NEIGHBORHOOD PLAN OF ANNANYA RESIDENTIAL AREA

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Abstract

The neighborhood plan of Annanya Residential Area has been designed bearing in mind the facility standards and policies, the privileges of the residents and the easy accessibility of the dwellers to the facilities. Some planning literatures have been reviewed to maintain a standard. Area and population have been calculated. Modified grid and cul-de-sac subdivision patterns are applied to avoid the sense of monotony and to ensure a peaceful living environment. Neighborhood design with many open spaces and greeneries provide serene and environmentally sound surroundings. Open public spaces provide a place for socialization and invite local people. Neighborhood circles designed in a way to reduce road accidents. Dwellers don't have to cross the highway or major roads frequently to get services and facilities. Sufficient religious and community services have been provided as well as various types of shops and markets. The neighborhood promotes households with 4-7 members without any class distribution. It is economically planned for the dwellers to live peacefully and comfortably in an eco-friendly neighborhood where services and facilities are provided accordingly.

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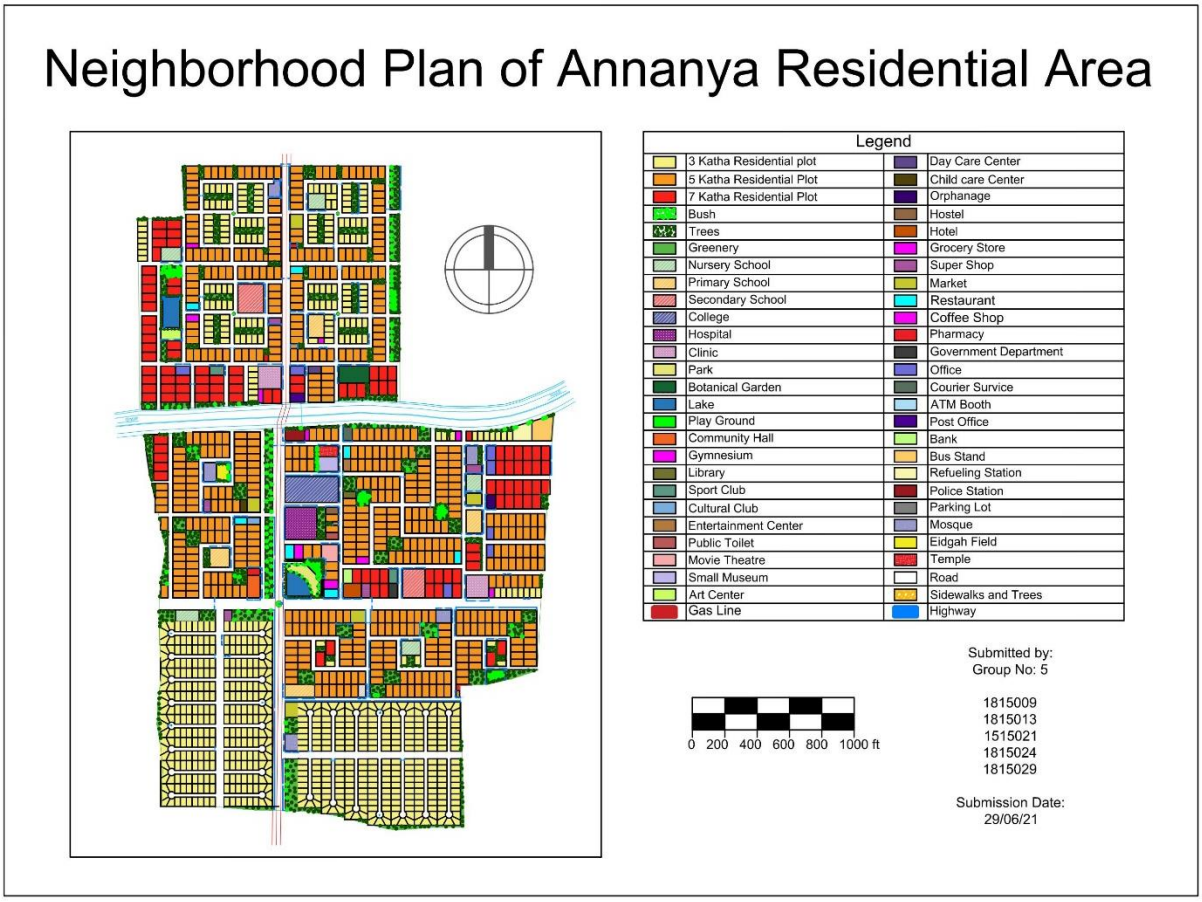

