Report on

Site Analysis

Pubon Hawa Housing Ltd.

Site and area planning Studio
URP 2214

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Submitted to
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Chapter 1
Introduction

1.1 Introduction

1.1.1 Background

Site and area planning studio is a course in this semester where a project is given by the course teachers. The project is about site analysis of any three sites and these sites has been chosen for analyzing, developing as neighborhood zone in future. But one site has been selected as a best site. Site analysis is the process of surveying or studying the existing environment and how it will influence the structure design and layout on the site and it is a predesign research activity which focuses on existing and potential conditions on and around the building site. It is an inventory of the site factors and forces. Site analysis Includes the site location and size, neighborhood context, zoning, legal aspect ,geology, physiography(natural and manmade features),hydrology, soils, vegetation, wildlife, climate, culture, circulation, access, utilities, historic, density, land cost, topology, water bodies, vegetation. drainage etc.

1.1.2 Objective

- To evaluate development constraints and opportunities for the selected sites
- To gain information about multiple factors, and facilities

1.1.3 Scope of the project:

It is known that, site analysis is a initial phase of architectural and urban design processes related to the study of the climatic, geographical, historical, legal, and infrastructural context of a specific site. By analyzing those sites, can be known about sites and factors. In future, if there will have a scope for developing those sites .it will be easy to develop. By knowing about factors like soil

conditions, winds, sun paths and drainage system, there has been some great ideas which will be helped to planning any sites in future.

1.1.4 Significant of the projects:

This site analysis is used to develop an understanding of the site and its context. Site analysis can be helped in design decisions based on site conditions and surrounding context. It can be helped such as

- How much solar access and natural ventilation need to provide a comfortable and energy efficient living environment for residents
- How can be maintained the existing character of the street through setbacks, separation and height, driveway and car parking location.
- From where the views of the site are optimized for both the development and neighbors
- The construction of the development is how much suitable to the slope of the land
- To Cost effective development in relation to connection to services and existing land uses

1.1.5 Limitation of the project:

By analyzing a site, there have some limitations. To analyze any site, at first have to know about the environments, the social conditions, climates and factors. All things have been known after survey. But at first, the three sites were selected with the help of secondary data then had a survey. So before selecting sites, the survey was important. Another limitation is lack of accurate information from local people. The presents of local people were not enough.

1.2 Literature review

1.2.1 Site:

A site is a spatial location or an area of ground on which a town, building, or monument is constructed.

1.2.2 Site Survey:

Site surveys are inspections of an area where work is proposed, to gather information for a design or an estimate to complete the initial tasks required for an outdoor activity. It can determine a precise location, access, best orientation for the site and the location of obstacles.

1.2.3 Site selection:

Site selection is a fundamental precept of "SMART" growth, or sustainable development. Smart Growth is a theory of land development that accepts that growth and development will continue to occur, and so seeks to direct that growth in an intentional, comprehensive way. Its proponents include urban planners, architects, developers, community activists, and historic preservationists.

1.2.4 Site Inventory and Analysis:

1.2.4.1 Site inventory:

A site inventory is simply a list of elements that currently exist on the property. It is an essential step in understanding the character of the site and physical, biological, and cultural linkages between the site and the surrounding landscape. Both basic and applied research has contributed to site understanding of physical, biological, and cultural phenomena. Elements that exist on adjacent properties should also be considered if site impact the future design. The location of inventoried elements can be recorded on a base map or simple plot plan. Arrows and other symbols can be used to indicate elements such as views, wind, and sun. Areas of concern include the soil and topography, plants, sun/shade conditions, built features, views, and activity areas. Site inventory is a focused process of collecting and mapping essential attribute data. If this data-gathering activity is not well focused, the site inventory can consume vast amount of time, money and professional expertise. First Stages of site inventory is following-Site reconnaissance according to the site survey (develop a base map which can serve as template for attribute mapping analysis)

1.2.4.2 Site Analysis:

The site analysis is an evaluation or judgment of features on the site. Site analysis –which is much more than simply mapping the site's existing condition – is essential to the design of sustainable built environments. The site inventory provides the physical, biological, and cultural data needed for this program-driven analysis. It is a diagnostic process that identifies the opportunities and constraints for a specific land use program.

Questions to ask in the analysis phase include:

- Determine opportunities and constraints.
- Is it good or bad?
- What should be changed?
- How does the area 'feel' or how do they react to the condition of the site

Neighborhood plan:

Neighborhood is such a unit of a larger community or a city as specially developed to ensure safety, health, comfort, convenience, education, shopping, recreation etc. It is distinct physical unit within the neighborhood of which internal planning provides for the provision and orderly arrangement of all those facilities, which are shared by common by the residents of the area.

1.2.5 Purpose of Neighborhood planning:

Neighborhood planning can be used for a variety of purposes. For example, it can be used to:

- identify where new homes, shops, school, hospital, park and open space should be built
- have a say on what new buildings look like
- grant planning permission for new development that a community wants.

Principles of Neighborhood planning

- Residential areas should be planned on a neighborhood basis.
- Major highways should pass around residential neighborhood.
- Secondary street patterns should connect the centers of neighborhood
- Independent of vehicular routes, a system of pedestrian greenways, generally located in natural stream valleys should be provided to connect homes, schools and residential area.
- School should be accessible by walkways Church/mosque, temple sites should be provided in each neighborhood.

The size of the neighborhood unit:

- The size of the population-2000 population per 5 unit.
- The extent of the geographic area-150 acre

1.3 Study Area

Three sites has been selected by the secondary information. That site is Munshipara, Chak Ashankhali and Alutola.

1.3.1 Munshi Para:

This place is located near Khulna city bypass. It is surrounded by the Mohesher Pasha main road. Near Munshi Para have many tea shop, store and mosque. Some distance away there have KUET and Bhairab River.

