# Final Land Acquisition Plan

on

Comprehensive Environmental & Social Impact Assessment (ESIA), including Land Acquisition Plan (LAP) and Resettlement Action Plan (RAP) Studies for Establishing Proposed Nawabganj Economic Zone, BEZA

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# **Abbreviations and Acronyms**

AH Affected Households

BEZA Bangladesh Economic Zones Authority
BUTM Bangladesh Universe Transverse Mercator

DC Deputy Commissioner

DLRS Department of Land Record and Survey

DoE Department of Environment

ECA Environmental Conservation Act
ECC Environmental Clearance Certificate

ESIA Environmental and Social Impact Assessment

EZ Economic Zones

GCP Ground Control Point

GIS Geographic Information System
GoB Government of Bangladesh

IEE Initial Environmental Examination

LAP Land Acquisition Plan
PAP Project Affected Person
PMO Prime Minister's Office
PwC Price Waterhouse Coopers
RAP Resettlement Action Plan

RS Revisional Survey
RTK Real Time Kinetic

SCC Site Clearance Certificate
ToR Terms of References
UAV Unmanned Aerial Vehicle

# 1. Introduction

# 1.1 Background

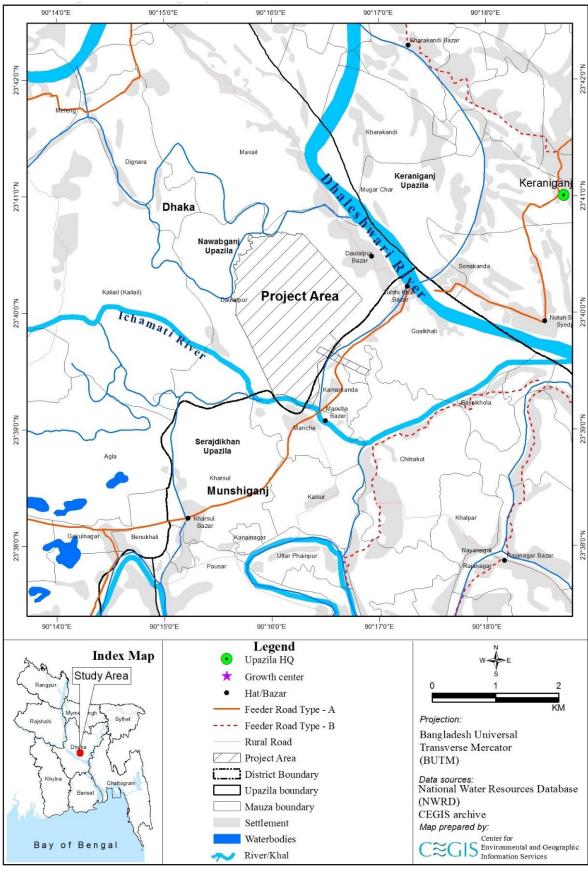
The Government of Bangladesh (GoB) has planned to establish 100 Economic Zones in different potential locations of the country by 2030, which will generate about 10 million employment opportunities for technical, non-technical and expert job seekers. Keeping the target to be a middle-income country by 2021 and developed country by 2041, Bangladesh Economic Zones Authority (BEZA) under the Prime Minister's Office (PMO) is working with the aim to establish economic zones in all potential areas in the country including backward and underdeveloped regions with a view to encouraging rapid economic development through increasing diversified industries, employment, production and export. For achieving the national agenda, BEZA has got approval to establish 97 Economic Zones (EZ) distributed throughout the country and out of which 68 EZ has been initiated by the government and rest 29 by the private investors (www.beza.gov.bd/economic-zones-site; August, 2021).

Consistent with the above initiatives, BEZA is planning to establish an EZ at Nawabganj Upazila under Dhaka District, for which a Pre-Feasibility Study (August, 2020) and Feasibility Study (February, 2021) has already been carried out by PricewaterhouseCoopers (PwC) Private Limited, India. The IEE Study for this 'Red' category Project aiming to obtain the Site Clearance Certificate (SCC) was exempted by Department of Environment (DoE) as this Project would boost up economy of the country with the view to become a middle-income country by 2021 and a developed country by 2041. Thus, only Environmental Clearance Certificate (ECC) was required in compliance with the Environmental Conservation Act (ECA), 1995 and Environmental Conservation Rules (ECR), 1997 including related amendments (December, 2017) for which, BEZA has entrusted CEGIS to conduct the Environmental and Social Impact Assessment (ESIA) study including Land Acquisition Plan (LAP) and Resettlement Action Plan (RAP) studies. The LAP and RAP studies aligning with the ESIA study are being carried out by CEGIS for properly addressing the environmental, social as well as land acquisition and resettlement issues aiming to support BEZA in managing potential environmental impacts as well as to find out alternative livelihood options for the project affected persons (PAPs) of the proposed EZ.

# 1.2 Project Brief

The proposed Nawabganj EZ project is highly demanded after constructing the Dhaka-Mawa Express Highway which makes the easiest and rapid communication network between the Nawabganj and Dhaka as well as with the South West Region. BEZA prioritized to establish the EZ in Nawabganj for easiest sourcing of raw materials, labors and opportunity of export. The proposed EZ will play supportive role to relocate the unplanned industries from the Dhaka City and adjacent areas. The proposed project site is located at Dawlatpur Mauza of Kailail Union under Nawabganj Upazila in Dhaka District with a total area of around 879.30 acres comprising 837.48 acres of private land and 41.82 acres of khas land. Proposed EZ is adjacent to the Dhaleshwari River and the Meghna River, which offers a possibility for cargo movement and source of surface water through these rivers. At present, the proposed EZ is entailed with an earthen road that has been connected with the pucca road toward Tulshikhali Bridge at the Keraniganj-Nawabganj Road (R820). The nearest highway connectivity for this proposed EZ is Dhaka-Mawa Express Highway (NS) which is at a distance of 13 km from the EZ and is connected to Keraniganj-Nawabganj Road (R820).

It is noted that the proposed Nawabganj EZ will directly link with the Keraniganj-Nawabganj Road (R820) through an approach road with a minimum 30m width. The proposed approach road falls under Goalkhali and Kamarkhanda Mouzas of Shirajdikhan Upazila under Munshiganj District and a part of Dawlatpur Mauza under Nawabganj Upazila of Dhaka District where about 12.51 acres of land in total need to be acquired. The location of the proposed Nawabganj EZ is shown in the following Figure 1.1.



Source: CEGIS, January 2021

Figure 1.1: Proposed Site of Nawabganj Economic Zones

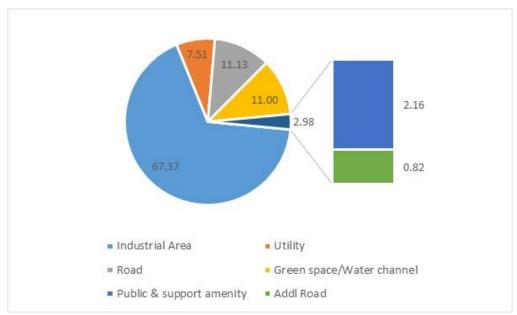
According to the Master Plan prepared under the Feasibility Study for the proposed Nawabganj EZ, the project area is divided into six (6) land zones which are as follows:

#### **Processing area**

- a. Industrial plots related to Textile, Food & Beverages, Non-metallic Minerals, Leather and Leather Products, Electrical and Electronics, Pharmaceuticals, Chemicals, Plastic & Rubber and Light Engineering Industries;
- b. Utility;
- c. Roads;
- d. Green and open spaces;

# Non-processing area

- a. Public and support amenities and
- b. Internal pathway/roads.