1.1. Introduction

Neighborhood planning is a type of urban planning where planners and communities form a neighborhood (Talen, 2019). It is a way where planners plan for the community to shape the area where the residents will live in future. The neighborhood planning concept is new in our country, though the concept of *para*, *mahalla* or ward is very popular here which is similar to neighborhood in the context of our country. The *Annanya Residential Area* is located at *Chandgaon Mouza* in Chittagong, Bangladesh with an area of 170.555 acres. *Oxygen-Kuaish Road* crosses through the neighborhood dividing it into 2 portions. As there is a few residential neighborhood planned in Bangladesh, through this opportunity to plan the *Annanya Residential Area*, the scope of neighborhood planning will increase in the recent times. To ensure a better living environment with all the facility standards within economic affordability, the residents have been facilitated with required neighborhood facilities considering their demands and benefits as well as within planning standards and policies. The neighborhood is planned for the non-classified dwellers to live comfortably in an eco-friendly neighborhood where services and facilities are available within a short distance from their residence.

1.2. Objectives of the Report

The objectives of the report are:

1) To facilitate the residents with required neighborhood facilities.
2) To plan a neighborhood considering the privileges of the residents.
3) To plan a neighborhood based on planning standards and policies.

2.1. Literature Review

A neighborhood is an organ of urban life where people live interdependently in geographical boundaries (Mumford, 1954; Keller, 1968). A block is the smallest geographic unit (Park and Rogers, 2015) whereas a village has three to five neighborhoods (9,000 to about 15,000 people) and a town has three to five villages (45,000 to 75,000 people) (Campbell, 1976). American Planning Association (2006) defines three types of neighborhoods: face-blocks (less than 500 people), residential neighborhoods (500 to 1,500 people) and institutional neighborhoods (5,000 to 10,000 people).

The population and size of a neighborhood differ to the radius, walking distance, neighborhood boundary, density, and even city-to-city (Park and Rogers, 2015). In the Neighborhood Unit theory, Clarence Perry (1929) proposed 160 acres (a quarter- to a half-mile radius) of land with 5,000 (up to 9,000) people for an ideal residential neighborhood

whereas Stein (1942) expanded Perry's idea to a half-mile radius (area of 500 acres). Duany and Plater-Zyberk (1994) and Nelessen (1994**)** agreed with a five-minute walking standard, a quarter-mile radius but Calthorpe's (1993)'s TOD neighborhood unit supported a ten-minute walking time with a 2,000-foot radius (Hornik 1994; Hur et al,2010)**.** Spreiregen and De Paz (2006) proposed neighborhoods with populations of 7,500–20,000 a three-mile radius, 18,000 acres of land but Jacobs (1961**)** criticized the ideal size of a neighborhood as 7,000 people. John Nolen's proposed neighborhood was of similar size to Perry's but with a lower density for 1,800 people **(**Spreiregen and De Paz 2006). According to the report from the Texas Chapter of American Planning Association (APA) in 2010, the adopted size of neighborhoods varies by city, like 5,000 people or 30 square blocks in Austin, Texas and 50–60 square blocks for Portland, Oregon. A neighborhood boundary is a clear border that defines neighborhoods (Alexander et al, 1977) that can be natural boundaries, (like farmland and greenways) or man-made barriers (e.g., railroads and major roads), geographical or physical features, even a more distinct boundary in a residential neighborhood (such as fences or gates) to restrict from random access (Park and Rogers, 2015).

