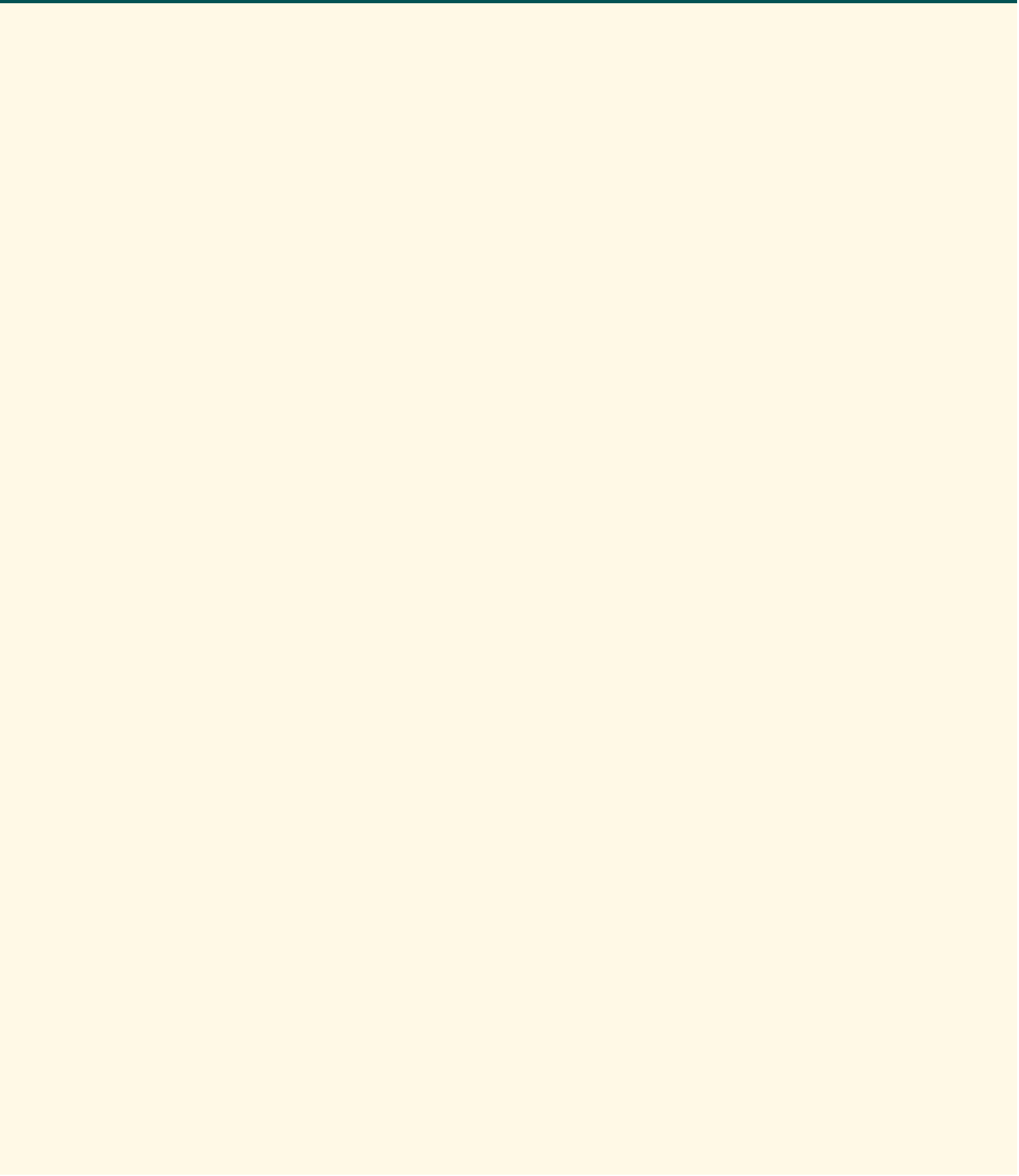
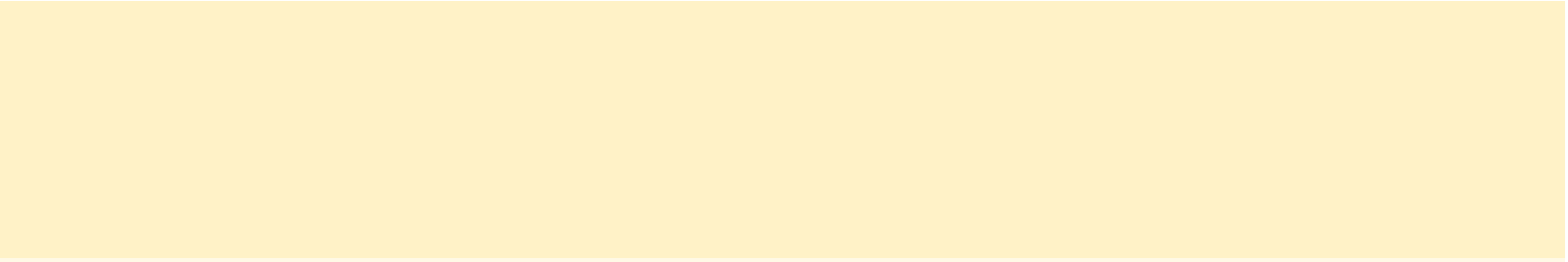




