

AMELIORATION: REDEMPTION OF HAZARIBAGH THROUGH NATURAL SOLACE



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ABSTRACT

“An intense foul smell that burns all the way to the lungs”- is what many think of as the name, Hajaribagh comes. The sole memory of a visit to the place leaves many with a disturbing headache. Yet around 2, 00,000 people reside in such a place with highly polluted environment filled with toxic waste produced by the tannery industries situated in the area. While this highly degrading condition was acknowledged long before, the forceful shut down of the tannery industries took place as recently as on March 6, 2017.

Now that the industries have shut down, the growing concern is towards the re-development of the land left behind by the tannery industries. The land is in an extremely poor condition with much needed attention to its redemption. This project addresses the concern as it takes a portion of the land and uses it to give back the community what it has been missing. Additionally, it provides the community with programs to enhance their living standards and attempts to bring the community close to nature by involving it to initiate the growth and nurture of nature within the site. The project also urges them to look closely as nature grows and spread its branches to redeem the much-polluted place into a vibrant natural one. As the project offers to allow the community to bond with the nature and understand its importance, it creates a potential to make people more empathetic towards the natural environment and thereby protecting it in the future. It also leaves behind the story of the redemption of Hazaribag to be passed down the generations of the community to make them feel the same connection with the nature as their ancestors.



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First and foremost, I have to thank the Almighty Allah for allowing me to face all the hurdles of this thesis project, headstrong without giving up.

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TABLE OF CONTENT

Chapter 1: Introduction-----	7-13
Chapter 2: Literature Review -----	14-22
Chapter 3: Site and Context Analysis -----	23-32
Chapter 4: Case Studies and Program Analysis-----	33-43
Chapter 5: Conceptual Stage and design development -----	44-55



LIST OF ABBREVIATION

DAP- Detailed Area Plan

DMDP- Dhaka Metropolitan Development Plan

DPZ- Detailed Planning Zone

RAJUK- Rajdhani Unnayan Kartipakkha

DCC- Dhaka City Corporation

SEHD- Society for Environment and Human Development

Cr- Chromium

Pb- Lead

WBB Trust- Work for a Better Bangladesh



LIST OF FIGURES:

Fig. 1.1.1. Urban Growth of Dhaka

Fig. 1.1.2. Some of the facts involving the workers of the tannery industries

Fig 1.1.3: Road network plan with DPZs of Dhaka city

Fig 1.1.4: Existing Landuse of DPZ-8

Fig 1.1.5: Proposed Landuse of DPZ-8

Fig.1.1.6.Impact of tannery industries on the residential community in hazaribagh

Fig.2.4.1. Images of Khoo Teck Puat Hospital in Singapore

Fig.2.5.1. Images of therapeutic gardens in practice

Fig 3.1.1: Location of Hazaribagh area in Dhaka city map

Fig 3.1.2: Hazaribagh area and its surrounding area

Fig 3.1.3: Placement of Tannery Industries in the area of Hazaribagh

Fig.3.2.1. LandUse Plan of the site and surrounding of Tannery Industrial Area

Fig.3.3.1. Road Network around the site and connection to the neighbouring residential areas

Fig.3.3.2. Road conditions in the area

Fig. 3.4.1. Green open spaces within and surrounding the site

Fig. 3.4.2. Only public open green space for the community to use as a playing field

Fig. 3.5.1. Lack of awareness of waste management

Fig. 3.7.1. Placement of the Tannery Mosque

Fig. 3.7.2. Elevations of the surrounding buildings



CHAPTER 1: INTRODUCTION

- 1.1. Project background
- 1.2. Project brief
- 1.3. Project introduction
- 1.4. Project rationale
- 1.5. Scope of the project
- 1.6. Aims and Objectives



CHAPTER 1: INTRODUCTION

1.1. Project background

Hazaribagh is an area situated on the south west part of the capital of Bangladesh, close to the river, Buriganga. Buriganga river had once been a route of trade and commerce to this region thus development of the city and settlements is said to have started from this region by Kabir and Parolin (2012) as shown in figure 1.1.1. Many business start-ups took place in this part as more and more merchants settled here during the Mughal period. Therefore, this area has grown to become a mix of organically developed, densely fitted region of residence and commerce.

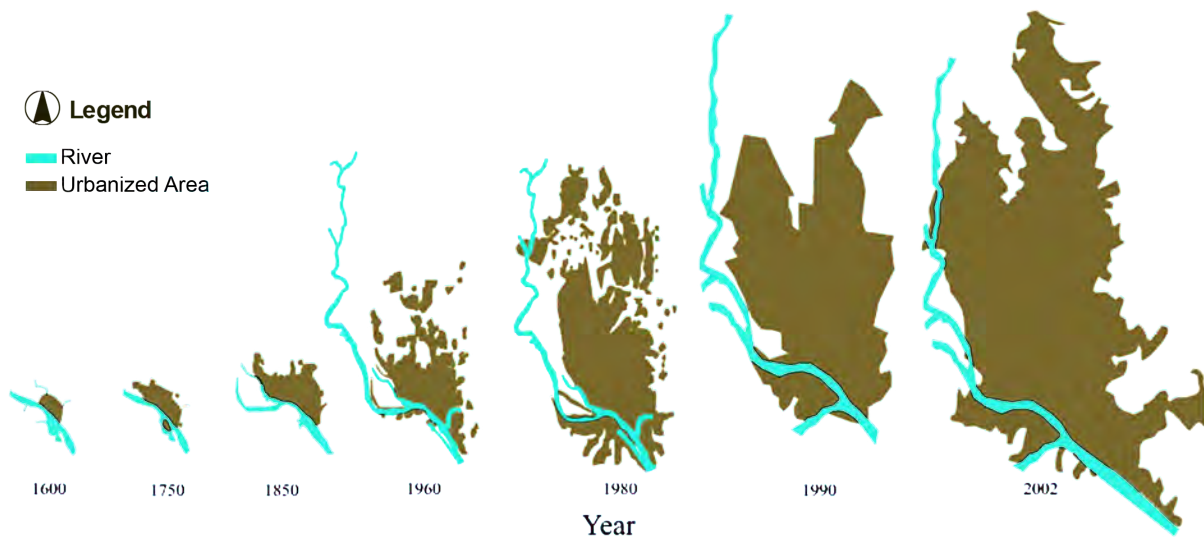


Fig. 1.1.1. Urban Growth of Dhaka

Source: Shankland Cox Partners and Others, 1981

The problem began when Industrialization hit Bangladesh and the first tannery in Bangladesh territory was set up at Narayanganj by RP Saha during the 1940s that was later shifted to Hazaribag (Hossain,2014). One industry

urged the settlements of many others and within 2010, according to Hossain (2014), the area became the home of 206 tannery industries.

Sufficient care on the operating of the Tanneries in a healthy manner with low environmental hazards were something completely missed out in the process of earning billions through it in the international market. This lead to daily illegal dumping of waste like :

- discharge of 21,600 square meters of liquid waste (UNB,NOV,2003)
- production of 150 tons of solid waste (The Independent, 2006)
- emission of 22,000 cubic meters of untreated toxic waste (The Daily Star, 2003)

Furthermore, according to a report from SEHD, Rahman (2013) expresses that the tannery industries involved child labor and the working conditions were so poor that the workers suffered from various health issues and had life expectancies less than 60% of the rest of the people in the country.

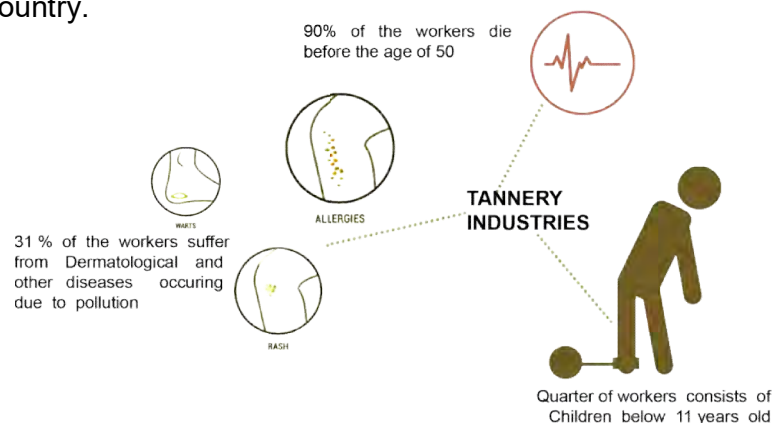
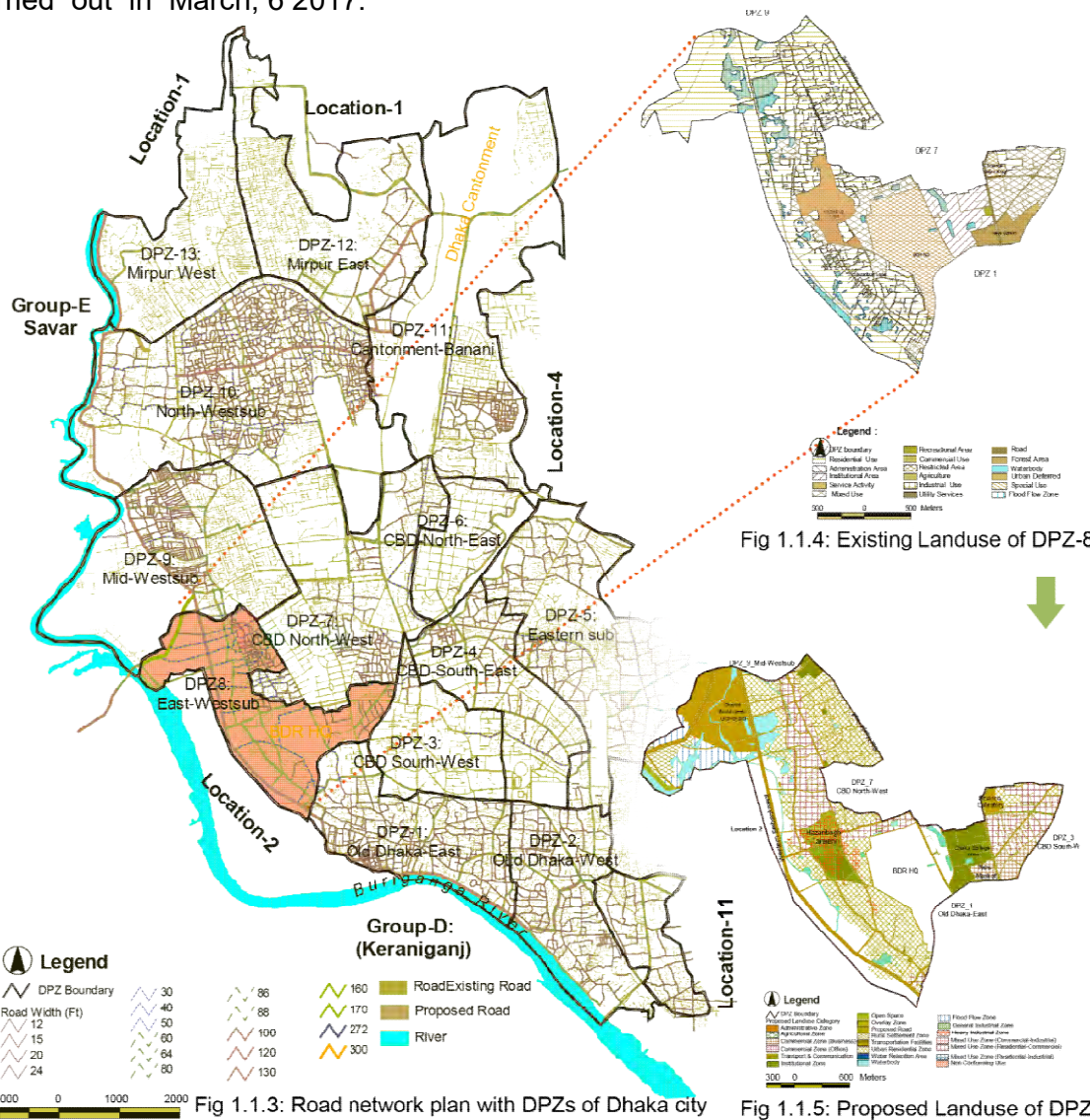


Fig. 1.1.2. Some of the facts involving the workers of the tannery industries



The living and working conditions in Hazaribag degrade to such extent that it placed 5th on one of the most polluted place on Earth (Dhaka Tribune,2013).