The requirements of the population in a neighborhood also vary with the facilities that have been provided (Park and Rogers, 2015). A ward, a sixth of a city, has facilities like schools, religious institutions, or libraries on about 1,000 acres of land with 5,000 people (Howard, 1965; Keller, 1968). Based on an elementary school in the central point of the neighborhood, Perry (1929) and Lawhon (2009) suggested the five minutes walking distance that could support 5000 people. This implies that the maximum walking distance to an elementary school is a half-mile and when a neighborhood is defined by an elementary school, it can cover 1700 families (US bureau of census, 2004). Again, three adjacent neighborhoods can create a town supporting high school and two major commercial centers (Mumford, 1954; Stein, 1949). On the other hand, Gallion (1950) proposed that one high school is enough for four neighborhoods and one junior high school is enough for two neighborhood units. According to Stein, an Elementary school and a small shopping center should be in the center for daily needs (Park and Rogers, 2015). Spreiregen and De Paz (2006) proposed that a neighborhood with populations of 7,500–20,000 should have a neighborhood center that includes a pharmacy, automobile services, and a supermarket reached within six-minute driving. If the population is 20,000-1,00,000, then it could have a community center providing junior department stores, retail stores selling soft goods and hard goods **(**Spreiregen and De Paz, 2006). According to Gibbs' classification, a neighborhood should have corner stores,

convenience stores, a neighborhood center, and a community center (Park and Rogers, 2015). One corner store would support about 2,500 people and it would provide regular necessary items (like beverages, food, etc.) whereas one convenient store would be for 2000 households that would offer services regarding daily needs and services (like a pharmacy, dry cleaners, etc.) (Gibbs, 2011). And a full-sized supermarket along with ten to fifteen smaller retailers would be in the neighborhood center that would be used by the residents once or twice weekly on average (Gibbs, 2011). According to John Nolen's proposed guidelines for the City of West Palm Beach in 1923, 450 dwelling units (each unit consists of 4 people on average) within a five-minute walking radius from the city center that has an educational or cultural community center, parks, commercial areas, or offices (Stephenson, 2002).

From our study on neighborhood plans, Holdbeck, a pre-industrial village is surrounded by well-defined roads and estimated population is 3900, containing a thriving local centre which contains shops, medical facilities, and other community facilities and green spaces (Holdbeck Neighborhood Plan, 2017). On the contrary, Linton Neighbourhood Plan (2015) has a lower density of population, having a triangular green space at the main street junction. Again, the neighborhood in Magarpatta city was designed as a walk to work/school design concept with facilities such as residential areas, central parks, schools, shopping complexes, security services, and commercial workplaces and includes hospital, shopping centre, restaurants, banks, ATMs, gymnasium, sports facility, cultural space, bus stands and 30% green area (Patel and Padhya, 2021).

2.2. Methodology of the Study

Literature review for planning the neighborhood plays a vital role in making effective decisions. Like the facilities of neighbourhood-scale are found and concept of 30% greeneries has been applied from the study.

The location of Annanya Residential Area is in Chittagong, Bangladesh and its land area is 170.555 Acres. The population of the neighborhood is calculated with the density standard taken from Private Residential Land Development Rules (PRLD), 2015. All the plots are standardized with the standard ratio of width and depth of a plot that is 1:1.5 to 1:2. Specially, the residential plots have been standardized so that facility distribution, setback and population calculation become easier. Then setbacks are calculated and we get the number of floors and the floor area of each type of residential plot. After that, the number of units and the average household size have been determined to calculate the accommodated population. The

list of facilities required for a neighborhood as well as the standard areas for the facilities have been calculated with the standards of Private Residential Land Development Rules (PRLD), 2015. Education, health, community service, religious service, shops and market, playground, park and lake, greenery and other facilities are the broader sections of facilities which have been divided into the various smaller part with required area and quantity. Modified grid patterns and Cul-de-sac patterns are used in order to place the residential plots with certain advantages.

While planning, various aspects have been considered that are required for a better living of the residents. Like accessibility of each plot has been ensured by road networks. To reduce road accidents, neighborhood traffic circles have been used. The nursery schools are placed beside the minor roads considering the advantages of the children. On the other hand, the neighborhood centre has been organized for the whole community. The residential plots (excluding the plots cul-de-sacs) have been used for 6-7 storied buildings in order to accommodate the whole population. Again open space and greeneries have been placed in almost every housing group so that they don't have to go for a long distance from their residences. Overall, the facilities are distributed both in the south and north of the highway so that residents need not cross the highway in the case of emergency services.

After all these considerations, the final plan of the neighborhood has been drawn with the AutoCAD software according to the calculations. AutoCAD software has been used for drawing because through it, drawing can be done precisely. Then, the assigned area and quantity of the facilities have been measured through the software.