# DPZ 12

**ANWARA-KARNAPHULI**



## 4.12 DPZ-12: ANWARA-KARNAPHULI

### 4.12.1 EXISTING SITUATION

**a) Location and administrative Boundary:** The Karnaphuli, Patiya, Anwara and Boalkhali Thana are on the southeastern edge of the planning area and on the right bank of the Karnaphuli River. It consists of flat plains of the Karnaphuli River on the north and west side and flat plains of the Bay of Bengal on the southwestern side. To the north and west side, its boundary is the Karnaphuli River and to the east side, its boundary is the Patiya Paurashava. The whole of the area covered by the Detailed Area Plan lies within Karnaphuli Thana, Patiya Thana and Anwara Thana and comprises 16 Unions. The total areas under this zone are 35,198 acres.

**b) Population:** As per the BBS census 2001 the population of the DPZ-12 was 239756. According to the trend of the population projection the total population is estimated to be 291907 in 2015. Density of the Area will rise from 9 / acre in 2001 to 11 / acre in 2015.

**c) Land ownership:** Most of the land within the area is under private ownership. A significant size of land is under public control as for examples educational institutions and marine academy. Most of the dwellers have own private land and major portion of land are occupied by the KEPZ and KAFCO industry of the Rangadia growth centre and a number of industries of S. Alam of the Shannaretak moor in Karnaphuli Thana.

**d) Socio-Economic Condition:** The DPZ 12 is situated outside of the Chittagong City which is vastly rural in character. The DPZ 12 area comprises three Upazilla Headquarters like Karnaphuli, Patiya and Anwara and a number of unions including three growth centres or extended bazaars of Rangadia growth centre, Sikalbaha growth centre and Anwara growth centre.

Educational status of the DPZ 12 area, it is found that about 33.54% have attained or completed the primary level and 21.10% have completed the secondary level education. (Source: Socio-economic Survey Report of DAP project in March 2007)

Status of land ownership is also a socio-economic indicator and most of the dwellers have own private land and major portion of land are occupied by the KEPZ and KAFCO industry of the Rangadia growth centre and a number of industries of S. Alam of the Shannaretak moor in Karnaphuli Thana. (Source: Socio-economic Survey Report of DAP project in March 2007)



*Pic. 4-49 KAFCO Industry.*

Structures in the DPZ 12 area fall into five main categories like pucca, semi-pucca, Katcha, Tinsed and Jhupri. Regarding the structural quality of housing in the DPZ 12 area, Katcha and Tinsed structures are dominated, and this is because this zone is located in the mostly rural area. (Source: Socio-economic Survey Report of DAP project in March 2007)

In order to understand the pattern of household employment and investment activities as well as sectoral contribution to the economy of DPZ 12, it is necessary to present an overall profile of economic activities mainly in the industrial sector and agricultural sector. Agriculture as a whole, including crops, livestock and poultry and fish cultivation, accounts for around 9.24%; there are about 10.97% day labour and around 2.69% are employed in informal activities. (Source: Socio-economic Survey Report of DAP project in March, 2007)

According to the socio-economic survey report of

the DAP project 2007, business, trade and agricultural goods are the dominant sources of household monthly income accounting for around 46.91% of the total household monthly income. Income from wages and salaried job accounts for around 28.32%, cottage industry and professional services accounts for around 0.98%, agriculture as a whole, including crops, livestock and poultry and fish cultivation, accounts for around only 8.45%.

#### 4.12.2 EXISTING LAND USE AND DEVELOPMENT STATUS:

As ascertained through the physical feature survey 2005-2006 this zone exhibits an admixture of a variety of land uses of rural character. The areas served by good road facilities have experienced spatial growth of rural character comprising housing, commerce, industries, institutions, and services. The inaccessible remote areas away from major roads have remained with their original rural character comprising homestead, farmland, fellow land and areas of water bodies. The table below shows the existing land use features of the DPZ-12.

According to the land use survey it is observed that the present dominant land uses of the study area are agriculture, fisheries, water body and residential use. Other dominant lands are hilly land, vacant land and coastal char land. Figure 4.23 shows the existing land use of the study area.