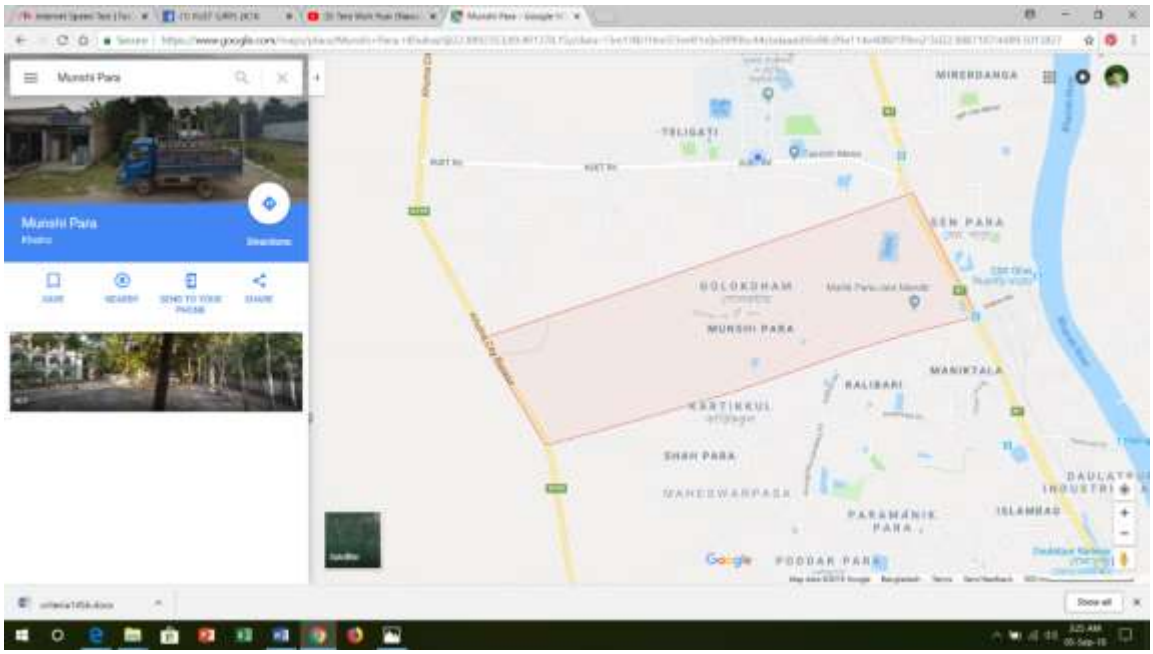

Figure 1.3.1.1: Map of Munshi Para Source: Google Map

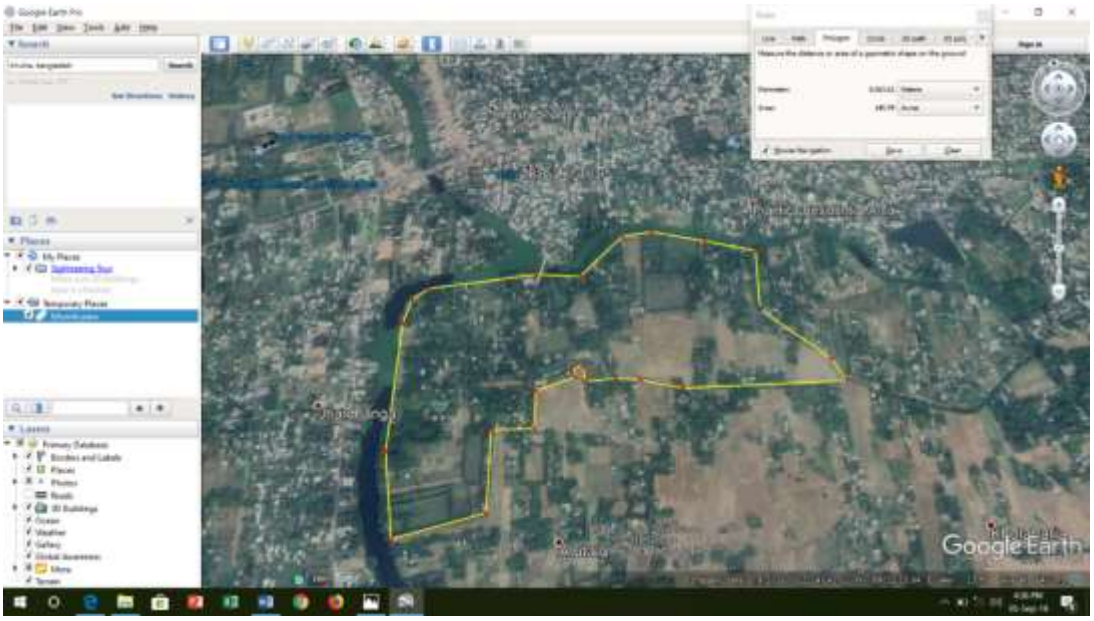

Figure 1.3.1.2 satelite Map of Munshipara with the boundary area. Source: Google Earth Pro

The total area of the Munshipara is 148 acres.

1.3.2 Chak Ashankhali:

The place is located near Sonadanga. Moyuri river is also located beside this area.Topography,existing excess and circulation is good of that area. Its all around having three High way road Name Dhaka-khulna-Jessore Road, Khulna City Bypass and Khulna-Sathkhira Road.

Figure 1.3.2.1 : Google Map of Chak Ashankhali. Source: Google Map

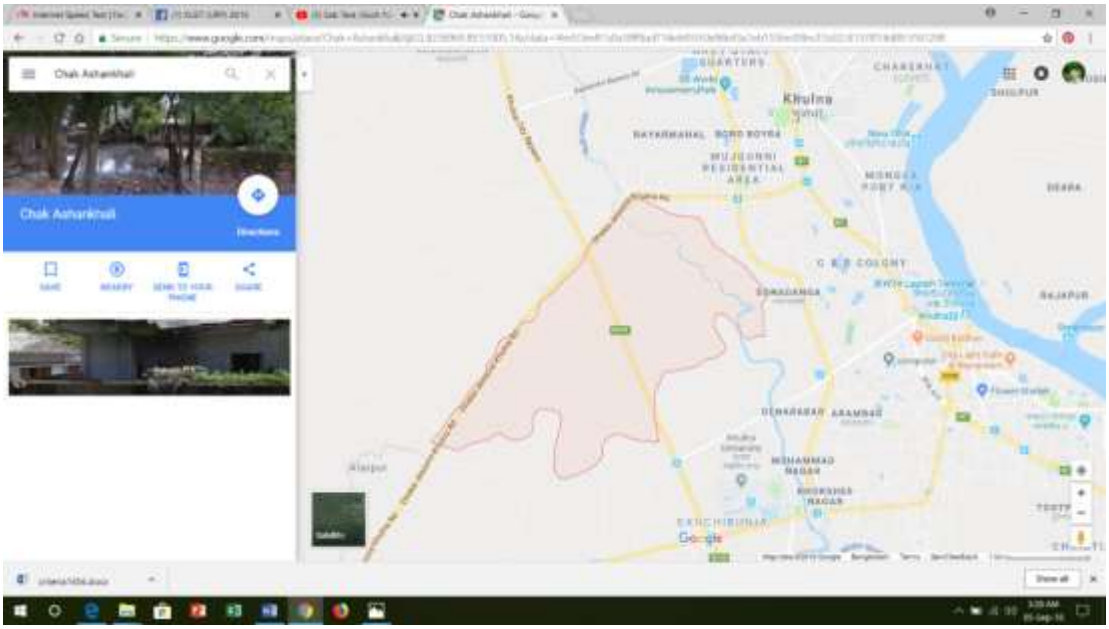

Figure 1.3.2.2 :Google map of chak Ashankhali Source: Google Map

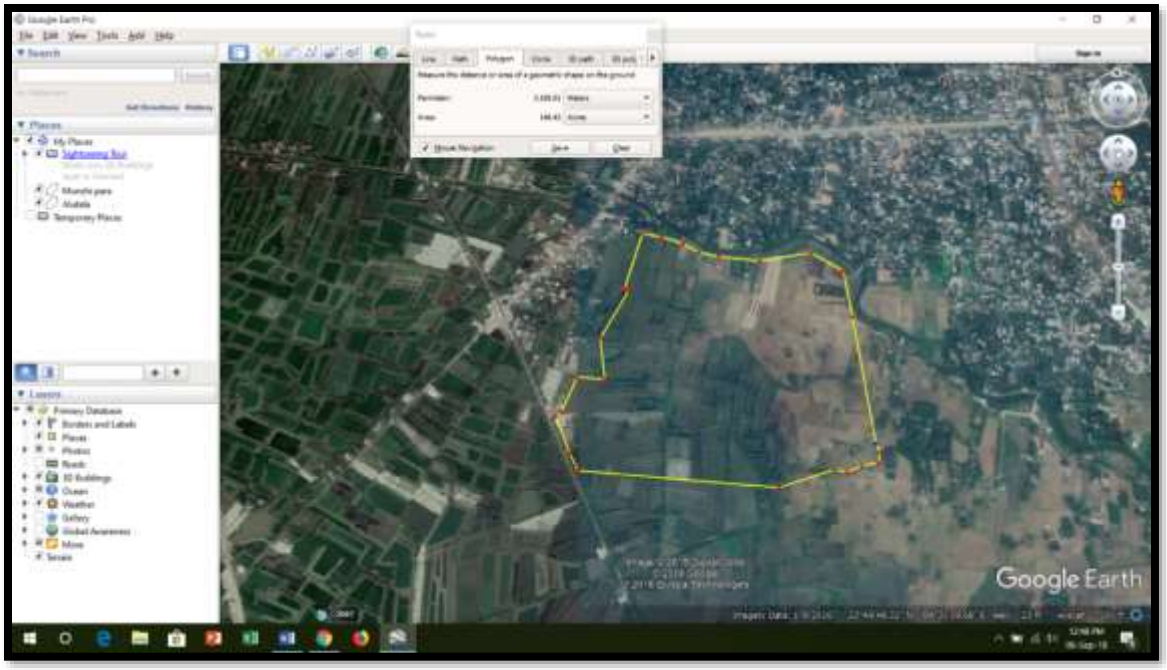

Figure 1.3.2.3: Satellite Map of Chak Ashankhali Source: Google Earth Pro

There are some existing residents but it would be possible to make neighborhood community design. The total area of the Chak Ashankhali is150 acre.