We could not go for a reconnaissance survey of the area due to the shortage of time and the pandemic situation. If we could do so, the neighborhood plan would be Chittagong context-based plan. Again, we did not consider the general density of the area but used a standard density for residential areas. Not only that, the level of the area had not been considered while planning though we knew that the area is hilly. Therefore, there are also some limitations in gathering knowledge about the area while planning the neighborhood.

2.3. Location of the Project Area

Annanya Residential Area is located in the southern part of Bangladesh, in the city of Chittagong. The geographic location of the site is 22°24'4.59"N, 91°50'47.84"E. The site is located 1.25 km northwest of *Shah Amanat Rah: Jame Mosque Naya Hat* and 1.59 km northeast

of *Bangabandhu Avenue*. It is located along with *Oxygen-Kuwaish Link Road*, *Chandgaon* Mouza and bordered by the Karnophuli River on the east and the Bay of Bengal on the west.

2.4. Density and Population

According to Private Residential Land Development Rules (PRLD), 2015, the population density in a residential area should be 350 people per Acre. The given area of Annanya Residential Area is 170.555 Acres. Hence, the population is determined to be 60,000 for the area that will be used in determining standard area of facilities of the neighborhood.

2.5. Plot Size

As the standard ratio of width and depth of a plot is 1:1.5 to 1:2, the ratio is implied in determining the plot size. Specially, the pre-determined area of the residential plots (3 Katha, 5 Katha and 7 Katha) have been standardized within the ratio.

Table-1: Standard size of the pre-determined residential plots' area

Plot Area (Katha)	Area (sq ft)	Depth (ft)	Width (ft)	Width-Depth Ratio
3	2160	60	36	1:1.67
5	3600	80	45	1:1.78
7	5040	90	56	1:1.61

2.6. Setback and Population Accommodation

According to Dhaka Building Construction Rules, 2008, the set-back of the pre-determined area of the residential plots is calculated (Appendix-B). The setback is used in accommodating the population of 60,000. While calculating the setback with MGC, FAR and recommended setback, the number of floors and floor areas have been found. Determining 900 sq ft floor area standard for a dwelling unit, 3 Katha, 5 Katha and 7 Katha plots are divided into 1, 2 and 3 units accordingly. The Dwelling unit is calculated by multiplying the number of plots, number of floors and number of units of the pre-determined residential plots. According to Population and Housing Census, 2011, the average household's size in Bangladesh was 4.4 and 4.8 persons per household in 2011 and 2001 respectively. Hence, the average household's size for nuclear family is considered as 4.2 persons per household and for extended family, it is 5.5 and 6.5 persons per household for the units of 5 Katha and 3 Katha accordingly. As the average floor area of the units of 3 Katha and 5 Katha plots are much more than the standard floor area of a unit, they can be used for joint family dwelling.

Table-2: Calculation of population accommodation

Plot area (Katha)	No. of plot	No. of floor	Floor Area (sq ft)	No. of Unit	Area per Unit	Average Household Size	Dwelling Unit	Population
3	169	6	1206	1	1206	6.5	1014	6591
5	603	6	2100	2	1050	5.5	7236	39798
7	121	7	2700	3	900	4.2	2541	10672
3 (Cul-de-sac)	556	1		1		5.5	556	3058
						Total	11347	60119

2.7. Standard Area of Facilities Calculation

According to Private Residential Land Development Rules (PRLD), 2015, the standard area for each facility has been calculated for the calculated population of 60,000.

Table-3: Standard area calculation of facilities

No.	Name of facilities	Standard area (Acre) for 1000 people	Required area (Acre) for the population	Required area (Katha) for the population
1	Nursery School	0.019	1.14	68.97
2	Primary School	0.019	1.14	68.97
3	Secondary School	0.02	1.2	72.6
4	College	0.02	1.2	72.6
5	Clinic	0.015	0.9	54.45
6	Hospital	0.015	0.9	54.45
7	Community Centre	0.02	1.2	72.6
8	Shop+Market	0.03	1.8	108.9
9	Others	0.02	1.2	72.6
10	Religious Service	0.02	1.2	72.6
11	Playground	0.03	1.8	108.9
12	Park and Lake	0.03	1.8	108.9
13	Residential Road	0.858	51.48	3114.54
14	Net Residential Area	1.999	119.94	7256.37

2.8. Subdivision Pattern

Two subdivision patterns named modified grid pattern and cul-de-sac are chosen for Annanya residential neighborhood planning. Swastika pattern, one kind of modified grid pattern, is used in the center of the neighborhood. Hence, modified grid pattern is used to ensure easy access to facilities and to avoid monotony. On the other hand, cul-de-sac pattern is used in the south for providing privacy and a calm environment. In addition, less vehicular circulation is one of the most important objectives to use cul-de-sac. The residential plots of cul-de-sacs also offer parking facilities and open spaces.