**a) Residential:** Residential land consists of an area of 2887 acres (8.2%) of DPZ-12. The survey results indicate that residential category is the major dominated land use in the DPZ-12 area. There are 43423 dwellings in this area of which 9.42% pucca, 11.66% semi pucca, 48.47% Tinished, 28.97% katcha and 1.48% under construction.

**b) Industrial:** Within the area covered by the DPZ 12, many fishing industries are developed along the Karnaphuli River and around the Parkir Char and Dakshin Paruapara area. Manufacturing and processing industries include food and manufacturing industries, salt crushing mill; saw mill, rice mill, match factory, cement factory, ice factory, cottage industry and other factory. A large amount of land 801 acres (2.28%) of DPZ-12 is covered by this category.

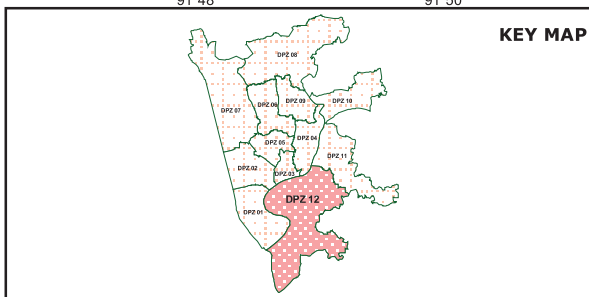
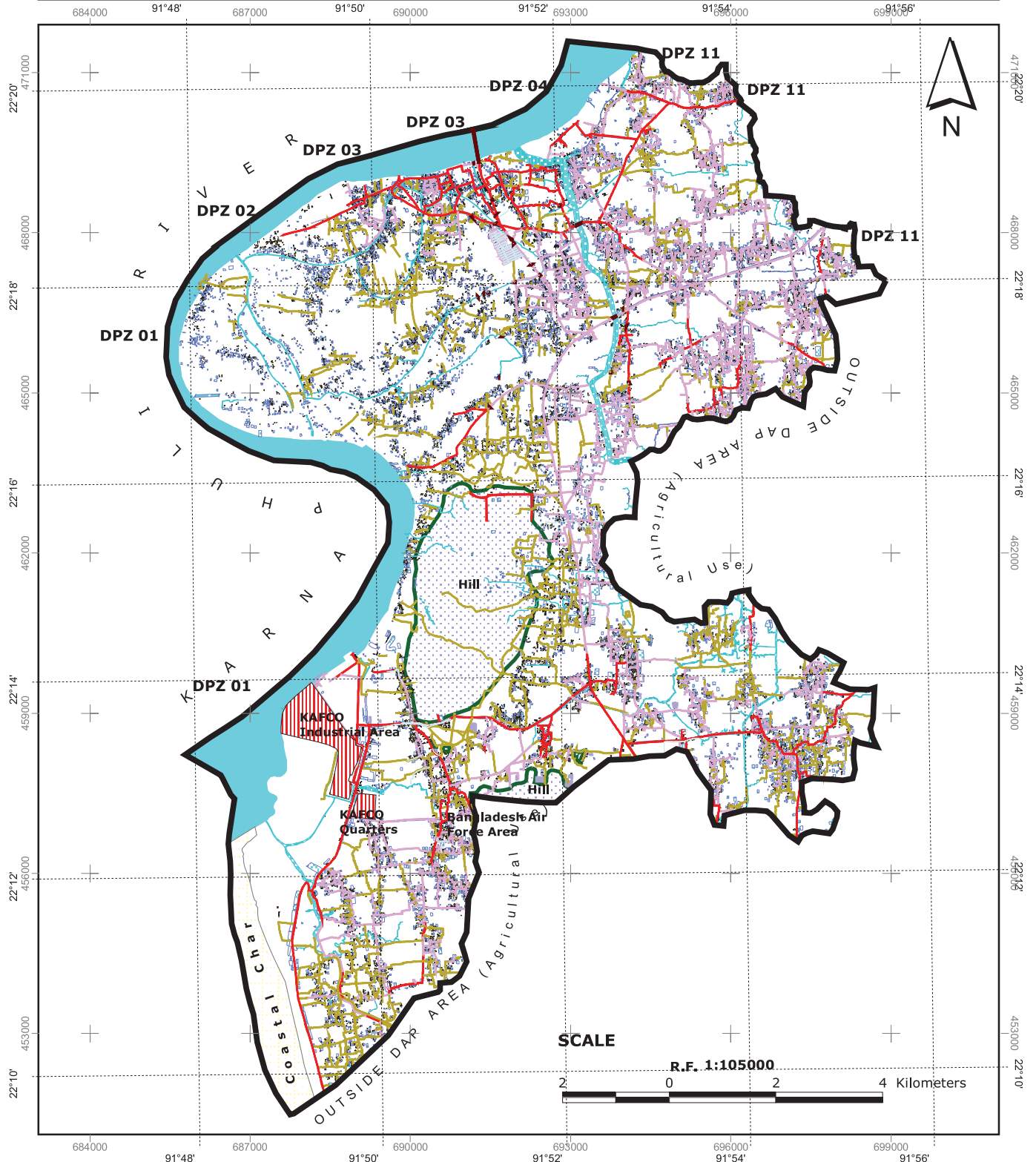
**c) Commercial:** Major land uses under this category are retail and wholesale shopping areas