Seeing this disastrous situation, in 2009, the Highcourt declared the relocation of tanneries to Savar . The deadline for the relocation was extended till 2011 and a forceful shut down of all tannery industries was carried out in March, 6 2017.



Source: Preparation of Detailed Area Plan (DAP) for DMDP Area: Group-C



The shifting of the tanneries and the use of the land for open space and recreation purposes were suggested in RAJUK's report, Preparation of Detailed Area Plan (DAP) for DMDP Area: Group-C as shown by Figures 1.1.3, 1.1.4 and 1.1.5

1.2. Project brief

Project name: Amelioration: Redemption of Hazaribagh through natural solace

Project type: Community Recreation Center

Location: Hazaribagh, Tannery Industrial Area

Coordinates: 23.7347703, 90.3674844

Total Tannery Area (Design Solution Suggested): 47.7 acres

Detailed Design Area: 9 acres (approx.)

Client: Dhaka South City Corporation

1.3. Project Introduction

This project attempts to study the site conditions, its area of impact and most importantly its people to understand what architectural input can be suggested within the site to not only pull its people out of the miserable living conditions they are forced to live in due to the presence of the tannery industries but also involve them in the redemption of the area in such a way that they themselves nurture the site and develop a sense of



belongingness and responsibility to take care of the site in future throughout generations.

1.4. Project rationale

The current condition of the area and the life styles of the people as shown by Fig. 1.1.6. signify the need for this project as it attempts to suggest a way to meet the needs of the people and heal them off the abuses done by the tannery industries.



Fig. 1.1.6. Impact of tannery industries on the residential community in hazaribagh



1.5. Scope of the project

The project has the scope to redeem the site that is now a negative place and a burden to the community's living standards and lifestyles to a place that adds value to the community and plays a role in raising their living standard higher. It addresses the social duty of an architect. As it portrays the impact design decisions have the potential to leave on people's lives for their betterment.

1.6. Aims and Objectives

- This project aims to study the site, its dialogue with its surrounding community and the potential it has to create an impact on a city scale which shape the design decisions later .
- It further tries to understand the needs and aspiration of the community that resides in the Hazaribagh area to generate the programs of the project.
- The project also attempts to find a way to naturally heal both the site and the community of Hazaribagh.
- A thorough Literature review is done to understand the role of nature in healing



CHAPTER 2: LITERATURE REVIEW

2.1 History of Environment and Architectural Psychology

2.2. Environmental impact on human

2.3. Role of Nature in Healing Process

2.4. Therapeutic Landscape

2.5. Therapeutic Gardens

2.5.1. Physical therapy

2.5.2. Recreational therapy

2.6. Healing of the soil of Hazaribagh



CHAPTER 2: LITERATURE REVIEW

This chapter tries to understand the relationship between environment and human health in both physical and mental aspects. Additionally it also takes a closer look how designed natural environment plays a part in restoration in humans as well as land.

2.1. History of Environment and Architectural Psychology:

In the early period of the field of environmental psychology, much attention was given to the built physical environment (i.e. architecture, technology and engineering) and how it affected human behaviour and well-being (Bonnes & Bonaiuto, 2002).

This focus on the built environment was largely guided by the political and social context of the time. Modern architecture tried to address the post-war challenges of providing decent housing and facilities for the general public (Pol, 2006). Questions such as how homes, offices or hospitals could best be built for their potential users and how environmental stressors (e.g. extreme temperatures, humidity, crowding) would affect human performance and well-being were the focus.

2.2. Environmental impact on human:

Edward Wilson, an etymologist proposed that humans have an instinctive affinity with life-like processes i.e., nature, due to their evolutionary history. Humans evolved as creatures deeply enmeshed with the intricacies of



nature, and that they still have this affinity with nature ingrained in their genotype.

Thus nature can positively impact people's health, stress level, attention level and can evoke several emotions.

Doctors and psychologists are considering "green" experiences (in touch with nature) and "green prescriptions" as part of the physical and psychological health promotion, prevention, and treatment regimens.

Nature Deficit Disorder, a term coined by Richard Louv in his *Last Child in the Woods* (2005) argues that children are spending less time outdoors, resulting in behavioural problems (e.g., ADHD), exacerbated by parental fears, restricted access to nature, and technology.

Research shows that exposure not only to actual nature, but also to visual simulations (e.g. videos, paintings) and to olfactory (smells) or auditory components can have restorative effects (Eisenberger et al.).

Preliminary investigations suggest that restorative responses might even extend to geometric properties of nature.

This extends the possible scope of restorative design measures from actual nature, to imitations of nature and nature's fractal geometry in architecture (Joye, 2007).

Thus, it is seen 90% of children's stories, cartoons, etc. feature animals as the main characters. Photos and artworks of nature and natural scenes



adorn people's homes, work-places, used as screen savers, etc. Dwellings with views of nature (e.g., ocean views) are highly valued

2.3. Role of Nature in Healing Process

The tradition of viewing nature as a 'healer' can be traced from way back in history. In Europe, during the Middle Ages, monastic hospitals provided with enclosed vegetation gardens with the aim of achieving the spiritual transformation of patients. The role of nature in bodily restoration gained a stronger foothold in the 17th and 18th centuries, where the emergence of scientific medicine suggested that infections were spread 'by noxious vapours' in the air.

This encouraged architectural designs that paid attention to fresh air and cross-ventilation. In particular, Florence Nightingale, in *Notes on Nursing* (1860), wrote on the Importance of fresh air, direct sunlight, and visual connections to nature in promoting recovery of the body.

2.4. Therapeutic Landscape

Medical geography and environmental psychology acknowledges the impact the design of physical environments hold on patient's medical outcomes and care quality, therefore, often involves purposeful landscaping of elements of nature into the built environment. These sort of landscaping are often called Therapeutic landscapes that facilitate achieving physical, mental and spiritual healing or well-being.



Green spaces such as gardens, walkways lined with trees and green walls imbue a sense of vitality into the hospital. Furthermore, trees and plants release oxygen, and humidify and cool the atmosphere. A steady supply of fresh air allows for the detoxification of airborne toxins in the body, and can significantly lighten one's mood.

Blue spaces are also important elements that may promote health and wellbeing. Therapeutic landscapes may encompass features such as fountains and streams. These aquatic elements are associated with positive mood effects, where the sounds of water are often considered calming and restorative.

The therapeutic effects of nature can also be achieved from one's bed in the ward. Ulrich R.(2001), environmental psychologist and director of the Centre for Health Systems and Design, emphasizes the benefits of a window view of nature. In critical care units, window views are linked to lower rates of anxiety and depression in comparison to windowless units. Patient rooms that allow natural sunlight to infiltrate also foster more favorable medical outcomes. Ulrich uses the term 'positive distraction' to refer to these conditions that have a capacity to redirect an individual's focus from negative foci of illness to the restorative aspects of nature. Simply viewing nature for five minutes or less can reduce stress and induce physiological benefits such as the lowering of blood pressure and reduced heart rate.



Singapore's Khoo Teck Puat Hospital prides itself on being both “a hospital in a garden” and “a garden in a hospital”. Visitors and patients would be pleased to see gardens and various green spaces within the hospital grounds that provide for a soothing yet rejuvenating surrounding. The hospital consists of over sixteen landscaped areas, including planting along the balconies of inpatient wards, patient-oriented gardens at the ICU and Geriatric clinic, water gardens and rooftop gardens. The architect of the hospital, Mr. Lee Soo Khoong, commented that its layout and spaces go beyond conventional hospital typology, which is traditionally very function-driven. Rather, design concepts were underpinned by the desire to create a healing environment, at the same time opening up communal spaces for both patients and the public.



Fig.2.4.1. Images of Khoo Teck Puat Hospital in Singapore

2.5. Therapeutic Gardens

These gardens have specific therapeutic functions to aid in the recovery and rehabilitation of patients. These may work alongside medical treatments and promote holistic wellness.

2.5.1. Physical therapy

While a fitness centre or gym may be often used by physical therapists, the use of equipment may be daunting to some. Therapy gardens however contribute to treatments by providing an outdoor space for activities such as low-impact walking or stretching. Physical movement and light exercise are especially beneficial for elderly patients, and combats mobility deterioration that may emerge from spending long hours on the bed. Additionally, regular physical activity in the outdoors helps develop muscle strength, aerobic capacity, balance and flexibility.

2.5.2. Recreational therapy

Horticulture is a common element of recreational therapy, where gardening may be included as part of treatment programs. Prominent psychiatric psychotherapist and author Sue Stuart-Smith points out that working in a walled garden gives a sense of protection to individuals afflicted with trauma or a mental breakdown.

Gardening is also helpful for patients looking to improve their motor skills. As a hands-on activity, it promotes eye-hand coordination,



range of motion and endurance. For the disabled, equipment and garden structures should be designed to increase accessibility and accommodate varying needs. This may include ergonomic tools, raised garden beds, and wheelchair friendly paths.



Fig.2.5.1. Images of therapeutic gardens in practice.

2.6. Healing of the soil of Hazaribagh

The soil of Hazaribagh contains heavy metals like copper and lead which are highest percentage concentration, followed by nickel and zinc. Yet above all, chromium (Cr) content has severely contaminated the soil.

RAJUK (2010) suggested the first 8 feet top soil of this area should be removed in order to safeguard a healthy environment by removing the dangerously contaminated soil.