2.9. Educational Facilities

To facilitate the educational activities, 1 college, 2 secondary schools, 4 primary schools and 5 nursery schools are placed in 2.75% of the total area of the neighborhood (Appendix-A). In order to accommodate playgrounds with educational purposes, about an area of 18.66 Katha is used here from the standard area of playground. Since there is only one college serving the whole neighborhood, it embeds beside a major road and approximately in the center of the neighborhood. On the other hand, there is a good quantity of nursery schools so that the children of the area can continue their education within a small distance from their residences. For ensuring child's safety and security, the location of nursery schools is plotted beside the minor road intentionally.

2.10. Health Facilities

There are 1 hospital and 2 clinics for providing health facilities in the neighborhood. They have been organized beside the major roads with about 110 Katha (Appendix-A) so that it becomes easier to reach there. For avoiding the problem of high-way crossing during the period of emergency health issues, there is a clinic at the northern side of the high-way.

2.11. Community Service

Community facilities have been provided in such a way that people can enjoy all the facilities for regular and occasional use without facing any disturbance. These facilities are provided much more than the standard area and quantity. Community hall, gymnasium, sports club, entertainment center, movie center, small museum, hotel, etc, are distributed near the neighborhood center. Library, art center, cultural club, public toilet, day care center, child care center, hostel and orphanage have also been facilitated both in the south and north portion of the neighborhood.

2.12. Religious Services

People need a place to practice their religious activities in a neighborhood. So about 0.7% area of the area has been dedicated to religious facilities (Appendix-A). 5 mosques cover the area of 59.36 Katha and the temple covers about 12 Katha. There is also an Eid-gah beside the mosque which is on the northwest side of the highway. Without the occasion of Eid, it can be served as playground. One mosque is situated at the cul-de-sac residential area so that the habitats of the area can also use it for religious activities. Mosques are placed on both sides of the highway so that people don't have to cross the highway to perform the religious activities.

2.13. Shops and Markets

Shops and markets should exist in a neighborhood so that people can buy their daily necessities from nearby. So, in *Annanya Residential Area*, there exist mainly 3 types of shops- Grocery Store, Super Shop and Market. There are 6 grocery stores, 5 super shops and 5 markets distributed equally all over the neighborhood. The average area of grocery stores is 2.76 Katha which is smaller than others (Appendix-A). Daily necessities such as rice, salt, sugar, biscuits and other domestic items may be found in grocery stores. Super shops are larger in size (6.2 Katha) while markets are the largest in size with an average area of 10.18 Katha. Vegetables, fruits, fishes, meats etc. may be sold in the markets. Markets are made up of some small shops clustered together. There are also 4 restaurants, 2 coffee shops and 5 pharmacies. Restaurants and coffee shops may sell daily meals, fast food items, tea, coffee, soft drinks etc. while the pharmacies may sell all kinds of medicines and other health-related items. All these facilities cover 1.47% of the total area of the neighborhood (Appendix-A). They were distributed within a short distance in the neighborhood so that residents need not travel far.

2.14. Playground

Playground is a must for a neighborhood, as residents of the neighborhood and children may spend their free time in the playground. Playgrounds can also be served as open spaces. They can help people to strengthen their social bonds. There are 7 playgrounds with a gross area of 105.43 Katha which is about 1.02% of the whole area (Appendix-A). About 18.66 Katha of the playground has been used as school playfield. The playground beside the mosque can also be used as Eid-gah during the time of Eid. 2 playgrounds are on the north side of the highway and 4 of them are on the south. Playgrounds are placed nearby so that children don't have to travel far to play or spend time in the playground. Many kinds of games and sports such as cricket, football or local games may be played by children in the playground. Trees and

bushes surround the playground to create a sense of restriction from the vehicular movements of the roads and ensure safety.

2.15. Parks and Lakes

About 107.27 Katha areas are being preserved to facilitate parks and lakes in the neighborhood (Appendix-A). There can be seen a large botanical garden and a lake in the northern part and a park along with a lake in the the southern part of the neighborhood. The tiers of trees maintain a quiet and safe environment of the lake area by segregating the mechanical environment of the town from the area.