1.3.3 Alutala:

This is located near Nirala residential area. Topography, existing access and circulation is good of that area. Khulna city Bypass and Khulna-Sathkhira Road is intersected by the side of the site. There are some existing residents but it would be possible to make neighborhood community design. The total area of the site is 154 acres.

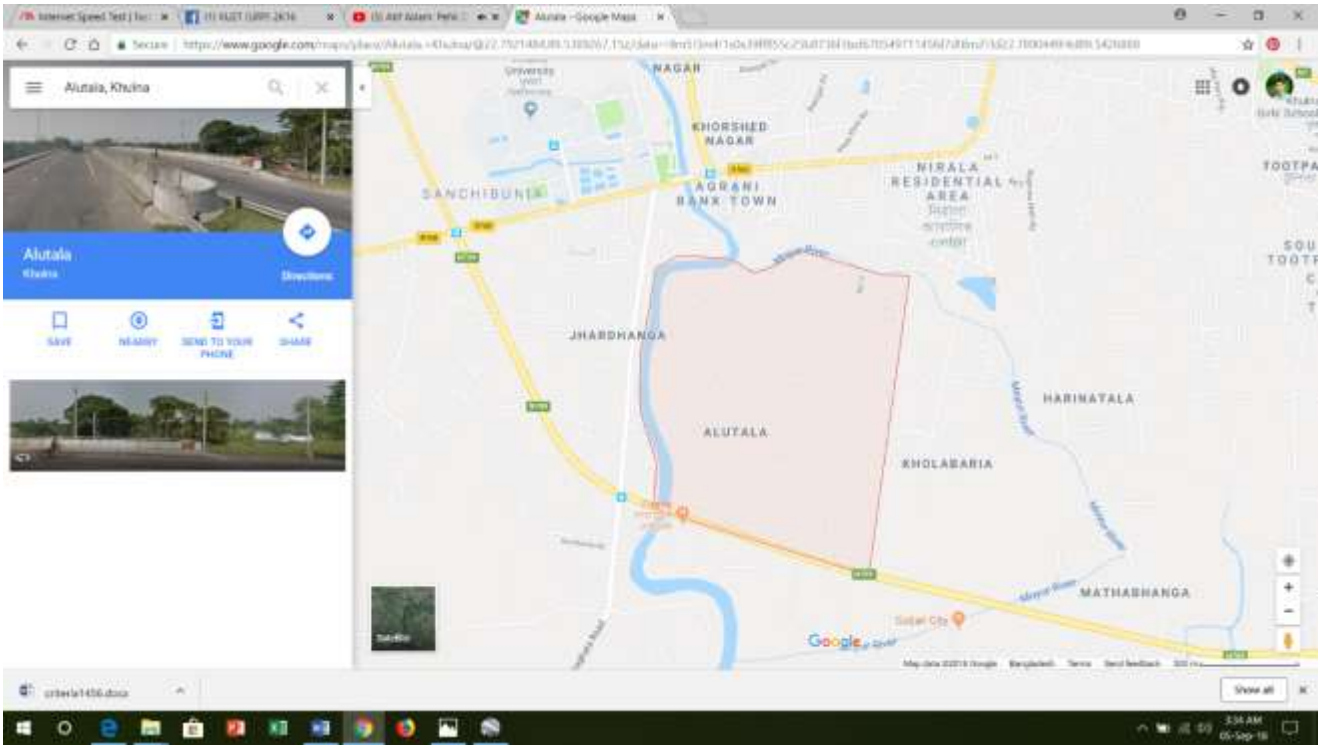

Figure 1.3.3.1 : Google map of Alutola Source: Google Map

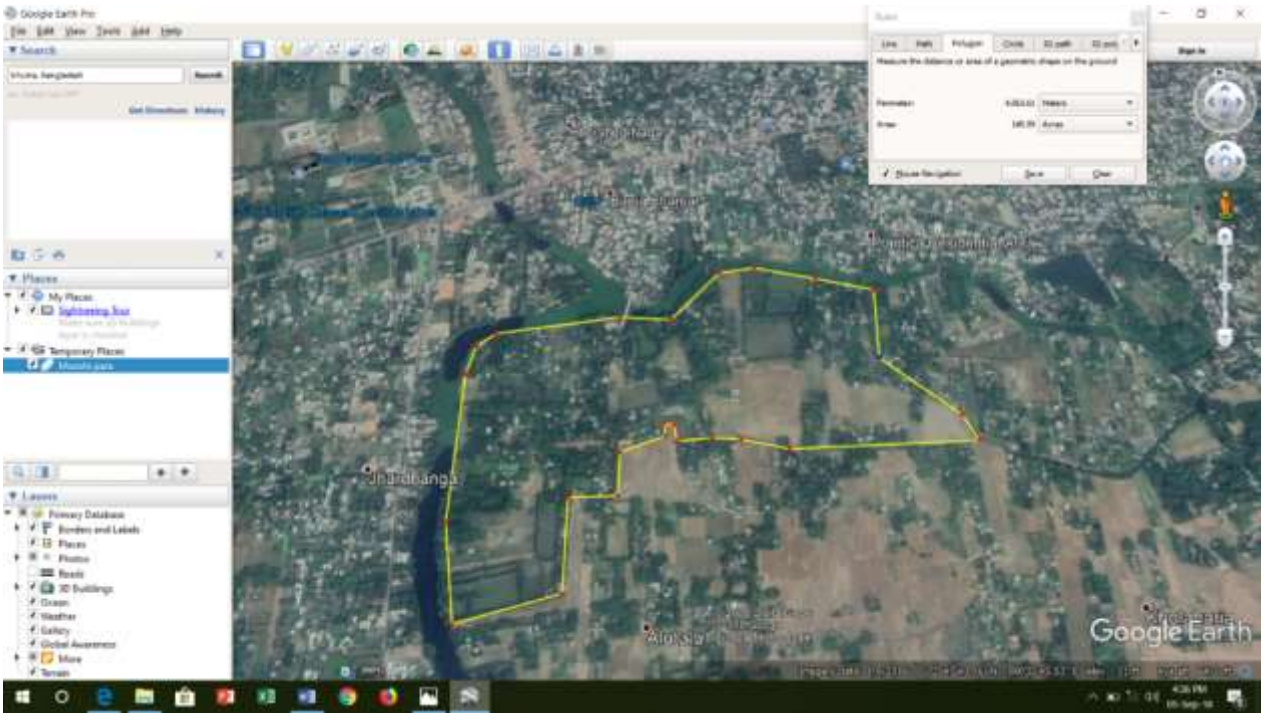

Figure 1.3.3.2: Satellite image of Alutala with boundary area Source: Google Earth Pro

Table 1.3.4: Weighted scores of our sites

criteria	Site 1 Shiromoni	Site 2 Munshi Para	Site 3 Chak Ashankhali	Site 4 Aronghata, Daulatpur	Site 5 Alutala
Less land cost	8	6	7	8.5	6.5
Topography	4	8	9	3	7
Existing access and circulation	4	6	7	5	7
Water bodies	7	7	3	3	7
vegetation	8	7	4	7.5	6.5
Infrastructure facilities	3	4	6	5	7
Surrounding Land use and buildings	4	5	8	6	7

Selected 3 sites:

Munshi Para, Chak Ashankhali, Alutala

They are selected because their topography is well conditioned. Their existing accessibility is also good to use for neighborhood planning. It would be easy to plan those area because of their existing circulation and surrounding land use and buildings.