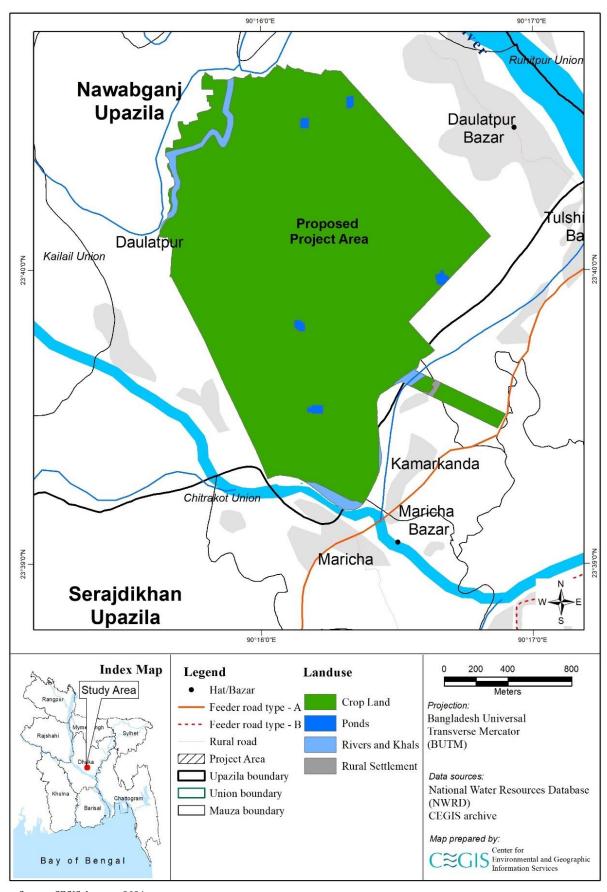


Source: Feasibility Study, PwC, February 2021

Figure 1.2: Land Use Plan of the Proposed EZ Project

In order to make Nawabganj EZ more attractive to the investors and to make it more economically feasible, following off-site infrastructure has been proposed in the Feasibility Report:

- A bridge of 100m length within the approach road to cross a major channel of River Ichhamoti;
- An approach road including utilities channel of 90m width and 650 m length from proposed project site to R820 Dhaka - Nawabganj Main Road;
- Necessary infrastructure to meet the water requirement of EZ from the River Kaliganga/Dhaleswari, which is perennial in nature;
- Boundary wall for a length of about 8 km along the periphery of the proposed EZ;
- Arrangement of sand filling for a huge volume of area from River Kaliganga/Dhaleswari or other possible sources through bulk headed cargo vessels;
- An administrative building of 1500 sqm built-up area for operating the proposed EZ; and
- The gas supply line of about 20.32 km from the nearest tapping point i.e. Keraniganj BSCIC (4 km away).



Source: CEGIS, January 2021

Figure 1.3: Existing Land Use Map

### 1.3 Rationale of the Project

Industrial plots within the proposed Nawabganj EZ will comprise Textile & RMG, Food & Beverages, Nonmetallic Minerals, Leather & Leather Products, Electrical & Electronics, Pharmaceuticals, Chemicals, Plastic & Rubber and Light Engineering Industries.

The proposed area is nearest to the Dhaka City, Munshiganj and Narayanganj districts and Padma Multi-Purpose Bridge. This will facilitate faster procurement and transportation of raw material to the site for production and supply to local markets as well as shipment to international markets. The Zinjira of Keraniganj, Dhaka has privately developed as an unplanned industrial/commercial area which has created risk of accidents risk. In this regard, Government has planned to shift these unplanned industries in the proposed EZ which is also very near to Zinjira. The connectivity of Padma Multi-Purpose Bridge and Dhaka-Chittagong highway through Narayanganj will facilitate faster transportation of raw material and shipment of the product to overseas. In this context, establishment of an Economic Zone in Nawabganj area is a well-judged plan.

According to the Feasibility Study Report of PwC, major economic activities in the proposed EZ include Textile/RMG (17.9%) followed by Agro based industries (12.6%) and Food processing industries (12%). Food and Beverage, Chemical and Automobile parts industries are the emerging new sectors in this region. The Bangladesh Bureau of Statistics (BBS) data (2011) shows that about 42% of people are employed and about 18% have no job, while about 40% are engaged in household activities. So, the proposed project will create the scope of employment and generate new scope of business e.g. restaurants, residential hotels, transportation, renting out of residential houses etc.

There are some additional advantages of the proposed Nawabganj EZ, such as, (i) Dhaka – Mawa Elevated Express Way; (ii) adjacent proposed railway line; (iii) water way connectivity with the Dhaleswari River and Ichamati River; (iv) availability of adequate land for establishing EZ; and (v) no displacement of physical structure including homesteads except to the loss of some agriculture and culture fish production as well as the agro-based livelihoods of the PAPs.

Therefore, establishment of the proposed Nawabganj Economic Zone would be a potential Project to boost up local and national economy through expanding national/international businesses, which will enhance national economy as a whole and living standard and quality of life of the local people in particular.

# 1.4 Objectives of Consultancy Services

# 1.4.1 The Overall Objective

The overall objective of this assignment is to carry out the required environmental and social study including LAP and RAP studies of the proposed Nawabganj Economic Zone following the legal framework for obtaining necessary clearance and approval certificate from the regulatory authorities. Owing to that, the main objective of the Consultancy Services is to:

- Prepare Land Acquisition Plan (LAP);
- Carry out Environmental and Social Impact Assessment (ESIA) Study;
- Assist BEZA for obtaining Environmental Clearance Certificate (ECC) from DoE; and
- Preparation of Resettlement Action Plan (RAP)

# 1.4.2 Specific Objectives

The specific objectives of the Consultancy Services under the LAP Study are to:

- Identification of total number of plots within the project area;
- Identify the government and privately owned land;
- Prepare plan for acquisition of land; and
- Assist BEZA in land acquisition process.

### 1.5 Scope of Work of the Consultancy Services

The scope of work for the LAP Study are to:

- Review project interventions designed in the Feasibility Study Report and relevant project documents to get the study context;
- Collection of latest Mauza maps in hardcopy format from DLRS/Upazila Land Office/Union Land Office (Tehsil Office) and/or from other possible sources and scanning the hardcopies subsequently;
- Digitization of scanned Mauza maps into GIS format by using ArcGIS software and following a set of digitizing rules and standards. Editing and adjustments of the Mauza maps to build proper topology;
- Ensuring the accuracy of maps through Ground Control Points (GCPs) selection and field survey for GCP collection for geometric correction of the collected mauza maps;
- Collection of latest Khatian information available to the Union Land Offices and preparation of Khatian Database;
- Geo-referencing of the Mauzas;
- Processing of high-resolution UAV ortho images to get the accurate area for the land acquisition; and
- Preparation of Land Acquisition Plan (LAP) Map showing acquisition area, part or full plots, class of land, and ownership of land in the proposed acquisition area.

# 1.6 Expected Outputs and Reporting Requirements

The following expected outputs will be generated from the LAP study:

- Identification of partially and fully acquisition plots;
- Land ownership identification and categorization of land;
- Preparation of Plot Index Tables; and
- Preparation of Plot Index Maps.

# 1.7 Limitations of the Study

As per the agreed ToR of the Consulting Services, the LAP study was initiated duly. Preparing the LAP, a long duration of field work was required for collecting mauza maps, carrying out RTK and Drone Surveys, Khatian data collection etc. But due to COVID 19 pandemic and lockdown situation, these field activities were hindrance and break the flow of regular routine activities because of COVID-affected records of some study team members.

Also, in some cases, the difference in plot area distinguished with the Mouza Map area were identified and discussed with the concerned Land Acquisition officials of Dhaka and Munshiganj which took times to resolve

In addition, at the middle of the study frame, additional work of plot indexing of the approach road was added in the study which took further sequential surveys including RTK Survey, Drone Survey, Mouza Sheets collection and Khatian information collection.

Considering all these noted limitations, BEZA was very cordial with CEGIS and extended the stipulated time frame of the Consultancy Service period as required.

# 2. Policy, Legal and Administrative Framework

#### 2.1 Land Acquisition Policy and Processes in Bangladesh

The Government of Bangladesh by dint of the Acquisition and Requisition of Immovable Property Act 2017 (Act 2017) having right of eminent domain acquires the private properties with compensation for the interest of public purposes. The Act 2017 details out the land acquisition and requisition process and way of determining compensation for loss and damages of properties. It has provision of compensation payment for affected land, structures, trees, crops and any other damages caused by acquisition for public purposes.

