Reparative Infrastructure:

Reimagining Water Kiosks in Ulaanbaatar's *Ger* Districts

by
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AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

ABSTRACT

Over half of Mongolia's population lives in the capital city, Ulaanbaatar, and more than half of these people live in the area located on the urban periphery. Since residents here still maintain the tradition of setting up traditional yurts (*gers*) on their own lots, these areas are called *ger* districts. Like other informal settlements around the world, they suffer from severely underdeveloped infrastructure. Most of the residents relocated to the *ger* districts from rural areas after Mongolia's political reforms in the late twentieth century, driven by land policies and in search of better employment and educational opportunities. But they are unable to enjoy the same quality of life as urban residents. This thesis explores how architectural interventions can improve daily life, enhance public space, and restore a touch of nomadic life in contemporary and rapidly urbanizing contexts.

In *ger* districts, access to clean water is a challenging issue. Residents must collect water daily from nearby kiosks using homemade carts—even during the harsh winter months. These water kiosks, embedded in daily routines, also hold a potential to become social hubs and micro public spaces within the existing urban fabric. Through a review of literature on the historical and cultural context of *ger* districts, alongside secondary data analysis and remote site investigation, this thesis proposes architectural upgrades of four water kiosks within a selected site in Bayangol district. Two of them are developed in greater design detail.

Confronting the complex and intertwined constraints that hinder development in *ger* districts, this thesis adopts an incremental design strategy to respond to these challenges. This approach offers a potential way to remove current barriers to development throughout the area. Moreover, it suggests an alternative framework for engaging with informal settlements worldwide, particularly in contexts with limited resources and ambiguous policies, by fostering local agency and contributing to spatial justice through light, community-driven interventions.

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In addition, I would like to express my heartfelt gratitude to the University of Waterloo, located on the traditional territory of the Neutral, Anishinaabeg, and Haudenosaunee peoples. I truly value the learning experience I have gained over the past two years, which has opened the door to the academic world for me. My time at the Cambridge campus has been warm and inspiring.

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CHAPTER 01 INTRODUCTION

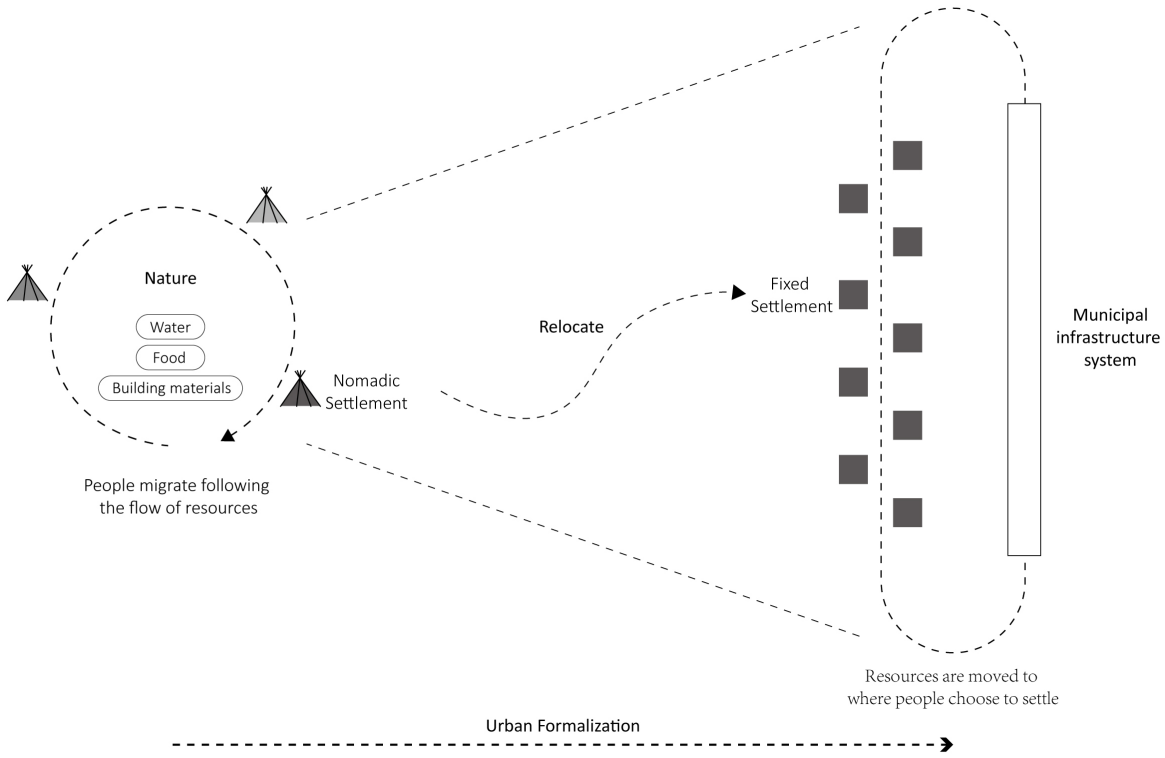


Fig 1.1 A diagram of the Transformation of Resources Allocation. Drawing by Author.

1.1 The Fixed and the Fluid

Access to natural resources has always been a key factor in the process of urbanization and it often plays a decisive role in shaping urban morphology and architectural typology. In the early beginning of urban formation, settlements often clustered along rivers as their terrain conditions gradually developed into cities. But they could only emerge if a place could provide sufficient food, water, and building materials for its citizens, especially when transportation costs were high (Bosker 2022). With population growth, the existing way of acquiring those resources could not meet the demands, leading to a creation of new methods to allocate them. Among essential resources, one of the most important was water management, as exemplified by the irrigation systems of ancient Egypt and the aqueducts of Rome. The irrigation systems in Egypt were used to combat and harness the seasonal floods of the Nile River basin (Kees and James 1977), while the aqueducts of Rome transported water from distant sources to the city and surrounding farmlands, since the water sources within the city were polluted by the dense population (Gagarin and Fantham 2010).

This can be seen as a point when a significant shift happened, where people did not need to migrate or move with resources; instead, essential resources, like water, were systematically transported to meet the needs of settled populations, even when these populations grew beyond their environmental carrying capacities. It marks a transition from a fluid, adaptive system of resource use and human habitation, where movement aligned with natural cycles, to a fixed, centralized system focused on delivering resources to stationary populations.

This transformation initially served specific regions, such as along the Nile or around Rome, and was limited in scale with minimal impact on nature. Over time, it developed further, and the scope of resource allocation expanded. By the seventeenth and eighteenth centuries, colonial activities had begun connecting distant regions through trade and resource extraction, representing an early form of globalization (Crosby 2015). In the nineteenth century, capitalist expansion led to rapid urban population growth and rising industrial demand for raw materials. As a result, production and consumption became increasingly organized through large-scale, centralized infrastructures as modern urban infrastructure systems gradually emerged (Foster 2010). For example, London's sewer system, Paris's water supply network, and New York's Central Park and water supply system were all established in the mid-to-late nineteenth century. Urban life became increasingly dependent

Fig 1.2 Aerial view of the *ger* districts. Source: Hector Retamal/AFP via Getty Images, in



n *Bloomberg*, “Houses and Traditional *Gers* in Ulaanbaatar in June,” September 12, 2024.



on these intricate systems, leaving inhabitants with little choice but to rely entirely on these structures for survival.

As a result, today we see that due to uneven regional development, not all urban areas have been able to conduct this transformation and establish a comprehensive resource supply system, leading to the emergence of informal settlements in Africa, Latin America, and Asia, for example. They are usually in a unique situation where people settled for various reasons and created dense populations, but without essential urban infrastructure such as water supply, power supply, and waste management. These informal settlements are often located on the urban periphery or in areas prone to natural disasters. The urban cores on the other hand have better geographical locations. However, although informal cities may appear fragmented on the surface, as Sassen points out, they maintain underlying interconnections with the dominant urban fabric (Sassen 2005, 83-87).

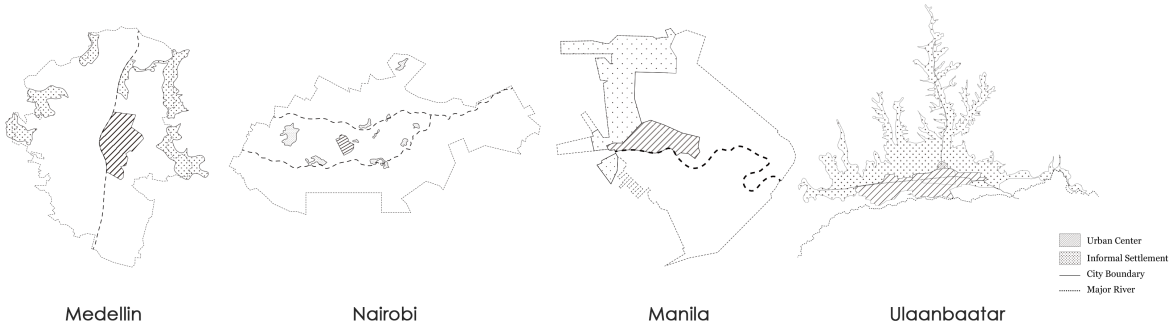


Fig 1.3 A diagram of the Marginalized Position of Informal Settlements. Drawing by Author.

While many informal settlements have evolved into more consolidated states and become densely populated, the ger districts in Mongolia continue to expand rapidly. This dynamic growth positions the ger districts as a unique model for studying the infrastructural transformations of that occur during the process of rapid urbanization, which is the focus of this thesis. Mongol herdsmen, who have migrated from the rural to the marginalized urban outskirts, are experiencing the blurring and disappearance of traditional lifestyles and self-identity (Fraser 2023). Dependent on incomplete infrastructure, they face challenges in establishing their place within the urban environment.



Fig 1.4 Location of the *ger* districts. Drawing by Author.

1.2 A Nomadic Life

From a Western perspective, Mongolia symbolizes a wild natural landscape with a rich historical heritage, particularly associated with Genghis Khan, his armies, and the nomadic culture they represent (Myadar 2011). The origins of Mongolia's nomadic inhabitants can be traced back to the hunters and nomadic tribes of Inner Asia in the third century B.C., whose range extended from the Korean Peninsula to the northern reaches of China and westward to the Pamir Mountains and Lake Balkash (Worden et al. 1991). This unique geographic landscape has nurtured a distinctive long-standing nomadic tradition, one that is centered around natural resources and deep respect for land. The earliest evidence of horse domestication in Mongolia dates to around 1400 B.C., and since then they have been used for pastoralism and trained to became part of the spirited development of nomadic civilization (Coutros 2018).

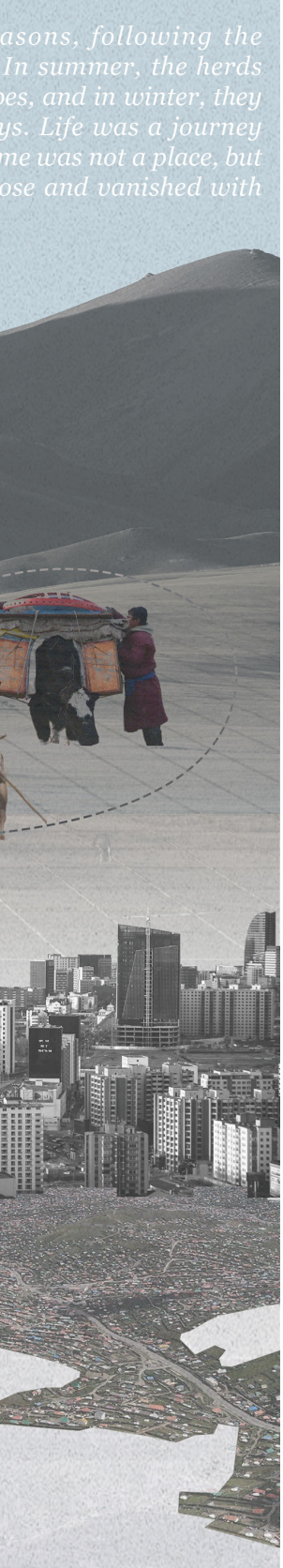
Mongolian nomadic culture was shaped by the inseparable bond between herders and pasturelands, centered on the care and cultivation of livestock to maximize their well-being and economic benefits. Traditionally, herders have migrated year-round to select back pastures rich in nutrients. Furthermore, they select their migration routes based on the characteristics of the four seasons, which leads to the creation of distinctive patterns of land. In winter, they move to mountain hollows to provide shelter from the cold winds, while in summer, they return to smooth grasslands closer to monasteries, where they can rest and prepare for harvest (Fernández--Giménez 1999). This method has been passed down through generations as a sophisticated way of regenerating the earth and vegetation using natural systems. Moreover, this migration tradition has led to the birth of a rich intangible cultural heritage with a philosophy of respecting nature and living with it. Mongol nomad migration and its associated practices now have been inscribed on the UNESCO Intangible



They moved with the se
rhythm of grass and sky.
grazed on wide green stepp
sought shelter in the valle
across open land, where ho
a circle of felt walls that r
the turning of time.

Leaving behind the open steppe,many herders turned their gaze toward the city. Drawn by the promise of a new beginning, they pitched their gers at the city's edge. Just as they once followed rivers and grasslands, they now follow the flow of opportunity, adapting with the same resilience that guided them across the seasons.

In the city, many herders turned residents no
sustain their families. By day, they take on hea
jobs, carrying with them the endurance shaped
By night, they return to the Ger districts, wh
capital's skyline flickers in the distance — a re
opportunities they seek and the distance that
from the heart of urban prosperity.