Deducted 2 sites:

Shiromoni, Aronghata,Daulatpur

They are deducted because of their poor conditioned topography which is a big question for planning a neighborhood community. Again, both of them have poor accessibility and connections with Khulna city.

1.4 Methodology:

Methodology is the systematic, theoretical analysis of the methods. At first, by Using Secondary data, had to select five sites. Then best three sites have been selected based on surrounding areas and factors. The 1st place is Munshipara, which is located near Teligati and bypass road,the second place is Chak Ashankhali ,which is located near Khulna university and the 3rd place is Alutola which is located near the zero point. Then Had a survey on three sites. After surveying those sites, has been collected data, information about factors for analyzing and then have primary data. Besides completing the site analysis, using sketch up software for creating maps. Then selected the best site. Then there has a complete report on site analysis.

Site analysis is a vital step in the design process. It involves the evaluation of an existing or potential site in relation to the development program, environmental impact, impacts on the community and adjacent properties, project budget, and schedule. In the site analysis project identifies environmental, program, and development constraints and opportunities. A well-executed site analysis forms the essential foundation for a cost-effective, environmentally sensitive, and rational approach to project development.

For analyzing any sites, factors are very important parts. There has been selected 11 factors. These are Land cost, Topography, Existing access and circulation, water bodies, vegetation, infrastructure facilities, surrounding land use, drainage, site view, legal constraints, micro climates

- **Topography** is the study of the shape and features of the surface of the Earth and other observable astronomical objects including planets, moons, and asteroids. The topography of an area could refer to the surface shapes and features themselves, or a description.
- **Vegetation** is **very** important **and** the vegetation is consisting of all the tress, flora, fauna that should be present on the site.
- **Land cost** is the total cost of a landed shipment including purchase price.
- **Drainage** is the natural or artificial removal of a surface's water and sub-surface water from an area.
- **Wind direction** Most of the locations have a general major direction from which the wind comes during different season and time of the year depending upon local climate. However, this will not always hold true and will vary from location to location. If a designer wants to design a climatically responsive house, it is very important to consider the wind direction that can be channelized through interiors. This will play an important role in size & placement of openings.Wind direction, frequency and speed will influence the building design including weather tightness detailing, building entry locations, window size and placement, roof and wall cladding selection, bracing requirements, and provision of shelter for outdoor spaces.
- **Microclimate** is the unique climatic characteristic of each specific sites that need to be analyzed. The climatic aspects of the specific site or areas on the site are called the microclimate. The specific characteristics of the site are analyzed only after one has a good understanding of the macroclimate and general climatic characteristics which give an overview of the natural elements, but for how any man-made elements, such as buildings and landscaping are affecting

1.4.1 Working Process:

Chapter 2

Site Inventory & Analysis

2.1 Site Inventory

A site inventory is simply a list of elements that currently exist on the sites. Three sites have been selected and analyzed, based on some key elements or attributes like Physical, biological and cultural attributes. According to the physical and cultural attributes, elements have been selected for selection of the best site.

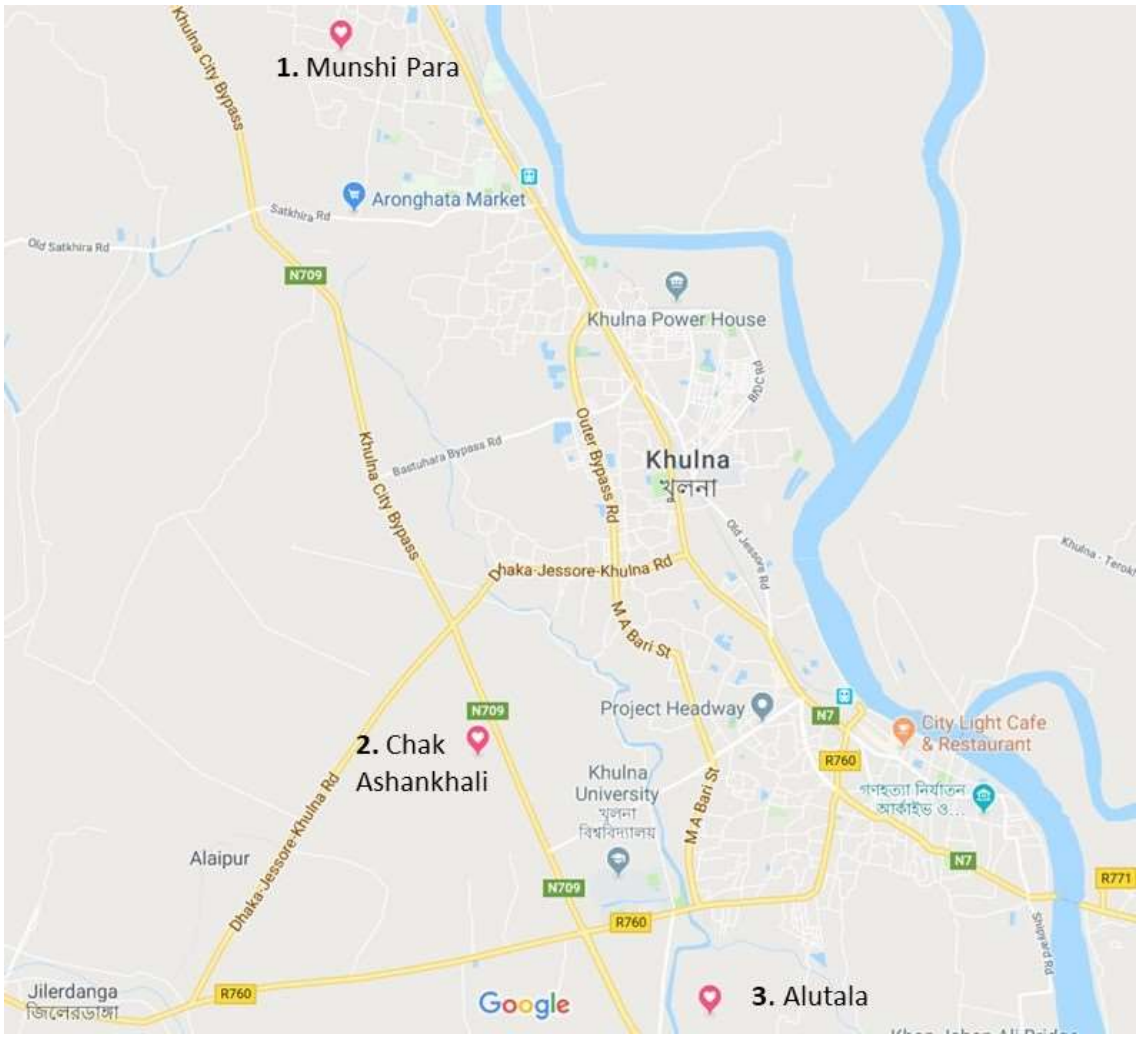

Figure 2.1.1: Google Map location of three sites Source: Google Map

Table 2.1.2: Percentage of Land use Chak Ashankhali

Attributes	Area (ft^2)	Percentage
Water Body	458734.31	10.07248
Agriculture	2030210.9	44.57755
Open Space	2065389.55	45.34997