The Deputy Commissioner (DC) concerned is mandated to determines the value of the acquired assets as at the date of issuing the notice of acquisition under section 4. The DC determines the average market value of the properties of similar description and with similar advantages in the vicinity during the twelve months preceding the date of publication of the notice under section 4. While the government is acquiring land, it shall provide the persons interested with compensation of additional 200% of the market price for land and 100% of the market price for (i) the standing crops or trees, (ii) the damage that may be sustained for serving the proposed immovable property from other immovable property of the person interested (affected person), (iii) the damage that may be sustained by reason of the acquisition injuriously affecting other properties, movable or immovable, in other manner, or earnings of the person interested, (iv) the reasonable expenses incidental to change of residence or place of business due to the acquisition of the property. Compensations other than the ones mentioned above necessary steps may be taken to rehabilitate displaced persons due to acquisition in the prescribed form. If the land acquired has standing crops cultivated by *Bargadar*/sharecropper (tenant), compensation (under section 12) as determined by the DC for the crops shall be paid to the *Bargadar*/sharecropper as per the agreement.

The government is obliged to pay compensation for the assets acquired. Land Acquisition and Compensation Payment Process provisioned in the Act 2017 is furnished in **Table 2.1** and **Figure 2.1**.

Table 2.1: Land Acquisition Process under the Act 2017

Relevant Section under the Act 2017	Steps in the Process	Responsibility
Section 4(1)	Publication of preliminary notice of acquisition of property for a public purpose.	Deputy Commissioner
Section 4 (3) (i)	Prior to the publication of section 4(1) notice; Identify the present status of the land, structures and trees through videography, still pictures or appropriate technology.	Deputy Commissioner
Section 4 (3) (ii)	After the publication of the section 4(1) notice a joint verification should be conducted with potentially affected households and relevant organizations.	Deputy Commissioner
Section 4 (7)	After publication of preliminary notice under the section 4(1), if any household has changed the status of the land for beneficial purposes, changed status will not be added to the joint verification notice.	Deputy Commissioner
Section 4 (8)	If the affected person is not happy with the joint verification assessment, he/she can appeal to the Divisional Commissioner within 7 days of issuing section 4(1) notice.	Affected Person
Section 4 (9)	Hearing by Divisional Commissioner within 15 working days after receiving the complaints. In case of government priority projects, hearing will be within 10 working days.	Divisional Commissioner
Section 5 (1)	Objections to acquisition by interested parties, within 15 working days of the issue of section 4 (1) notice to the DC.	Affected Person

Relevant Section under the Act 2017	Steps in the Process	Responsibility
Section 5 (2)	Deputy Commissioner submits hearing report within 30 working days after the date of the section 5(1) notice. In the case of government priority projects, it will be within 15 working days.	Deputy Commissioner
Section 5 (3)	DC submits his report to the (i) Ministry of Land (MoL) (for properties that exceed 16.50 acres; (ii) Divisional Commissioner for properties that do not exceed 50 standard bighas. Deputy Commissioner makes the final decision If no objections were raised within 30 working days of inquiry. In case of government priority project, it will be 15 working days.	Deputy Commissioner
Section 6 (1) (1)	Government makes the final decision on acquisition within 60 working days after receiving report from the Deputy Commissioner under section 5(3) notice.	MoL
Section 6 (1) (2	Divisional Commissioner makes the decision within 15 working days or with reasons within 30 working days since the submission of the report by Deputy Commissioner under section 5(3) notice.	Divisional Commissioner
Section 7 (1)	Publication of the Notice of final decision to acquire the property and notifying the interested parties to submit their claims for compensation	Deputy Commissioner
Section 7 (2)	Interested parties submit their interests in the property and claims for compensation within 15 working days (in case of priority project 7 working days).	Affected Person
Section 7 (3)	Individual notices have to be served to all interested persons including the shareholders within 15 working days of issuing section 7(1) notice.	Deputy Commissioner
Section 7 (4)	The Deputy Commissioner may also, by notice, require any such person to make or deliver to him at a time, not being earlier than 15 days after the date of service of the notice, and place mentioned therein a statement containing so far, as may be practicable, the name of every other person possessing any interest in the property or any part thereof as co-sharer, mortgagee or otherwise, and of the nature of such interest and profits, if any, received or receivable on account thereof.	Deputy Commissioner
Section 8 (1)	Deputy Commissioner makes a valuation of the property to be acquired as at the date of issuing section 4 notice; determine the compensation; and apportionment of compensation among parties interested.	Deputy Commissioner
Section 8 (3)	Deputy Commissioner informs the award of compensation to the interested parties and sends the estimate of compensation to the requiring agency/person within 7 days of making the compensation decision.	Deputy Commissioner
Section 8 (4)	The requiring agency/person deposits the estimated award of compensation with the Deputy Commissioner within 120 working days of receiving the estimate.	Deputy Commissioner
Section 9 (1)	During valuation of assets, Deputy Commissioner will consider the following: (i) Average market price of land of the same category in the last 12 months; (ii) Impact on existing crops and trees; (iii) Impact on other remaining adjacent properties; (iv) Impact on properties and income; and (v) Relocation cost for businesses, residential dwellings etc.	Deputy Commissioner
Section 9 (2)	Additional 200% compensation on current mouza rate is added to the estimated value. If private organizations acquire, added compensation will be 300%.	Deputy Commissioner
Section 9 (3)	Additional 100% compensation on top of the current market price for impacts mentioned under section 9(1) and (2).	Deputy Commissioner

Relevant Section under the Act 2017	Steps in the Process	Responsibility
Section 9 (4)	Other than the compensation measures mentioned in Section 9 (subsections 1-3) appropriate action should be taken for resettlement of the displaced households/persons following one or more steps of Section 4 of the National Guidelines for Resettlement of Project-induced Displacement 2018.	Project Executing Agency/BEZA
Section 10 (1)	In determining the amount of compensation to be awarded for any property to be acquired, the Deputy Commissioner shall not consider the degree of urgency which has led to the acquisition.	Deputy Commissioner
Section 10 (2)	If an entitled person does not consent to receive compensation, or if there is no competent person to receive compensation, or in the case of any dispute with the title to receive compensation, Deputy Commissioner deposits the compensation amount in a deposit account in the Public Account of the Republic and Deputy Commissioner acquires the land. But if any person complains about the ownership of the land, with appeal, he/she will be able to collect the amount from Deputy Commissioner. There is no fixed time for this.	Deputy Commissioner
Section 11 (1)	Deputy Commissioner awards the compensation to entitled parties within 60 days of receiving the deposit from the Requiring Agency/Person.	Deputy Commissioner
Section 12	When the property acquired contains, standing crops cultivated by bargadar (shareholders), such portion of the compensation will be determined by the Deputy Commissioner and will be paid to the bargadar in cash.	Deputy Commissioner
Section 17 <b>(1)</b>	Transfer of acquired land to the requiring person other than the Government, such person shall enter to an agreement with the Government in such form as may be prescribed before a notice under section 4 is published.	Requiring person or Organization
Section 17 (2)	When the property, in respect of which an agreement has been entered into with a person under subsection (1), is acquired, transfer the property to the Requiring person or Organization by executing a deed in such form as may be prescribed.	Deputy Commissioner

Brief of Land Acquisition Process is given in the following figure:

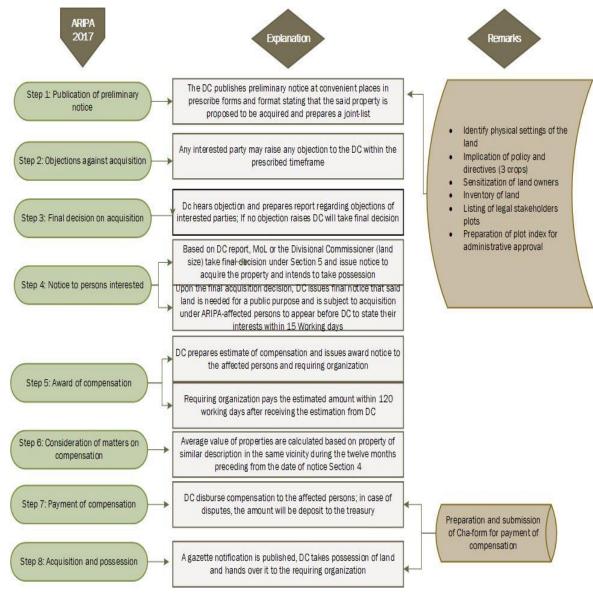


Figure 2.1: Brief of Land Acquisition Process

# 2.2 Temporary Land Requisition under the Act 2017

The Act 2017 is also the principal legislation governing eminent domain for land requisition in Bangladesh. It detailed out the land requisition process from section 20 to section 28. As per the section 20 (1) where any property is required temporarily for a public purpose or in the public interest, the Deputy Commissioner may, with the prior approval of the Government, by order in writing, requisition it. Provided that save in the case of emergency requirement for the purpose of maintenance of transport or communication system, no property which is bona fide used by the owner thereof as the residence of himself or his family or which is used either for religious worship by the public or as an educational institution or orphanage or as a hospital, public library, graveyard or cremation ground shall be requisitioned. The Act requires compensation to be paid for (i) vacating the requisitioned property, (ii) reoccupying the property upon released from the requisition, (iii) damaged the cost to the property during period of requisition including the expenses that may have to be incurred for restoring to the original condition.