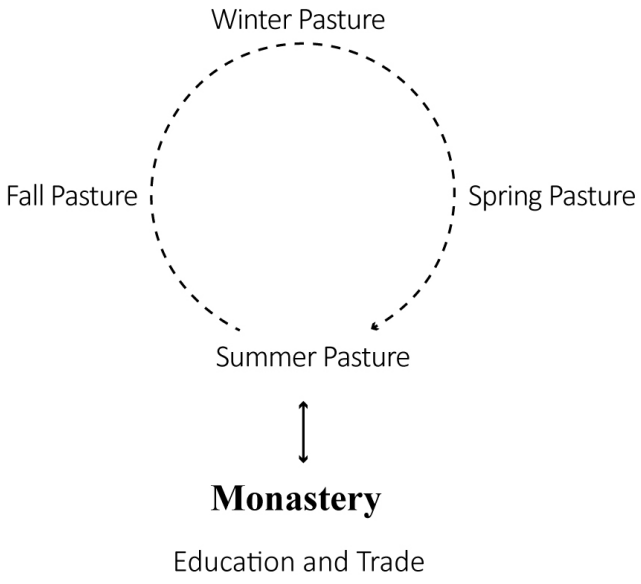
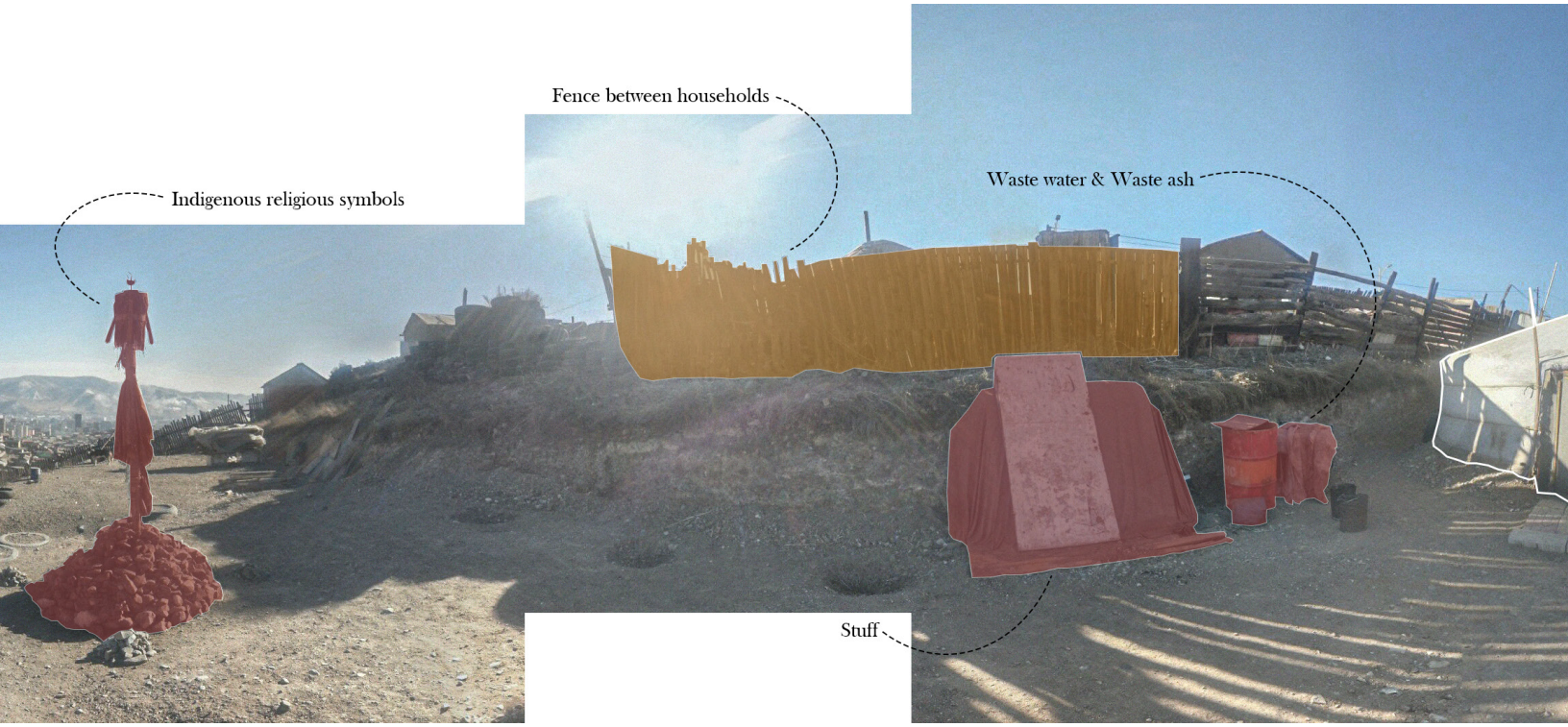


Fig 1.5 From Nomadism to Settlement. Drawing by Author.

Fig 1.6 Traditional Seasonal Migration Routes. Drawing by Author.



Cultural Heritage list and recognized as a culture deeply rooted in the interdependence between pastures, livestock, and herders ("UNESCO - Mongol Nomad Migration and Its Associated Practices," n.d.). Based on this culture, they have also developed a unique housing tradition. The Mongolian yurt, or *ger* (Mongolian), is known for its mobility and environmental adaptation. The lightweight, foldable wooden framework allows for easy assembly and transportation, while the felt enclosure helps herders withstand the cold. Not only in the wild, but even when herders moved to the peri-urban areas of the city, the *ger* became their first step in establishing and expanding lives, leading to its extensive use. Thus, these areas came to be known as *ger* districts.

1.3 An Urban Illusion

Nomadic herders who have relocated to the *ger* districts of Ulaanbaatar abandon their nomadic pastoralism in pursuit of employment and educational opportunities. But their lives remain far from the conveniences associated with urbanization, as the rapid expansion of *ger* districts has far outpaced the development of essential infrastructure, leaving vast residential areas without access to municipal services (Hamiduddin et al. 2021). For example, the water supply in *ger* districts mostly relies on the water kiosks system, and very limited kiosks are connected to the municipal pipelines. Instead, most of the water is

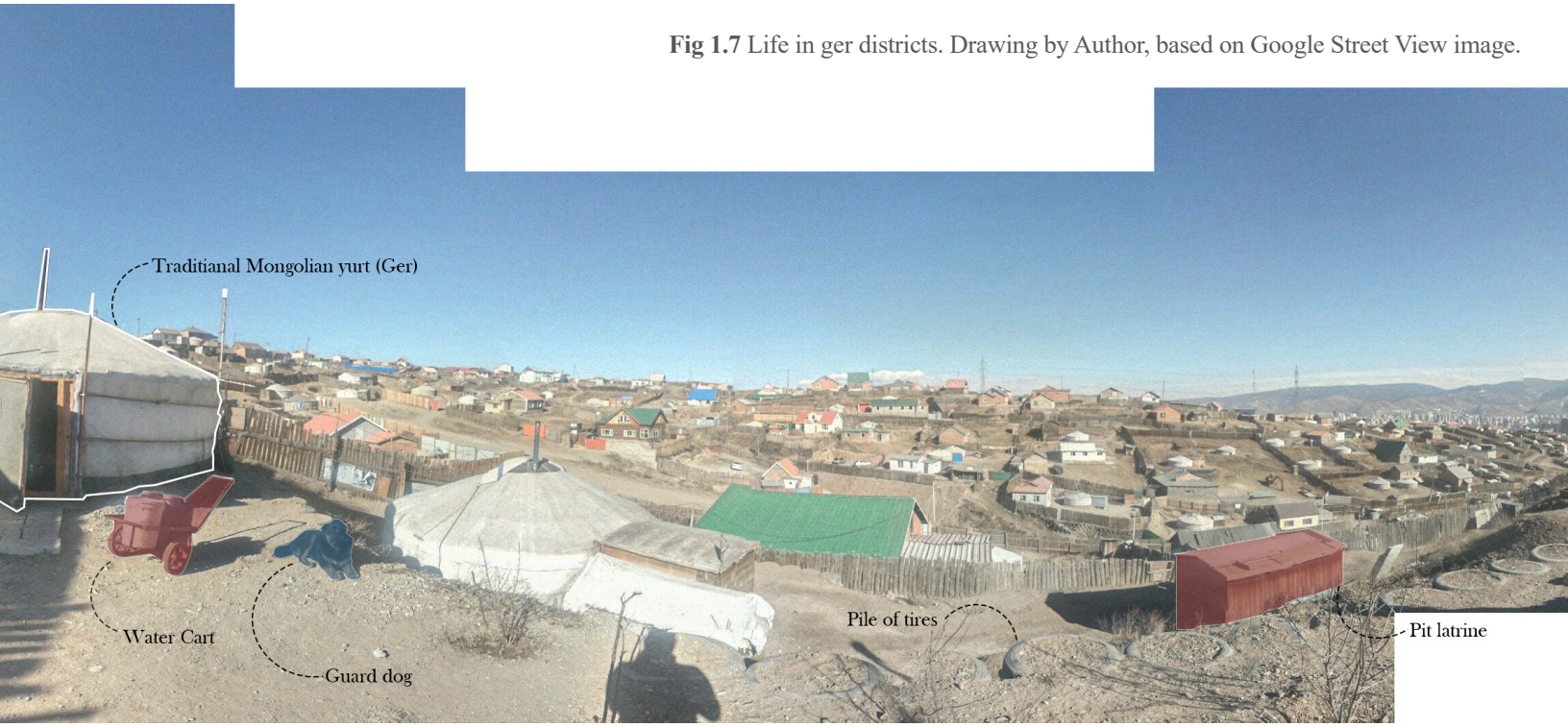


Fig 1.7 Life in ger districts. Drawing by Author, based on Google Street View image.

transported by trucks from the water plant into the area. Similarly, a latrine pit is commonly used by each household since there is no sewage system. Electricity in *ger* districts, often dependent on unsafe connections through informal extraction, is available but highly unstable. Transportation and waste management facilities are also lacking. More details regarding the water supply system and infrastructure will be elaborated on in the following chapters.

Consequently, after selling their livestock and left their traditional way of life, herders have found themselves in a dilemma, struggling to integrate into formal urban geographies while relying almost entirely on an incomplete infrastructural system. Employment and education also depend on the city. All the resources are compiled within the boundaries of the city. The *ger* districts spread like a vast carpet around it, surrounded by mountains and intersected by rivers, yet lacking the vitality of nature. Land no longer represents natural resources but has instead, transformed into an endless sea of fenced backyard.

1.4 Aim and Scope of the Thesis

Even though informal settlements have been widely discussed and analyzed globally, providing various theoretical frameworks, applying these frameworks to the *ger* districts still requires careful consideration of Mongolia's political, economic, and cultural context (Sinclair 2017). Therefore, the earlier part of the thesis has reviewed the historical development of Ulaanbaatar, analyzed the formation of the *ger* districts and the policy logic behind their rapid expansion. While these discussions may not directly relate to specific design interventions, they are essential for developing a thorough understanding of the area. This thesis also aims to explore the urbanization transformation of *ger* districts, focusing on the challenges related to infrastructure development and resource allocation. The thesis seeks to preserve certain elements of nomadic traditions that allow residents to maintain their sense of identity as they adapt to a new urban lifestyle. Previous discussions on the development of *ger* districts have often centered on addressing infrastructure issues through large-scale urban planning and construction. In contrast, this thesis aims to explore a more sustainable micro-narrative as an alternative approach.

The primary objectives of this thesis are threefold:
1. To propose architectural solutions that enhance living systems within *ger* districts through functional upgrades.
2. To provide insights for the future development planning of *ger* districts based on Mongolia's unique socio-cultural and environmental context.
3. To explore spatial interventions that reconstruct a resource allocation system centered on humans and nature.

1.5 Research Limitations

This research was conducted without the opportunity for on-site fieldwork or engagement with local residents in Ulaanbaatar. The analysis relies on existing literature, remote mapping, and secondary data sources. Having grown up in Inner Mongolia, China, I have a degree of familiarity with the broader cultural context, even though significant differences remain between Inner Mongolia and Mongolia. While these methods and background provide a valuable understanding of the *ger* districts, certain elements of everyday life and community perspectives may not be fully captured. Therefore, only local communities could guide the design work to best serve their needs and interests, including their unique spiritual relationship with the land. These insights would likely alter the design resolution in meaningful ways, and if this thesis were a real project, my first priority would be to connect with local communities and work alongside them throughout the entire process. Within these limitations, the primary focus of this research is to gain a deeper understanding of the specific urban conditions of the *ger* districts in terms of infrastructure, and how this understanding can serve as a catalyst for future development.