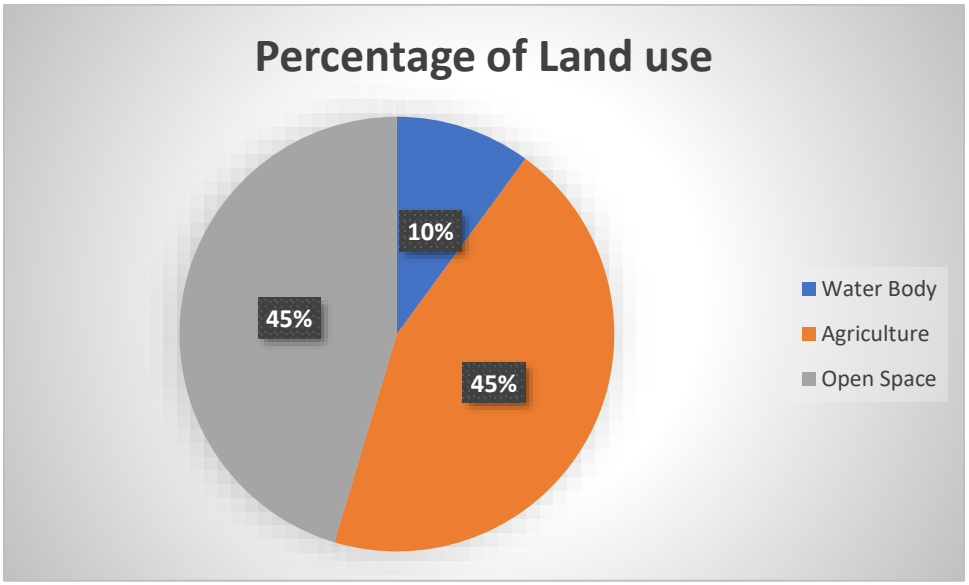

Figure 2.1.3: Percentage of Land use Chak Ashankhali

2.1.1 Scoring

They have been selected 11 important factors for our site's suitability analysis. Then the score for each factor according to those sites. Where the SITE 1 is "Munshi Para". SITE 2 is "Chak Ashankhali" and SITE 3 is "Alutala".

Table 2.1.1.1: The scores of the three sites on the basis of each factors

Factors	Site 1	Site 2	Site 3
	Munshi Para	Chak Ashankhali	Alutala
Land cost	6	7	6.5
Topography	8	9	7
Existing access and circulation	6	7	7
Water bodies	7	6	7
Vegetation	7	6	6.5
Infrastructure facilities	4	6	7
Surrounding Land use	5	8	7
Drainage	6	7	7
Site View	5	5	7
Local Constraints	7	8	5
Types of Land ownership	5	6	5

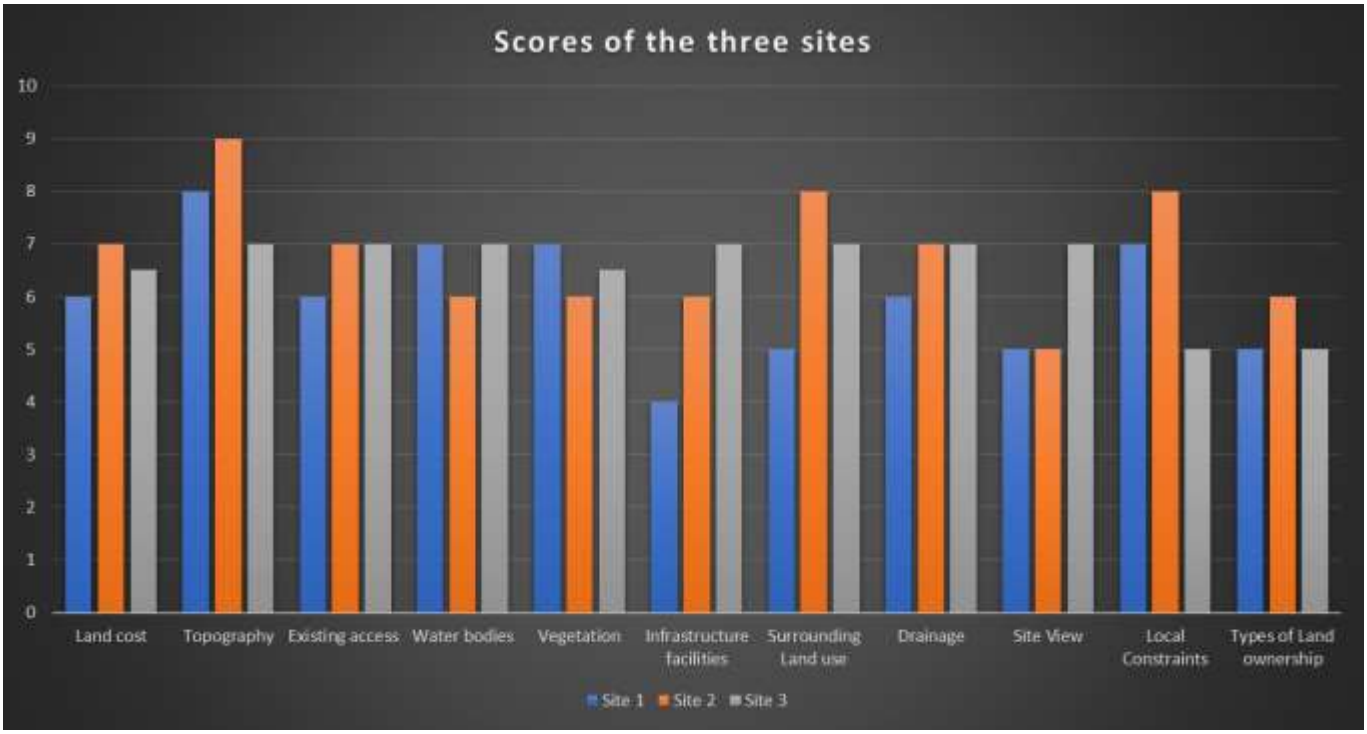

Figure 2.1.1.2: Scores of the three sites

Each factor has different weight according their importance for site. The experts provided different weight for every factor. For example, seniors give more importance in infrastructure facilities. They gave 13% weight to this, where site orientation got 5% weight. By surveying, a table for the weight of the factors shown below:

Quantitative Rating Scale with Five classes:

Score (0-2) = Unacceptable

Score (2-4) = Poor

Score (4-6) = Good

Score (6-8) = Very Good

Score (8-10) = Excellent

According to the score scale, the site have been chosen. The quantitative rating scale give the rank of each site for choosing the best site according to the scale criteria. It can reflect the most important site and attributes.

Table 2.1.1.3: Weight of the factors of site

FACTORS	WEIGHT
LAND COST	5%
Existing access and circulation	10%
TOPOGRAPHY	8%
VEGETATION	12%
WATER BODIES	10%
INFRASTRUCTURE	13%
SORROUNDINGS	10%
DRAINAGE	12%
LOCAL CONSTRAINTS	7%
SITE VIEW	8%
TYPES OF LAND OWNERSHIP	5%
TOTAL	100%