However, removing 8 feet top soil could be a rather exhausting and costly with almost no potential to involve the community in the process so that they develop a sense of responsibility to keep the site healthy after its redemption.



An alternative process could be the use of Phytoremediation. It refers to the technologies that use living plants to clean up soil, air, and water contaminated with hazardous chemicals. Reichenauer and Germida (2008).

Phytoremediation is a cost-effective plant-based approach of remediation that takes advantage of the ability of plants to concentrate elements and compounds from the environment and to metabolize various molecules in their tissues. It refers to the natural ability of certain plants called hyperaccumulators to bioaccumulate, degrade, or render harmless contaminants in soils, water, or air as shown by figure.2.6.1. Toxic heavy metals and organic pollutants are the major targets for phytoremediation.

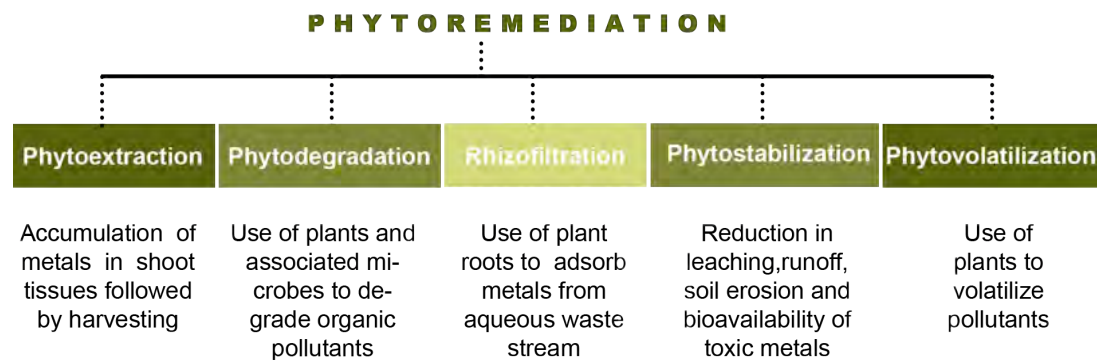


Figure.2.6.1. Different approaches of phytoremediation

Source: Mitran, T. (2014) Heavy metal pollution in soil and its mitigation aspect by Dr. Tarik Mitran



CHAPTER 3: SITE AND CONTEXT ANALYSIS

3.1 Location of Hazaribagh area

3.2. Land Use of Hazaribagh

3.3.Road network and area layout

3.4 Open space and surroundings

3.5. Environmental aspects

3.6. Socioeconomic and cultural aspects

3.7. Site drawings and considerations



CHAPTER 3: SITE AND CONTEXT ANALYSIS

This chapter attempts to comprehend the current condition of the site, its surrounding and its people. It also talks about the challenges and opportunities of the site to accomplish the project.

3.1. Location of Hazaribagh area

Fatemi and Rahman (2015) described Hazaribagh, as an urban brownfield in Dhaka that needs to be redeveloped as a planned sustainable area that has the potential to set an example for the entire city. The Hazaribagh neighbourhood lies southwest of the city centre and was absorbed as Dhaka expanded as shown in fig. 3.1.1. As it can be perceived from fig. 3.1.2. the area is surrounded by residential neighbourhoods (Dhanmondi and Mohammadpur) except to the west, where it is bordered by an embankment built in the late 1980s to protect the area from flooding. Beyond the western embankment is the flood plain of the Buriganga River; this is one of

Total Hazaribagh Area: 395 acres (approx.)

Word No.s: 46, 48 & 58



Fig 3.1.1: Location of Hazaribagh area in Dhaka city map



Fig 3.1.2: Hazaribagh area and its surrounding area



Fig 3.1.3: Placement of Tannery Industries in the area of Hazaribagh

Total Tannery Industries Area: 47.7acres (approx.)



Dhaka's main rivers and it lies just one kilometer away (Human Rights Watch, 2012).

3.2. Land Use of Hazaribagh

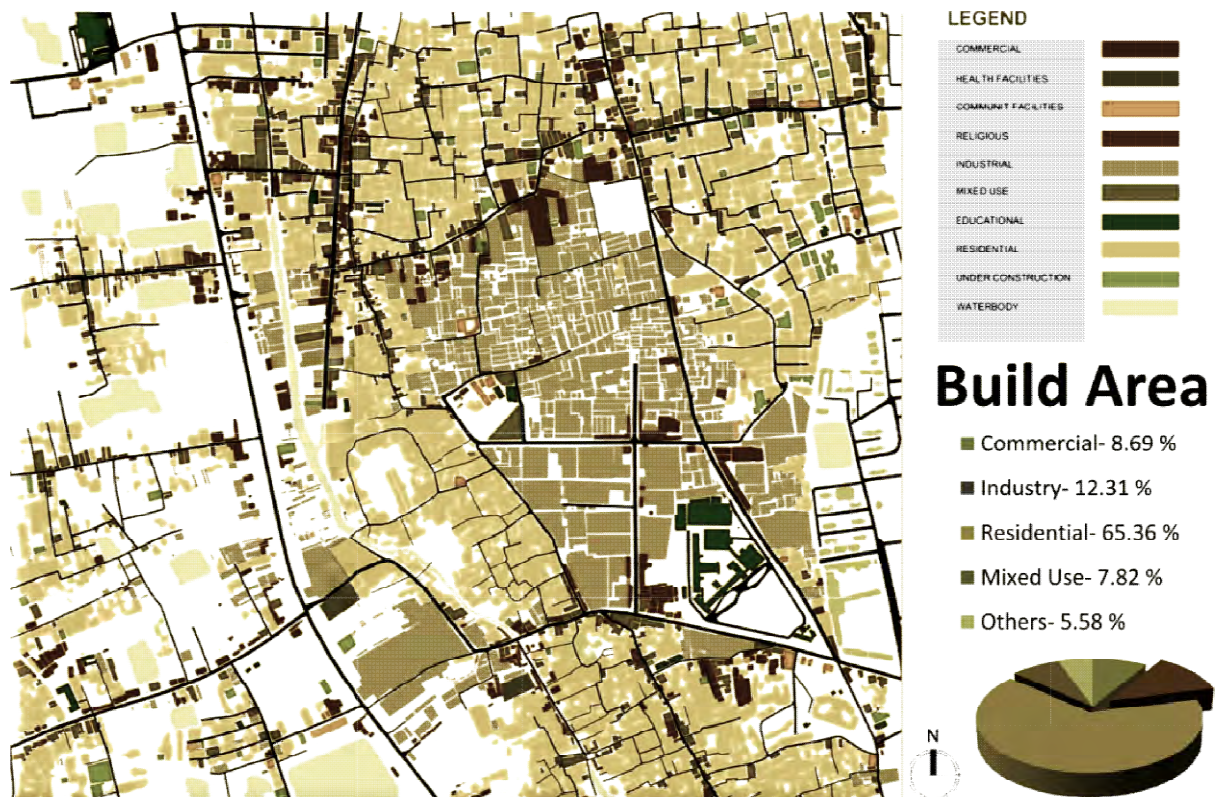


Fig.3.2.1. LandUse Plan of the site and surrounding of Tannery Industrial Area

The land-use pattern of the area clearly illustrates the chronological development of this area as shown in figure 3.2.1. The development of the area is an accumulation of mostly residential and industrial areas along with some transitional uses, such as mixed and commercial use. Many residential plots are very small. The industrial area has many plots where the majority of buildings are temporary structures with very few permanent ones. A small amount of supporting small and cottage industries for

tanneries such as paint and glue industries, shoe manufacturers, shops and similar industries are also seen. Along the western embankment, there

are several businesses for car repair, wood storage, carpentry, and repairing and producing metal products.

A slum area has also developed with some rickshaw and compressed natural gas (CNG) vehicle storage, paper and metal recycling, and other commercial activity.

3.3.Road network and area layout

The road network and layout of the area developed organically, like in other parts of Dhaka. Area grids are non-existent or discontinuous, with many sharp turns and dead ends in the roads.

Also as

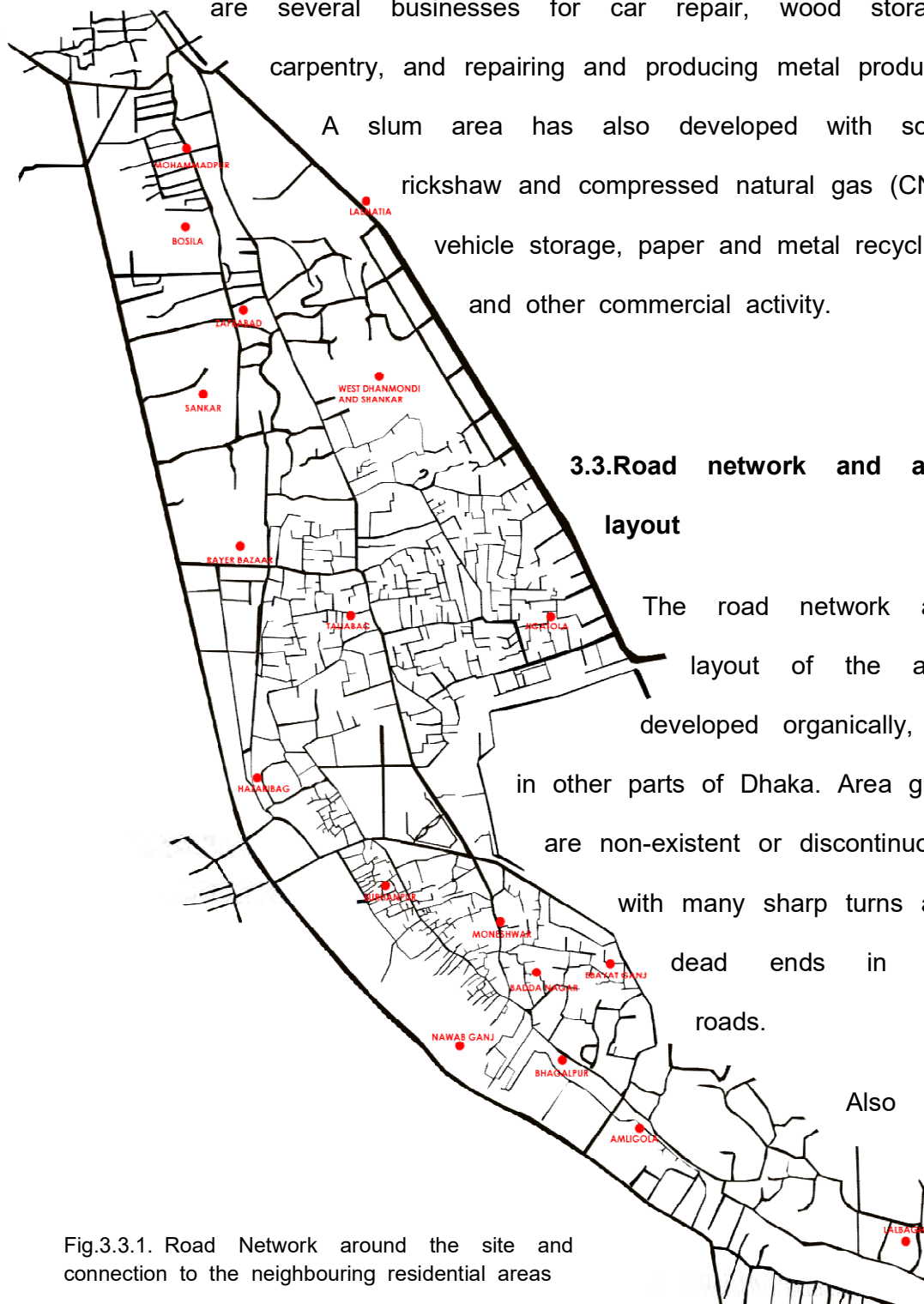


Fig.3.3.1. Road Network around the site and connection to the neighbouring residential areas



seen in fig. 3.3.1 proximity of the site with the neighboring residential areas can be an issue to be considered when taking design decisions.