Under the Act 2017, the Deputy Commissioner determines the value of the requisitioned assets under section 22(1) and 22(2) with due consultation with the land owners. According to section 22(6), requisition is allowed only for 2 years. If land is required more than 2 years, a new contract is required with the land

owners with an agreed compensation rate. Under section 23, Deputy Commissioner will pay the compensation to the land owners. If the land requisitioned has standing crops cultivated by a tenant (*Bargadar*) under a legally constituted written agreement, the law requires that compensation money to be paid in cash to the tenants as per the agreement. Any losses for structures, trees, and business will follow the provisions of the Act 2017.

# 3. Methodology for Land Acquisition Plan

# 3.1 Preparation of the Land Acquisition Plan (LAP) for Nawabganj EZ

After carefully studying the Terms of Reference (ToR), requirement analysis, and based on discussions with the concerned BAZA officials, field visits and review of the spatial and non-spatial data requirement, a step-by-step approach and methodology has been developed for Land Acquisition Plan (LAP).

At the very beginning of the work, consultation meeting was made with the officials of BEZA to exchange ideas about the details of requirements and prioritization/sequences of activities. The data (mauza maps, khatians) availability within BEZA and collection mechanism from DLRS and Land offices concerned was discussed. Later, necessary consultation meetings were held to fix the spatial and tabular database format, projection system, attributes to avoid inconsistencies and to create common understandings.

All the tasks related to the land acquisition plan has been detailed out such as:

- collection of the latest published mauza maps including relevant sheets of mauza covering the proposed EZ area;
- scanning of mauza map and digitizing all plots of the sheets;
- conversion of mauza map with plots into GIS format;
- acquisition and processing of high-resolution UAV ortho images;
- geo-referencing of images through collecting GCP by conducting RTK survey at proposed EZ site and prepare database;
- geo-referencing of mauza plot map according to geo-referenced UAV ortho images;
- collection of both Khatian records and Porcha of each plot including information of class of land from Upazila/Union Land Office (Tehsil Office);
- preparation of land ownership database and linking with mauza plot GIS database; and
- superimposing of acquisition boundaries and preparation of acquisition mauza plot maps.

A self-explanatory figure of methodology (**Figure 3.1**) is presented below, while the description of the different steps under that methodology is given in the subsequent sections.

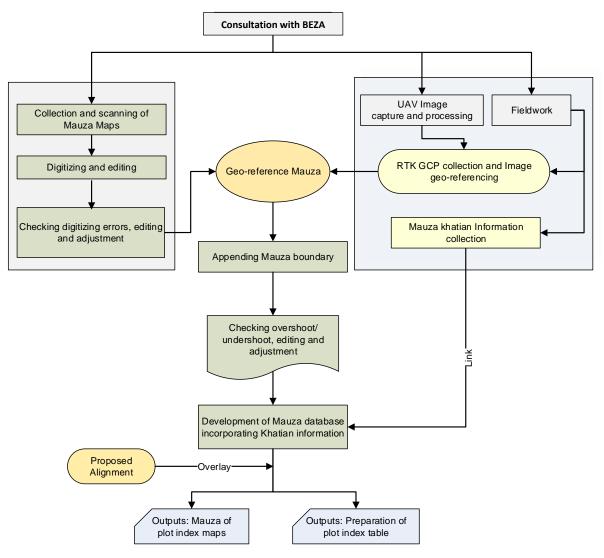


Figure 3.1: Comprehensive Methodology for Preparation of LAP

# 3.1.1 Mauza Map and Khatian Data Collection and Scanning

Identification and collection of maps and khatians were the important tasks of this study. CEGIS Team visited BEZA office to collect all the available data and records such as project area plan and the initial proposals of land acquisition including the approvals of higher authority. CEGIS collected all the required mauza maps including sheets and khatians in hardcopy format (**Figure 3.2**) from DLRS/Upazila Land Offices/Union Land offices. The concerned officials of BEZA related to Land Acquisition aspects facilitated the data/information/record collection process. After collection, all map sheets were scanned using a high precision scanner. The maps were scanned at 200 dpi in JPEG format which is readable by all the GIS software as well as all the features would be clearly visible.

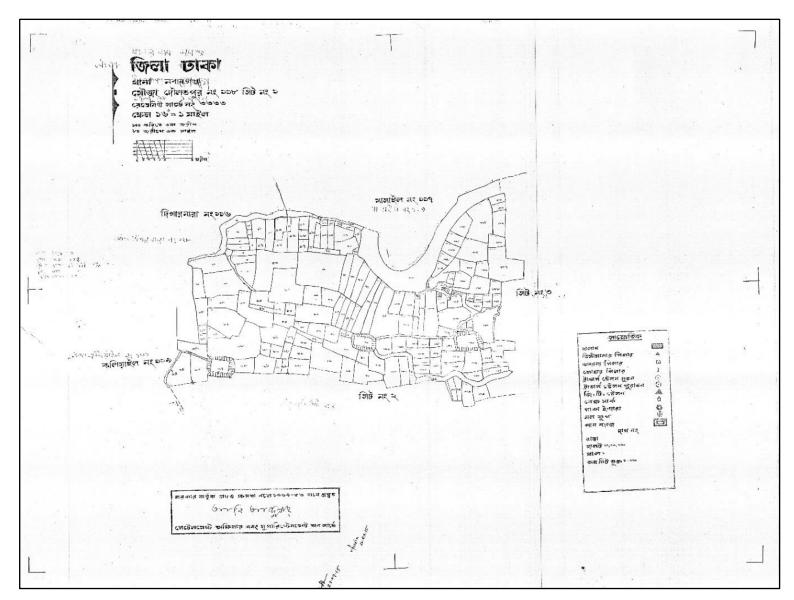


Figure 3.2: Sample Mauza Plot Map

#### 3.1.2 Digitizing and Editing

All scanned mauza maps was considered to convert into GIS format. 'On screen digitization process' was followed to convert scanned mauza maps into GIS format by using ArcGIS software. A set of digitizing rules and standards such as 300% zoomed during digitization was also maintained for high quality digital map generation. The converted data was generated in vector format as shape file. The plots were generated polygon shapes, which were stored in well-defined file structure. The mauza boundary was needed for editing and adjustments to build proper topology. Digitizing errors i.e., duplicate line, shared edges, sliver polygon, missing label, undershoot gap between arcs, overshoot arc were checked properly. After digitizing the mauza maps, the plot numbers named 'dag number' were assigned against each plot in the digital data. The plots, which have represented as polygon feature, were linked with the Khatian's information.

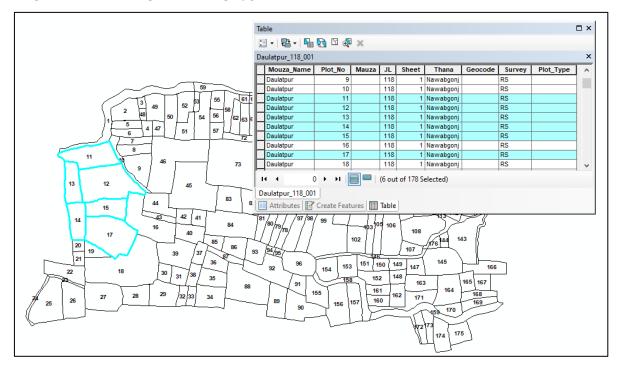


Figure 3.3: Sample Digitizing, Editing and Plot Number Integration in ArcGIS

#### 3.1.3 Image Acquisition and Geo-referencing

The KOMPSAT high-resolution pan sharpened multispectral images having 1m resolution were collected from CEGIS archive covering whole project area. The images were processed through conversion of images from 16-bit to 8-bit data, co-registration and geo-referencing and projection into Bangladesh Universe Transverse Mercator (BUTM) coordinate system. The images were geo-referenced to correct geometric distortions and transformed into the projected BUTM coordinate system using a set of input Ground Control Points (GCP). The reference GCPs was collected by carrying out RTK (Real Time Kinetic) survey.