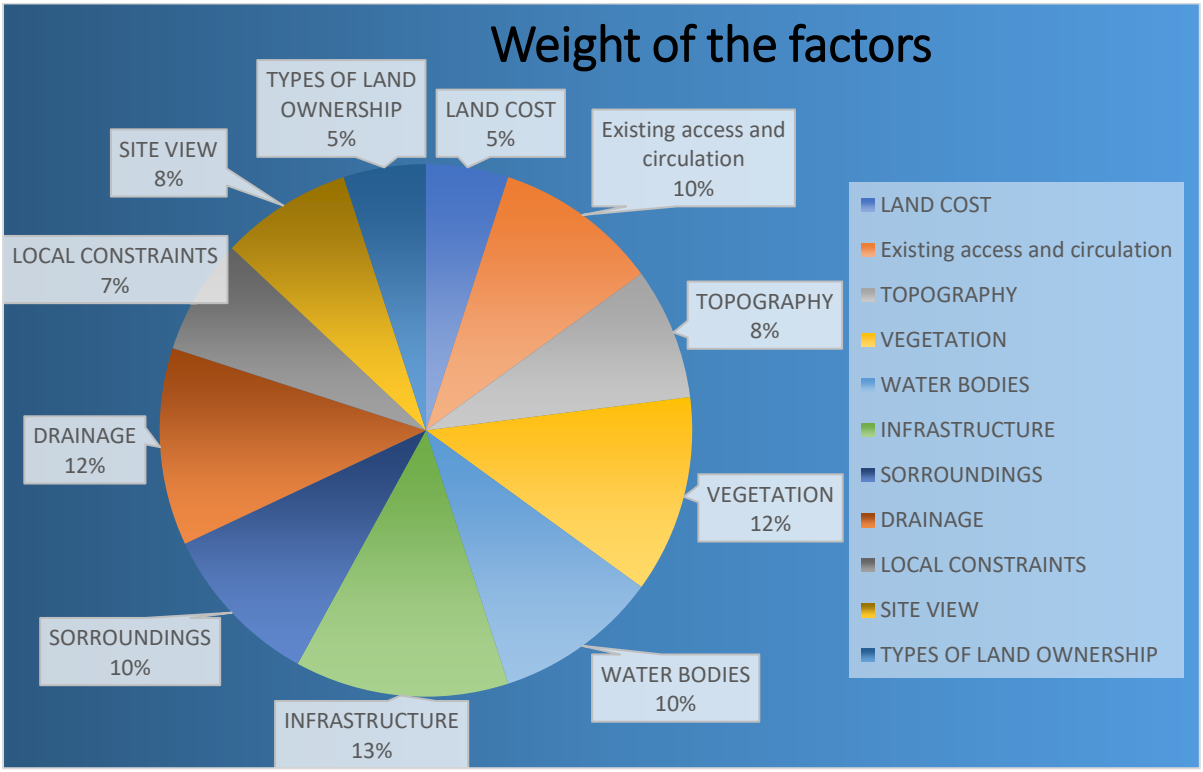

Figure 2.1.1.4: Weight of the factors of site

So, after getting the weight of each factors if we measure the weighted score for Munshi Para and it stands:

Table 2.1.1.5: Weighted score for Munshi Para

Factors	Site 1	Weight	Weighted score
LAND COST	6	5%	0.3
Existing access and circulation	6	10%	0.6
TOPOGRAPHY	8	8%	0.64
VEGETATION	7	12%	0.84
WATER BODIES	7	10%	0.7
INFRASTRUCTURE	4	13%	0.52
SORROUNDINGS	5	10%	0.5
DRAINAGE	6	12%	0.72
LOCAL CONSTRAINTS	7	7%	0.49
SITE VIEW	5	8%	0.4
TYPES OF LAND OWNERSHIP	5	5%	0.25
TOTAL			5.96

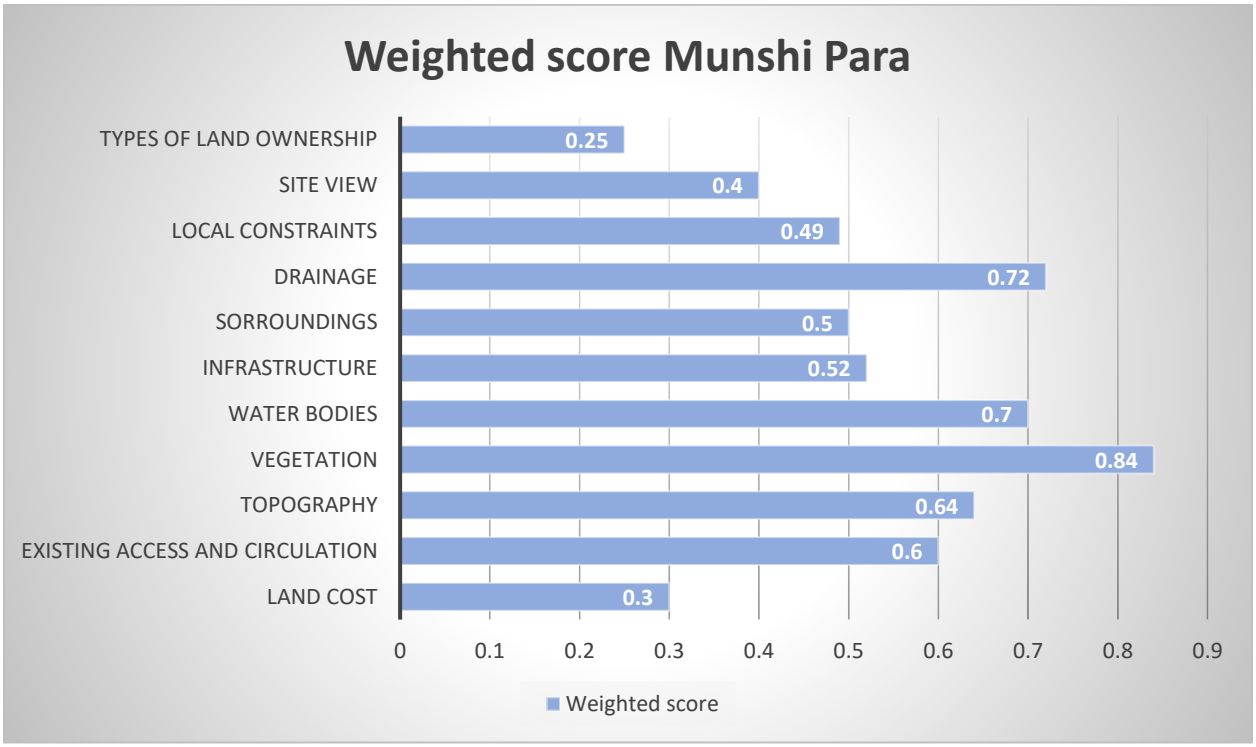

Figure 2.1.1.6: Weighted score of Munshi Para

Then the weighted score for Chak Ashankhali stands:

Table 2.1.1.7: Weighted score for Chak Ashankhali

Factors	Site 2	Weight	Weighted score
LAND COST	7	5%	0.35
Existing access and circulation	7	10%	0.7
TOPOGRAPHY	9	8%	0.72
VEGETATION	6	12%	0.72
WATER BODIES	6	10%	0.6
INFRASTRUCTURE	6	13%	0.78
SORROUNDINGS	8	10%	0.8
DRAINAGE	7	12%	0.84
LOCAL CONSTRAINTS	8	7%	0.56
SITE VIEW	5	8%	0.4
TYPES OF LAND OWNERSHIP	6	5%	0.3
TOTAL			6.77