CHAPTER 02 MONGOLIA'S URBAN–RURAL HISTORY

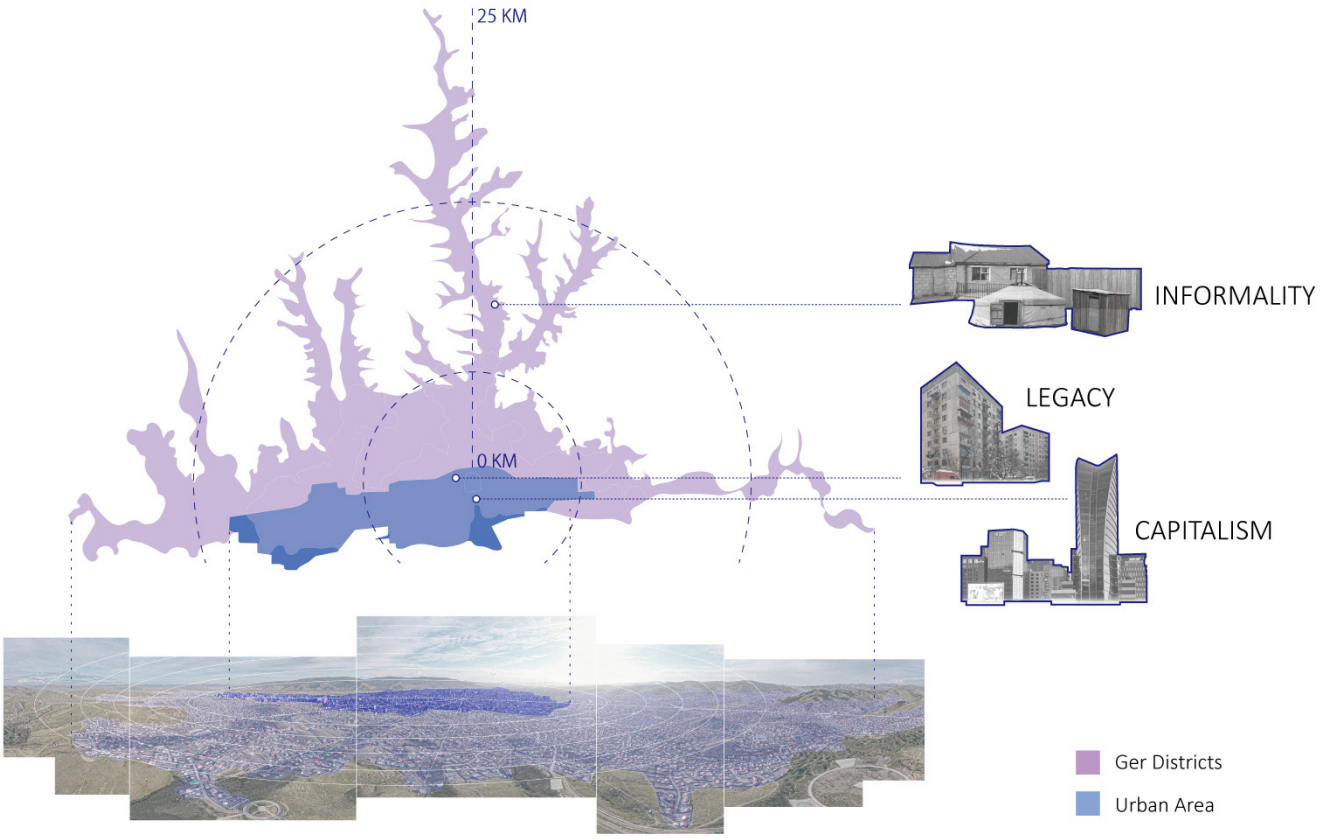


Fig 2.1 Mapping from the urban to the rural. Drawing by Author.

Three Historical Periods

Since the early 20th century, Mongolia's path toward modernization has been primarily expressed through the urbanization of its capital city, Ulaanbaatar. This urban transformation reveals a layered history: ancient Lama temples remain at the city's core, surrounded by large modern apartment blocks, which in turn give way to *ger* districts on the urban fringe. While the sprawling of *ger* districts is not merely an inevitable trend within the global urbanization process, it is also a social phenomenon deeply rooted in Mongolian culture, and it is closely related to the gradually formed distinct urban-rural dual structure of Mongolian society. This structure was established during a series of major transformations during the 20th-century, including the disintegration of the traditional society and the rapid establishment and decline of new orders. Therefore, to explore the deeper causes behind the development of *ger* districts and to understand their social position, it is necessary to briefly review the history of Mongolia. This chapter adopts the lens of urban-rural development to trace Mongolia's historical trajectory from the 13th century onward. David Sneath's article "The Rural and the Urban in Pastoral Mongolia" provides significant insight into this process and serves as a primary reference for the chapter (Sneath 2006, 140-161). According to Sneath, the history of Mongolia can be divided into three periods: the ancient era, Chinese and Soviet occupation era, and modern Mongolia after gaining independence.

a. Ancient Mongolia (3rd century BCE – 1911)

Common pastoralists in early 13th century were ruled by aristocratic elites after Genghis Khan unified the Mongolian nation. Khan and his court were seen as the political center. By the end of the 16th century, Buddhism had spread across most of Mongolia from Tibet. Monasteries became central institutions in Mongolian life, serving as key centers for ritual, education, economic, and politics. During the 17th century the region came under the power of the Manchu (Qing) empire. They introduced the administrative division of inter and outer Mongolia which later divided the country into two parts during the 20th century. In the18th and 19th centuries, some clusters of dwellings emerged around Buddhist temples established by the Manchu state. Urga, which later became the city of Ulaanbaatar, came into existence during this time. As a nomadic monastery-town, it moved more than 20 times as required by supply and other needs before settling down in 1788 and finally becoming the religious and trading centre of Mongolia. During this time, rural and urban systems were gradually shaped by the sociopolitical order. Administrative regions were divided and established, with land, livestock, and civilians allocated as property to the aristocracy.

During this period, skills involved in Mongolian pastoral production and daily life were mostly taught and practiced within the household. These skills also formed the foundation of a broader framework of social rights and obligations, as the right to practice pastoralism came with the responsibility of properly managing the land and livestock (Sneath 2006, 145).



Fig 2.2 Detail of Gandan Tegchinling Monastery, map of capital Yekhe Khüriye. Source: Jügdür, 1912, Bogd Khan Palace Museum, Ulaanbaatar.

Figure 2.3 Megjid Janraisig temple, Ulaanbaatar, Mongolia.



b. Socialist Mongolia (1924 – 1992)

In 1911 after the collapse of Qing Dynasty of China, Mongolia declared its independence and Urga was stated as capital city in 1912. But later between 1919 and 1924, Mongolia was constantly caught between Russian and Chinese pressures. Also with internal political struggles, large-scale conflicts occurred in Ulaanbaatar. In July 1921, the Soviet-backed Mongolian People's Revolutionary Army took power, and in 1924 the capital was officially renamed Ulaanbaatar ("Red Hero City") as Mongolia became a satellite state under strong Soviet influence.

During the early period of socialist regime, Mongolian society experienced profound transformations. The revolutionary Mongolian elite resisted and purged Buddhism, replacing the sociopolitical system centered around it with a Soviet-style state system. Religious institutions were replaced by state agencies and educational organizations, while in rural areas, people were confused by these changes and paid little attention to the new political ideas. Furthermore, during this time, the government adopted radical urbanization policies, significantly increasing the number of administrative employees and urban populations.

The government also started efforts to reshape the economy. While early attempts at pastoral collectivization failed to achieve the expected results, the slower processes of the 1950s and 1960s proved to be more successful. The national territory was divided into 300 rural districts, most of which were tied to a collective farm that controlled land use and managed livestock according to state plans. These districts consisted of a central settlement of several hundred households and surrounding pastures. Herdsmen migrated seasonally across the pastures, while district centers often included infrastructure such as schools,

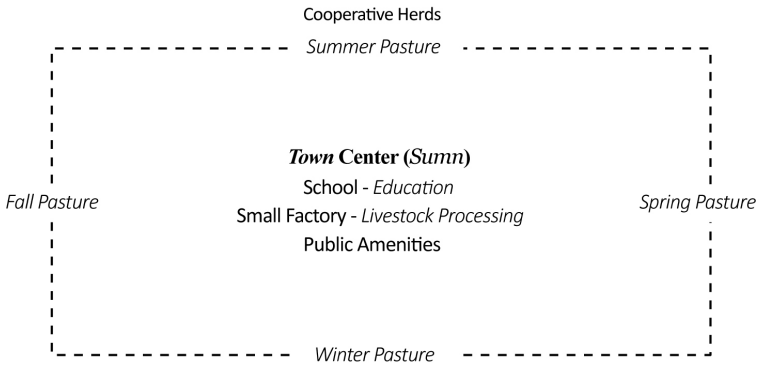


Fig 2.4 Seasonal migration routes in socialist era. Drawing by Author, based on Bolchover, Joshua. 2023. *Becoming Urban: The Mongolian City of Nomads*.





Fig 2.5 Opendoor market in Ulaanbaatar, 1972.

Fig 2.6 Herders and Trucks during the Communist Period





Fig 2.7 Zaisan Memorial in Ulaanbaatar. Source: Kirill Burtasovsky.



Fig 2.8 Socialist-Era apartment buildings in Ulaanbaatar. Source: Łukasz Stanek, in *Integrate, Adapt, Collaborate: Comecon Architecture in Socialist Mongolia*.

clinics, police stations, and post offices. Those small centers helped to improve the living standards of herders at that time and were often remembered by the older generation in later days.

In the 1990s, Mongolia was affected by political transformations in the Soviet Union and its satellite states, leading to large-scale economic privatization and market reforms. These reforms aimed to free the economy from political structures but dragged Mongolia into a severe economic crisis, reducing it from a middle-income country to a poor one. In rural areas, collective farms disbanded, and communal property was privatized. Economies of scale, such as mechanized transport and feed supplies, were disrupted, and state procurement systems ended. In urban areas, state enterprises shut down, and government layoffs triggered reverse urbanization, with populations moving back to rural areas.

During this socialist period, the values of urban and rural areas diverged. The ideal paths were linked to government, academia, the military, and industry, while the status of traditional pastoralism declined, highlighting an urban-rural dichotomy. Land-use patterns also changed. Former residents of district centers returned to pastoralism but exhibited low mobility, grazing livestock near settlements in summer and leaving them with distant relatives in winter. This reduced mobility may have caused ecological harm to the pastures but the capital city was an exception. People struggling to make a living in rural areas migrated to the capital in search of economic opportunities and it was during this period that Ulaanbaatar's population grew while other cities saw declines. These were the early factors driving the population explosion in the *ger* districts (Sneath 2001).

c. Post-socialist Mongolia (1992 – present)

In 1992, Mongolia underwent a political revolution, adopting a new constitution that marked a key step in its transition from socialism to democracy. In 2002, as part of the government's privatization policy to stimulate the economy, Mongolian parliament passed the Land Law, which entitled citizens to claim a parcel of national land, up to 0.5 hectares in rural areas and 0.07 hectares per person in urban zones, mainly on the city's periphery where the *ger* districts are located. Residents can identify unclaimed plots and register them with local authorities. The process will be discussed in the next chapter. As population movements were government-managed and tied to employment in state-owned enterprises during the socialist period this shift to a policy-driven land ownership system led to a massive concentration of people in the *ger* districts (Sneath 2006, 140).

Conclusion

In summary, Mongolia's historical development reveals how the relationship between urban and rural areas has been continuously reshaped through religious, political, and economic transformations. From nomadic monastic settlements to Soviet-era district centers and, later, to policy-driven urban expansion, each phase has left behind institutional and spatial legacies that shaped the contemporary urban form of Ulaanbaatar. The ger-type settlements have existed since ancient Mongolia, but they were completely overlooked during socialist urban planning, which reinforced a rural–urban divide and allowed Ulaanbaatar to grow continuously. In the post-socialist period, changes in policies and laws attracted large numbers of people, triggering a rapid, explosive expansion of the *ger* districts. It emerged both as a product of structural discontinuities and as a survival strategy for rural migrants. The next chapter will examine in greater detail the driving forces behind the rapid expansion of the *ger* districts and the consequences it has brought about.



Fig 2.9 City center of Ulaanbaatar.

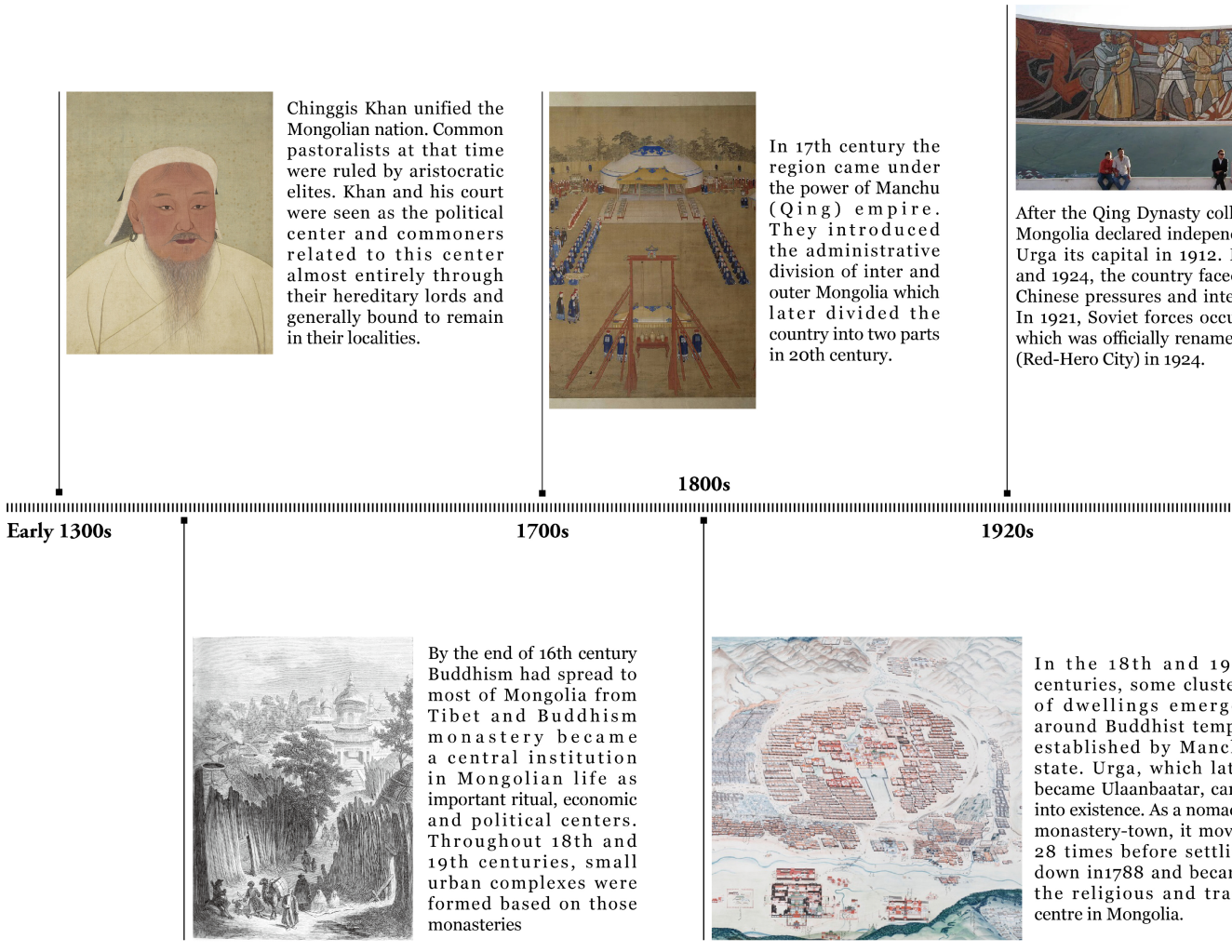
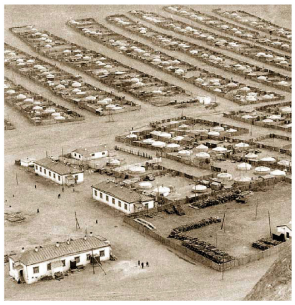


Fig 2.10 Historical timeline and demograph



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Early pastoral collectivization faced resistance, but gradual reforms in the 1950s–60s succeeded. Mongolia was divided into 300 rural districts, each centered on a collective farm managing land, livestock, and basic services, while herdsmen migrated seasonally across surrounding pastures.