# 3.1.4 GCP Selection and Field Survey of GCP Collection

GCPs are very important for geometric correction of UAV ortho images and can place it in an accurate geographic coordinate system. GCP is the known reference point which is used to geo-reference the images. The accuracy of the GCP also leads to the accuracy of images which ultimately helps to produce quality geo-reference of mauza map database. Therefore, GCPs were collected from field using RTK GPS to geo-reference the images containing the proposed acquisition areas. In this regard, the reference points were identified in the sheets of the mauza maps.

Before starting the collection of GCP, a planning was done on the images to identify tentative locations of the GCP points. Generally, road and railroad intersections, corner of medium to large size ponds, embankments, large bridges, etc. were selected as the position of GCP. All GCPs were used for geo

referencing, while, some GCPs were used for validation of the collected value of geo referencing. During the GCP collection, often it became very difficult to identify the planned locations on the ground, and thus many changes and revision in the GCP location were done during field investigation. The accuracy of the GCP was usually within ± 0.5 meter. The process of GCP collection to geo-reference is presented in the **Figure 3.4**.

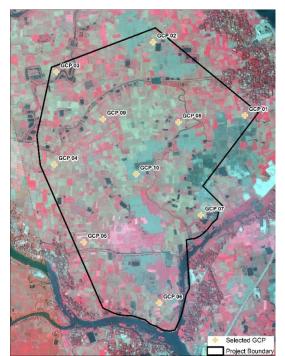




Figure 3.4: GCP Planning and Collection

# 3.1.5 Khatian Database Preparation

Khatian information of all selected mauzas were collected from the Union Land Office (Tahsil Office). Union Land Office is at the bottom tier of the land administration in Bangladesh. Khatian is the individual land record certificate, indicates genuine title over the land. The term "Khatian" is commonly used to mean "record-of-rights". Every entry of the Khatian shows its own khatian number, plot numbers, bata (divided) plot numbers, area, mauza names and shares of the possessors, descriptions of their rights and superior interests etc. Different Khatians had been prepared during different administrative surveys (e.g., CS, SA, RS, BS), while, Revisional Survey (RS) is the latest administrative survey currently using in project area. The Khatian database was prepared by using latest RS Khatian information available to the Union Land Offices which was linked with the mauza plot boundary. The linking was done primarily using mauza plot number.

Certified copy of all available RS information was collected from the respective land offices. If any Khatian information were not found or not understandable, it was brought to the notice of the responsible officials of BEZA and checked to the immediate upper tier of the source.

# 3.1.6 Mauza Geo-referencing

Geo referencing means the internal coordinate system of a map or aerial photo image can be related to a ground system of geographic coordinates. In this case, geo-referencing was done in individual mauza sheet. The mauza sheets were geo-referenced subject to the geo referenced image using ArcGIS software. In this case, the land plot boundary, road and land marks in the image were considered. The maps were projected in BUTM projection system which is being widely used by almost all the GIS frontline users in Bangladesh.

# 3.1.7 Appending the Mauzas

After digitization and geo-reference of mauza shape files, the next step was to append all shape files to make it a single shape file. Mauza map usually comprises number of map sheets. At first appending was done in

mauzas those are splitting into different sheets which were combined to produce individual mauza maps. Afterwards all the individual mauzas were appended into one layer. After that, all the errors such as duplicate plots, sliver polygon, undershoot gaps, overshoot errors were checked and edited.

# 3.1.8 Linking Attribute to Mauza Database

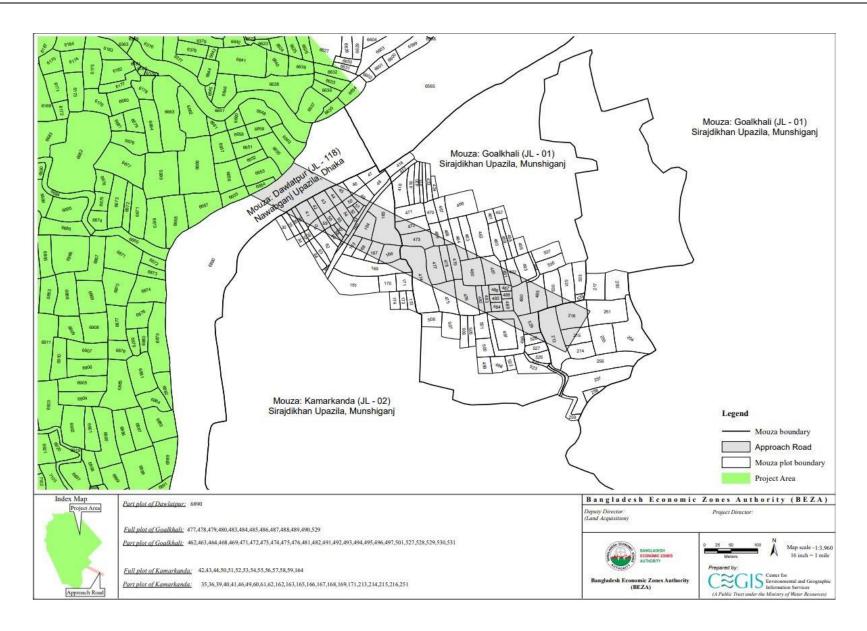
Ownership database compiled from Khatians contains a number of information like Khatian number, land type, amount of land area, JL number, Mauza and sheet number, plot number etc. On the other hand, digital mauza maps contained Mauza number, sheet number and plot number. Using common field values (Mauza number, sheet number and plot number), geo-spatial mauza data were joined with the attribute of ownership data and thus, each and every Khatian record information were linked to the corresponding plots in the mauza map. This spatially linked resulted table was produced various spatial operation capability with the database such as by pin-pointing any plot on the map, corresponding khatian information from khatian database can be retrieved, and similarly by searching any particular khatian number in the database (tabular database), corresponding plot in the GIS data.

#### 3.1.9 Overlay Project Boundary and Mauza Boundary

Proposed acquisition area was overlaid with the mauza boundaries in GIS platform and this was provided plot number, full plots, partial plots, and amount of the acquisition area. The plot index maps were prepared containing acquisition boundary, plot numbers, labels of mauza, union, upazila and district and other physical features.

#### 3.1.10 Preparation of Land Acquisition Map and Plot Index

Finally, the plot index maps and tables containing proposed acquisition area, part or full plots, class of land, etc. has been prepared as the output of the services (**Appendix 1**, **Appendix 2** and **Appendix 3**). A sample output of the plot index map and plot index table are given in **Figure 3.5**, **Figure 3.6** and **Figure 3.7** respectively.