Walkways in Hazaribagh are not pedestrian-friendly; there is a lack of footpaths and covered drains, and pedestrian and vehicular traffic are not separated (Figure 3.3.2.). The DAP (2005) proposes improving the currently haphazardly developed area through a land pooling system, which includes better serviced plots, utilities, roads and other social infrastructure.



Fig.3.3.2. Road conditions in the area

3.4 Open space and surroundings

In Hazaribagh, a large portion of the land is either undeveloped or underdeveloped (Fatemi and Rahman, 2015). After the demolition of tannery buildings an enormous area will be converted into vacant space, which would have the potential of becoming a “negative space,” which can create many social problems and also become a haven for antisocial elements. There are many sick industries in this area and, given the current value of land in Dhaka, unproductive use of these spaces will be a great loss for the city in the future. Fatemi and Rahman (2015) further emphasize from their study that like other neighborhoods in Dhaka, planned

open and green spaces are highly recommended for this area's sustainable development and the improvement of the current compact living conditions. Hazaribagh area has only 3.72% of green area as shown in the fig. 3.4.1 and fig.3.4.2.



Fig. 3.4.1. Green open spaces within and surrounding the site



Fig. 3.4.2. Only public open green space for the community to use as a playing field



3.5. Environmental aspects

Soil contamination with organic metals and toxic heavy metals create an unlivable environment as seen previously in figure 1.1.6. Currently, waste disposal from the surrounding areas and tanneries is increasing the level of pollution. The collection of local information and interviews taken by Fatemi and Rahman(2015) with residents showed that 67% of residents have poor environmental knowledge and awareness which is something that can be changed through the design process . Self survey and interviews also showed that the waste management system is very poor in this area and most people throw solid waste into the streets, drains, canal and elsewhere, and only 33% of respondents dispose of their solid waste at a specific waste-collection point (Figure 3.5.1). Untreated waste in industrial areas causes serious water pollution and many environmental hazards along with air pollution. This severely interrupts the ecological balance of the site.



Fig. 3.5.1.

Lack of awareness of waste management

3.6. Socioeconomic and cultural aspects

In spite of its tannery and polluted environment, Hazaribagh has tight community bonds, inherited from old Dhaka. The most important physical quality of a space is enclosure, which creates a sense of place. Narrow, pedestrian-dominated streets bounded by adjacent buildings in Hazaribagh provide a feeling of intimate social spaces. These intimate spaces encourage and enhance community and cultural activities in the outdoor urban environment, which also sustains the community spirit.

The spaces between and in front of the buildings are vibrant and provide many enclosed and small areas, making streets, alleys and other public spaces comfortable, satisfying and secure for assorted activities and for walking through (Mowla, 2002). In many parts of the streets, the original character of the neighborhood has changed due to new construction of tall buildings, and also due to tanneries, which completely contrast with the spatial relationships of the area. At first glance, the settlement texture of Hazaribagh may look chaotic, but behind the chaos there is an order that developed in line with people's needs.



3.7. Site drawings and considerations

Within the site there is a Tannery Mosque that has become a landmark of the area so design decisions were later taken addressing this mosque rather than relocating it.

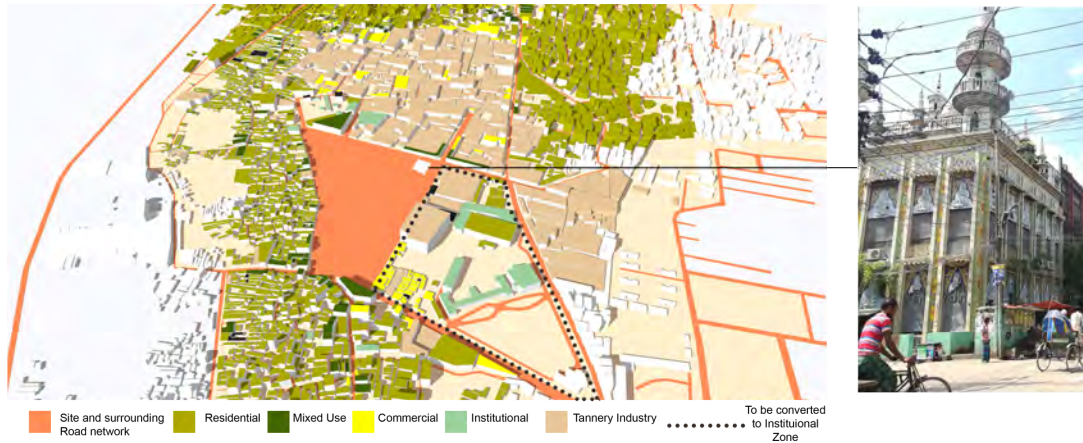


Fig. 3.6.1. Placement of the Tannery Mosque

Elevation drawings of the North, South, East and West sides of the site were produced and the changes that may occur in them in the future according to RAJUK's landuse proposal report, 2005.

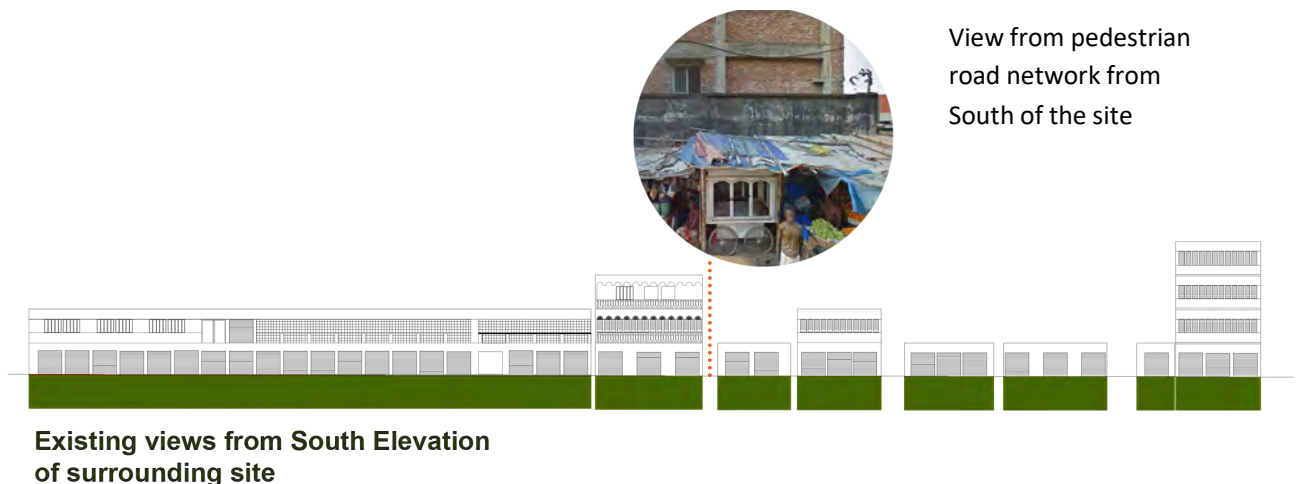
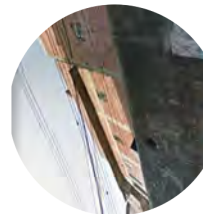
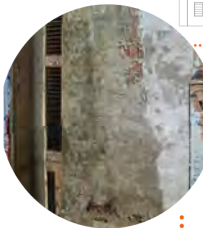


Fig. 3.6.2. Elevations of the surrounding buildings



Existing views from West Elevation
of surrounding site



Fig. 3.6.3. Elevations of the surrounding buildings (Continuation)



CHAPTER 4: CASE STUDIES AND PROGRAM ANALYSIS

4.1. Community Recreation Centres

4.1.1 Clayton Community Centre

4.1.2. The Sunset Community Centre

4.1.3. Cam Thanh Community House

4.1.4. Pani Community Centre

4.1.5. Comparison and tentative program analysis

4.2. Community's Choice of a Public Natural Open Space



CHAPTER 4: CASE STUDIES AND PROGRAM ANALYSIS

This chapter studies worldwide examples of community centers. Four such projects are selected from arch daily site and their programs are studied, analyzed and compared to create a tentative program of this project while also keeping in mind the needs and demands of the community.

Moreover, during site survey, when asked about recreation and an element missing within the community, the people responded with an yearning for an open green public space naming Dhanmondi Lake several times thus a study of the Dhanmondi lake and its public activities were studied as well.

4.1.1 Clayton Community Centre

Architects: Jackson Architecture

Location: Clayton, Victoria, Australia

Ground Floor Area: 4300 sqm

First Floor Area: 2350 sqm

Project Year: 2008

The architectural expression of this project is intentionally contrasted with the adjacent environment using a unified deep red skin and canted glazed walls to provide a high degree of transparency. The large glazed volumes of the Aquatic zone (north facing) and the Library zone (facing Centre Road) were each given a canted wall and roof to “book end” the building.



Ease of access, personal amenity and security are key issues that have been addressed in the design of the Centre. A prominent Main Public Entry provides access to the Library and Aquatic Centre via a foyer with a Café. Adjacent is an internally located Theatre. Further on, the Clayton Art Room and Youth and Family Services facilities adjoin a large landscaped Courtyard accessed via a covered verandah that leads through to the Preschool and Medical Clinic. The east-west courtyard is a key feature of the masterplan as it provides increased northern orientation and separates the Aquatic/Fitness functions from the rest of the facilities. A Pre-school is located at the rear arm of the site with its discrete drop off and secure playground bordering the Council's western car park. A dedicated entry is also provided here with lift and stair access to the Medical Centre at first floor level.

The architectural design addresses the security for staff and visitors with clear site lines from the reception/control desk that will allow staff to monitor the traffic to toilets, meeting rooms, treatment room corridors and the administrative office zone. Staff facilities have been separately zoned .