The 2002 Land Law allowed citizens to own 0.07–0.5 hectares of land, depending on location, encouraging population mobility. Under socialism, movements were government-controlled and linked to state employment. Market-driven urbanization later concentrated people in the ger districts, which existed previously but expanded greatly in the late 20th century.

1950s **1990**

1960s **2002**

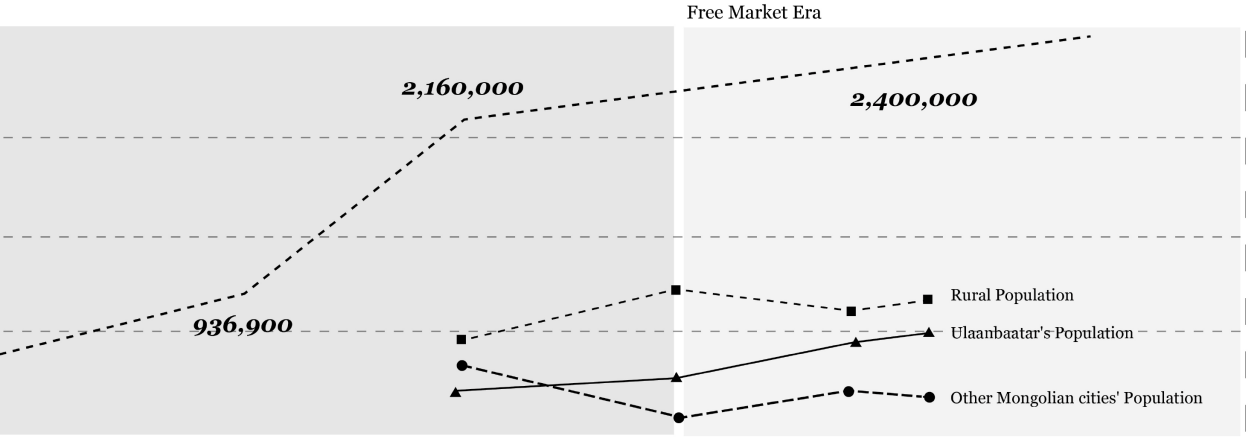
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During the socialist period, the government adopted radical urbanization policies, significantly increasing the number of administrative employees and urban populations.

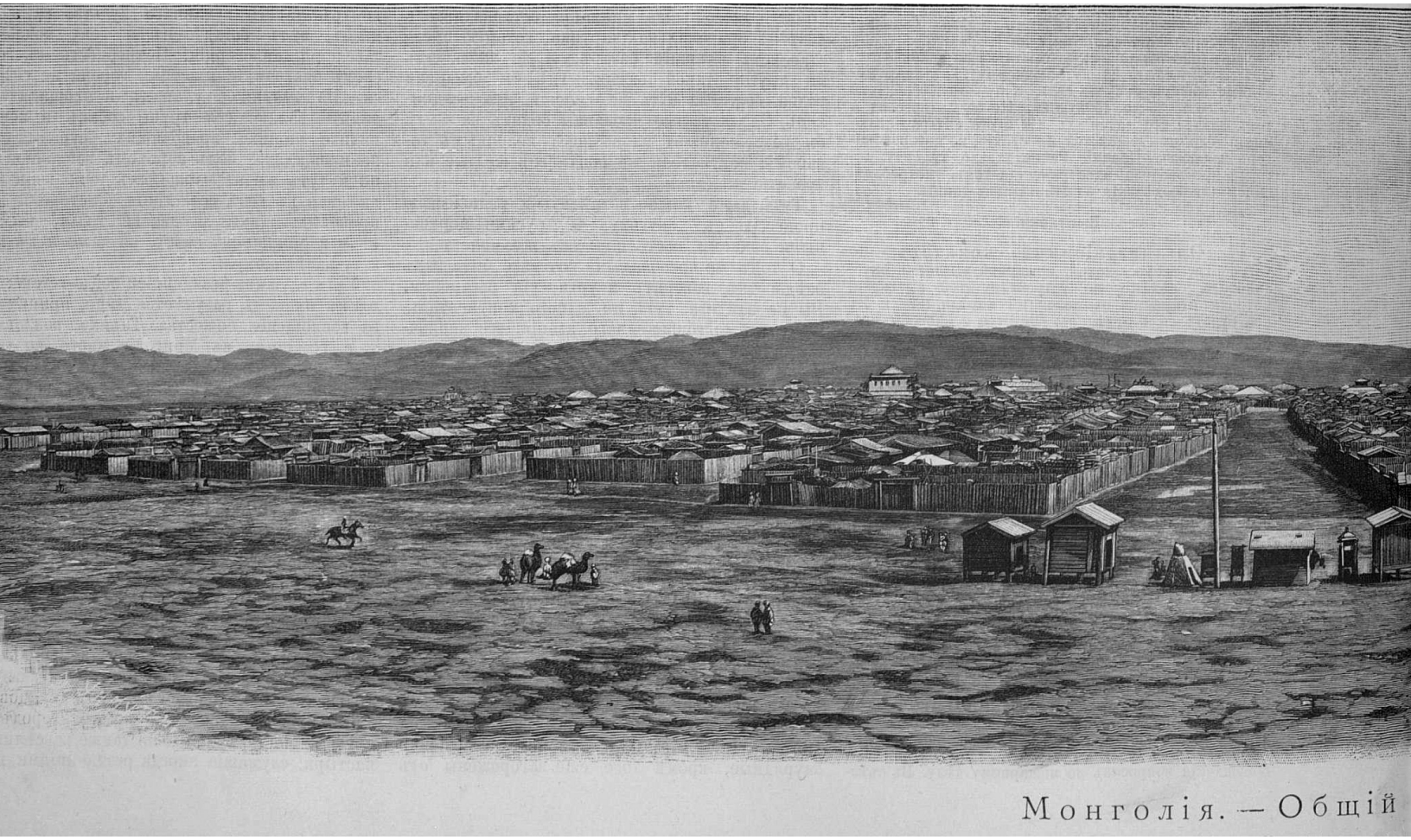
In the 1990s, Mongolia's market reforms and privatization, following Soviet-era political changes, triggered a severe economic crisis, lowering the country from middle- to low-income. Collective farms dissolved, mechanized services and state procurement were disrupted, and urban enterprise closures and layoffs led to reverse migration to rural areas.





ic change of Mongolia. Drawing by Author.

CHAPTER 03 THE RAPID EXPANSION



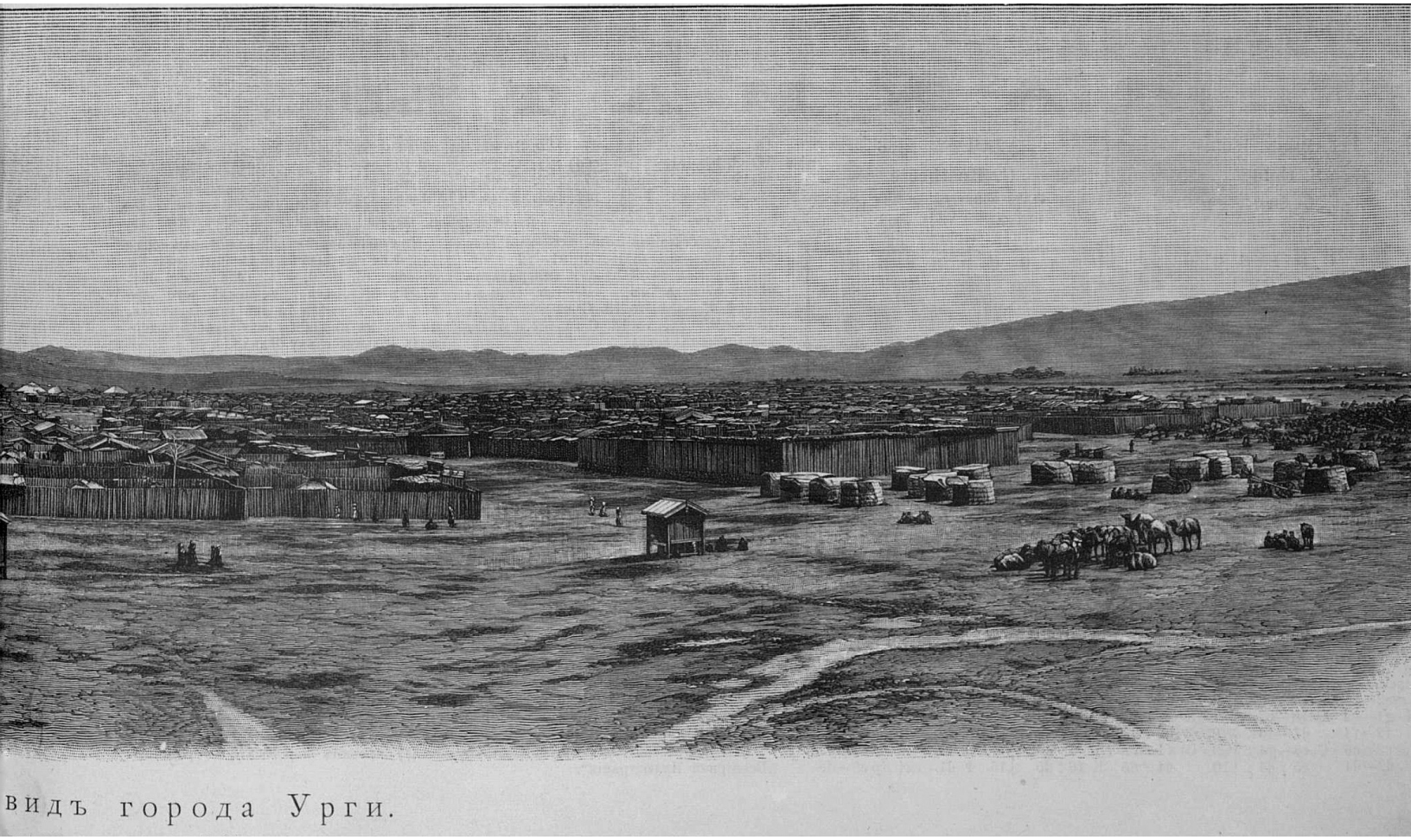


Fig 3.1 Charushin's engraving of old Ulaanbaatar with potanin, 1888. Source: Wikimedia Commons

3.1 Driving Forces Behind

The *ger* districts existed for a long time before their rapid expansion. They represent a longstanding urban form in Mongolia, dating back at least to the 16th century, and their presence is not confined to Ulaanbaatar. Smaller cities in Mongolia also include extensive *ger* areas. Even Ulaan-Ude in the Buriad Republic of Russia is surrounded by *ger* district-like settlements (Fox, n.d., 98). Moreover, before the socialist period, fenced residential plots were a common and legitimate form of settlement, frequently shown in historical paintings, and had no implication of peripherality or informality. In the mid-20th century, efforts to modernize Ulaanbaatar under Soviet influence sought to reduce the prominence of the traditional yurt, framing it as incompatible with urban modernity (Fox, n.d., 99). As wool was seen as an important material associated with modernization at the time, the traditional techniques of yurt construction were also questioned by some modernizers (Litvinenko 2024). Mongolian scholar Buyandalai Duurenbayar further notes that this marginalization was driven by Soviet-era master plans, which redefined *ger* districts as peripheral spaces to align with Soviet conceptions of progress (Duurenbayar 2017). In the master plan for Ulaanbaatar carried out by the Moscow in the 1970s & 1980s, the *ger* districts were completely neglected. This oversight possibly led to the subsequent lack of infrastructure in the area. In the late 1990s, under the catalytic influence of a complex historical context and policy transitions, as outlined in the previous chapter, the population in *ger* districts began to grow rapidly. The driving forces behind this development can be categorized into two primary aspects.



Fig 3.2 1950s Master plan of Ulaanbaatar. Source: Łukasz Stanek, in *Integrate, Adapt, Collaborate: Comecon Architecture in Socialist Mongolia*.

First, the collapse of collective pastoralism production in rural areas was one of the most direct reasons that triggered a series of changes. Due to the withdrawal of government support, cooperatives could no longer sustain their operations, leaving a large population without livelihoods. Additionally, consecutive blizzards from 1999 to 2002 directly resulted in the loss of substantial livestock for many herders, leading them unable to continue their pastoral practice (Bruun and Narangoa 2006, 141-148). These factors swiftly and decisively pushed herders away from their traditional nomadic life.

On the other hand, certain forces draw herders to relocate to the city. Ulaanbaatar, as the largest city in Mongolia, exhibited a significant agglomeration effect, with a continuously growing population and a steadily developing economy. In addition, a new land policy enacted in 2002 allowed each household to claim and legally own a plot of 0.07 hectares in urban areas (0.5 hectares in rural areas) for residential use (Miller 2013, 63–84). Due to the significant appeal of the capital city, many citizens from rural areas identified unoccupied plots in the *ger* districts through their networks of relatives. They moved in, built fences, and began the complicated registration process. A revision in 2010 changed the terms from "per household" to "per individual". Because of this legal change, land previously allocated to a household was transferred to one of its members, while the other members were given the right to receive land ownership once.