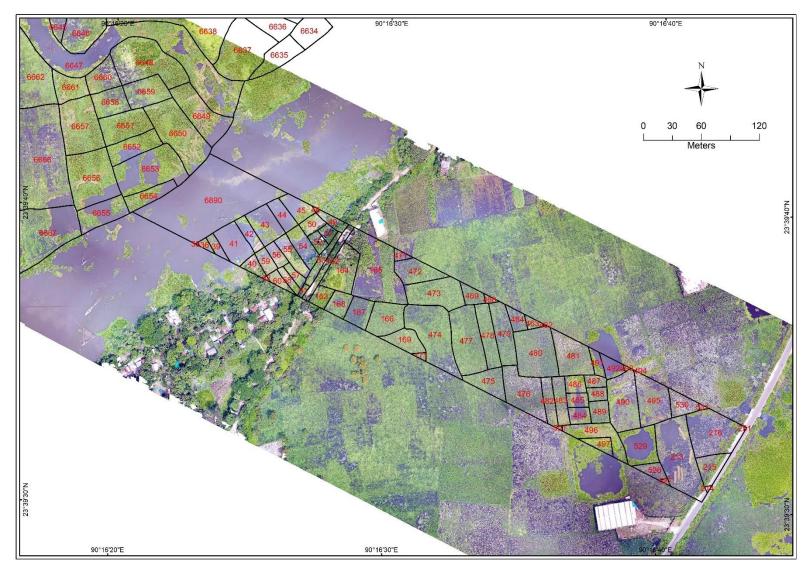


Figure 3.5: Sample of Plot Index Map

ক্রমিক নং	দাগ নম্বর	খতিয়ান নম্বর	দাগে মোট জমি	বন্দোবস্তের জন্য প্রস্তাবিত জমি	রেকর্ডীয় শ্রেনী
۵.	8\$8	۵	0.0000	0,0000	হালট
	মৌজায় অধিগ্র ন জমির পরিম		0.0000	0,0000	
২.	20	5	0.5800	0.0050	নাল
૭.	৩৬	5	0.5000	0.0220	নাল
8.	৩৯	5	0.5200	0.0696	নাল
C.	85	5	0.2800	0.2000	নাল
৬.	82	5	0.5000	0.5000	নাল
٩.	80	5	0.2800	0.2800	নাল
ъ.	88	5	0.5000	0.5000	নাল
৯.	8¢	5	0.5600	0.5800	নাল
50.	8৬	5	0.5600	0,0000	নাল
55.	১৬২	5	0.6900	0.5800	রাস্তা
	মৌজায় অধিগ্র জমির পরিম		২.০৪০০	১.০৯৬৫	
		া মৌজায় মাট খাস জমির	২.৩৭০০	3.505@	

# নবাবগঞ্জ অর্থনৈতিক অঞ্চল, ঢাকা। অধিগ্রহণের প্রশাসনিক অনুমোদনের জন্য প্রস্তাবিত ব্যক্তি মালিকানাধীন জমির দাগসূচী

ক্রমিক	আর, এস	আর, এস	দাগে মোট জমির	বন্দোবন্তের জন্য	জমির
নং প্লট/দাগ নং		খতিয়ান নং	পরিমাণ (একর)	প্রস্তাবিত জমির	শ্রেনী
				পরিমাণ (একর)	
۵	७५५	৬৮৯	೦೦೪೩೦೦	೦.৮৯೦೦	নাল
ą	৬১২	১৩৩৯	0.8900	0.8900	নাল
9	৬১৩	৮৬8	0.0000	0.0000	নাল
8	७५८	১৩৩৯	0.8২00	0.8২00	নাল
œ	৬১৫	\$868	0.0000	0.0000	নাল
૭	৬১৬	৬৮৯	0.5000	0.5000	নাল
٩	৬১৭	১২৩৮	0.২২00	0.2200	নাল
ъ	৬১৮	১২৩৮	0.2500	0.2500	নাল
৯	<b>৫</b> ১৯	2000	००४०.८	००४०.८	নাল
20	৬২০	3006	3.0800	3.0800	নাল
22	৬২১	১২৩১	٥٥٥٥.د	٥٥٥٥.د	নাল
25	৬২২	১২৩১	০০৬৫.০	০০৬৫.০	নাল
20	৬২৪	<b>৮</b> ৬8	০.২৩০০	০.২৩০০	নাল
78	৬২৫	৮৬8	০.২৬০০	০.২৬০০	নাল
26	৬২৬	৮৬৪	0.২800	0.২800	নাল
১৬	৬২৭	<b>৮</b> ৬8	০.২৮০০	०.२४००	নাল
۶۹	৬২৮	<b>৮</b> ৬8	২.১৭০০	২.১৭০০	নাল
72-	৬২৯	৮৬8	0.3000	0.3000	নাল
۵۵	৬৩০	৬৫	o. <u>\</u> 800	১.৫৬০০	নাল
২০	৬৩১	১১৩৫	0.2000	0.3000	নাল
২১	৬৩২	১১৩৫	0.8900	0.8900	নাল
২২	৬৩৩	৮৬৪	0.8800	0.8500	নাল
২৩	৬৩৪	৮৬8	೦೦ឥ8.೦	೦೦68.೦	নাল

Figure 3.6: Sample of Plot Index Table (for Administrative Order)

চ-ফরম

# প্রকল্পের নামঃ নবাবগঞ্জ অর্থনৈতিক অঞ্চল, নবাবগঞ্জ, ঢাকা। প্রত্যাশী সংস্থার নামঃ বাংলাদেশ অর্থনৈতিক অঞ্চল কর্তৃপক্ষ (বেজা), প্রধানমন্ত্রীর কার্যালয়

# অধিগ্রহন প্রস্তাবিত জমির দাগভিত্তিক মালিকানার তথ্য

# জেলাঃ মু<del>লিগঞ্জ</del> উপজেলাঃ সিরাজদিখান মৌজাঃ গোয়ালখালী ও কামারকান্দা

দাগ নং	খিতিয়ান নং	জমির			জমির মালিক গনের বিবরণ						
		শ্ৰেণী	দাগের মোট জমি প্রস্তাবিত জমির পরিমাণ	প্রস্তাবিত জমির পরিমাণ	ও ঠিকানা	নামজারী অনুযায়ী জুমি মালিক গনের নাম ঠিকানা	জমির পরিমান ও নামজারী মামলা নম্বর	নামজারী সম্পন্ন হয়নি এমন ক্রেড পনের নাম	রেকর্জীয়/ নামজারীকৃত মৃত মালিক গনের নাম ও ঠিকানা	মন্তব্য	
8৬২	২৬৬	নাল	0.6900	0.00@	চন্দ্র মাধব মঙল, পিং জ্ঞানেদ্র মঙল, সাং নিজ রতন মঙল, পিং জ্ঞানেদ্র মঙল, সাং নিজ নুগা প্রফল্প মঙল, পিং অশ্বিনী মঙল, সাং নিজ হাজারী মঙল, পিং কৃষ্ণ চন্দ্র মঙল, সাং নিজ						
৪৬৩	ঽ৬৬	নাল	0.9900	0.0800	হাজারী মডল, পিং কৃষ্ণ চন্দ্র মডল, সাং নিজ নুগা প্রফল্ল মডল, পিং অশ্বিনী মডল, সাং নিজ রতন মডল, পিং জ্ঞানেদ্র মডল, সাং নিজ চন্দ্র মাধব মডল, পিং জ্ঞানেদ্র মডল, সাং নিজ						
8৬8	২৬৬	নাল	0.0800	0.0৮৫	চন্দ্র মাধব মডল, পিং জ্ঞানেদ্র মডল, সাং নিজ হাজারী মডল, পিং কৃষ্ণ চন্দ্র মডল, সাং নিজ রতন মডল, পিং জ্ঞানেদ্র মডল, সাং নিজ নুগা প্রফল্প মডল, পিং অশ্বিনী মডল, সাং নিজ						
8৬৮	<b>২৫</b> ৯	নাল	0.2200	0,0২00	বিপিন মডল, পিং দিনবন্দু মডল, সাং নিজ বিবেকানন্দ মডল, পিং হরি মোহন মডল, সাং নিজ সমীনাথ মডল, পিং মহেশ মডল, সাং নিজ গিরিধন মডল, পিং মহেশ মডল, সাং নিজ চিত্তাহরন মডল, পিং মহেশ মডল, সাং নিজ পার্শ নার্থ মডল, পিং সানাতন মডল, সাং নিজ ভোলানাথ মডল, পিং সানাতন মডল, সাং নিজ গগন মডল, পিং সজনী মডল, সাং নিজ গগন মডল, পিং সজনী মডল, সাং নিজ হরেন্দ্র মডল, পিং সরু মডল, সাং নিজ গনেশ মডল, পিং হরি মোহন মডল, সাং নিজ গবল মডল, পিং সজনী মডল, সাং নিজ					ইনডেক্সে উল্লেখিত দাগে জমির পরিমাণ ০.২১ একর থাকলেও খতিয়ানে ভুল ক্রমে ০.২২ এব	