**Table 4.21:** Existing land use features of DPZ-12

Sl. No	Type of use	Area (in acre)	Percentage
1.	Agriculture and Fisheries	16722	47.51 %
2.	Commercial Activity	167	0.47 %
3.	Education and Research	36	0.1 %
4.	Hilly land	1582	4.5 %
5.	Manufacturing & Processing	801	2.28 %
6.	Miscellaneous	84	0.24 %
7.	Mixed Use	8	0.02 %
8.	Open/Community Space	33	0.09 %
9.	Residential	2887	8.2 %
10.	Restricted	835	2.37 %
11.	Service Facilities	14	0.04 %
12.	Transport & Community	960	2.73 %
13.	Vacant Land	1758	4.99 %
14.	Water Body	7698	21.88 %
15.	Coastal Char	1613	4.58 %
<b>TOTAL</b>		<b>35,198</b>	<b>100%</b>

Source: Land use survey, 2006-2007

**FIGURE 4.23: EXISTING LAND USE MAP OF DPZ-12 (Anwara-Karnaphuli)**



**LEGEND**

Existing Structure		Existing Road	
[Yellow Box]	Residential	[Red Line]	Pucca Road
[Green Box]	Commercial Activity	[Pink Line]	Semi-pucca Road
[Blue Box]	Community Service	[Yellow Line]	Katcha Road
[Purple Box]	Education & Research	[Blue Box]	Marshland
[Light Blue Box]	Governmental Services	[Blue Box]	Ditch
[Dark Blue Box]	Manufacturing and Processing Activity	[Blue Box]	Pond
[Light Green Box]	Miscellaneous	[Blue Box]	Khal
[Light Purple Box]	Mixed Use	[Blue Box]	River
[Light Blue Box]	Non Government Services	[Grey Box]	Char
[Light Green Box]	Service Activity	[Light Blue Box]	Other Use
[Light Purple Box]	Transport & Communication	[Red Box]	Bridge
[Light Green Box]	Agriculture	[Light Green Box]	Restricted
		[Red Box]	Manufacturing & Processing

and all categories of ribbon commercial developments along the major road. In the DPZ-12 area, there are a large number of retail shops, bazaars and wholesale markets. Some portion of land 167 acres (0.47%) of DPZ 12 is covered by this category.

**d) Mixed use:** Mixed land use area may be mixed up with residential with commercial or commercial with residential with office or admixture of all the three. The small processing plants are also found to co-exist with any one or all the above land uses. However, other admixture of diverse land uses is also found. Around 8 acres (0.02%) of DPZ-12 is covered by this category.

**e) Topography and Drainage:** Some area is geologically flat as well as encompasses a large number of Ponds and khals. West and north side of the area covers flood plain land along the Karnaphuli River. Consequently, this portion of the study area is flood prone and water remains for a few weeks during the rainy season and also this part is vulnerable to landslides. Some khals and branches, which cross the area, are important natural drainage courses. In addition to the khals a significant number of ponds work as storm water reservoir during the monsoon period. The northern and western areas are susceptible to cyclonic surges therefore largely unsuitable for general rural use without an embankment along the river Karnaphuli.

**f) Transport:** An analysis of the circulation system shows that there is no prominent arterial road network in this planning zone. As the proportions of industrial and mixed uses are low and residential land uses are rural in character, transport network has not developed properly. Tertiary and access roads are also inadequate and very narrow. Again all of the existing roads do not form a proper circulation system. The land dedicated for road network is 960 acres (2.73% land of DPZ-12). Karnaphuli River at the southern end of the DPZ-12 area is extensively used for transporting cargo to and from Chittagong, which is a busy trading and industrial centre. There is a declining trend in the handling of cargo by boats. This remains the cheapest mode of transport.

**g) Restricted:** There is only one restricted zone located within the DPZ-12 area. This zone is the jurisdiction of Government authorities like Marine Academy and its headquarters where public access is controlled by the concerned authority. There is an area of 835 acres (2.37%) of DPZ-12 covering the restricted zone.

**h) Community facilities:** Community facilities cover all land uses where public gathering mostly. This category of uses includes educational institutions, hospital/clinic/dispensary, park & playground, post office, police station, fire station, town hall, all kinds of assembly hall, prayer halls including mosque, temple, church, pagoda, community centre, graveyards, cemetery, religious sites etc. It constitutes about 33 acres (0.09%) within the DPZ-12.

