capital cost estimate for Case 1, the cost of the NSKB, as well as the cost of the Road Network of KDA Master Plan, are excluded because both Case 0 and Case 1 include these two KDA schemes. Accordingly, the incremental capital cost only comprises the cost of the Rupsa Bridge and the SSKB. The capital cost estimate in the economic analysis includes physical contingencies but excludes price contingencies.

Incremental benefits comprise savings in vehicle operating costs (VOCs) and savings in travel time costs (TTCs). The increment reflects the difference between Case 0 and Case 1. Forecasted traffic demand is the same in both cases.

9.2.2 Financial Analysis Approach

Financial analysis was conducted for Case 1. Tolls would only be levied for crossing the Bridge (not for using whole stretch of SSKB). Thus the capital cost in the Base Case financial analysis only comprises the construction of the main bridge and toll booths, and a proportion of other costs allocated to the main bridge such as engineering and supervisory services.

9.3 Economic Benefits

Under the umbrella of the UK's Department for International Development, RHD is receiving long term technical assistance (TA). The TA program is known as the Institutional Development Component (IDC). Among other things, IDC/RHD have recently developed a set of recommended national TTCs and VOCs (TTC Final Report E7 September 1998 and VOC Final Report E6 December 1998).

9.3.1 Travel Time Costs

IDC/RHD's recommended economic TTCs for FY 1998/99 are as follows, with more details being provided in the Appendix:

Table 9.3.1 Economic Travel Time Costs for FY 1998/99

Vehicle	Occupancy	TTC per passenger Tk./hour	TTC per vehicle Tk./hour
Bus	47.1	12.5	588.6
Car	3.2	28.2	90.2
Auto Rickshaw	2.0	12.5	25.0
Motor Cycle	1.5	12.5	18.8

Note: economic costs reflect conversion by 0.8.

9.3.2 Vehicle Operating Costs

IDC/RHD's recommended economic VOCs for FY 1998/99 are as follows:

Table 9.3.2 Economic Vehicle Operating Costs FY 1998/99

Vehicle	IRI 3 Tk./km	IRI 4 Tk./km
Truck	10.88	11.58
Bus	13.92	14.17
Car	5.50	5.80
Motor Cycle	1.71	1.79
Auto Rickshaw	3.43	3.59

VOC economic costs were derived based on border prices; local taxes where known were excluded; and local labor and materials were converted by 0.8 except where the local tax on materials was known. The above figures for motor cycles and auto rickshaws were drawn from the ongoing RIP III ADB project since IDC/RHD do not yet have VOCs for these two categories. However, by the early part of the year 2000 IDC/RHD expect to have VOCs for motor cycles and auto rickshaws based on HDM IV (the existing VOCs are based on HDM III which does not cover motor cycles and auto rickshaws).

9.4 Results of Analysis

9.4.1 Economic Analysis Results

In the economic analysis, the vehicle operating costs for trucks, buses and cars are based on the figures recently developed by IDC/RHD (FY 1998/99 prices expressed in economic terms). For Case 0, the international roughness index was assumed as "IRI 4", while for Case 1, the assumption was "IRI 3". VOCs for auto-rickshaws and motor cycles were drawn from the ongoing RIP III ADB project. For TTCs, the recent figures developed by IDC/RHD were the starting point. To reflect the inherent difficulties in valuing non work time, only 15 per cent of IDC/RHD's TTCs were used in the economic analysis. 15 per cent is considered to be the working time component of total TTCs (85 per cent is non work time). Travelling to/from work is treated as non work time. The results of the economic analysis, including sensitivity tests, are as follows (more details are in the Appendix).

Table 9.4.1 Results of Economic Analysis and Sensitivity Tests

Base case	EIRR 26.2%
VOC benefits only	EIRR 19.4%
Costs increased by 10%	EIRR 24.4%
Benefits decreased by 10%	EIRR 24.2%
Costs increased by 10% and benefits decreased by 10%	EIRR 22.6%
Vehicles crossing bridge in 2005	6,243 per day
Vehicles crossing bridge in 2010	8,282 per day
Vehicles crossing bridge in 2015	11,094 per day

9.4.2 Financial Analysis Results

Financial analysis was conducted for Case 1. The results are summarized below, with more details being provided in the Appendix.

Table 9.4.2 Results of Financial Analysis (Base Case)

Base case - after 25 years of toll operations (year 2029)	FIRR 2.4%
Annual toll revenue	88.0 Tk. million in 2005, rising to 159.3 Tk. million by 2015
Cost of routine maintenance (annual)	6.0 Tk. million
Cost of periodic maintenance (every 7 years)	10.2 Tk. million

In the FIRR analysis, the assumed tolls are as follows:

Table 9.4.3 Assumed Tolls for Rupsa Bridge

	Tk. per crossing
Truck	88
Bus	38
Car	19
Auto-rickshaw	13
Motor Cycle	5

When a new bridge with a length of less than 1,500 m replaces an existing ferry, RHD's policy is that the ferry tolls should be applied to the new bridge. In the financial analysis, this approach has been adopted (i.e., the bridge tolls in the above table are the same as the ferry tolls). The resulting estimated FIRR of 2.4% appears low but full cost recovery is reached. Also, the annual toll revenue streams greatly exceed maintenance requirements. The traffic levels used in the economic analysis were also used in the financial analysis because the existing ferry tolls were applied to the Bridge. In estimating the FIRR, tolls were kept constant in real terms (i.e., real increases in toll rates were not assumed). The capital cost used in the Base Case FIRR analysis only covers the main bridge and not whole stretch of the SSKB. This reflects that tolls would only be levied for crossing the Bridge.

To provide a picture of the extent to which bridge toll revenues would cover total project costs (Rupsa Bridge and SSKB), a cash flow analysis was conducted. The terms of the proposed financing from Japan are not yet known. However, for the purpose of preparing the cash flow analysis the assumed terms are: a loan to cover 85% of total project costs (the balance of 15% is an equity contribution from the Bangladesh Government); an interest rate of 1%; and a repayment period of 30 years including a grace period of 10 years (i.e., 10 years grace plus 20 years repayment). The estimated cash flow picture is provided below.

Table 9.4.4 Cash Flow Analysis (loan fully repaid by 2029)

	Cumulative cash 2000 - 2029 (Tk. Million)
Toll Revenues	3,558.2
1. Loan repayments	3,372.9
2. Interest expenses	570.1
3. O/M expenses (routine and periodic)	289.5
Cash Deficit as of 2029	674.3 (= 20% of loan repayments)

The cash flow analysis is in real terms and indicates that tolls revenues (same as FIRR Base Case) would be sufficient to cover interest and O/M expenses and about 80% of loan repayments. In interpreting the cash flow picture it is important to consider that the tolls are only for the main bridge while the three expense items cover the total project (Rupsa Bridge and SSKB).