ENVIRONMENTAL IMPACT ASSESSMENT (EIA) OF ARAIHAZAR (JAPANESE) ECONOMIC ZONE LIMITED AT ARAIHAZAR, NARAYANGANJ

MAY 2018

Prepared For

Bangladesh Economic Zones Authority

Level 12, Monem Business District 111, Bir Uttam C.R. Dutta Road, Karwanbazar, Dhaka-1205

Prepared By:

EQMS Consulting Limited

Suit# C1, House# 76, Road# 05, Block# F,
Banani, Dhaka-1213, Bangladesh
Website: www.eqms.com.bd

EXECUTIVE SUMMARY

E-1 Introduction

Bangladesh has been averaging relatively high annual GDP growth rate at 5 to 6 % over the past 10 years. However in order to achieve a transition to a middle-income nation by 2021 as the country envisions as its national goal, the country needs to accelerate its GDP growth rate to about 8%. To realize this goal, the country needs to break away from the existing economic structure that is heavily relying on garment exports and remittance from overseas workers. Moreover, it is essential that the country should seek diversification of the national industries and exports, and promote investment and strengthen industries with a focus on manufacturing industries that have competitiveness in export. Therefore, it is necessary for the country to improve the system, the administration and the implementation capacity of the pertinent government agencies responsible for the promotion of investment and industrial development.

The government of Bangladesh has announced that no new EPZ is needed, but instead, it has launched a new policy to establish "Economic Zones (EZs)" to reinforce enter-industrial relationship of export industry and domestic industry, and to optimize the domestic market.

Investment by Japanese companies in Bangladesh first began in Chittagong EPZ, which was established in 1983, and the investment from Japan continued in other new EPZs during 1990s. In recent years, the increasing number of Japanese companies started to recognize Bangladesh as "China plus 1" or their next investment destination due to its abundant labour force and the competitive labour cost as well as its huge domestic market of over 150 million people, and 240 Japanese companies, as of October 2016, have started their operation in Bangladesh. However, the existing EPZs are facing a shortage of available land for Japanese companies that are currently interested in investing in Bangladesh. In addition, a certain number of Japanese companies are hesitant to invest in Bangladesh due to the lack of stable power, gas and road infrastructure, and uncertainties towards the investment promotion policies and the implementation capability of the Bangladesh government.

Under these circumstances, the government of Bangladesh has requested the government of Japan to provide Yen loan for "the Foreign Direct Investment Promotion Project (hereinafter FDIPP)" in order to establish a new EZ mainly targeting Japanese companies and to further facilitate investments from Japan. The loan agreement for FDIPP was already signed in December 2015. The loan is expected to provide both short term and mid to long term low-interest financing for operation and capital investment of the EZ. Additionally, a part of the loan will contribute to the development of infrastructure such as roads, power and gas, as well as to assure the involvement of the government of Bangladesh to resolve and simplify the complicated system and procedures so that Japanese companies can be more confident and comfortable about their investment decision.

Previously, in connection with FDIPP, JICA implemented "Project for Development Study and Capacity Enhancement of Bangladesh Economic Zone Development Plan Authority" from February 2015 thru March 2017. Within the above project, analysis and site comparisons of the candidate EZ locations were conducted Araihazar and Nayanpur were

selected as prominent locations for EZ development. The project also undertook pre-feasibility studies for these two locations, and as of July 2017.

Taking into consideration the site location, available infrastructure, existing industries, investors interest and infrastructure and logistic requirement of the proposed industries, Araihazar Economic Zone is more like to be selected for EZ development through FDIPP.