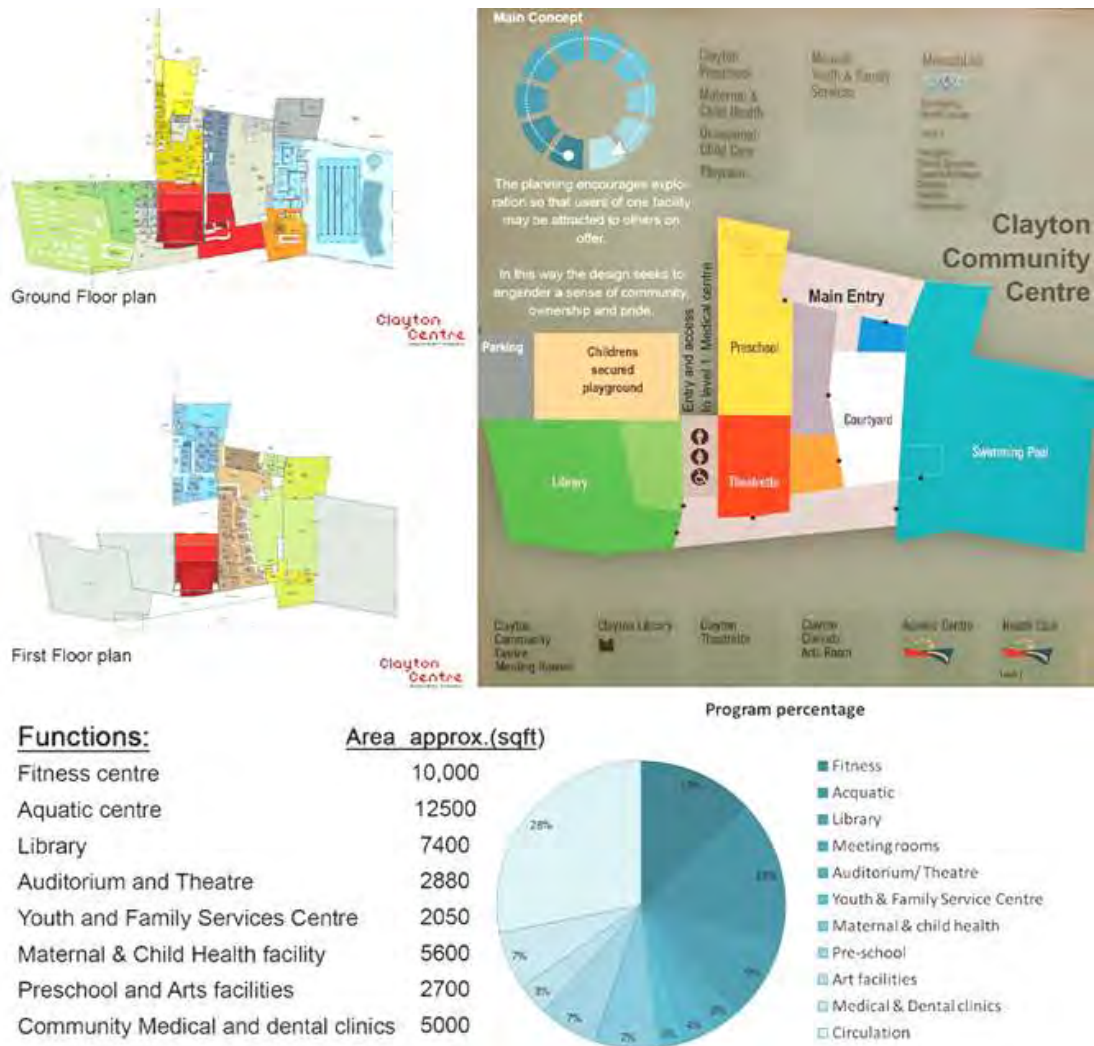


Fig.4.1.1.1. Images and analysis of Clayton Community Centre



4.1.2 Sunset Community Centre

Client: City of Vancouver, Board of Parks & Recreation

Architects: Bing Thom Architects

Location: Vancouver, Canada

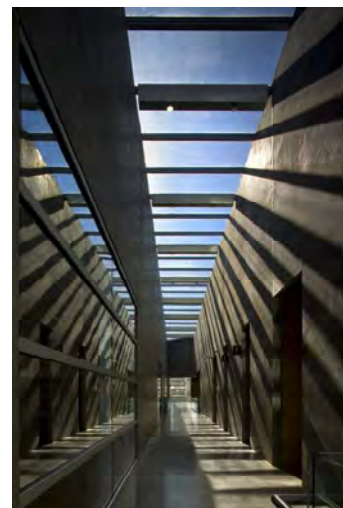
Area: 30000.0 ft²

Project Year: 2007

LEED Gold certified building



The Sunset Community Centre was conceived as a link between nature and the vibrant multi-cultural communities that surround it. Unique yet not foreign to its surroundings, Sunset Community Centre is an elegant and transparent building, carefully sited on a major thoroughfare to give the building visibility and accessibility to the community. The back and sides of the building serve as a background for outdoor activities with its spectacular southern views and setting among the fields, greenhouses and planting beds of the adjacent Vancouver Park Board site.



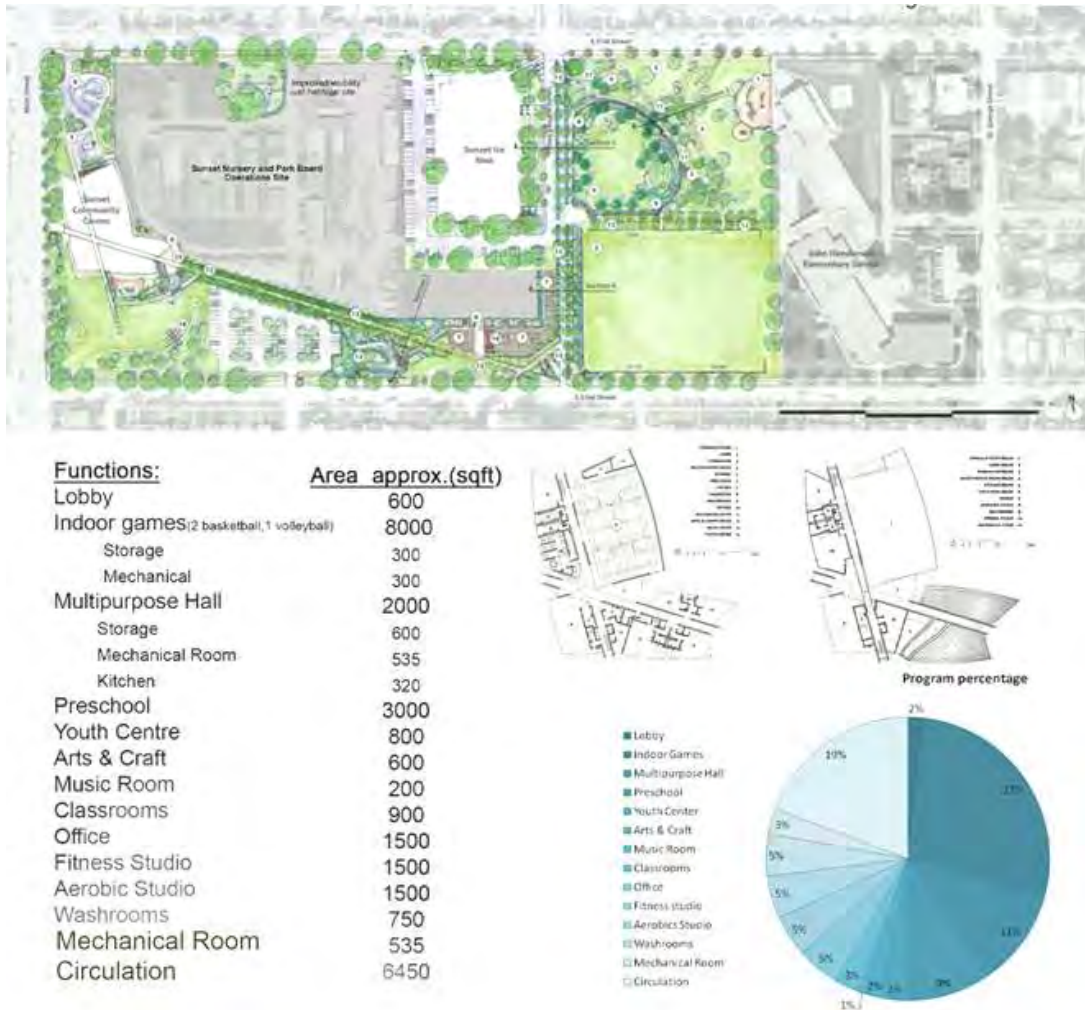


Fig.4.1.2.1. Images and analysis of Sunset Community Centre



4.1.3. Cam Thanh Community House

Architects: 1+1>2

Location: tp.Hội An, Quảng Nam, Vietnam

Area: 550.0 sqm

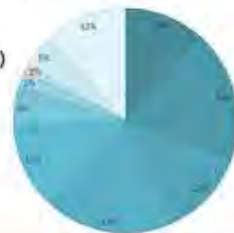
Project Year: 2015



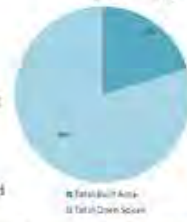
Functions:

	Area approx.(sqft)
Total Site	44000
Total build area	6000
Total open space	30000
Children playground	4500
Lobby	1200
Library	1200
Multi-function space	1200
Exhibition	750
Conference/meeting room	750
Cafe	335
Courtyard	750
Washroom	135

Program percentage



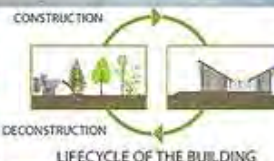
Open Space to built area percentage



LOCAL WORKERS AND MATERIAL

WIND-RESISTANT ROOF:

- During great storms, the roof form - which was erected to avoid wind stagnation at the acute angle created by the roof and wall - is usually the cause for roof tearing.
- According to aerodynamic principles, the cone is subjected to pressure formed by the low pressure of the air flow under the roof and high pressure on its surface.