**i) Utility services:** The supply network in the served area is not enough. There is no piped line water network in Boalkhali, Patiya and Anwara Thana. There are various sources of water supply in the DPZ 12. Most of the households use their owned tube well for safe drinking water. A large number of households depend on community tube-well in their daily uses.

There is no piped sewerage system in Chittagong. Some buildings have septic tanks but the majority of sewage is flushed directly to khals or deposited in open latrines.

There is no proper solid waste management system in this area. People dump waste indiscriminately along the roadside; drain, pond and canal that pollute water body. Such unsanitary condition may lead widespread pollution, which causes health hazard.

Supplies of gas and electricity are available to the industrial parts of this zone. Some poor households cannot bring gas line due to financial inability rather they cook food in traditional mud made oven.

**j) Agriculture:** This category includes all types of agricultural uses like paddy field, cropland, grazing land, orchard, horticulture, fisheries, nursery, farm land, poultry, cattle farm etc. It constitutes about 16722 acres (47.51%) land of DPZ 12. Approximately 205 poultry farms and a certain



number of fisheries play an important role in local economy of the DPZ 12.

**k) Vacant land & Char land:** Unused or vacant land is an outstanding characteristic of this planning area. This category includes land with no apparent use or unused land, low-lying areas, char land etc. The vacant land and char land constitutes about 3371 acres (9.57%) within the DPZ 12. A little portion agricultural land is converted to other uses through selling from farmers to non-farmers

#### 4.12.3 EXISTING ENVIRONMENTAL ISSUES:

Water body and hilly land are the major environmental issues in the DPZ 12 area. The water body land use spreads all over the DPZ 12 area. Water bodies like river, pond, khal, ditch etc. encompass almost 7698 acres (21.88%) of DPZ 12 as shown in the Table-4.21. A lot of small hilly regions are present in the DPZ 12 and covers 1582 acres (4.54%) of this zone.

#### 4.12.4 HIGHER LEVEL PLANNING:

**a) Structure plan 1995:** Structure plan has identified Karnaphuli Thana as the port related industrial zone along the Karnaphuli River. The existing industrial incentives scheme encourages industrial location outside the developed areas and which are the future expansion areas of Chittagong city taking into consideration various policies on population, economy, spatial development opportunity, community facilities, transportation, infrastructure services, flood and drainage, urban land development, environment and prestige projects. Two fertilizer plants have been established on the south bank of the Karnaphuli in recent years to take advantage of direct access to the sheltered berths available within the Karnaphuli River. The berths available within the Karnaphuli are a scarce national resource. It is therefore the policy of the Authority, in conjunction with the other relevant authorities, to examine the potential for additional locations for berths. If such locations are found, land can be reserved adjacent to them for future port and port related industrial activities.

#### b) Major issues, problems, opportunities and required actions

The following issues, problems, opportunities and required actions have been recognized at DPZ-12 areas, which are clarified through observation.

##### Major issues and problems

- Susceptibility to cyclonic surges and seasonal flooding near the Karnaphuli River.
- Haphazard development of urban fringe areas.
- Presence of slum and squatter housing areas.
- Lack of direct access into the city centre.

##### Opportunities

- Proximity to the existing urban area.
- Identified in the Structure Plan as one of three preferred locations for peripheral expansion.

##### Actions Required

- Implement a slum improvement programme.
- Ensure the potential for port related industrial activities on the south bank of the Karnaphuli River.
- Implement coastal afforestation schemes in association with the new embankment of the Bay of Bengal.
- Improve the conditions of existing industrial areas and ensure their full utilization.

##### Priority Actions Required by Area

- Implement coastal afforestation schemes in association with the new embankment of the Bay of Bengal.
- Ensure the potential for port related industrial activities on the south bank of the Karnaphuli River.

#### 4.12.5 DETAILED AREA DEVELOPMENT PROPOSALS:

The following development proposals have been shown in *Figure no 4.24*.

As a large-scale peripheral expansion of the area, this study recommends that the area covered by the Detailed Area Plan should contain a wide use

of industrial and agriculture and fisheries related use. Taking into consider all the demand for different activities, the present study of DAP recommends around 35,198 acres land in the DPZ-12 area The following table shows proposed land use of DPZ-12:

**a) Residential (Housing) & Ancillary:** Day by day industry is developing along the Karnaphuli River and for this people are coming to live in these areas. Consequently, unplanned growths of residential areas are developed here. Under the present study of DPZ 12, an attempt is taken to identify the proper location of future housing development for the workers people with some guidelines. Here it is mentionable that almost land of these areas are flat, so before taking any housing project land development is necessary as it demands in different parts of the study area. The Chittagong development Authority has make a initiative for making a planned housing scheme named Karnaphuli Planned Residential area at the Shannaretak moor. About 5841 acres land are proposed for residential area in the Shannaretak moor, Sikalbaha crossing, and some parts of the Char Lakhya area and the south side of the KAFCO road named Mohammadpur area.