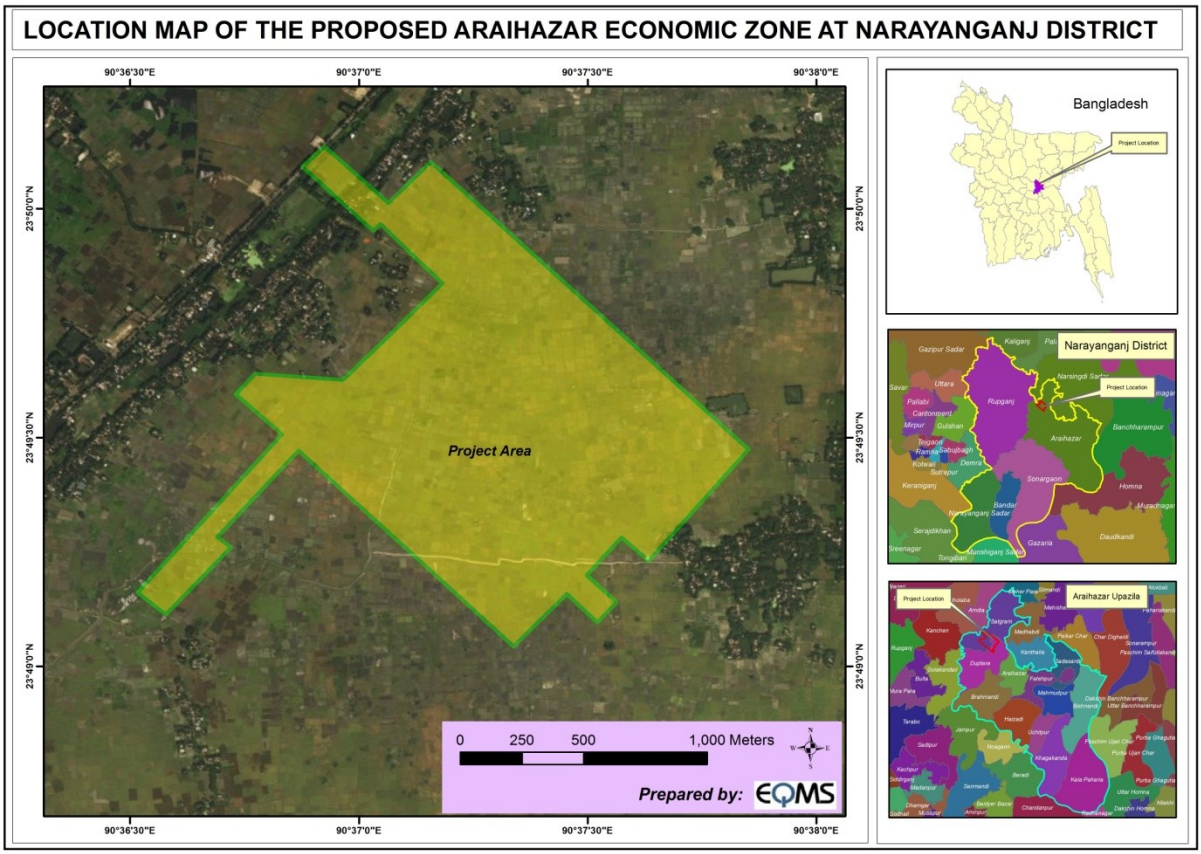
The proposed Araihazar Economic Zone (AEZ) site is located at Mouza: Panchrukhi, Panchgaog, Union: Satgram & Duptara, under Araihazar Upazila, which is adjacent to the Dhaka–Sylhet highway. The total land of Araihazar Economic Zone (AEZ) is approximately 218.84 ha or 540.77 acres for 1st phase. Upon completion, AEZ is envisaged to create approximately 10,000 jobs when fully occupied by investors.

Prospective private developers will plan onsite facilities and industrial area development on later stage. JICA has appointed Japan Development Institute Ltd. (JDI) as consultant for doing the Environment Impact Assessment (EIA) study of the Araihazar Economic Zone.

This EIA will examine the aspects of the project activities, which are likely to interact with and affect the surrounding environment and the community. The EIA report provides an Environmental Management Plan (EMP) and Social Screening issues along with specific mitigation measures with a view to reduce and/or control the level of adverse impacts upon the environment as well as to enhance measures for positive impacts resulting from the proposed project activities.

E-2 Project Description

The proposed Araihazar Economic Zone (AEZ) site is located at Satgram & Duptara Union, under Araihazar upazila. The total land of the project area is 218.84 ha or 540.77 acres. The project site is near to Dhaka-Sylhet Highway in the north-west direction, Shitalakhya River in west direction whereas settlement, water body and agricultural land in the East, west & south side of the project area. A canal pass through the proposed project boundary and a brance of Meghna River named Brahmaputra river pass through south direction to northwestern direction. The project area is mainly covers agricultural low land.