Since the political transition of 1990, Mongolia has seen an ongoing process of land and property privatization. What was once entirely state-owned land has gradually become understood as a public resource, and debates continue between state interests and neoliberalism capital over how far privatization should go. The 1994 Land Law sought to achieve a balance by creating a limited form of land ownership called ezemshil. Under this system, citizens gained the right to apply for residential land use by a fixed term (60 years in rural areas and 5 to 15 years in urban area) with the possibility of renewal upon expiration (Plueckhahn 2020, 102). This unique, temporary land-ownership regime became a key tool for managing land allocation and population movement. In *ger* districts, inhabitants can register the lots they occupy and thereby privatize them, but due to complex bureaucratic procedures and associated fees, residents ultimately have to continually renew short-term permits for long-term land use instead of full privatization. Newly arrived residents mark their parcels with fences and build gers or brick houses to assert control, yet nominally the underlying land in the *ger* districts mostly remains state-owned.

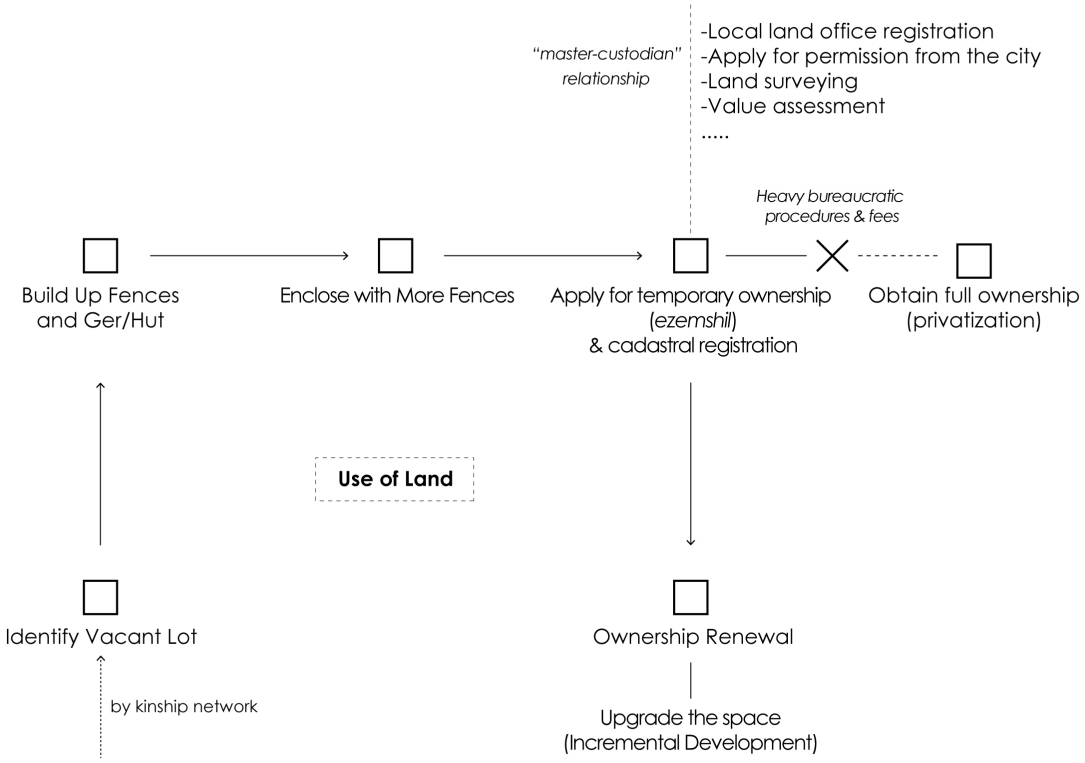


Fig 3.3 Land registration process. Drawing by Author.

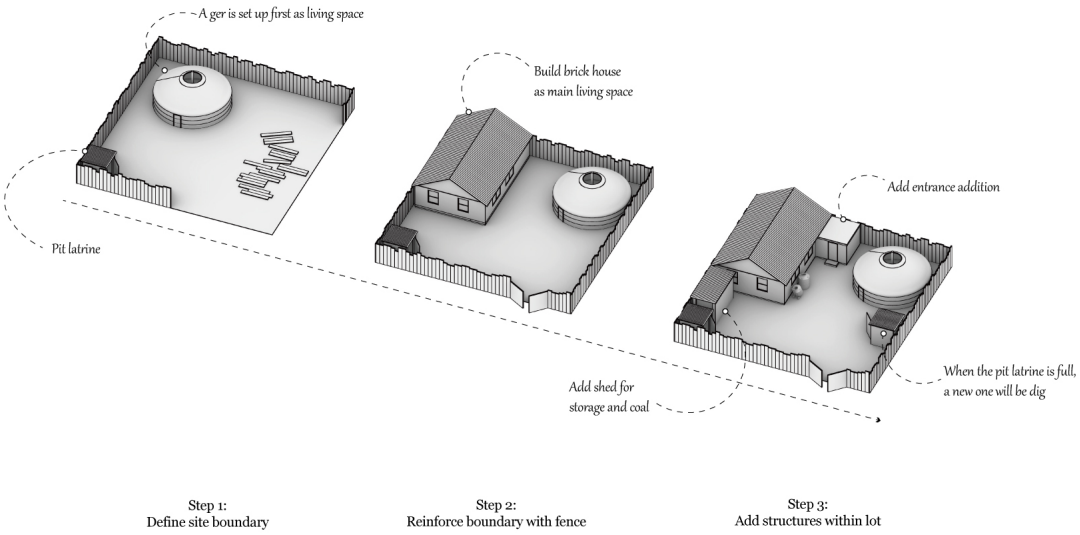


Fig 3.4 Incremental development of a plot. Drawing by Author.

Within this framework, use of land emerges as a core concept. In the field of anthropology, Rebecca Empson describes a "master-custodian" relationship that lies at the heart of Mongolia's capitalism: access to resources is often granted through a custodial model in which a "master" entrusts a "recipient" with their use (Plueckhahn 2020, 105). Under this system, state-owned land can be subdivided and allocated either to individual settlers or to development companies, thereby driving Mongolia's economic growth. This relationship not only exists in the legal framework but also at the household level, where the master of the yurt holds the authority to allocate resources, such as livestock, and carries spiritual leadership responsibilities. This idea is rooted in traditional Mongolian beliefs, which see nature itself as entities with spirit, and considered to be in control of the weather and environmental conditions of each locality of the natural world. These spirits were, and continue to be, honored each year at *Ovoo*, a ritual cairn built from stones and branches (Sneath 2001, 45).



Fig 3.5 *Ovoo*. Source: Bernard Gagnon, Wikimedia Commons

This traditional conception of land use in Mongolia centers on the responsibility that individuals bear toward the land, which is grounded in stewardship and duty. It has been significantly weakened by market forces and urbanization. The concepts of deterritorialization and reterritorialization from *A Thousand Plateaus* developed by Deleuze and Guattari (1987), are useful in examining the dynamic transformation of land use in Ulaanbaatar's *ger* districts. Deterritorialization refers to the dismantling of these traditional responsibilities between people and land, while reterritorialization describes the subsequent reorganization of land ownership and social structures under new socio-economic forces. The series of land policies and social changes experienced by the *ger* districts throughout the twentieth century can be seen as a clear process of deterritorialization. This was followed by reterritorialization initiated by government land laws and resettlement policies, which established new land relations. These newly formed land parcels were subdivided and fenced, converted into private property, losing their original function of livestock grazing and land stewardship, and instead gaining value as tradable assets due to their proximity to the city.

The following section will attempt to understand how this process of reterritorialization is reflected in the spatial form of the *ger* districts, specifically how it has contributed to the formation of the current urban fabric.

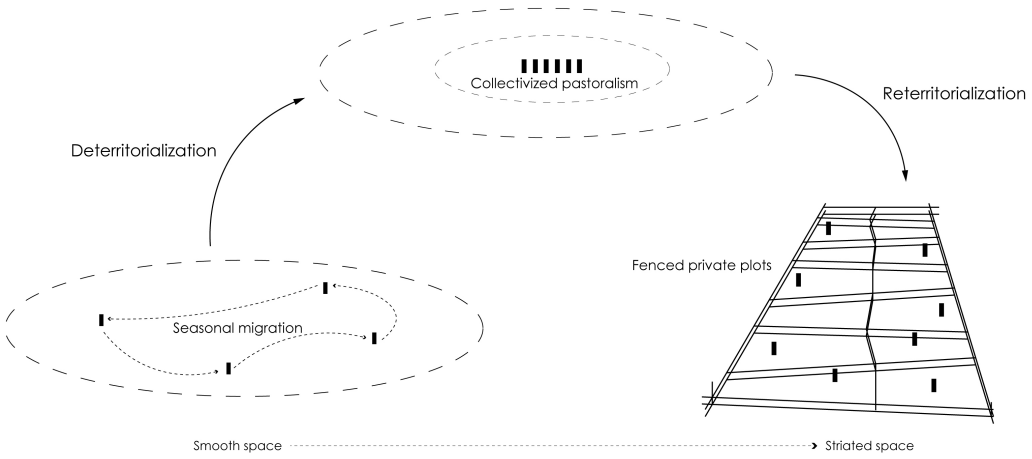


Fig 3.6 Deterritorialization and reterritorialization in Mongolia. Drawing by Author.

3.2 Growth Patterns

The historical developments, economic factors, and policy reforms discussed above are subsequently projected into the physical space, allowing us to observe the organic, self-replicating growth of *ger* districts on the Mongolian landscape. Research by Park has explored the spatial expansion patterns of them, offering valuable insights into this phenomenon (Park et al. 2019). Through interviews, the authors identified four stages of development for *ger* districts: infancy, consolidation, maturity, and expansion. Using satellite image analysis, they studied the spatial distribution of *ger* districts from 1990 to 2013, defined by four distinct development patterns: spillover, linear aggregation, leap-frogging[1], and infill[2] growth.

Spillover first occurred beyond the city boundary in the 1990s, as the initial settlers chose locations close to the urban area. This pattern was driven by the proximity to existing infrastructure and employment opportunities, typical of emerging cities in the Global South. After 2000, linear aggregation appeared along the major roads north of the city, supported by improved transportation access. Since most roads in the *ger* districts remained unpaved and poorly maintained except for a few main routes, rural-to-urban migrants settled near these major roads, making transportation accessibility a significant factor. As the city expanded, the linear aggregation pattern extended to secondary and lower-level roads, displaying a radial growth pattern visible in satellite images, forming a star-shaped urban

1. **Leap-frogging** refers to a growth pattern in which new ger districts emerge beyond the existing areas, without being directly adjacent or connected to the current settlements.

2. **Infill** development refers to the *ger* districts that have changed or evolved to different stages of development, normally with higher densities and better infrastructural conditions.

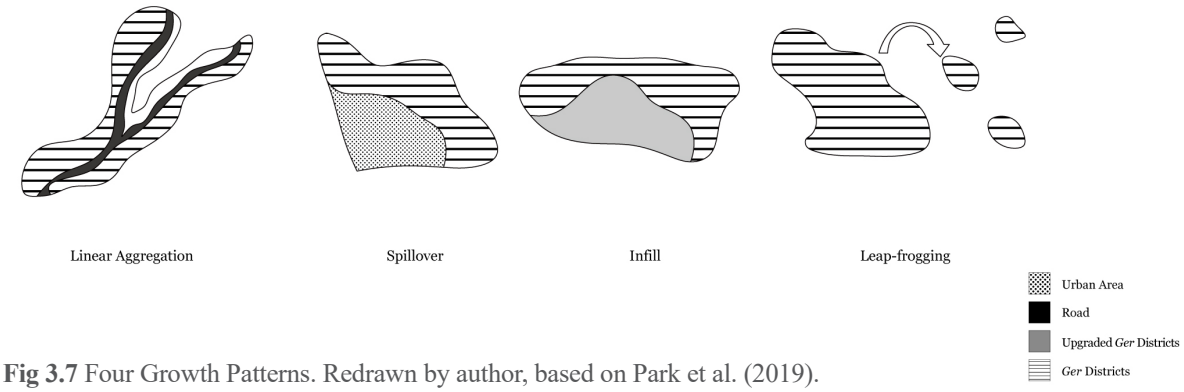


Fig 3.7 Four Growth Patterns. Redrawn by author, based on Park et al. (2019).

configuration by 2005. During this time, leap-frogging emerged in the northern areas farther from the city, driven by the lack of available land close to the city center and rising land values. Concurrently, infill development took place in *ger* districts near the city center, as residents gradually transformed these areas from infancy to consolidation or maturity stages through self- construction and incremental improvements. These infill processes contributed to increasing density and consolidation, aligning with the broader trend of urban transition observed in *ger* districts.