2.16. Greenery

While reviewing the literature, inspired by the matter of keeping 30% green space in Magarpatta City, about 11.5 acres of land have been used as greenery. In this neighborhood plan, it is a very common structure to have green spaces in every housing group. In some portions of the plan, there are some sidewalks with tiers of trees. Again there are some organizations of trees and bushes at the boundary of neighborhood and beside the major road and the highway so that air and noise pollution can be minimized. In between the greeneries, there are some seating arrangements so that the residents can spend their leisure time with green and children can play safely. Eventually, the arrangement of greenery can ensure an environment-friendly neighborhood system.

2.17. Other Facilities

Every neighborhood needs to manage communication and transportation systems with the rest portion of the city. The plan organizes some other facilities for ensuring this system like a bus stand and a refueling station at the corner of the eastern side of the site for providing transportation facilities. The location of the facility on the highway promotes the chaos and crowd of masses away from residential plots. On the other hand, there are also a bank and 5 ATM booths for money transactions. Again a post office and a courier service serve the communication facility. The plan includes about 7 offices for maintaining the internet service and the utility services (like gas, electricity, water supply, etc.). There is also a police station in the neighborhood to protect law and order and prevent chaos. The residents have car parking facilities nearby from their residences. In addition, parking arrangements have also been made in the residential plots of cul-de-sacs. There is a government department in the neighborhood that serves the urgent administrative facilities of the neighborhood.

2.18. Road Network

Four types of roads have been used throughout the neighborhood. The main highway (Oxygen-Kuwaish Link Road) of this neighborhood is 160 feet wider. The major roads are 76 and 56 feet respectively. 2 major roads are placed to the south and the north of the highway. However, the routes of Minor roads are 30 feet. In the cul-de-sacs, 23 feet minor road has been used to facilitate less vehicular circulation intentionally and keep the environment quiet.

2.19. Residential Plot

In the *Annanya residential area*, 58.5% of the total area is used for residential purposes (Appendix-A). The total number of residential plots are 1449 and the plot size are pre-determined. In the cul-de-sac pattern, only 3 Katha plots have been used but in the modified grid pattern, all the 3 types of residential plots have been used.

Table-4: Quantity and area of residential plots

Plot area (Katha)	Plot Area(sq ft)	Number of plots	Total plot area
3	2160	169	507
5	3600	603	3015
7	5040	121	847
3 (cul-de-sac)	2160	556	1668
	Total	1449	6037

2.20. Neighborhood Center

In the centre of *Annanya Residential Area*, park, lake, playground, sidewalk with trees, etc., are provided considering the accessibility of the recreational facilities of the residents. Moreover, coffee shops, restaurants and a movie center are also placed with underground parking in the neighborhood center thinking about the visitors nearby. On the other hand, two on-street parking lots are provided which have been isolated by trees and bushes from the park.

2.21. Neighborhood Traffic Circle

At the intersection of 2 major roads, there is a neighborhood traffic circle to calm traffic near the neighborhood centre. Hence, to reduce heavy traffic is not a concern here but to reduce speed in order to reduce unwanted accidents is the main issue. There are also 4 neighborhood traffic circles on the north part of the area. These also add aesthetic values due to greeneries.

3. Result and Discussion

All the facilities in the neighborhood are distributed on both sides of the highway so that the dwellers don't have to cross the highway in a hurry. But the single facilities (like college, hospital, etc.) are placed on the southern part of the highway. Cul-de-sacs are fully used for noise-free residential living. Other residential buildings are mainly 6-7 storied to accommodate the population. Again almost 10% area is used as open space (like parks, lakes, playgrounds and greeneries) all over the neighborhood to make it environmentally sound (Appendix-A). The percentages of assigned area (shown in figure-1) shows that most of the areas have been used for residential area and roads. Moreover, all kinds of facilities (excluding residential area and roads) are provided more than the required area (shown in figure-2). The neighborhood promotes households with 4-7 members without any class distribution. So the neighborhood plan is both economically and socially accepted by the residents.