Source: Google Earth

Figure 1: Location Map of Araihazar Economic Zone

E-2.1 Project Components

Table 1: Summary of Project Components

Araihazar Economic Zone	
Location and district	Union: Satgram & Duptara, Upazila: Araihazar, District: Narayanganj
Mouza	Panchrukhi, Panchgaog
Development area	Phase-1 development: 218.84ha or 540.77 acres
Land use	Farmland, double cropping
Site preparation	Embankment: 0.6-2.6m (Avg.1.6m),Land elevation: Approx.6-m above MSL, Flood water level due to rivers of Shitalakhya and Meghna: Approx.7.52m (1/100),Elevation of land preparation: 8.6m
Environmental and social conditions	Need resettlement of houses and peoples; No precious ecology and cultural heritages sites exist
Road	**Access road** The access road is planned directly connecting from the national highway No.2 (Dhaka-Sylhet Expressway) to the Araihazar EZ with approximate length of 400 m. Access roads are designed with two lanes on each side including a median strip, sidewalks and space for utilities (gas transmission, telecommunication, etc.).

	Internal roads The center of EZ will be the internal main road and will have four lanes. Moreover, the internal roads from the main road to each block will have 2 lanes.
Canal	Rainwater drainage ditches will be located on both sides of internal roads and will drain rainwater to the canal located along the 60m main road. The flow capacity of the planned canal is, assuming the roughness coefficient is 0.035 and the water surface gradient is 0.02%, about 33.3m^3/s when the water depth is 3.6m (if the canal bottom elevation is considered to be 2.5m, water surface elevation of 6.1m), and it can carry the planned flow rate.
Retention Pond	In the land use plan, the retention pond use land is planned as 18.55 ha. It will be located at the terminal of the canal, and it will have storage functions enabling it to perform the function, preventing the impact of the change of the runoff rate accompanying land preparation, and part of the pump drainage functions during flooding. The study of pump capacity assumed the scale able to withstand 115mm/3hours of the largest past rainfall of July 18, 2005.
Utilities	**Power distribution line:** On-site developer will prepare on-site power distribution plan. Interface between On-site and Off-site is external cable terminals at 11kV Switchgears in Substation in Off-site because jointing of 11kV cables in On-site area is not recommendable from electrical safety/maintenance point of view. **Water/Sewage Pipe:** Araihazar water supply facility data is given below PVC Water-supply Pipes – 200 mm dia - 2,300 m PVC Water-supply Pipes – 150 mm dia - 9,400 m PVC Water-supply Pipes – 100 mm dia - 2,400 m High pressure PVC Pipes, for hydrant – 100 mm dia - 12,500 m **Gas Supply Plan:** In addition, use in the EZ is predicted to be general use rather than industrial use orpower generation use, so gas will be supplied in 75mm diameter pipes. **Telecommunication services:** At Araihazar EZ, communication services will be provided by installing wire (optical fiber etc.) feed cables to provide services under contracts completed by each attracted enterprise with local service providers. The wires will be installed on electric power supply poles or in underground communication line use conduits following consultations with EZ management.
Water supply	**Quantity of Water Supplied** The predicted attracted industries are assumed to be mainly manufacturing industries that use relatively little water, assembling and sewing for example, and the basic unit of the quantity of water

	used is considered 35m^3/day/ha for the total development area. In addition, the total quantity is 7,000m^3/day for the initial 189.52 ha development. In fact, the area of factory use land will be about 145 ha, so it is about 45.74 m^3/ day/ha. **Water supply facility** The water storage tank scale will be equivalent to one day's requirement of 7,000 m^3. An elevated water tank will ensure capacity for about 1 hour.
Sewage Treatment Plant(On site infrastructure)	Living wastewater of each tenant factory (kitchen and toilet wastewater) is treated by the central processing facility in the EZ candidate site. Industry wastewater from each tenant factory should be processed to an acceptable drainage level at each plant.
Industrial Waste Treatment	Processing by contract with the outsourcing of waste disposal company with improvement of local government policies

E-2.2 Connectivity

The project site is near to Dhaka-Sylhet Highway in the north-west direction, Shitalakhya River in west direction and Meghna River is in southeast direction. In addition, this location is suitable to access not only for roadway but also river way. **Airport Access:** 30.2 km from Hazrat Shahjalal International Airport (Dhaka), 265 km from Shah Aman at International Airport (Chittagong) & 221 km from Osmani International Airport (Sylhet), **Seaport Access:**258 km from Chittagong Sea Port, 248 km from Mongla Sea Port & 314 km from Payra Sea Port, **Road Access:** Adjacent Dhaka-Sylhet Highway, **River Access:** 31.5 km from Narayanganj River Port & 115 km from Chadpur River Port and **Railway station:** 30.3 km from Kamalapur Railway Station, Dhaka.