If we zoom in from the urban-planning scale to an architectural level, this study argues that the growth of *ger* districts is mainly driven by two key concepts based on close observation and analysis: the self-replication of a fragmented, irregular urban form, and the incremental process of households improving their lots.

a. Self-replication depends on three inputs: parcel size, the road network, and accessibility to the road. Under current regulations, citizens acquire plots of 0.07 hectares, approximately 700 m^2, so most parcels are around that size. Subsequently, instances of land consolidation or subdivision also occurred, such as through land acquisition or subleasing. Also, the road network in *ger* districts is largely shaped by topography, a relationship especially clear along the main roads. Moreover, every household ensures that its plot has road access when it stakes its claim. Taken together, these factors give rise to the *ger* districts' distinctive, irregular polygons—and leave many small corner spaces at road junctions unusable because they fall below the minimum area. These corner voids, along with other irregular fragments of unused land, form a network of interstitial spaces within the *ger* districts. As byproducts of uncoordinated and parcel-based urban development, these spaces emerge in the gaps between private plots and roads, especially at junctions and leftover edges. They are embedded in the urban fabric and carry significant potential for reuse as sites for micro-infrastructure.

b. Incremental development also stems from the land-tenure rules. Residents first occupy a parcel and set up a simple shelter or *ger* to establish use rights, often reinforcing their claim with a fence. Only later, as they accumulate resources, do they build more permanent structures within the same parcel to expand their living space. This process cements the *ger* districts: once a household has a provisional title, it becomes effectively isolated from the broader urban fabric as families focus inward on improving their own plots. Public spaces

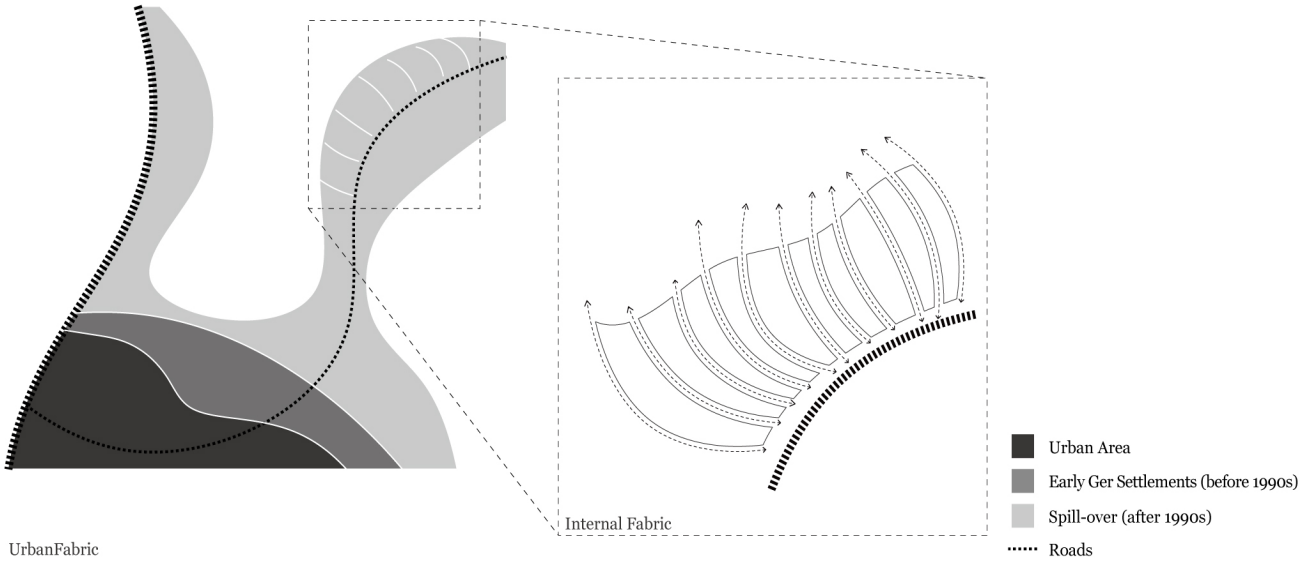


Fig 3.8 Formation of the irregular fabric. Drawing by Author.

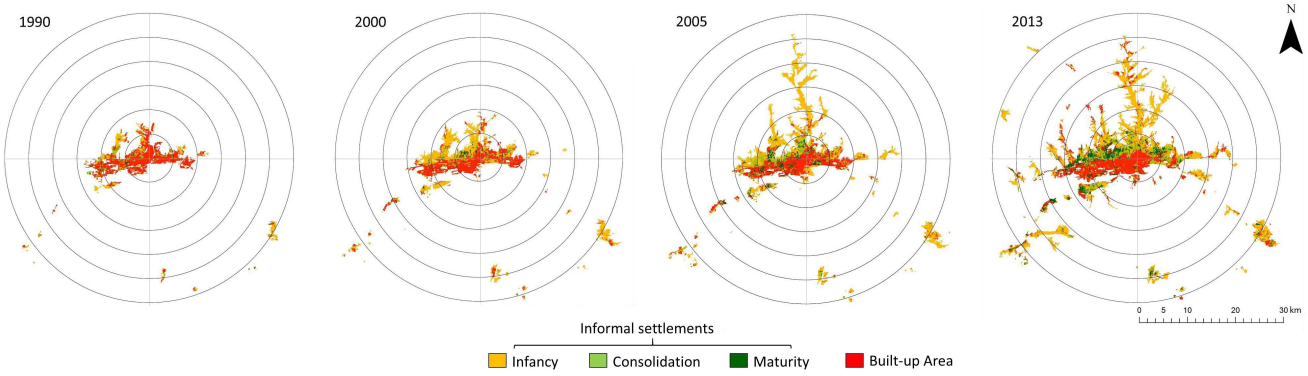


Fig 3.9 Spatiotemporal changes of ger districts. Retrieved from: Park et al. (2019).

therefore wither, since private plots—and disputes over property rights—block large-scale redevelopment and delay any coordinated investment in shared infrastructure (Hamiduddin et al. 2021, 2).

3.3 Unsustainable Development

Such rapid, unplanned population concentration has not only resulted in inadequate infrastructure and urban services but has also given rise to various forms of socio-economic unsustainability. Unemployment in the *ger* districts remains higher than in the formal city core, and the local economy is characterized by a relatively simple industrial structure. According to a 2008 report, only 51 percent of working-age residents in the *ger* districts were employed at any time during the previous twelve months—compared with 56 percent in apartment districts and a national average employment rate of 63.6 percent (Kamata et al., n.d.). Among those employed in the *ger* areas, 30 percent work in construction or

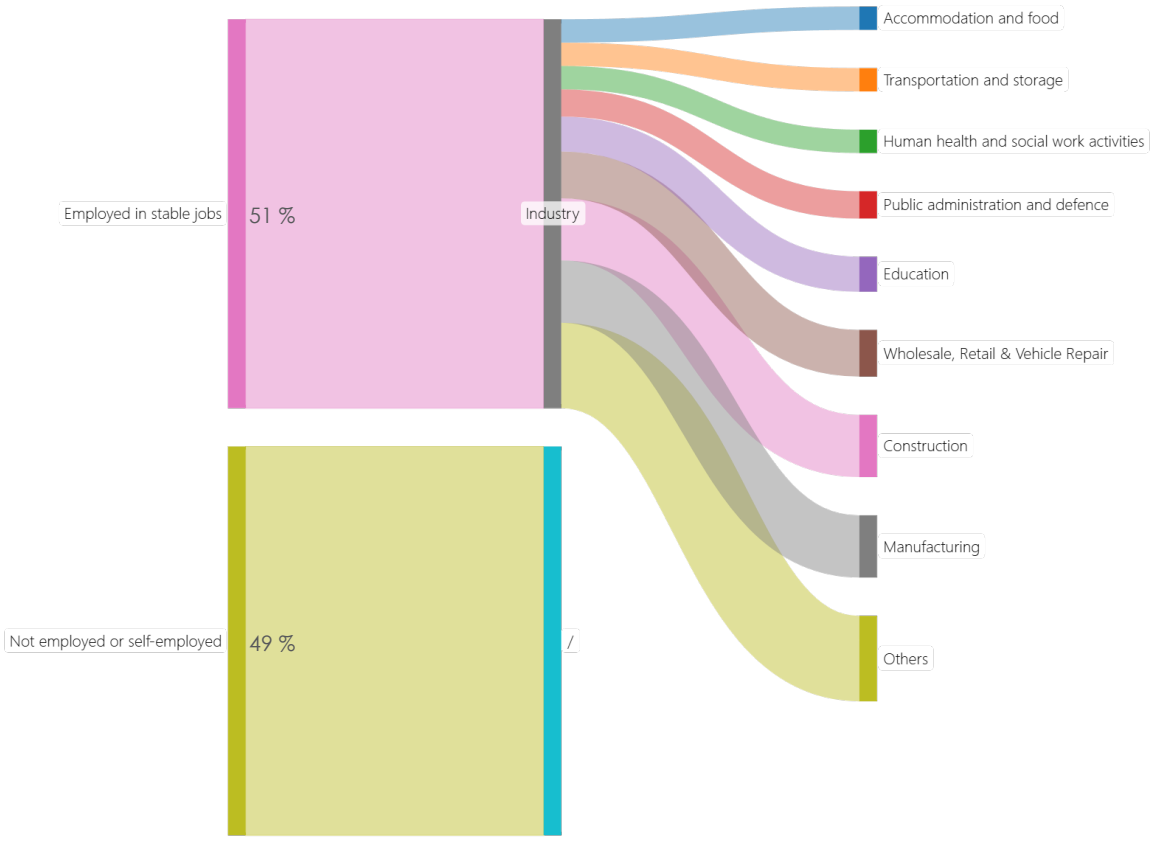


Fig 3.10 Employment in *ger* districts. Drawing by Author, based on Kamata et al., n.d.

manufacturing, followed by 12 percent in trade (wholesale and retail) and automotive repair. Employment levels are further tied to the densification of commercial developments near transportation hubs; several suburban sub-centers on the outskirts of the city have emerged as focal points for job opportunities (Hamiduddin et al. 2021). Those without steady jobs often turn to seasonal or temporary labor—such as farm produce picking, to make ends meet (Plueckhahn and Bayartsetseg 2018). Many of these activities are entirely informal and self-organized. Some households operate small businesses like convenience shops, breakfast stalls, and scrap-metal recycling on their own properties. Some build greenhouses to grow vegetables. These indications suggest that the economic activities within the *ger* districts are relatively independent and not entirely reliant on urban areas, differentiating them from some other informal settlements in the Global South.

3.4 Conclusion

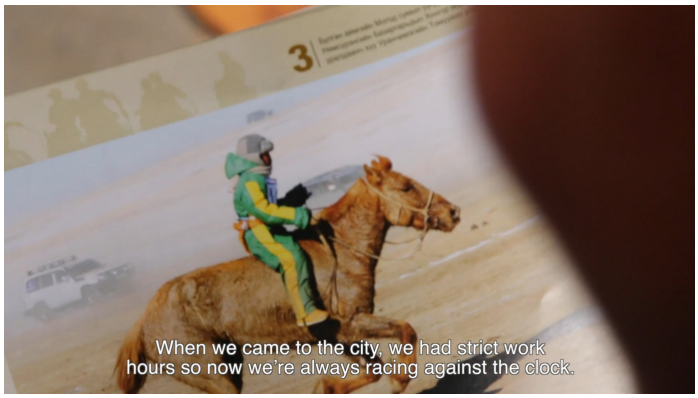
In conclusion, the rapid expansion of *ger* districts is the outcome of several intersecting socio-economic forces and this process has produced a distinctive form of self-organized urbanization. As Wright (2005, 79-82) observes, informal cities are not simply chaotic or isolated; they are shaped by multiple realities, where residents adapt creatively to limited resources, occupy underutilized land, and establish micro-economies. This perspective helps us understand that the rapid expansion of *ger* districts reflects both structural constraints and the creativity of residents managing them. It is marked by irregular plots, fragmented infrastructure, and incremental development. While this growth model has enabled widespread access to land and housing, it has also entrenched informality and hindered the provision of basic urban services. These consequences, rooted in both policy and culture, now shape the everyday lives of *ger* district residents and form the foundation for understanding their living experiences which will be explored in the next chapter.

CHAPTER 04 LIFE IN *GER* DISTRICTS



Fig 4.1 Film stills showing the daily life of a *ger* district household. Source: Bayasgalan, Dulguun, dir. 2016. *Portrait of Ger District Residents: Zul-Erdene & Urangua*.


er have to worry about the time.
hat's how we used to be.


When we came to the city, we had strict work
hours so now we're always racing against the clock.


prived of
a child.


We at least want a bigger ger
before we have any children.


We're optimistic!

A young Mongolian filmmaker and musician, Dulguun Bayasgalan, produced a three-minute documentary for the Rural Urban Framework[1] & *Ger* Hub exhibition at the 2016 Venice Architecture Biennale (Bayasgalan 2016). The film focuses on a young couple who relocated to the *ger* area in 2001. As explained in the film, 26-year-old Zulaa moved to Ulaanbaatar seeking employment opportunities after working as a herder in rural Mongolia. Every day, he walks 20 minutes to the bus stop and takes 40 to 50 minutes by bus to the factory in the city where he works. He walks 15 minutes daily to collect about 40 liters of water from a kiosk. And as autumn arrives, he and his partner begin preparing coal and firewood for the harsh winter. In the film, Zulaa talks about how he missed the countryside where things were much easier and less stressful. Despite the difficult living conditions, they remain optimistic. Their next step includes starting a family, saving money to build a house, and buying a car. They expect to stay in the *ger* district for a long time (Bolchover 2019, 60–61).

4.1 Infrastructure

a. Electricity and heating

As Bayasgalan's film illustrates, residents in the *ger* districts experience a very different reality, where the absence of urban infrastructure deeply affects their daily lives. The Ulaanbaatar's municipal infrastructure, inherited from the Soviet era, includes several power and heating plants located in the urban area. Electricity is widely accessible, and most buildings are connected to the central heating system, which distribute heat via underground pipes to apartment units from three major heating plants during the wintertime. Meanwhile in the *ger* districts, electricity is often obtained through illegal connections, a practice sanctioned by the authorities despite leading to unstable supply and safety risks. And heating is primarily dependent on individual coal stoves, which households use to endure the extreme cold of winter. The use of those stoves imposes extra economic burdens on families during winter months and has become a major contributor to severe air pollution since the coal used is typically unprocessed (Carlisle and Pevzner 2019, 3–6).

1. Rural Urban Framework (RUF) is a Hong Kong based architectural research and design studio focusing on the rural-urban transformation in East Asia. GerHub is an organization that seeks to find solutions for ger area development through community engagement and policy advocacy. A collaborative installation by RUF and GerHub, a ger plug-in experimental unit, was shown at the 2016 Venice Architecture Biennale.