**b) Mixed Use:** Growth centre is such place where economic activities grow. Considering enhancement of economic activities, Anwara growth centre, part of Shikalbaha and Rangadia growth centre have been recommended as mixed-use area. This area will be focal point of economic activities where predominantly commercial use will

be allowed. In addition to that, residential use, small-scale light industry, community facilities and other urban amenities will also be permitted in these areas. Required number of access road with proper width, traffic circulation and parking facilities are to be provided. **Anwara Upazilla Headquarter, Rangadia Industrial zone and Sikalbaha Industrial Zone are proposed for 1st category growth centre.**

**c) Industrial:** In the study it is observed that many industrial activity are already exists along the Karnaphuli River and this zone are suitable for industrial development. The Korean Export Processing Zone and KAFCO Fertilizer Industries already capture a major portion of land and finally DAP study proposes about 8981 acres of land along the Karnaphuli River for industrial use. Industrial waste water treatment facility has to be remained individually or group wise or centrally in industrial areas. Marine Academy will be retained as Marine Research Centre.

**d) Commercial:** As future industrialization will take place in zone 10 area, lots of commercial activities will be needed to support this area and considering this demand some right places have been recognized for commercial are proposed at the Chaturi Chowmohoni junction and the Sikalbaha Crossing.

**e) Drainage:** In accordance with the 'Storm Water Drainage and Flood Control Master Plan – 1995', DPZ-12 falls partly in the Drainage Area No. 8 of the Drainage Master Plan. About 1/10th area of DPZ-12 is covered by Drainage Master Plan

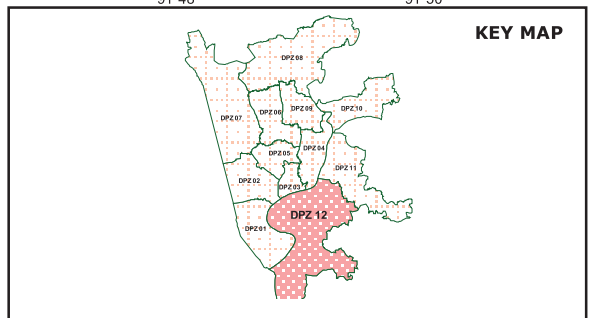
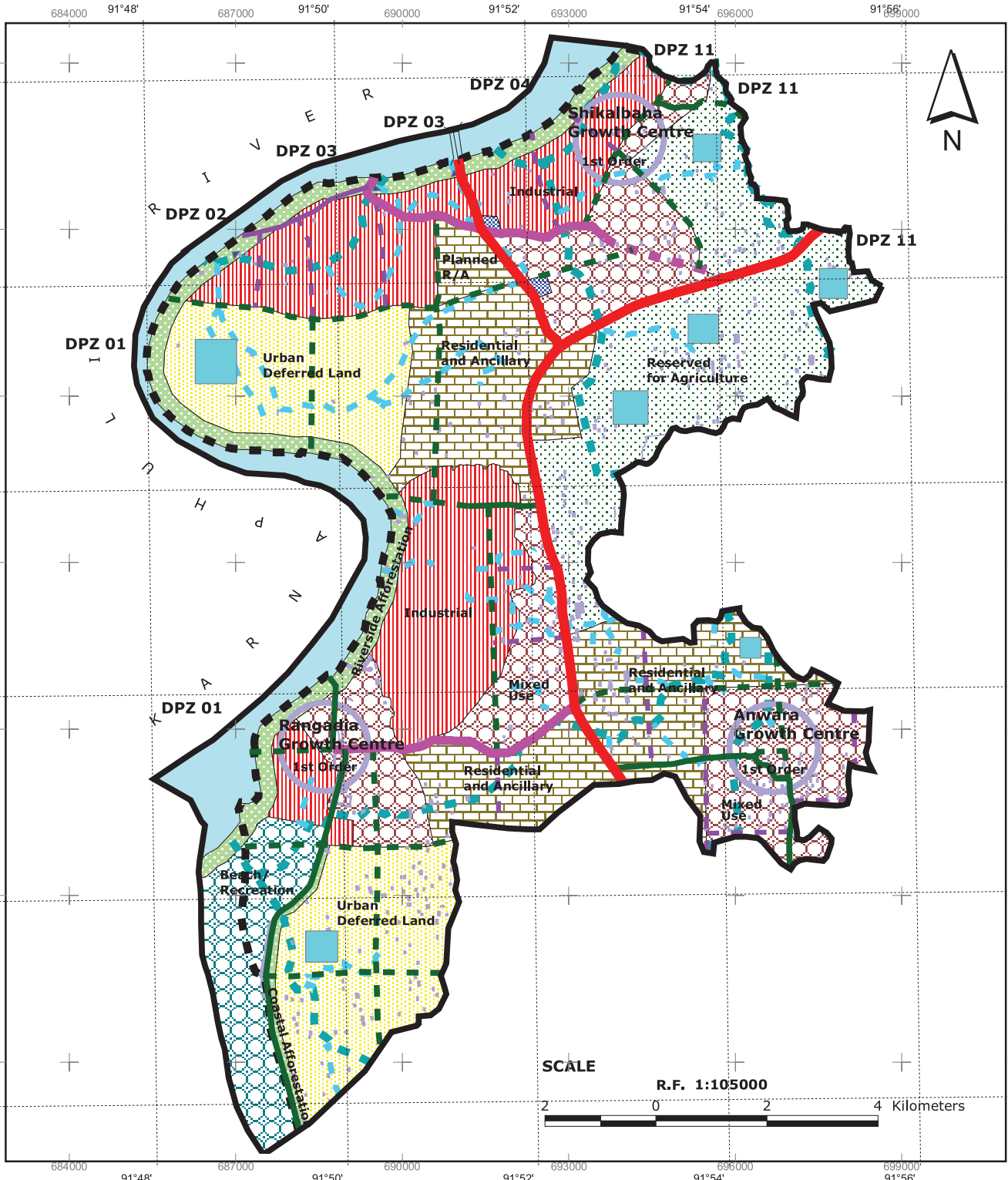
**Table 4.22:** Proposed land use features of DPZ-12