E-3 Rationale of the Project

In the past, the Government of Bangladesh has successfully provided tailored infrastructure services and business environment conditions through EPZs. EPZs were used as a strategic instrument for attracting Foreign Direct Investment (FDI) and dealing with the shortcomings of the overall investment climate, business registration, licensing, etc. that were restricting investments in the Domestic Tariff Area (DTA).

To overcome the limitations of EZ model, new Economic Zone regime has been adopted by the Government of Bangladesh so as more spill-over can be harnessed by local firms from FDI, additional investments can be encouraged within value chains, more local produce can be procured and better linkages can be established between manufacturing firms and educational institutions.

The AEZ development, a zoned industrialization, is required in Bangladesh to maximize the growth benefits of agglomeration and ease the increasing urban congestion. More importantly, the project will enable new sources of growth, where investor will show their interest.

4.7.2 Cropping Pattern and Intensity

Major portion of the land within study area is under agriculture. Crop land areas are occupied with paddy cultivation in Araihazar Upazila during the most part of the year. Other crops like mustard, potato, vegetable, chili, spice, jute, sweet potato, sesame, pulses and wheat are also included in cropping pattern of this Upazila. Different crops like chili, onion, groundnut, B.aman, Boro, aus, mustard, small cucumber and vegetables are instilled and adapted in char cropping pattern for the maximum utilization of land. Out of the total cultivable land in Araihazar single cropped area covers 19%, double cropped area 61%, triple cropped area 20% and multi cropped area less than 1%. Cropping intensity of this Upazila is about 201%. Cropping pattern and intensity of the study area is provided in ***Table 4-27***.

Table 4-27: Present Cropping Pattern

Upazila	Net Cultivable Area (NCA)	Major Cropping Pattern	Percentage (%)	Area(in ha)	Cropping Intensity (%)
Araihazar	11,256 ha	Boro- Fallow-B.aman	32	3602	201
		Boro-Fallow-Fallow	12	1351	
		Spices- Fallow -B.aman	12	1351	
		Boro-Dhaincha-T.aman	8	900	
		Vegetables-Vegetables-Vegetables	8	900	
		Potato-Fallow-Fallow	6	675	
		Pulse- Fallow -B.aman	5	563	
		Boro-Aus-Fallow	5	563	
		Boro-Fallow-T.aman	5	563	
		Others	7	788	
		Total	**100**	**11,256**	

Source: National Land Zoning Report, Araihazar Upazila, December 2016 (Page-37)

4.7.3 Cropped Area

Multiplicity of cropping systems has been one of the main features of the upazila. Farmers are harnessing their life style by producing various crops round the year. At the same time, the pressure of population on land and other natural resources along with rapid urbanization and/or industrialization is a major factor for changing land-use patterns rapidly which has adverse effect upon upazila's agricultural land. These changes are again causing reduction of agricultural production and the loss of biodiversity. In addition, the availability of land per capita is decreasing and thereby people are becoming landless and marginalized.

Overexploitation, mismanagement and changes in land use pattern are taking place at an unprecedented rate. However, there has been a positive change in adaption modern technologies like high-yielding varieties of rice and other crops, irrigation and mechanized

cultivation in this area. It is recognize that a change has taken place in production of different crops including fruit and vegetable in this region. The cropped area and cropping intensity of Araihazar upazila has given in ***Table 4-28***.

Table 4-28: Cropped area and cropping intensity of Araihazar upazila

Union	Crop Land Category								
	Single		Double		Triple		Multi		Cropping Intensity (%)
	Area (in ha)	Area (%)	Area (in ha)	Area (%)	Area (in ha)	Area (%)	Area (in ha)	Area (%)	
Araihazar	61	14	218	50	153	35	4	1	223
Bishnandi	321	38	448	53	76	9	0	0	171
Brahmandi	63	6	778	74	210	20	0	0	214
Duptara*	126	11	756	66	264	23	0	0	212
Fatehpur	50	12	203	49	161	39	0	0	227
Haizadi	191	15	867	68	217	17	0	0	202
Kalapaharia	683	35	1053	54	215	11	0	0	176
Khagakand	83	13	496	78	57	9	0	0	196
Mahmudpur	72	11	424	65	157	24	0	0	213
Sadasardi	85	13	389	59	184	28	0	0	215
Satgram*	237	16	888	60	355	24	0	0	208
Uchitpur	149	21	405	57	156	22	0	0	201
Total	**2,121**	**19**	**6,925**	**61**	**2,205**	**20**	**4**	**0**	**201**