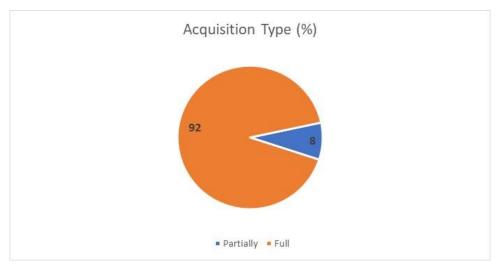
জলাঃ ঢাকা							উপজেলাঃ নবাবগঞ					মৌজাঃ দৌলত				
				8			জমির মালিকানার বিবরণ									
ক্রমিক নং	আর, এস প্রট/দাগ নং	আর, এস খতিয়ান নং	জমির শ্রেনী	দাপে মোট জমির পরিমাণ (একর)	প্রস্তাবিত জমির পরিমাণ (একর)	দাগ অনুযায়ী মালিকগণের ক্রমিক নং	সর্বশেষ রেকর্ড অনুযায়ী ভূমি মালিকগণের নাম ও ঠিকানা	নামজারী অনুযায়ী ভূমি মালিক গনের নাম ঠিকানা	জমির পরিমান ও নামজারী মামলা নম্বর	নামজারী সম্পন্ন হয়নি এমন ক্রেত গনের নাম	রেকর্জীয়/ নামজারীকৃত মৃত মালিক গনের নাম ও ঠিকানা	মন্তব্য				
7	<i>د</i> ده	৬৮৯	নাল	0.64.0	0.6%00	2	পবন চন্দ্র গোপ, পিং রাম চন্দ্র গোপ, সাং জৈনপুর উপজেলা কেরানীগঞ্জ		15							
						2	দীনেশ চন্দ্র গোপ, পিং রাখাল চন্দ্র গোপ, সাং জৈনপুর উপজেলা কেরানীগঞ্জ									
						9	অমৃতলাল গোপ, পিং রাখাল চন্দ্র গোপ, সাং জৈনপুর উপজেলা কেরানীগঞ্জ									
						8	আব্দুল বারেক খা, পিং আমিন খা, সাং নিজ									
						œ	রফিজ উদ্দীন খা, পিং আমিন খা, সাং নিজ									
						৬	দাইমদীন খা, পিং আমিন খা, সাং নিজ									
						٩	নৈমদ্দীন খা, পিং আমিন খা, সাং নিজ									
						Ъ	আমির উদ্দীন খা, পিং আব্দুল মালেক খান, সাং নিজ									
							i	ĺ			৯	রহমান খা, পিং আব্দুল মালেক খান, সাং নিজ		2		
						30	বাজিত খা, পিং বাউল খান, সাং নিজ									
						77	নমিন খা, পিং আবজাল খা, সাং নিজ									
						25	মুনছের খা, পিং আবজাল খা, সাং নিজ									
						20	আবদুল মান্নান খান, পিং আছালত খান, সাং নিজ									
						\$8	বাজিজ খান, পিং ইমন খান, সাং নিজ					à				
2	৬১২	४००४	নাল	0.8900	0.8900	2	সুখদেব মঙল, পিং আশানন্দ মঙল, সাং জৈনপুর									
						٤	মহাদেব মণ্ডল, পিং আশানন্দ মণ্ডল, সাং জৈনপুর									

Figure 3.7: Sample of Plot Index Table (for Acquisition Process)

# 4. Description of Proposed Land for Acquisition

# 4.1 Acquisition Plot Types

The plots those are proposed to be acquisitioned for this project are two types – 1) Fully Acquisition Plots and 2) Partially Acquisition Plots. In the proposed Nawabganj EZ Project, it was observed that 92% of the total acquisition plots are partially demarcated and remaining are fully demarcated within the proposed project alignment (**Figure 4.1**).



Source: Tehsil Office, Kailail & Chitrakot and respective AC Land Offices, 2021

Figure 4.1: Type of the Acquisition Plot for Proposed LAP

# 4.2 Distribution of Acquisition Plots

Overall, 1773 plots with 891.81 acre of land will be acquisition for operating the proposed project including approach road in which about 10 acres' land within the project area is used as internal canal/khal which will be intact during operation of the proposed project. Therefore, this canal area will not be included in acquisition, so in total 881.80 acres' land will need to be acquired for the proposed project.

For the main project intervention, 1700 plots in 879.29 acres (approx.) of land area will be acquisitioned, in which, 1581 plots are fully fallen within the project alignment that amounts to 838.31 acres in size (**Table 4.1**). Also, 119 plots are partially fallen in the demarcated alignment which is about 40.98 acres in size. It is to be noted that, a *dag* of Khal area under *khas* Khatian is located outside the project alignment but adjacent to the project area over which a bridge will need to be constructed. Therefore, that *dag* (No. 6890 under Khatian 1) is not included in the LAP.

Information of the Approach Road is also included in the following table where 73 plots will be acquisitioned in which 26 plots are fully fallen within the alignment of the Approach Road.

No. of Plots Total Area (in acre) **Plot Demarcated under Project** Project **Approach Proiect Approach** Area Total **Total** Area Area Road Road **Partially** 119 47 166 40.98 47.81 6.83 **Fully** 1581 26 1607 838.31 5.14 843.45 **Sub-Total** 1700 73 1773 879.29 11.97 891.26

Table 4.1: Distribution of Plots by Type within Demarcated Area

Source: Tehsil Office, Kailail & Chitrakot and respective AC Land Offices, 2021

#### 4.3 Distribution of Plots under Khas Land

Among the 1773 plots, 63 are titled as *khas* land plots, in which 48 plots are fully demarcated and 15 plots are partially demarcated within the proposed project alignment. In measuring the amount, total 42.92 acres of land proposed to be acquired from *khas* land in which 30.43 acres of land will be fully acquisition plots and 12.49 will be partially acquisition plots (**Table 4.2**). According to the UNO Nawabganj, no khas land in the proposed project area has been leased out or DCR.

Table 4.2: Distribution of Khas Plots as per Type of Demarcated Plots

Khas Plot under		No. of Plots		Total Area (in acre)			
Project Area	Project Area	Approach Road	Total	Project Area	Approach Road	Total	
Partially Demarcated	7	8	15	11.89	0.6	12.49	
Fully Demarcated	45	3	48	29.93	0.5	30.43	
Sub-Total	52	11	63	41.82	1.1	42.92	

Source: Tehsil Office, Kailail & Chitrakot and respective AC Land Offices, 2021

# 4.4 Percentage of Partial Plots under Acquisition

Percentage of demarcated plots under partially fallen category has been assessed through the area of plots fall under the demarcated proposed project alignment. In this regard, level of acquisition' affect may be assumed under three classes: (a) acquisition' affect is less than 10% of the plot area, (b) acquisition' affect is 10% to 50% of the plot area and (c) acquisition' affect is over 50% to 99% of plot area.

According to this assumption, in privately land-owning plots, highest 68 plots are to be acquisitioned which would affect over 50% plot area, followed by 56 plot area which would affect from 10% to 50% of the total plot area (**Table 4.3**). Besides, for the *Khas* land, 6 plots each out of 15 are to be acquisitioned which would affect over 50% plot area and 10% to 50% of total plots and 3 plots which would affect below 10% of total plot area.

Table 4.3: Level of Affect against Acquisition of Partial Private and Public Plots

Level of affect in % of	No. o	of Private Plots		No. of Khas Plots			
Total Plot Area	Project Area	Approach Road	Total	Project Area	Approach Road	Total	
<10%	17	10	27	0	3	3	
10% to 50%	42	14	56	3	3	6	
>50%	53	15	68	4	2	6	
Total	112	39	151	7	8	15	

Source: Tehsil Office, Kailail & Chitrakot and respective AC Land Offices, 2021

# 4.5 Land Use of Plots under Acquisition

According to the data-information of the local Tafsil Offices, the proposed acquisition land has 14 different types of use, in which, null (agriculture) and pond (fish culture) are the main productive use of the land (**Table 4.4**). In total, 1670 plots (out of 1773 plots) are used as null and/or null with other category both in partially and fully fallen into the demarcated project alignment. Nineteen (19) plots are used as khal which will remain intact during operation phase of the project. It is to be noted that the land use information of 33 plots is not found in the Khatian Record (registered regulation books) available in the Tehsil offices.