Sl. No.	Types of use	Area (in acre)	%
1	Residential & Ancillary	5841.46	16.60%
2	Mixed Use	2864.88	8.14%
3	Industrial	8980.59	25.51%
4	Riverside and Coastal Afforestation	2074.52	5.89%
5	Recreation, Leisure and Open Space	1705	4.84%
6	Agricultural Land	5605.58	15.93%
7	Urban Deferred Area	5178.56	14.71%
8	River	2892.19	8.22%
9	Transport Related Use (Bus and Truck Terminal)	55.22	0.16%
<b>Total</b>		<b>35,198</b>	<b>100%</b>

Source: Prepared by the consultants-2007



**FIGURE 4.24: PROPOSED LAND USE PLAN OF DPZ-12 (Anwara-Karnaphuli)**



**LEGEND**

Proposed Landuse		Proposed Road and Embankment	
[Yellow Brick Pattern]	Residential	[Red Diamond]	P-120'
[Red Vertical Stripes]	Industrial	[Green Diamond]	P-60'
[Blue Grid]	Mixed Use	[Black Diamond]	P-40'
[Blue Grid]	Transport Related Use	[Black Line]	Proposed Embankment
[Green Dotted]	Riverside Afforestation	[Red Line]	Widening Road and Khal
[Blue Wavy Pattern]	Recreation, Leisure & Open Space	[Red Line]	W-160'
[Yellow Dotted]	Urban Deferred Land	[Red Line]	W-120'
[Green Dotted]	Agriculture	[Red Line]	W-60'
[Blue Square]	Retention Pond	[Red Line]	W-40'
[Blue Square]	Flood Storage Pond	[Red Line]	Khal Rehabilitation
[Purple Circle]	1st Priority Growth Centre	[Red Line]	Existing Road
		[Red Line]	Pucca
		[Red Line]	Semi-pucca
		[Red Line]	Katcha

proposals. For the rest of the area, DAP study has identified the drainage works to be done.

Drainage Master Plan Proposals for the area include:

- 1.3 regulators on khals flowing into the Karnaphuli River are proposed and their locations are identified in the proposed land use plan Figure 4.24 of DPZ-12.
2. Flood defense proposed on the left bank of the Karnaphuli River.

DAP proposals:

1. Rehabilitation of Shikalbaha Khal, Boalkhali Khal, Lakra Khal, Sannartak Khal, Kheya Nagar Khal, Chaturi Keyagar Khal, Char Purar Khal, Parki Khal, Boaliar Khal and Shapmara Khal having a total length of about 60.42 km. Their locations are identified in the proposed land use plan Figure 4.24 of DPZ 12.
2. Retaining and preservation of 225 ponds of 0.5 acre and above are proposed. The accumulated size of these existing ponds proposed to be preserved equal to approximately 208 acres. Their locations are identified in the proposed land use plan Figure 4.24 of DPZ-12.
3. 7 new flood storage ponds/flood plains measuring about 723 acres are proposed. Their locations are identified in the proposed land use plan Figure 4.24 of DPZ 12.
4. Following drainage-guiding principles/guidelines C at page from 3-3 to 3-4 remaining drainage network is proposed and identified in the proposed land use plan of Figure 4.24.
5. Where not shown specifically in the proposed land use plan map, drainage guiding principles/guidelines will apply.