	LOCAL WOOD	BAMBOO	COCONUT LEAVES	ADOBE BRICK
LOCAL MATERIALS	YES	YES	YES	YES
RECYCLE	YES	YES	YES	YES
DECOMPOSITION	YES	YES	YES	YES
NON-TOXIC MANUFACTURING PROCESS	YES	YES	YES	YES

EMBODIED ENERGY OF COMMON MATERIALS	LEAF	SOIL	STONE	CONCRETE	TIMBER	STEEL	PLYWOOD	COPPER	GLASS	BRASS	PVC	POLY	ALUMI
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MATERIALS USED IN BUILDING

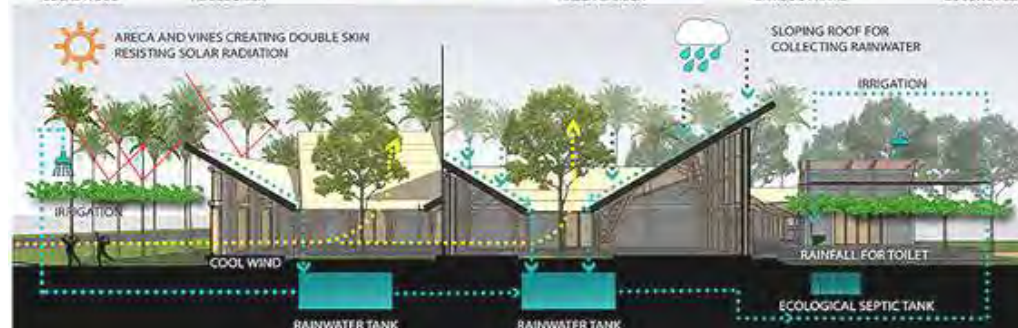


Fig.4.1.3.1. Images and analysis of Cam Thanh Community Centre



4.1.4. Pani Community Centre

Architects: SchilderScholte architects

Location: Rajarhat, Rangpur, Bangladesh

Area: 910sqm

Project Year: 2014



Functions:

Area approx.(sqft)

Workplace	300
Workshop	2000
Storage	700
Plaza	750
Classroom	2000
Toilet	260
Assembly hall	1100
Storage water tanks	260
Circulation	1096



Fig.4.1.4.1. Images and analysis of Pani Community Centre



4.1.5. Comparison and tentative program analysis

Functions	Clayton Community Centre	The Sunset Community Centre	Cam thanh community house	Pani community centre
Education	11	16	N/A	20
Library	10	N/A	20	N/A
Medical Centre	15	N/A	N/A	N/A
Gathering place	4	11.5	32	20
Fitness	30	10	N/A	N/A
Cafe	N/A	N/A	6	N/A
Indoor Games	N/A	N/A	5	6
Office / Admin	3	5	12.5	3
Maintenance	4	4	2	3
Washroom	3	4	2	3
Total built area	60	30	20	30

Functions	Area in Percentage	Area in sqft
Preschool		16000
Arts & Craft		600
Music		300
Exhibition		1000
Self Defence		500
Playground		5000
Maternal & Childcare		4000
Daycare		2000
Medical clinics		5000
Youth and Family Service		2000
Workshops & Vocational training		3000
Multipurpose Hall		20000
Library		15500
Indoor Games		5000
Office / Administration		6000
Fitness		3000
Cafe/ Restaurants		15000
Shops		10000
Total built space	30%	200000
Vendors		6000
Community Gardens		
Waterbody		
Phytoremediation area		
Plaza		



4.2. Community's Choice of a Public Natural Open Space

Dhanmondi Lake Park



Fig. 4.2.1 Dhanmondi residential area and Dhanmondi lake

Dhanmondi Lake Park is a large linear park surrounding Dhanmondi Lake that flows through the planned neighborhood of the same name. The neighborhood and park are enclosed by Road No. 16 to the north, Mirpur Road to the east, Road No. 2 to the south, and Satmasjid Road to the west. The

boundary of the park hosts a tree-lined lakeside footpath, numerous green pocket spaces, restaurants, an amphitheatre and a small marina for paddleboats. Two small islands are created within the lake which are accessible by pedestrian bridges.

According to Surveys done by WBB Trust (2015) 4531 activities in Dhanmondi Lake Park. Overall, the dominant activity in Dhanmondi Lake Park was personal and social activities (41%), followed by selling products (20%), walking and biking (16%), and work-oriented activities excluding vendors (16%). Six percent of activities involved athletics and play (6%).



In the morning, the share of personal and social activities (34%) was followed by work-oriented activities (22%), selling products (19%), and walking and biking (18%). Athletics and play were much less prevalent (8%). In the afternoon, the share of personal and social activities increased (49%), and was followed by selling products (21%), walking and biking (15%), and work-oriented activities (10%). Again, athletics and play were less prevalent (5%) than other activity types. Figure 4.2.2 and Figure 4.2.3 summarize the frequency of different kinds of activities throughout the day. In the figure, a larger silhouette represents a more frequent activity, although this relationship is not to scale.

Activity	AM	AM (%)	PM	PM (%)	Total	Total (%)
Athletics and play	176	8%	103	5%	279	6%
Personal or social	783	34%	1084	49%	1867	41%
Selling products	434	19%	460	21%	894	20%
Walking and biking	416	18%	326	15%	742	16%
Work oriented activity	516	22%	221	10%	737	16%
Total	2325	100%	2194	100%	4519	100%

Fig. 4.2.2. Activities by time of day in Dhanmondi Lake



Fig. 4.2.3. Activities in Dhanmondi Lake Park by time of day



CHAPTER 5: CONCEPTUAL STAGE AND DESIGN DEVELOPMENT

5.1. Concept

5.2. Design Process

5.3. Plans

5.4. Sections

5.5. Renders



CHAPTER 5: CONCEPTUAL STAGE AND DESIGN DEVELOPMENT

5.1. Concept

The main idea of the project was to connect people to nature by involving them in the redemption process of the site so that they nurture it themselves and develop a sense of responsibility over it and prevent polluting of the site in the future.

5.2. Design Process



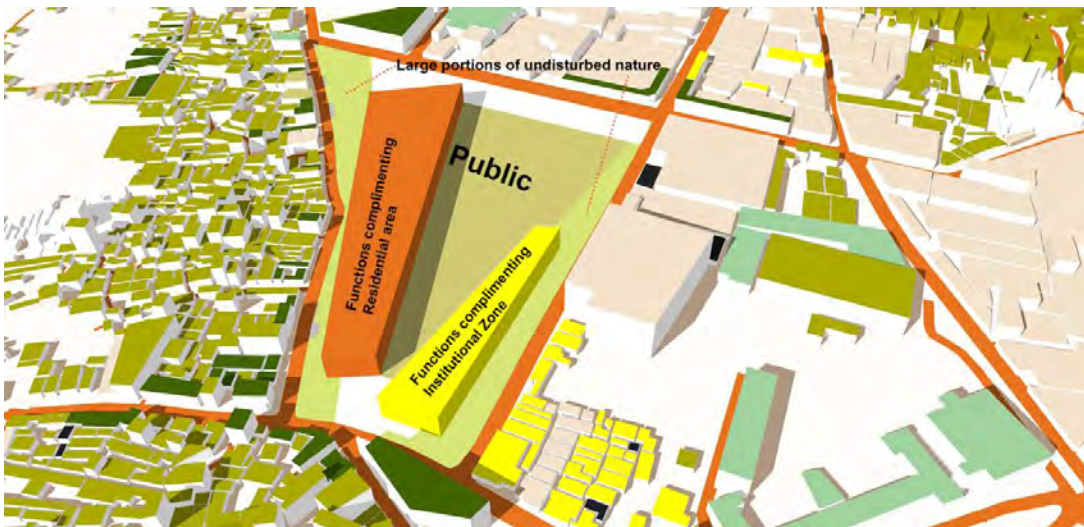
The site was already divided into two parts by the surrounding road network the larger chunk of the site was identified to have the potential of hosting large open field

public place as it already bear a small playing field thus this area is planned to bear open field and park that can host sports and festivals.



5.2.1. Design Steps Taken

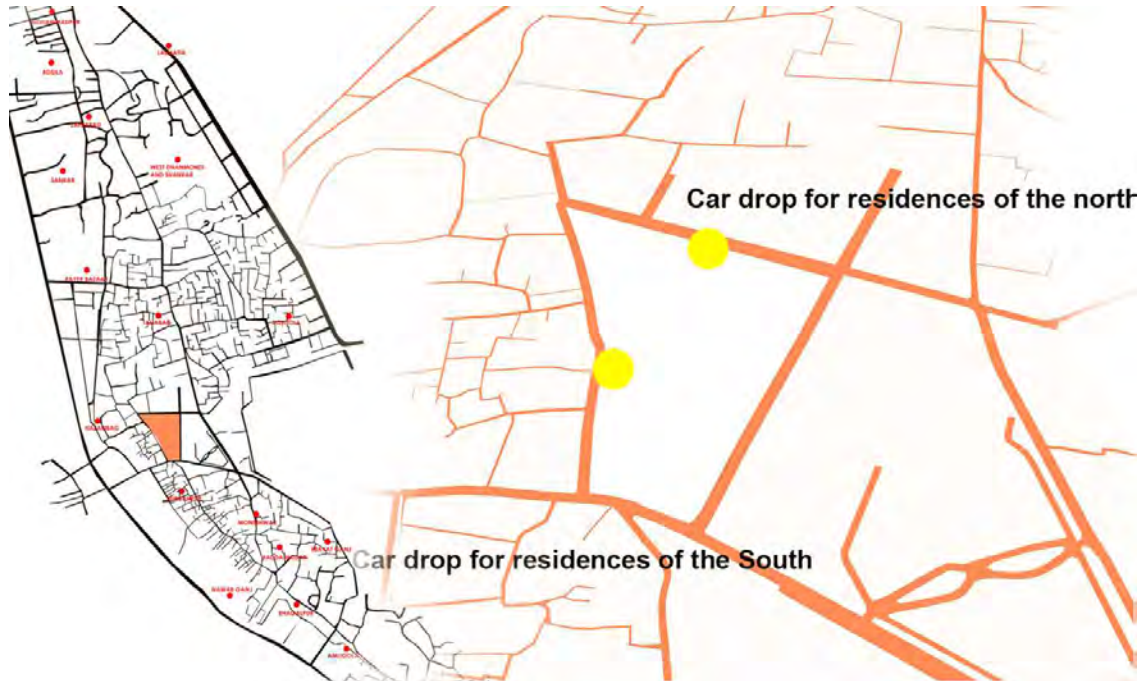
1.Zoning within the site is done according to the adjacent land use



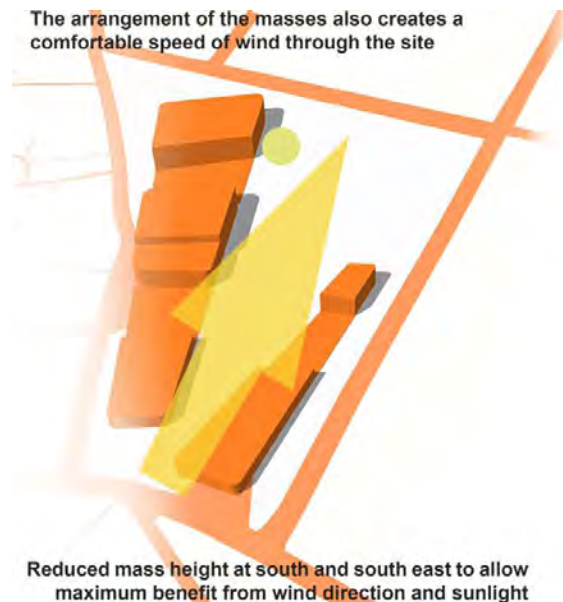
2.Considering the city fabric and road network to keep thoroughfare through the site and to the mosque . The placement of dedicated place for the vendors, an important part of the community was determined to enhance experience through the site and also act as an attractive point.