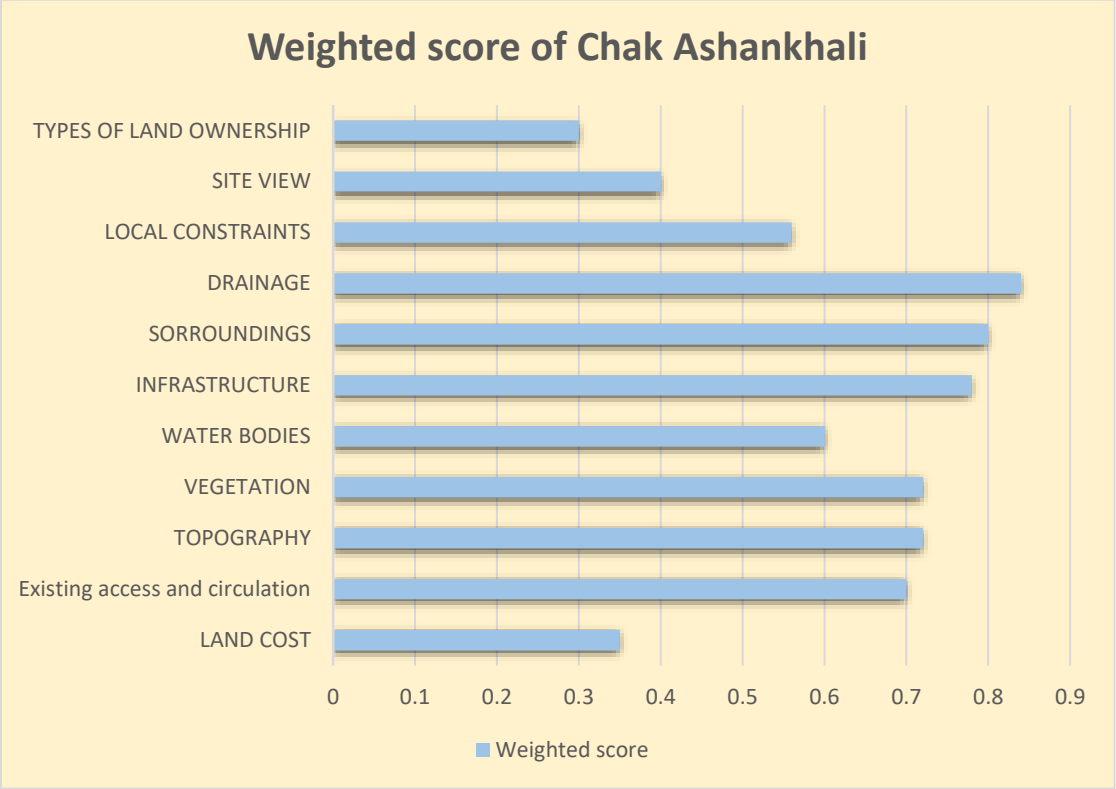

Figure 2.1.1.8: Weighted score of Chak Ashankhai

The last site of our project is Alutala and its weighted score stands:

Table 2.1.1.9: Weighted score for Alutala

Factors	Site 3	Weight	Weighted score
LAND COST	6.5	5%	0.325
Existing access and circulation	7	10%	0.7
TOPOGRAPHY	7	8%	0.56
VEGETATION	6.5	12%	0.78
WATER BODIES	7	10%	0.7
INFRASTRUCTURE	7	13%	0.91
SORROUNDINGS	7	10%	0.7
DRAINAGE	7	12%	0.84
LOCAL CONSTRAINTS	5	7%	0.35
SITE VIEW	7	8%	0.56
TYPES OF LAND OWNERSHIP	5	5%	0.25
TOTAL			6.675

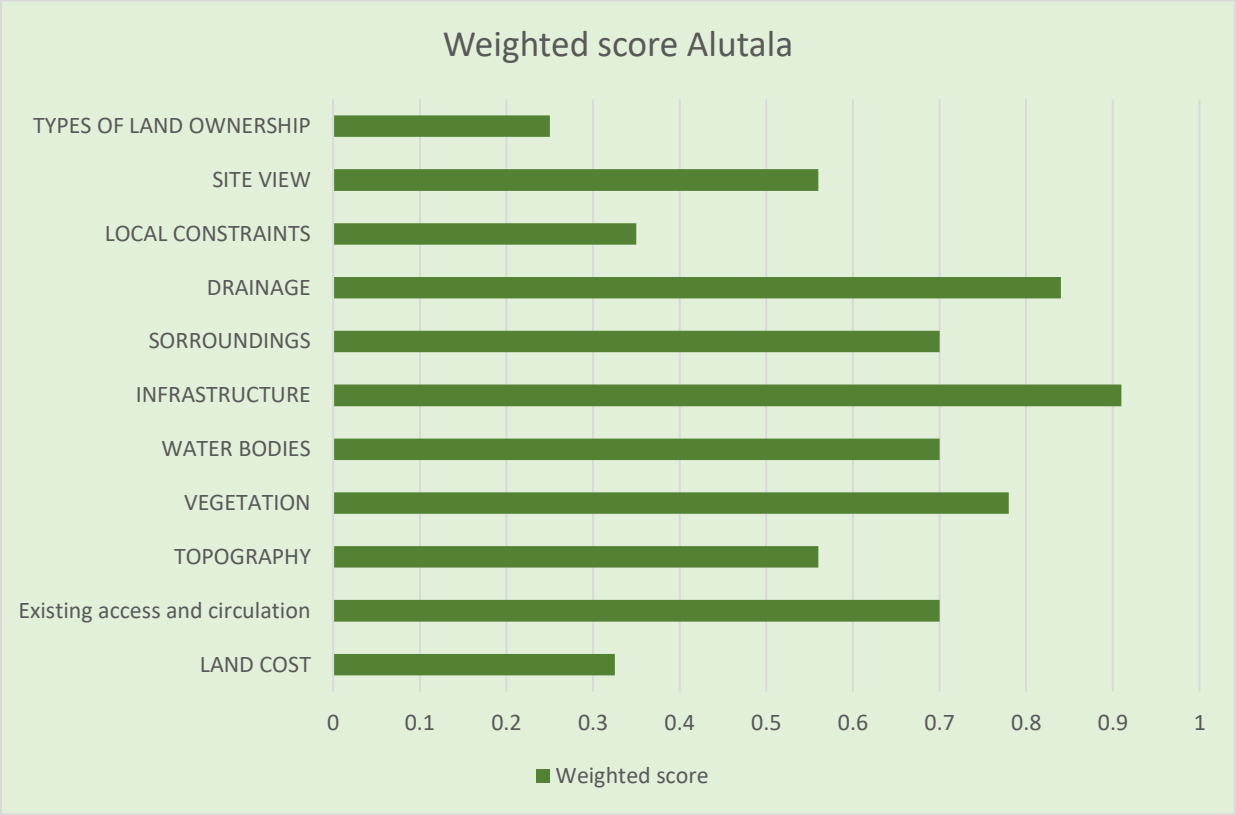

Figure 2.1.1.10: Weighted score of Alutala

The above chart shows the weighted score of the three sites. From the weighted score our site suitability analysis it is seen that Chak Ashankhali may be the best site for neighbourhood residential development plan.

2.1.2.1 Physical attributes:

Physical attributes contains the topography, existing access and circulation, infrastructure facilities, site view , water bodies, vegetation and drainage system of the sites and the cultural attributes contains the cost of land, Surrounding land use, legal constraints and types of land ownership. Clarification of those physical and cultural attributes as follows:

Topography:

If a site is flat, the topography may not influence the location and layout of the building, but on a sloping site, the topography is likely to be a significant design factor which is challenging. The contour location and spacing of contours will have played a significant role in the siting of the building and the other infrastructure. It is better to design buildings along with the contours to reduce the unnecessary cutting and filling of soil.

Existing excess and circulation:

This site must be improved to allow for traffic, egress, accessibility, and a certain number of onsite parking for visitors existing parking spaces at site will have to be planned for mitigation as part of this project. The pedestrian traffic must be re-directed from several areas outside and from the inside of the new and existing buildings. A covered bridge connection or walkway from the building directly south and east of this site to the new building is desired. It is imperative to maintain service & emergency vehicle access to all vicinity building during construction.

Infrastructure facilities:

If utilities like pure water, electricity, gas, telephone etc. are available to tap into directly adjacent to site, the cost of development may be significantly minimized.

Site View:

A visual analysis is the most practical means of determining positive and negative on-site and off-site views. Factors to be examined include mass and space. Offsite views to be accentuated or screened and On-Site view opportunities or problems.

Water bodies:

The site has been visited, identifying water bodies present in and around and the site ponds, lakes, rivers etc. The presence of water can lead to reduction in the overall temperatures. It will also affect the moisture content in the atmosphere.

Vegetation:

The vegetation will consist of all trees, flora fauna present on the site. These should be marked on the site plan so that it will assist during the design stage. Along with the location type of trees, the size of the trees, diameter or spread of the branches, heights etc. are to be identified. Different trees

have different characteristic –The spread of leaves, the speed of growth, the spread of roots, failing of leaves, water requirement, soil nourishment etc.