Table 4.4: Distribution of Acquisition Plots as per Land Use

Land Use	Plots und	er Landu Project	ise in the	Plots under Landuse in Approach Road					
	Partially	Fully	Total	Partially	Fully	Total			
Bosotvita (Homestead)	0	0	0	0	1	1			
Null (Agriculture land)	109	1487	1596	26	42	68			
Null+Khal (Agri + Canal)	1	4	5			0			
Null+Halot (Agri + Kutcha Road)	0	1	1			0			
Khal (Canal)	3	16	19			0			
Pukur (Pond)	0	13	13		1	1			
Pukur par (Pond bank)	0	7	7		1	1			
Pukur +Pukur par (Pond+pond bank)	0	1	1			0			
Halot (Kutcha Road))	2	15	17		2	2			
Potit (Fallow) & others	4	37	41			0			
Overall	119	1581	1700	26	47	73			

Source: Tehsil Office, Kailail & Chitrakot and respective AC Land Offices, 2021

Land use of some portion of the project area land is given below:

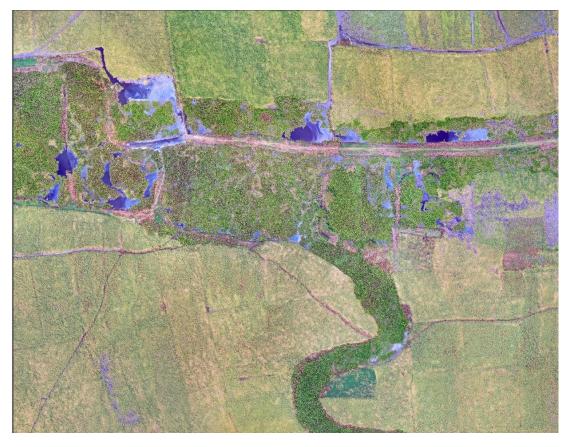






Figure 4.2: Different Landuse Captured through Drone

# 4.6 Summary of the Proposed Land Acquisition

The amount of land for the purpose of acquisition through the Acquiring Body (District Administrations of Dhaka and Munshiganj) in favor of the requiring body (BEZA) is presented in the summary table (**Table 4.5**) below.

Daulatpur mauza under Nawabganj upazila covers entire of the main project location (879.29 acre) while Goalkhali (6.32 acre) and Kamarkanda (5.64 acre) covers area for the Approach Road only. Mouza rates of the affected mouzas with different land classes are attached in Appendix A. Following the rates of land and affected others assets with livelihood a Resettlement Action Plan (RAP) will be prepared.

Table 4.5: Summary of Proposed Land Acquisition for Nawabganj EZ

		Proposed Acquisition of Land											
District	Mauza	Null, Null+Khal/ Halot (acre)	Khal (acre)	Pukur (acre)	Pukur +Pukur par (acre)	Bosotvita (acre)	Halot (acre)	Other Types (acre)	Full Plot Land (acre)	Part Plot Land (acre)	Total Land (acre)		
Dhaka	Daulatpur	828.19	10.76	11.31	3.44	0	5.22	20.39	838.31	40.98	879.29		
Munchigani	Goalkhali	6.06	0.00	0.05	0.21	0	0.005	0	2.63	3.69	6.32		
Munshiganj	Kamarkanda	6.02	0.00	0.00	0.00	0.03	0.14	0	2.51	3.13	5.64		
	Total			11.36	3.65	0.03	5.365	20.39	843.45	47.31	891.25		

Source: Tehsil Office, Kailail & Chitrakot and respective AC Land Offices, 2021

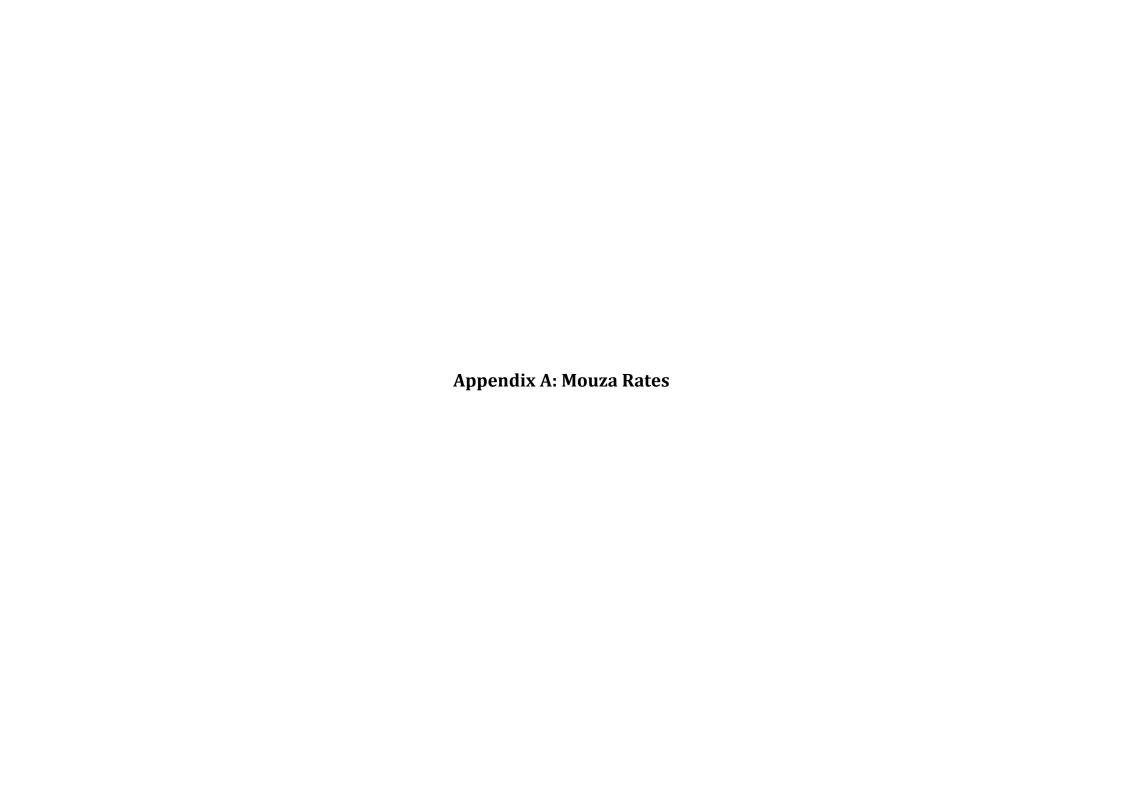
# 4.7 Conclusion

In order to establish Nawabganj EZ, the Acquiring Body would approve the land acquisition process of about 881.25 acres (excluding the land area of the internal *khal*/canal) of land in favor of the Requiring Body. Detail of the Plot Index and Ownership Information are attached in the Appendices (**Annex 1, 2 & 3**).



Annex 2: Cha Form





র, এস, দৌজা	দৌজান দান	নাল/বোন/ইবি /বাশুচন	পুৰুন/ভোন/ নাটিয়াল	বণাস্থবাশৰাড়	চাৰি জিটি ও লিটি/গো-চাল্লন/ চালা/গালান	বাড়ী	লোকান ভিটি	ণড় লায়েক পতিত	West.
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79	देक्तरिल		00,000/-						
36	দিশালাড়া	20,000/-				80,000/-			
98	পাড়াহাম	20,000/-			90,000/-	bo,000/-			
74	দৌলতপুর	20,920/-			65,000/-	90,000/-			
26	কুন্যা	20,000/-				3,00,000/-			

# গণপ্রজাতশ্রী বাংলাদেশ সরকার সাব-রেজিস্ট্রারের কার্যালয় সিরাজদিখান, মুগীগঞ্জ।

সম্পত্তির সর্বনিমু বাজার মূল্য নির্ধারণ বিধি মালা ২০১৫ এর ৫ নং বিধি অনুযায়ী মুলীগঞ্জ জেলার সিরাজদিখান সাব-রেজিস্ট্রী অঞ্চিসের অধিক্ষেরাধীন সম্পত্তির মৌজাওয়ায়ী শ্রেণী ভিত্তিক প্রতি শতাংশ জমির বাজার মূল্য তালিকা যাহা ২০১৭-২০১৮ সালের জন্য প্রযোজ্য।

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