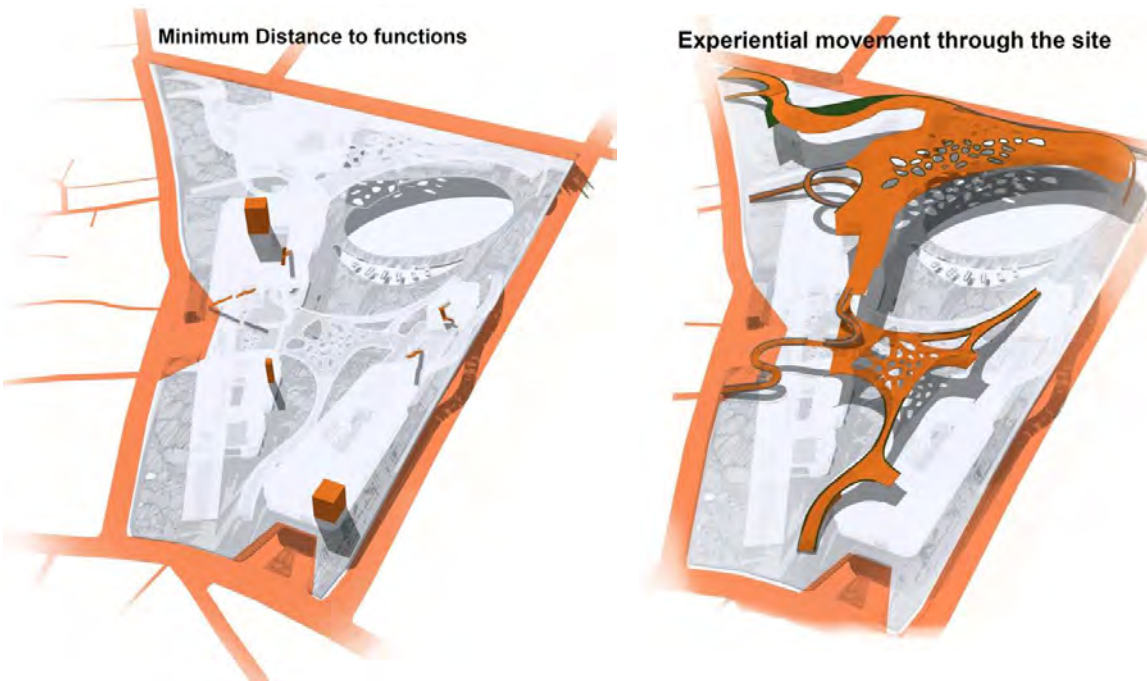
Drop-off's were determined keeping in mind the surrounding road network.



3. Massing decisions were taken with the help of climatic considerations



4. The circulation of the project was designed in two ways- one comprises of the minimum distances to functions and the other more experiential.



The experiential circulation was designed with the help of a canopy connecting the pedestrians from surrounding road network to multi-level functions. Additionally, the canopy also provides a shade the public functions beneath it.

Function of Canopy

Connects functions to city fabric



Allows people to experience nature from different levels



Provides optimum shade and sunlight through to the public functions underneath



Too light and heat _exhausting



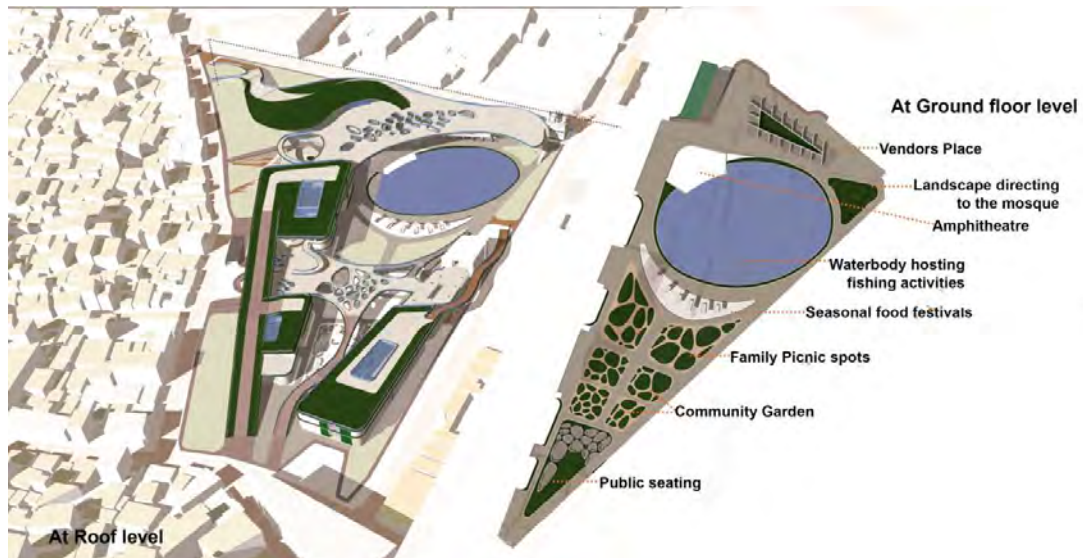
Too dark _depressing



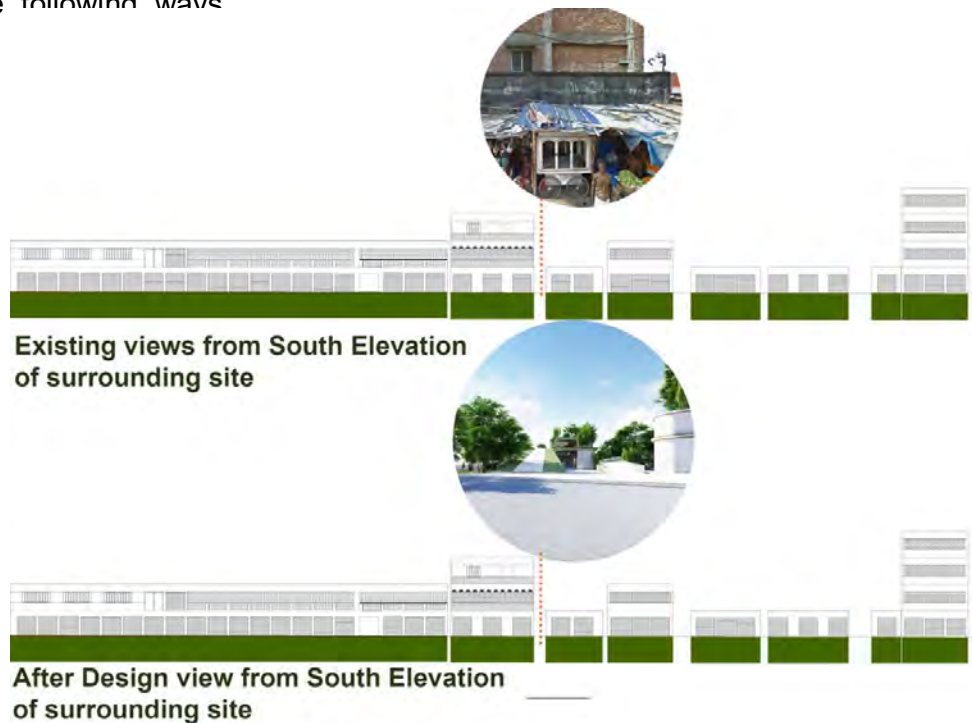
A controlled sunlight produces enough serotonin to feel happy and calm