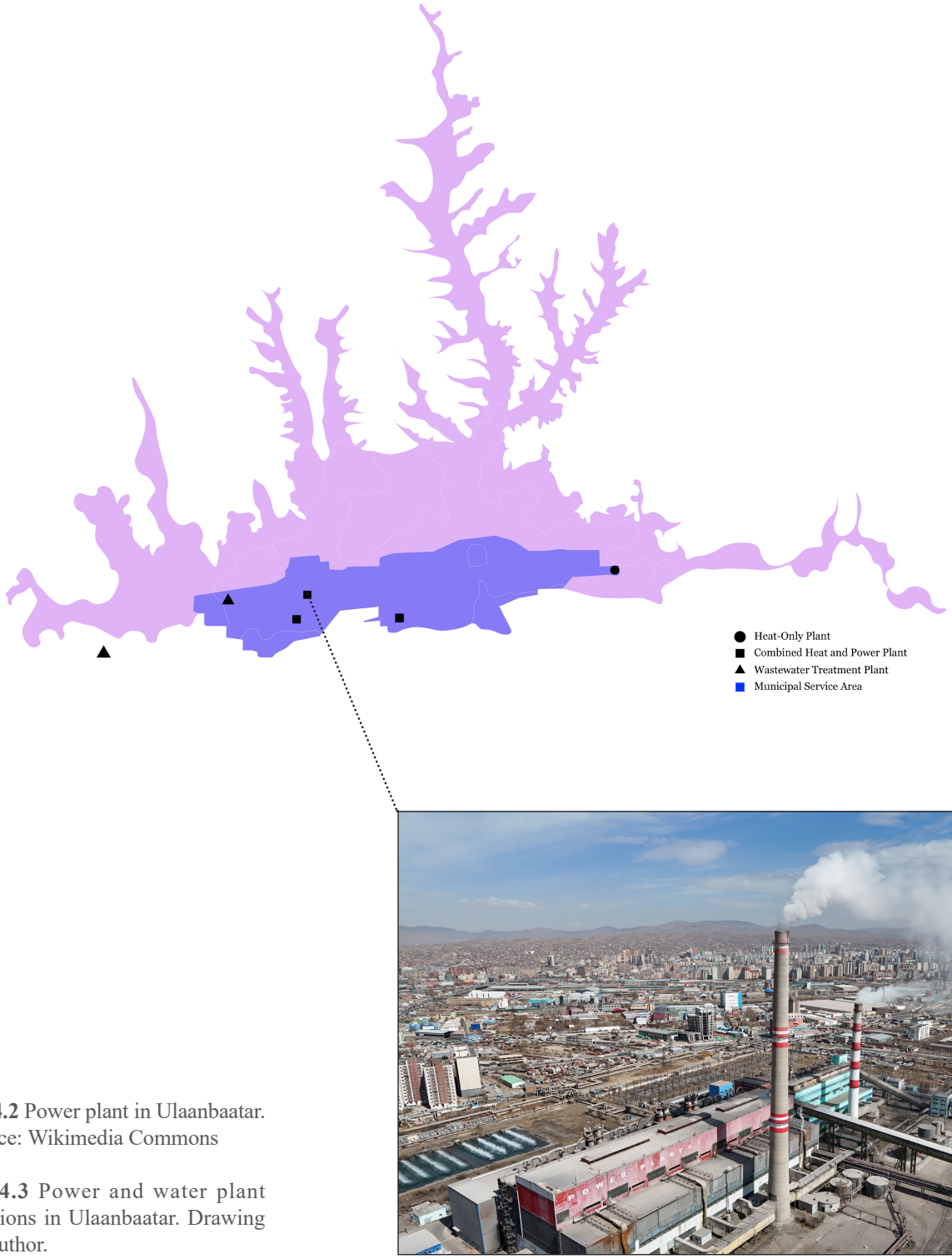


Fig 4.2 Power plant in Ulaanbaatar. Source: Wikimedia Commons

Fig 4.3 Power and water plant locations in Ulaanbaatar. Drawing by Author.



Fig 4.4 Infrastructure distribution.
Drawing by Author.

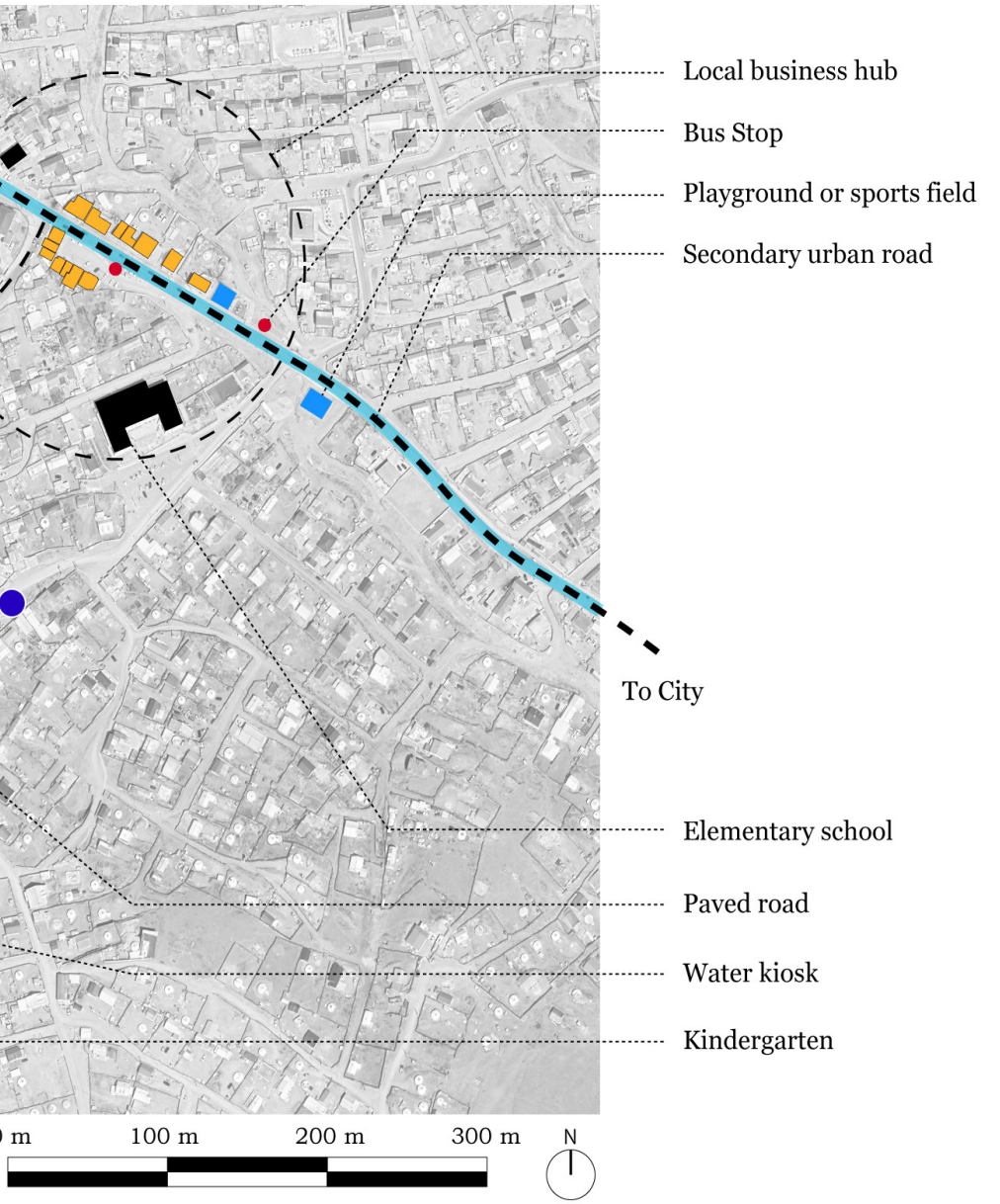




Fig 4.5 Different levels of roads in ger districts. Source: Google Street View.

b. Transport and Facilities

Not only is there a significant gap in electricity and heating, but transportation and access to essential community facilities also differ compared to the urban core. Mongolia's vast land area and sparse population have led to high car ownership and underdeveloped public transit. With formal bus services confined to high-standard roads, residents have to choose informal options like shared taxis and microbuses, which are irregular but more affordable. For those who live deep inside the area and without private vehicles, walking on unpaved tracks becomes unavoidable even in the cold winters. This means commuting to work in the city generally takes a considerable amount of time (Hamiduddin et al. 2021, 6–7). Furthermore, facilities such as supermarkets, schools, and sports facilities, are also clustered near major roads, leaving areas further away largely devoid of accessible amenities. Education and healthcare services perform relatively better as they have received more government subsidies, but they are still underdeveloped. For example, a considerable number of kindergartens and primary schools have been built within *ger* districts. This was an important step forward in the government's efforts to improve the regional development. However, these schools are operating in compact lots, and many do not include a playground due to the very limited space (Kamata et al., n.d., 75–80).

c. Water

The water supply system in *ger* districts is a primary focus of the research:
Although 90% of Mongolia is classified as semi-arid or water-scarce, the country's small population ensures a relatively abundant supply of freshwater per capita (Gordillo Fuertes 2023, 4). However, urban development and industrial activities like mining, have increasingly polluted groundwater resources. Take Ulaanbaatar for example. It relies heavily on groundwater aquifers for its water supply, which accounts for about 82% of the city's total water consumption. And the Tuul River, flowing through the city's southern areas, serves as the primary recharge source for these aquifers. However, its declining water levels and pollution issues have become worrying in recent years (Gordillo Fuertes 2023, 4–5).

Water supply in Ulaanbaatar is also problematically inequitable. Urban buildings connected to the municipal water system are ensured with clean and stable tap water, while homes in the *ger* districts almost only rely on distributed water kiosks. These kiosks typically consist

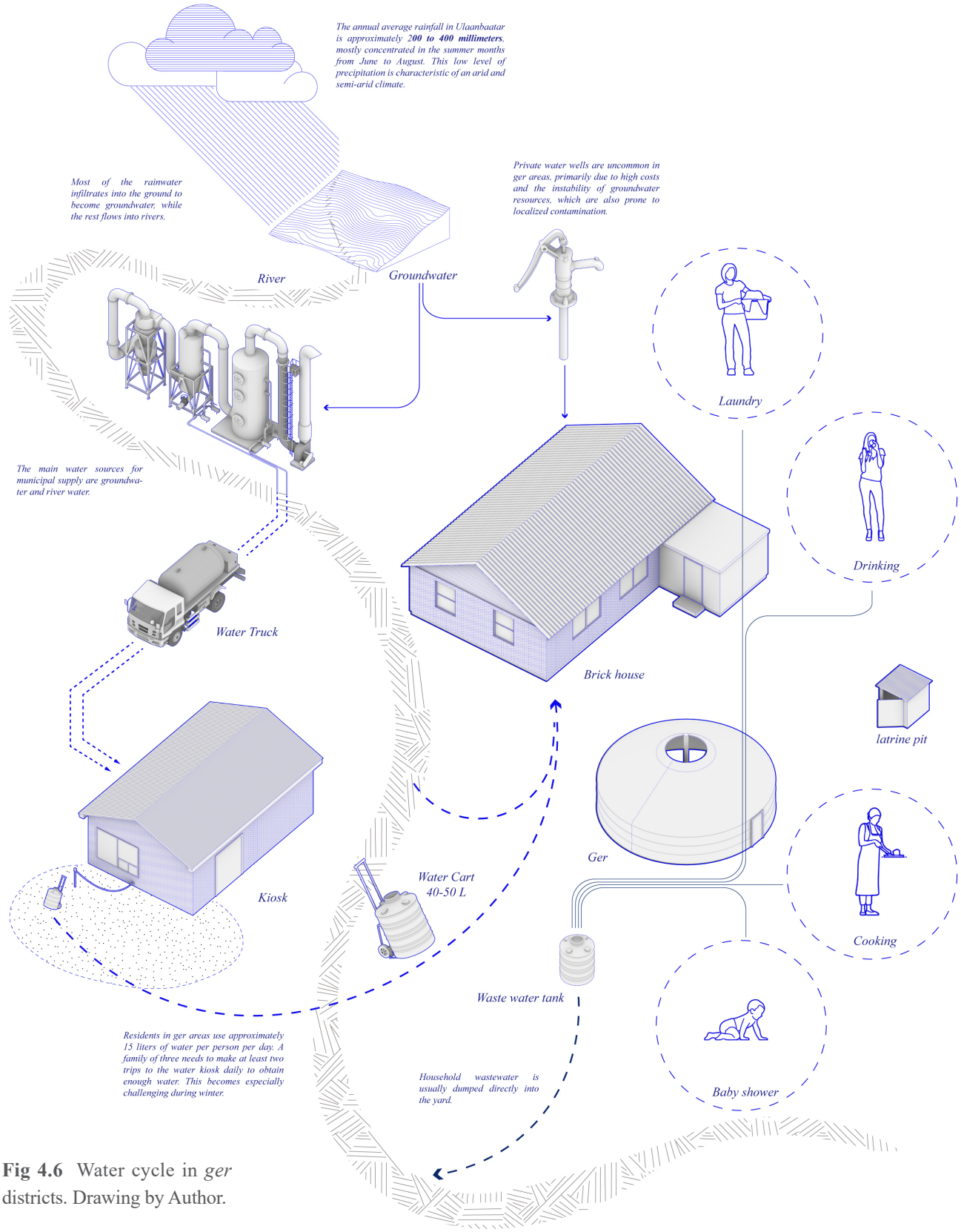


Fig 4.6 Water cycle in *ger* districts. Drawing by Author.



Fig4.7 Water kiosks. Source: Google Street View.







of simple brick structures with water tanks, which are supplied by tanker trucks from central water plants. Residents use water carts (often buckets mounted on trolleys) to fetch water, a task that becomes particularly challenging during wintertime (Hamiduddin et al. 2021, 9).