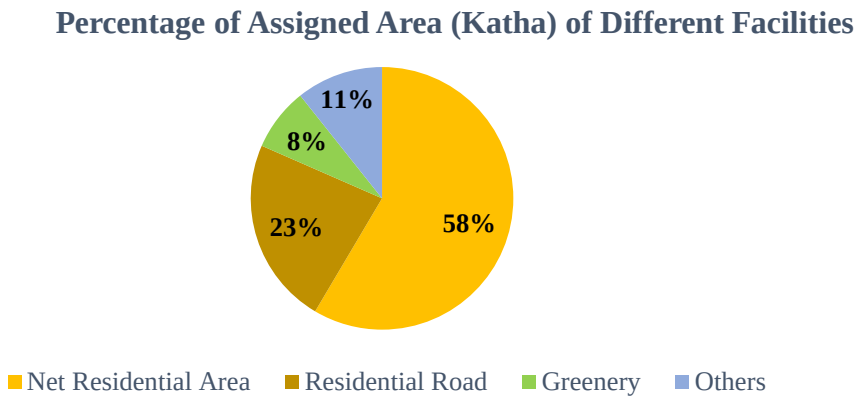

Figure-1: Percentage of assigned area (Katha) of different facilities.

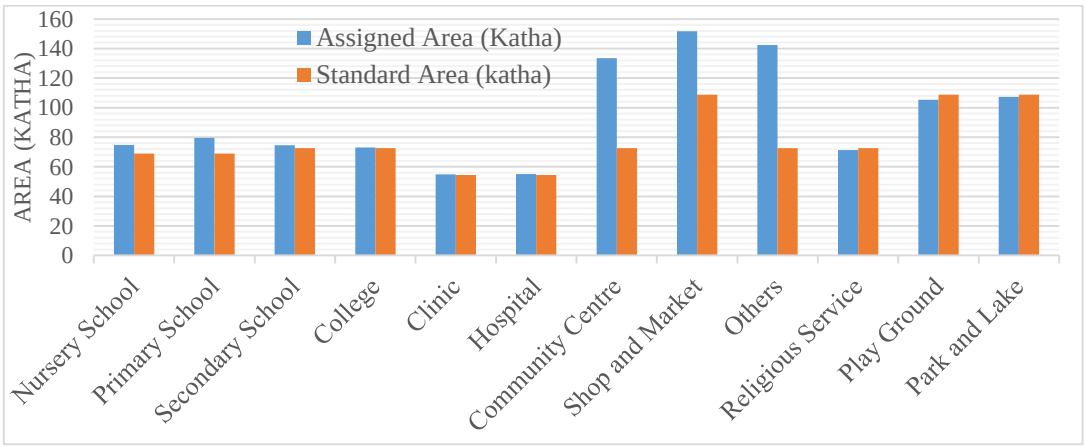

Figure-2: Comparison of assigned and standard area for some facilities.

4. Conclusion and Recommendations

Residential neighborhood plans are important to arrange the plots with facilities according to the area and condition of the neighborhood. The main focus of the plan is to facilitate the maximum population with high rise buildings. But greeneries and open spaces are also considered cautiously to keep the environment calm and free from population. In our neighborhood planning, standard facilities and policies have been maintained in the context of Bangladesh. In short economically and socially, the neighborhood plan is affordable and acceptable.

As the neighborhood plan mostly depends on online-based data, it could not gain more accuracy and it should be considered in further planning. Neighborhood planning should assure all the services and sustainable development in the long run, considering the privileges of the residents which is the main concern and recommendation of the neighborhood plan.

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6. Appendices

6.1. Appendix A: Detail land use of *Annanya Residential Area*'s neighborhood plan.

Table: Quantity and assigned area of the facilities of *Annanya Residential Area*.

	Name of Facilities	Quantity	Assigned Total Area (Katha)	Standard Area (Katha)
1	**Nursery School**	**5**	**74.7**	**68.97**
2	**Primary School**	**4**	**79.6**	**68.97**
3	**Secondary School**	**2**	**74.5**	**72.6**
4	**College**	**1**	**73**	**72.6**
5	**Clinic**	**2**	**54.8**	**54.45**
6	**Hospital**	**1**	**55**	**54.45**
7	**Community Centre**	**16**	**133.41**	**72.6**
	Community Hall	1	15	
	Gymnasium	1	5	
	Library	1	5	
	Sport Club	2	14	
	Cultural Club	1	5	
	Entertainment Center	1	5	
	Public Toilet	1	5	
	Movie Theatre	1	15.25	
	Small Museum	1	15.7	
	Art Center	1	12.46	
	Orphanage	1	7	
	Day Care Center	1	5	
	Child Care Center	1	5	
	Hostel	1	5	
	Hotel	1	14	
8	**Shop+Market**	**26**	**151.69**	**108.9**
	Grocery Store	6	16.58	
	Super Shop	5	31	