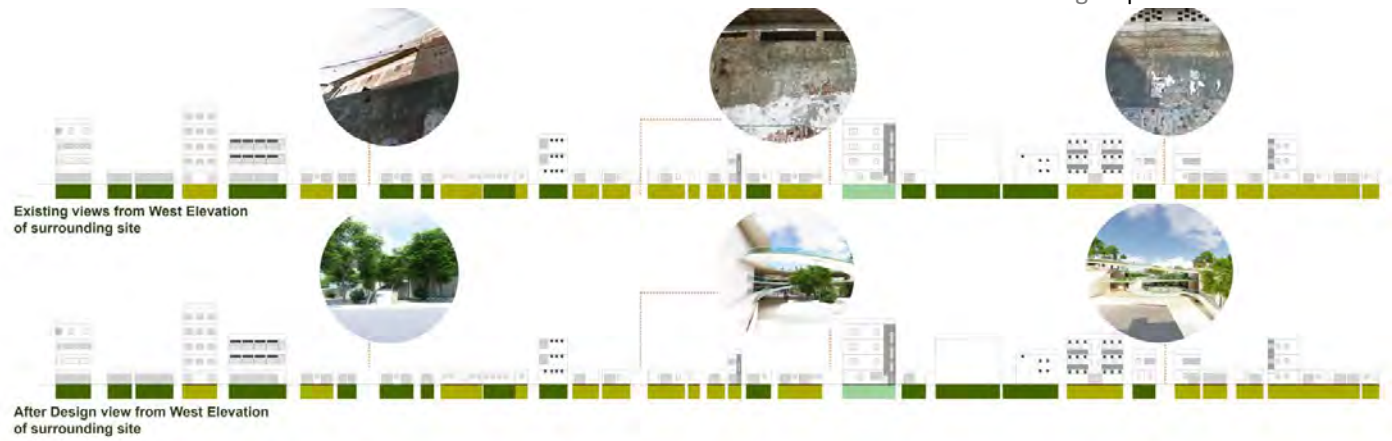


5. Natural, green, open public places were created at different levels for the users to enjoy.



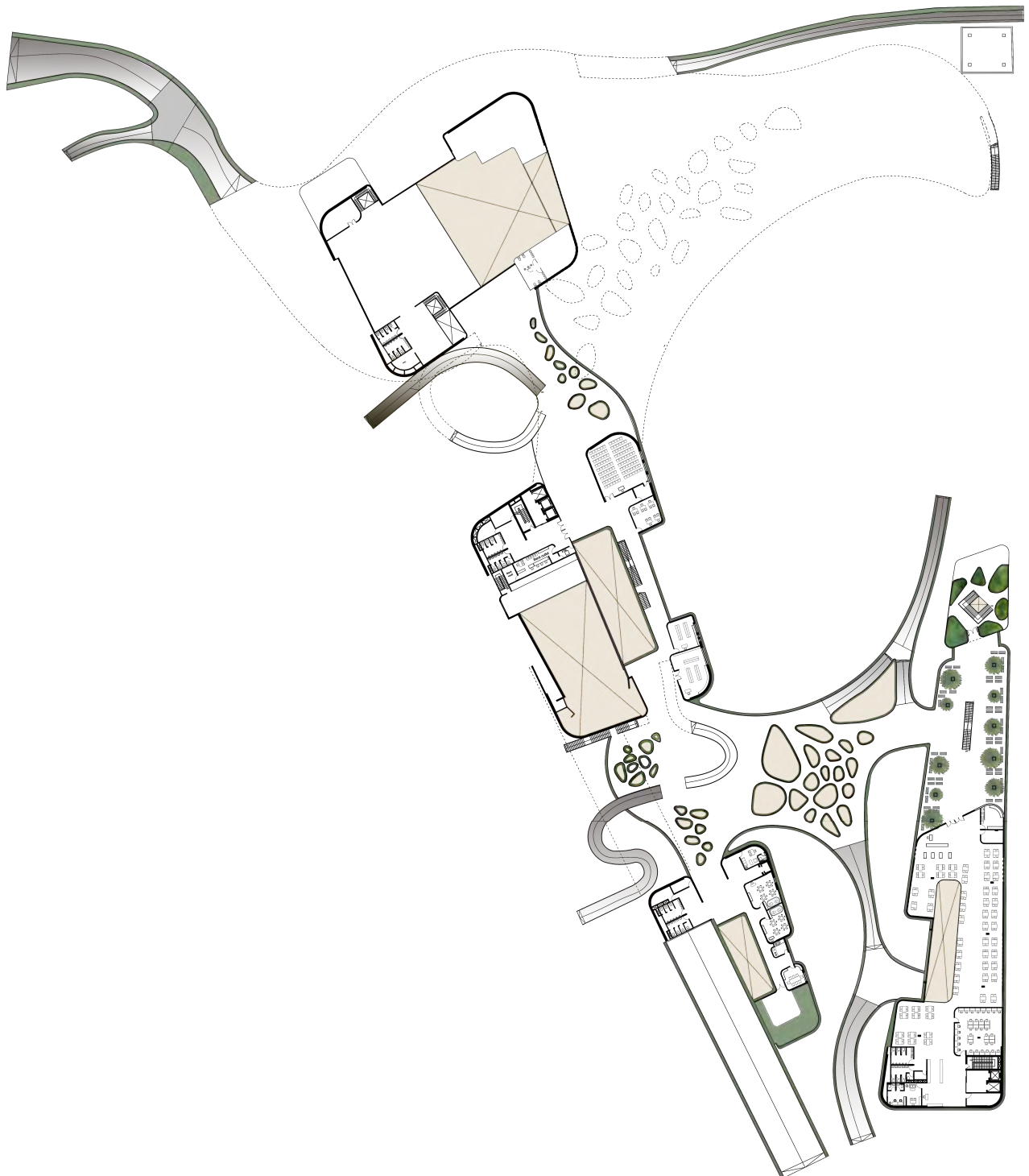
6. Site response to surrounding route and road network was designed in the following ways



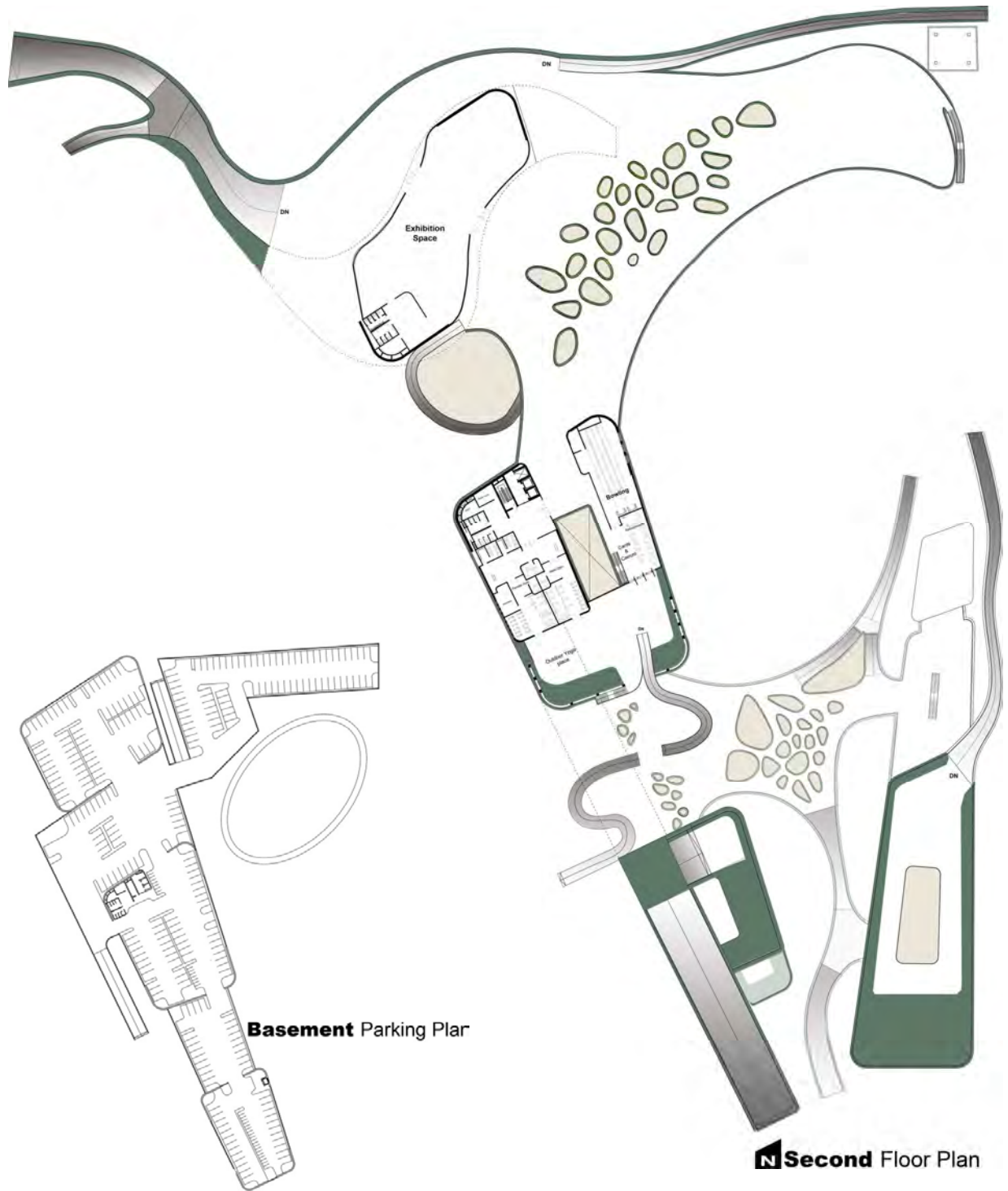


5.3. Plans

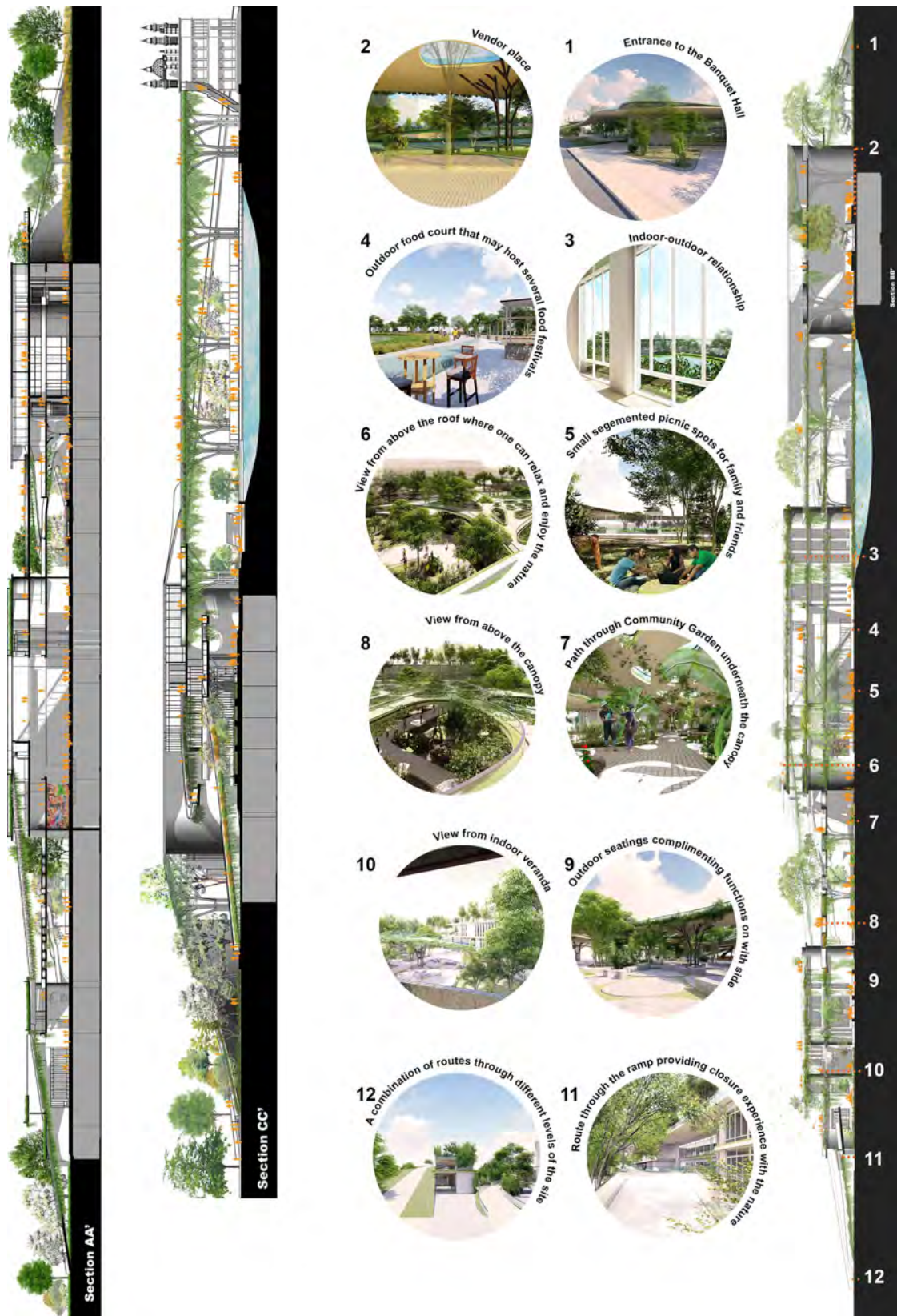




▲ **First Floor Plan**



5.4. Sections



5.5. Renders



The site becomes a splash of green among the heavily built hard area



Walkway with the pond on one side and the vendors' place on the other



Outdoor seating area providing a place for a variety of users



Community Garden Space under the Canopy



Outdoor reading space- a continuation of indoor Library



Atrium Space showing incorporation of nature Indoor

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