Source: National Land Zoning Report, Araihazar Upazila, December 2016 (Page-34)
*Project site located in this union

4.7.4 Crop Production

Araihazar Upazila of Narayanganj district is very close to Dhaka city. Agriculture is still a promising sector creating enormous food production, generating employment opportunities and potential for the development of rural livelihood. However, the agricultural production system has aggravated by climate change, increasing population pressure, rapid urbanization, industrialization and infrastructural development that already depleted cultivable agricultural land resources. At present, the land of Araihazar Upazila are occupied with heavily industrialization and successively decreasing the land for agricultural production that making the farmers very tense to produce more food from this scanty land resource. To cope up with this present situation, farmers are using their land very intensively with the traditional diversified crop cultivation that reflects the present cropping practices in different unions. Blessed by the Meghna and Brahmaputra river basin Araihazar Upazila was prominent for cultivating different crops but present scenarios has changed due to land degradation. About 28.48% people of this Upazila are now engaged in agriculture. Wide range of rabi and kharif crops such as paddy, mustard, potato, vegetable, chili, spice, jute, sweet potato, sesame, pulses, wheat etc. grow here. Well-grown fruits are mango,

jackfruit, litchi, black berry; papaya etc. It is reported that sometimes-natural disasters like flood, drought, tornado, hailstorm damage crop production.

However, shifting agricultural land to non-agricultural purposes is a common phenomenon in this Upazila. Protecting agricultural land, minimizing land degradation and introducing modern technology are the basic needs to cope-up with the increasing demand of food for the growing population of this Upazila.

4.7.5 Crop Damage

Major causes for crop damage are given below:

- Scarcity of surface water for irrigation and higher cost of LLPs and DTWs in the local markets are the major problems for intensive irrigation in the area. But there is an ample opportunity to expand the irrigated area in future by promoting surface water irrigation, infrastructural development and ensuring timely availability of necessary inputs like seeds, fertilizers and pesticide/insecticides as reported by the local people.
- The most alarming situation found in the area was that the valuable agriculture land had been decreasing rapidly due to unplanned construction of houses, markets, industries and other infrastructural development in the area.
- During field survey, it has found that most of the old canals of the study areas had been close due to human interventions like construction of houses, markets and other infrastructures that were creating barriers to natural flow of water and ultimately had created drainage congestion in the area.
- In the medium high land areas, drainage congestion during rainy season hampering timely cultivation of T.aman (HYV) crop and damages summer vegetables. Seed beds of T. aman
- (HYV) crop were damaging in almost every year due to drainage congestion created when there is heavy rainfall during the months of June-August.
- Deficiencies of essential plant nutrients, drought in dry season, risk of early flood caused by heavy rainfall, shortage of crops storage facilities, marketing etc. are other common problems restricting crop cultivation in the study areas.

4.7.6 Main Constraints of Crop Production

Major problems here in crop cultivation are as follows: (i) Flood (ii) Drought (iii) hail storm (iv)Siltation (v)Water logging (vi) Soil fertility losses (vii) Pest and disease (viii) Shortage of mechanical tools and equipment (ix) Post-harvest loss of rabi crops (x) Tornado (xi) Lack of improved varieties and quality planting materials (xii) Artificial fertilizer crisis (xiii) Electricity power failure (xiv)Shortage of irrigation (xv) Temperature fluctuation (xvi) Changes in rainfall pattern (xvii) Top-soil cutting (xviii) Agriculture labor crisis and high wage rate (xix) Poor use of organic matter and soil nutrients deficiency (xx) Decrease of agricultural land.

Impact of the above problems on crop cultivation and society are: (i) Damaged standing crop due to seasonal flood(ii) Increase insect and pest infestation (iii) Essential plant nutrients deficiency (iv)Rapid depletion of crop production resources (v) Change in rivers

and canals morphology (vi)Unfavorable human habitat and health hazards (vii) Seasonal un-employment (viii) Land degradation(ix) Unmanageable post-harvest loss of fruits and vegetable and (x) Negative impact on employment and food security.