	Market	5	50.9	
	Restaurant	4	24	
	Coffee Shop	2	14	
	Pharmacy	5	15.21	
9	**Others**	**21**	**142.27**	**72.6**
	Government Department	1	7	
	Office	7	49	
	Courier Service	1	7	
	ATM Booth	5	9.15	
	Post Office	1	7	
	Bank	1	7	
	Refueling Station	1	17.17	
	Bus Stand	1	21.75	
	Police Station	1	11.86	
	Parking Lot	2	5.34	
10	**Religious Service**	**6**	**71.36**	**72.6**
	Mosque	5	59.36	
	Temple	1	12	
11	**Playground**	**7**	**105.43**	**108.9**
	Playground (General)	6	73.6	
	Playground (School)		(Extra) 18.66	
	Eid-gah Field	1	13.17	
12	**Park and Lake**	**4**	**107.27**	**108.9**
	Park	1	26.73	
	Lake	2	52.54	
	Botanical Garden	1	28	
13	**Residential Road**		**2378.72**	**3114.54**
	All types of Roads		2364.58	
	Sidewalk With Trees		14.14	
14	**Greenery**		**798.49**	
15	**Net Residential Area**	**1449**	**6037**	**7256.37**

16	Gross Residential Area		8415.72	10370.91
17	Density	350		
18	Area	170.555	10318.58	
19	Population	60,000		

Appendix B: Setback calculation of the pre-determined residential plots.

Table: Setback calculation of given plot area according to Town Improvement Act, 1953.

Katha	Area (Sq.ft.)	Width-Depth ratio	Depth (ft.)	Width (ft.)	Depth of ground coverage(ft.)	Width of ground coverage(ft.)	MGC	FAR
3	2160	1:1.67	36	60	51.8	29.44	1404	3.35
5	3600	1:1.78	45	80	68.52	36.80	2250	3.5
7	5040	1:1.61	56	90	78.51	47.80	3024	3.75

Katha	Number of plots	Floor Area (Sq.ft.)	New Width (ft.)	New depth (ft.)	Total setback along width(ft.)	Total setback along depth(ft.)	Difference of setback of width(ft.)	Difference of setback of depth(ft.)
3	6	1206	26.89	44.83	9.1	15.17	2.53	6.96
5	6	2100	34.37	61.10	10.63	18.89	2.42	7.41
7	7	2700	41	65.87	15.01	24.13	6.81	12.64

Table: Setback of the pre-determined residential plots' area

Katha	Front Side(ft.)	Back Side(ft.)	Each Side(ft.)
3	8.40	6.76	4.55
5	8.63	10.27	5.31
7	11.24	12.88	7.51

7. Glossary

Building Construction Act: An act to prevent haphazard construction of buildings.

Cul-de-sac: A street or passage which is closed at one end. It is a dead-end street with a turnaround.

Floor Area Ratio (FAR): The ratio of the total floor area of a building and the plot area.

Greenery: Green areas with grass, trees and bushes.

Maximum Ground Coverage (MGC): The maximum area of a plot can be covered by a building or structure and expressed as a percentage.

Modified Grid Pattern: Grid like pattern which is modified by open spaces in the center for a pleasing design.

Plot: A small area of the ground or a small piece of land.

Pre-industrial village: A village that existed before there were machines and tools to perform tasks.

Private Residential Land Development Rules (PRLD): Legal set of rules for controlling land development in private sector housing in Bangladesh. It was issued on March 1, 2004.

Reconnaissance Survey: Preliminary study of the whole area and take necessary notes.

Residential Area: It is an area of land that is predominantly used for housing and private residence.

Setback: The minimum distance by which a building or structure must be separated from the plot boundary.

Subdivision Pattern: Different patterns with which a parcel of land is divided for accessibility to facilities and other uses.

Swastika Pattern: It is a kind of modified pattern. The swastika symbol is an ancient religious icon that is used in subdivision pattern.

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