Drainage System:
The kind of information normally indicated and analyzed include determination of watersheds (basically a system of ridge lines and valleys or drainage patterns), duration. Susceptibility to erosion and the problem of sedimentation to off-site water flow are also problems to be noted.

2.1.2.2 Cultural Attributes:

Land cost:

Land cost is the total cost of landed shipment purchase price of the site of land. People usually wants to purchase cheap land. So, here highest score determined on cheap rate of the land. Therefore, having proper accessibility and cheap rate of land will be lucrative for the owners.

Surrounding land use:

Surrounding land use play an important role. If the land uses are incompatible, it may lead to creation of issues in the design. For example, if there is a school right next to the site, the noise disturbance will have to be factored in while designing. Also, the height and setbacks of adjacent buildings are important in affecting the flow of air and also sunlight.

Legal constraints:

These may include legal property boundaries, easements, right of way; restrictive covenants and deed restrictions. Local regulations such as zoning ordinances and subdivision regulations may impose limitations upon what a developer is allowed to do on a given site and provide procedural requirements by which development may move forward.

Types of Land ownership:

Through this the ownership of the land is clarified. Sometimes, some land is owned by government for development purpose. Those land are not for public uses. Again, some lands are acquisition from people to use for development for residential purpose.

2.1.3 SWOT Analysis:

SWOT Analysis of three site:

SWOT	Chak Ashankhali	Munshi Para	Alutala
Strength	• Full of resources • Easy Accessibility • Land and soil suitable for Agriculture. • Well drainage system • Near to the **Shibbari.** • Close to the Bypass Road. • Compatible with surrounding land use	• Compatible with the area. • Existing market system and residential community. • Ensure safety and privacy	• High lands area. • Man made drainage system • Resourceful
Weakness	• Topography is not good • Low land area. • Lack off residence surrounding the area • Lack of road and walkway • Maximum land cost	• Lack of accessibility • Lack of existing well planned infrastructure. • Low land area • Long distance to service authority • Salty soil	• Only usable for agricultural use • Poor drainage system • Low accessibility • Lack of existing well planned infrastructure • Long distance to service authority
Opportunity	• Establishing new infrastructure • Increasing utility service • Vacant land for residential area • Increasing street facilities • Establishing the market place • Having vast space for future extension	• Having vast space for future extension • Establishing new infrastructure • Increasing street facilities • Vacant land for community	• Vacant land for establishing new infrastructure • Vast space for future extension
Threat	• Vast agricultural land will be damaged • Scarcity of safety and privacy • Salty soil affects to build any structure	• Salty soil can't bear the load of structure. • Losing Living environment	• Vast agricultural land will be damaged • Scarcity of safety and privacy • Lack of road network system • Costly land

2.1.4 Conclusion

After analyzing the three sites and surveying, there has been selected a best site. And Chak Ashankhali is the best site. For selecting this site, there have some reasons. At first, the land use of this site is enough accurate, then the scoring of the factors of this site are enough strong. By swot analyzing is known that the strengths and opportunities are more than two other sites. The accessibilities and other utilities are also perfect for developing in future as a residential, commercial zone.

2.2 Site Analysis

There has been selected three sites for analyzing. But one site has been selected as a best site and that is Chak Ashankhali. Many reasons have to choose this site as a best site. Before 20 years from now the site was fully agricultural land. But now the percentage of the agricultural land is decreased. Perspective of Khulna, the site is best because the distance from KDA, Shibabri is less so people will attract this easily as a residential area and people also get benefited from this site. There can be a comparison of Chak Ashankhali with a existing residential area like Sonadanga phase 2. The drainage system of the sonadanga phase 2 is designed for residential purposes but in Chak Ashankhali the drainage system is designed for agriculture purposes. Sonadanga phase 2 is not near to highway but Chak Ashankhali in near to highyway.

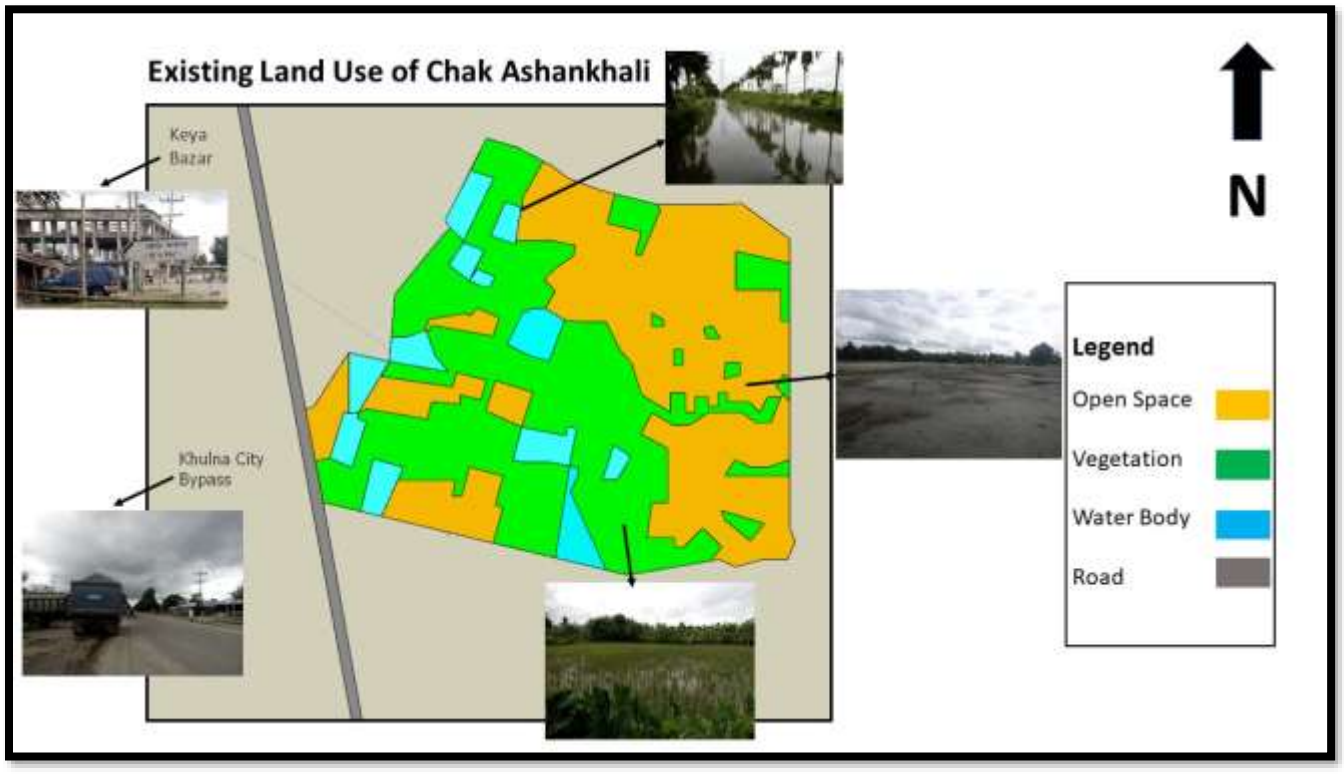

Figure 2.2.1: Existing Land use Map of Chak Ashankhali

Table 2.2.2: Distance From KDA, Avenue to Following Site:

Site	Distance
Chak Ashankhali	5.4km
Alutala	7.1km
Munshi Para	11.0 km

2.3 Pictures of Survey:

Figure 2.3.1: Photo Courtesy: Anim,21/9

Figure 2.3.2: Photo Courtesy: Anim,21/9

Figure 2.3.3: Photo Courtesy: Anim,21/9

Figure 2.3.4: Photo Courtesy: Nijhum,21/9

Figure 2.3.5: Photo Courtesy: Anim,21/9

Figure 2.3.6: Photo Courtesy: Anim,21/9

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