4.8 Livestock and Poultry

Livestock is an integral component of the complex farming system in Bangladesh as it not only a source of meat protein but also a major source of farm power services as well as employment. The livestock sub-sector provides full time employment for 20% of the total population and part-time employment for another 50%. The poultry meat alone contributes a substantial 37% of the total meat production in Bangladesh (Begum et al 2011). The GDP contribution of this sub-sector has been a modest 2.6% annually in the 1990s (IMF 2005) which was lower than the previous estimates of 5% of total and 10% of agricultural GDP during the 1970s and 1980s (FAO 1990; Planning Commission 1990).Livestock population in Bangladesh is currently estimated to comprise 25.7 million cattle, 0.83 million buffaloes, 14.8 million goats, 1.9 million sheep, 118.7 million chicken and 34.1 million ducks. The density of livestock population per acre of cultivable land is 7.37 (Banglapedia). The number of holding reporting selected livestock and poultry species 2008 in Araihazar Upazila has given in ***Table 4-29***.

Table 4-29: Number of holding reporting selected livestock and poultry species 2008 in Araihazar Uapzila

Cow and buffalo	Holding number	11,377
	Number of animal	23,471
Goat	Holding number	12,942
	Number of animal	28,180
Sheep	Holding number	2,031
	Number of animal	5,712
Hen and cock	Holding number	31,941
	Number of animal	161,578
Duck	Holding number	14,628
	Number of animal	66,353
Others	Holding number	1,971
	Number of animal	15,115

Source: Bangladesh Bureau of Statistics (BBS), District Statistics 2011 Narayanganj

4.8.1 Feed and Fodder Shortage

The owners of the livestock population are facing problems in respect of availability of fodder and feeds during the month from March to December due to shortage of grazing fields. In dry and Kharif-I seasons, the lands are generally submerged with water in the study areas. During Kharif-II season, the fields have covered with T. Aman (Local). Rice straw is the main fodder for cattle. Bran of wheat and rice, oil cakes, powder of cereal crops etc. are the other common fodders, but the availability of these feed in these areas is rare. Shortage of grazing area throughout the year aggravates the feed problem to the animal

population. Poultry population at family level survives by scavenging and generally, no feed supplements has provided. However, at times kitchen wastes become feed to the poultry.

4.8.2 Livestock/Poultry Diseases

Parasites and diseases cause serious losses in draft power and in the livestock and poultry production. Compounding factors make the control of health problems difficult and they include:

- General low level of nutrition
- Large livestock population
- Warm humid climate
- Congestion of animals during annual flooding
- Difficult communications impede implementing control programs

The Government has estimated that losses due to internal parasites are far greater than losses caused by diseases but both are serious. Adequate levels of nutrition would significantly reduce production losses caused by parasites.

The most frequently reported diseases among cattle and buffaloes are Anthrax, black quarter and foot and mouth disease. The got/cyst in head is common disease of goat. Newcastle disease, fowl pox, fowl cholera and duck plague are common among poultry. The most vulnerable period is between July to October (rainy season) months for spreading diseases to livestock and poultry populations. The duck plague generally occurs in summer. During monsoon season, the soggy condition of the animal shelter promotes various kinds of diseases to the bullocks and cows. Moreover, the unhygienic condition of the courtyards during this season may cause the diseases to the poultry birds.

The Directorate of Livestock Services (DSL) laboratories produce vaccines and serra for control. There is some shortage in capacity of the laboratories to meet all the needs. However, this is a serious problem due to an inadequate or ineffective system of distribution to the farm level.

4.9 Fisheries

4.9.1 Introduction

In Bangladesh, fish provides 60 percent of the national animal protein and this sub-sector contributes about 5 percent to the national GDP and approximately 9 percent to the total foreign exchange earnings. Nearly, 1.2 million people directly employed in this sub-sector and another 11 million are indirectly engaged in activities related to this sub-sector.

Fisheries status of the study area is good in wet season but moderate in dry season because of polluting water of Dhawrakhali canal and Brahmaputra River. Like other fisheries sector of the of country fisheries of the study area is not a major source of income, employment and livelihood support of the local people. (Source: Land Zoning Report, Araihazar Upazila)