**f) Transportation:** The Long Term Development Strategy for Traffic and Transportation proposed widening of two major roads to improve traffic movement in the DPZ-12 area. One is north-south Anwara Road and the other is east-west Patiya Road, going to Cox's Bazaar. Figure 4.24 illustrates the entire proposed road network for the DPZ 12.

**Primary Roads (District Distributor Roads):**

Both the north-south road and the east-west links of Anwara Road are proposed to be widened to 160 ft ROW. To promote industrial development in the north side of this DPZ, another existing road from Bridgeghat Moore to Shannaretak Moore to Anwara Road proposed to be widened to 120 ft ROW, to serve as a primary road. It is also proposed to extend this road to Patiya Road.

**Secondary Roads (Other Distributor Roads):** In the middle part of this zone, the road between the Chowmohoni Bazaar Moore to KAFCO Moore should also be widened to 120 ft ROW to encourage future industrial development. In order to encourage industrial and residential development in the northern and southern part of this development-planning zone, a large number of north-south and east-west links have been proposed to develop on an incremental basis. Most of these links will have a ROW of 60 ft, except some to have a ROW of 40 ft to serve very local needs. A big part in the middle of the zone has been left instructed, because it has been purchased by a Korean investor, to be developed according to his or her own plan.

**Embankment-cum-Road:** In order to protect the riverbank and to encourage future development on the riverside area of the DPZ-12, an embankment-cum-road is required to be built along the Karnaphuli River Bank on the Rangadia Growth Centre side from the Dakshin Purba Para to Shahdatnagar. The width of the embankment-cum-road would be 30 ft.

**Bus and Truck Terminal:** There are two sites identified in figure 4.24 have been recommended for transport related use. The site located at Moizzar Tack and another site located on the north of Silver Crossing has been designated for inter district bus terminal and truck terminal respectively. The terminals are to be developed taking into account environmental enhancement and proper traffic circulation. It is mandatory to design a green buffer of trees surrounding the terminals.

**g) Leisure, Recreation, Parks and Open Spaces:** About 1705 acres of the land of the Parkir Char area are proposed for the Beach related

recreational activity. Along the Bay of Bengal, all the areas of the coastal char are proposed for this activity.



Pic. 4-50 Parkir char.

**h) Utility Services:** The present DAP study recommends that the responsible agencies for the provision of utility services, will prepare their own detailed plan in respective fields

**i) Agricultural land:** Due to the fertile land, south side of the Patiya road and east side of the Anwara road are proposed for the agricultural land and for this; about 5606 acres of land are reserved for agriculture use.

**j) River and coastal Afforestation:** A linear 300m-afforestation programme has been proposed along the Karnaphuli River. This afforestation programme may also incorporate other trees and bamboo for systemic felling for building purposes. Along the Bay of Bengal, all the areas of the coastal char are proposed for the afforestation programme and beside the east side of the proposed coastal embankment, 300m coastal afforestation is proposed.

#### 4.12.6 ENVIRONMENTAL PROTECTION AND ENHANCEMENT:

Some of the guiding principles are as follows:

**i) Protection of Water bodies:** All the water bodies and ponds of 0.5 acre and above must be preserved under the guidelines of water body preservation (Chapter-3). The environments of

some of the water bodies need to be improved by plantation on bank sides. Such pond can be used for community used.

**ii) Marine side forest:** Considering the spectacular marine side view and to enhance physical environmental quality, a 500m wide belt of marine side forest is proposed along the shoreline. In the intertidal zone, mangrove forest can be generated, but in the sandy beach area only evergreen species (Jhao) forest is recommended. This forest belt will act as a protection against cyclone and storm surges.

**iii) Green belt along River and Khal sides:** The south bank of the Karnaphuli River needs to be protected from saline water intrusion and storm surges by polders. A green belt is recommendation along the embankment. All major khals, such as Shikolbaha khal should be rehabilitated; backlines should be marked and fixed. Along the backline there should be a buffer zone of green belt, up to 100 ft wide on both sides.

**iv) Treatment Plants:** Major part of the area, particularly adjacent to the Karnaphuli River, has been proposed to develop for industrial use. There is always a risk of pollution of the Karnaphuli from the industrial units. All polluting industries must have treatment plant, and must not discharge into the river without treatment.

**v) Protection of existing Hilly Areas:** There are hill landmasses at the southern part of the zone and also on the south bank of Karnaphuli near KAFCO area. No further hill cutting and forest clearing would be allowed in these existing hilly areas. The remaining hill area must be preserved and kept under green forest coverage.