The exact time when these kiosks were put into use is unclear, but over time, they have evolved from simple sheds with manually operated water tanks to well-decorated brick structures equipped with automated 24-hour water dispensing systems and underground reservoirs. As documented by The United Nations Development Programme (UNDP) Mongolia in 2019, some kiosks have even been connected directly to the city's water pipeline system and are equipped with heating devices (UNDP Mongolia 2019). While such improvements offer optimism about future access to water in the *ger* districts, the majority of people still rely on truck deliveries.

The number of kiosks has also steadily increased. According to research by the World Bank in 2008, there were over 550 kiosks across the city, with most operated by government-owned companies and a small portion managed by private operators. Approximately 66% of them depend on water trucks. Most residents had access to at least one kiosk within a 500-meter radius. Data from the Mongolian national statistics department shows that the number of water kiosks has steadily increased since 2001, reaching 747 in 2019. The number of water delivery trucks has also gradually grown, reaching 75 in 2019 (National Statistics Office of Mongolia, n.d.).

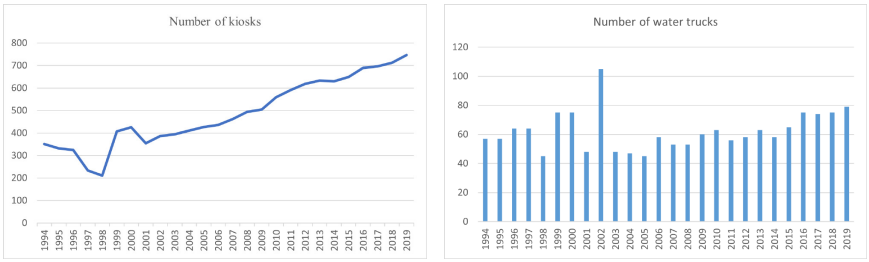


Fig 4.8 Statistics of kiosks, water trucks in Ulaanbaatar. Source: National Statistics Office of Mongolia. Drawing by Author.

Residents' water usage habits are also closely tied to these kiosks. Based on the survey conducted by RUF, for a six-person household in *ger* districts, daily water consumption is estimated at 60–70 liters in total, necessitating at least two trips to the kiosk daily (Bolchover 2019, 48–49). This consumption level is relatively low comparing with the World Health Organization (WHO)'s recommendation, which is 50–100 liters per person per day as

minimum (United Nations, n.d.). This limited water access forces households to prioritize drinking, cooking, laundry, and child bathing while excluding activities such as regular bathing and toilet flushing. Residents who wish to bathe must either visit one of the few public bathhouses or relatives who live in apartments in the city.

Even though most residents are accustomed to this water-fetching activity, due to the nomadic tradition of collecting surface water, the increasing population density and evolving modern lifestyles are pushing this system into its limit. Additionally, the lack of a sewer system has led to the widespread use of pit latrines. These very simple dry toilets are often made of brick walls and metal roofs and have no insulation measures. A deep pit is dug beneath it to store sewage. And used wastewater is frequently dumped directly into the yards without any recycling. These approaches of treating waste have also caused potential pollutions of groundwater. The unequal distribution of these basic infrastructure resources further contributes to the marginality of the *ger* districts.

4.2 Insufficient Public Space

As mentioned earlier, since formal urban planning was absent and residents tend to focus more on their own yard spaces, public space is extremely scarce within the *ger* districts. Gathering spaces like parks, playgrounds, and community centers are rarely seen, leading to a low level of social contact and mutual support (Hamiduddin et al. 2021, 10–11). These spaces are actually what emerging urban areas like *ger* districts need, to foster broader networks of social trust, a sense of belonging and community. In recent years, only a few projects supported by private owners or international groups have transformed shared spaces in the area, especially aiming to provide valuable play spaces for children. Three different precedents of such projects will be discussed here.

The first one is located in Chingeltei District, called Lake at the Hills (Уулын нуур парк). This area was previously a landfill site. Its founder, S. Ulziyo, took over the site in 2009 in a personal capacity and gradually started transforming it through landscaping. He mentioned that the goal of starting this project was to create an environment for children to play (Нарантуяа 2025). Now, it is a vibrant small lake with several cherry blossom trees planted along the shore. In summer, people come here to boat; in winter, to skate; and sometimes there are outdoor movie screenings. S. Ulziyo also opened a family museum nearby, which



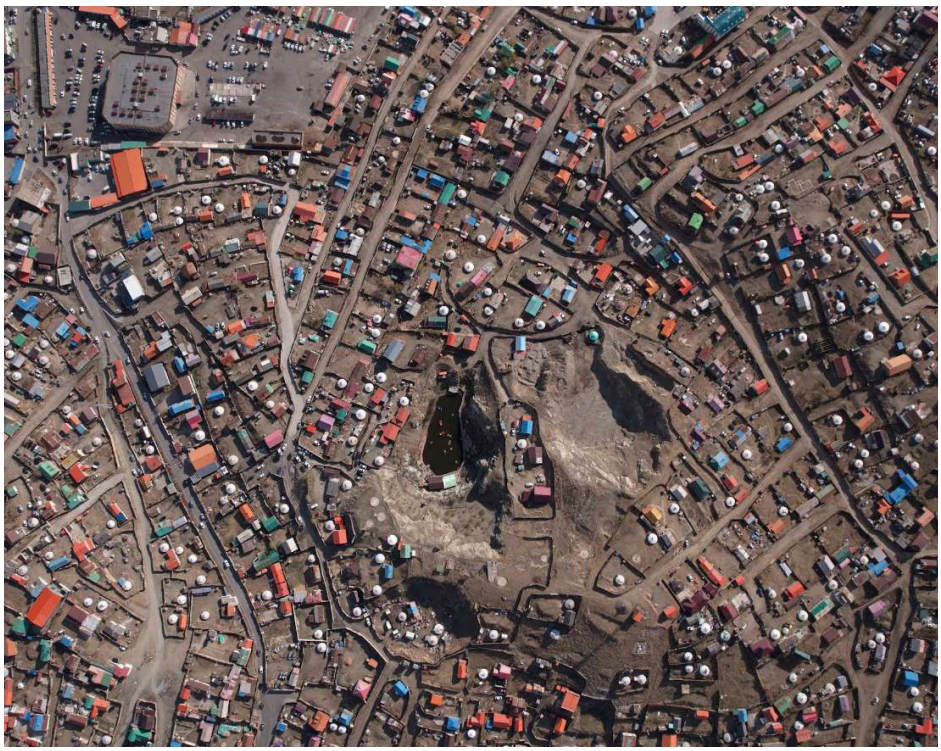


Fig 4.9 Lake at the hills. Source: Google Map user.

Fig 4.10 Playground by GerHub and South Korean disaster relief organization.

Fig 4.11 Ger Innovation Hub. Source: Rural Urban Framework









houses some historical photos and books. This small park, a vibrant gem set within the heart of the *ger* district, provides residents with accessible opportunities for leisure and fostering a sense of community and well-being in an otherwise dense urban fabric. It can be seen as a successful case of a privately driven public space improvement project.

The second project is a community-led playground supported by an international group. In 2023, GerHub partnered with the South Korean disaster relief organization Hope Bridge to build a new playground in Khoroo 31, a *ger* district with over 12,500 residents but only limited access to public play areas. Named Planet Peace at the request of the donor Woori Yoga Anu, the playground features a space-themed design with equipment for different age groups, a sports corner, and a small basketball hoop. Although the playground was initially planned for another location, it was relocated to a former play site near the *Ger* Innovation Hub after the July flash floods, which led the government to restrict construction in flood-prone areas. This project exemplifies how small-scale interventions can bring meaningful improvements to everyday life in the *ger* districts.

The third example is the *Ger* Innovation Hub, completed in 2020. It is a 160-square-meter micro community center designed by the Hong Kong architectural firm Rural Urban Framework. This center integrates different functions such as a daycare, after-class club, lecture space, and vocational training. Its ingenuity lies in a layered spatial structure, where the interior rooms are enclosed by bricks, but the building enclosure is wrapped with polycarbonate panels, effectively forming an air insulation in between. It is a model of sustainable design in the *ger* districts. The building also includes a frame of a *ger* in the center, which not only has cultural and educational use but also expresses a deep-rooted connection between people, space, and nature. Moreover, the center has served as a community-building anchor within the *ger* districts, owing to the deep involvement of local residents in both its design and construction. After completion, this community center can continuously provide residents with a symbol of stability and durability, elements that are needed in the current stage of urbanization in the area (Block 2020).

These three projects, driven by different individuals or organizations, all illustrate the scarcity of public space in the *ger* district and the feasibility of light interventions with an incremental strategy. It is worth noting that the Ulaanbaatar city government has proposed multiple redevelopments plans for the *ger* districts and collaborated with various

international organizations. However, most of these projects are large-scale developments of demolishing and rebuilding. With 80% of residents welcoming this approach, given it would lead to significant infrastructure improvements, there are still many obstacles stopping it from moving forward, such as a shortage of funding and insufficient public trust in government initiatives. As a result, the reconstruction projects have progressed slowly, and the outcomes are rarely seen. Moreover, large-scale demolition and reconstruction would accelerate the loss of traditional culture, lead to foreseeable negative environmental impacts, and potentially put the government into an economic crisis. This situation places the *ger* districts in a dilemma: the government cannot proceed with many construction projects, and current conditions make large-scale infrastructure upgrades infeasible. Therefore, in this thesis, I hope to explore a more lightweight intervention method that can



Fig 4.12 Satellite image of a vacant lot over 20 years. Source: Google Earth
Fig 4.13 Newly Built Apartments in Ulaanbaatar. Source: Chinneeb.

improve residents' living standards at a lower cost and with shorter construction cycles. Such interventions may be limited or even temporary, serving the next 20 to 30 years, but they can still act as catalysts to activate public space awareness among residents, similar to the three completed renovation projects mentioned above.

4.3 Intervention Concept

Building upon the analysis of rapid growth of *ger* districts discussed in the previous chapters, infrastructural condition, and the lack of public spaces, this thesis proposes a design strategy aimed at addressing these interconnected issues.
The three research questions are:
1. How to further expand infrastructure access, based on the existing system, to improve residents' daily lives;
2. How to develop public spaces within this organic urban fabric and promote their spatial quality;
3. How to reclaim the fading nomadic spirit to address residents' issues of identity and belonging.

The research objectives at the beginning of the thesis outline the study's broader aims, while these questions translate aims into specific interventions on infrastructure, public space, and the nomadic spirit. Based on them, I propose the concept of reparative infrastructure. The term "reparative" means tending to repair, fix, or restore something to its original state. Reparative architecture is currently often used to describe architectural projects aimed at correcting social injustices caused by historical developments. In the context of *ger* districts, "reparative infrastructure" refers to architectural design within infrastructure networks to address the historically unjust spatial conditions endured by residents. This approach also aligns with Rashad Williams's concept of reparative planning, which emphasizes acknowledging past harms and implementing structural measures to address historically unjust conditions in urban environments (Williams and Steil 2023). Such injustices may relate to ethnicity, class, economic status, or historical urban policies.

The design responds to the three questions as follows:

1. Given the current constraints that make large-scale infrastructure construction difficult,

the focus can be on integrating existing resources to improve convenience. The first key step is to gradually connect water kiosks to the municipal supply system while incorporating additional functions such as public toilets, public baths, and laundries. This will help optimize residents' water usage structure and ensure their rights to access water resources.

2. Water kiosks can serve as the foundation for establishing much-needed public spaces. Since fetching water is already an essential part of residents' daily routines, it creates potential for social interactions. With thoughtful design, these spaces can be transformed into urban anchors that foster "the third places[2]" needed beyond work and home, adding certain stable elements in the area.

3. In terms of programming, the concept of a mutual aid network is proposed to encourage residents to establish more self-governed systems of resource distribution as autonomy is a key aspect of nomadic culture. It can be carried out as community-based education centers, free trading markets, or skill-sharing workshops. These initiatives aim to break down the psychological "fences" between people and strengthen community bonds.

These approaches respond to the challenges faced by the *ger* districts in an incremental way. They should not be seen as ultimate solutions, but rather as practical experiments aimed at empowering residents, fostering community development, and promoting urban spatial improvements.

2. "The third place" is a sociological concept introduced by Ray Oldenburg in 1989 (Oldenburg 2023). It refers to the social surroundings that are separate from the two usual social environments of home ("first place") and the workplace ("second place"). The third places are important for citizens' social engagement and sense of belonging.

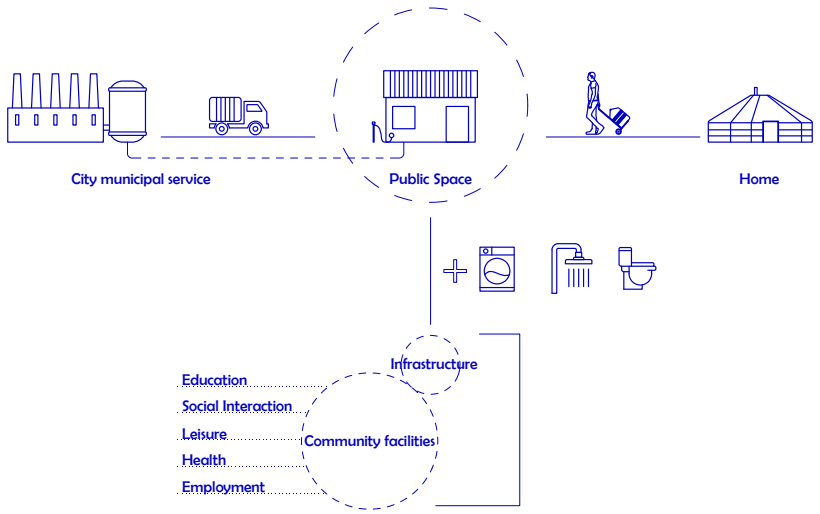


Fig 4.14 Upgrading Concept. Drawing by Author.

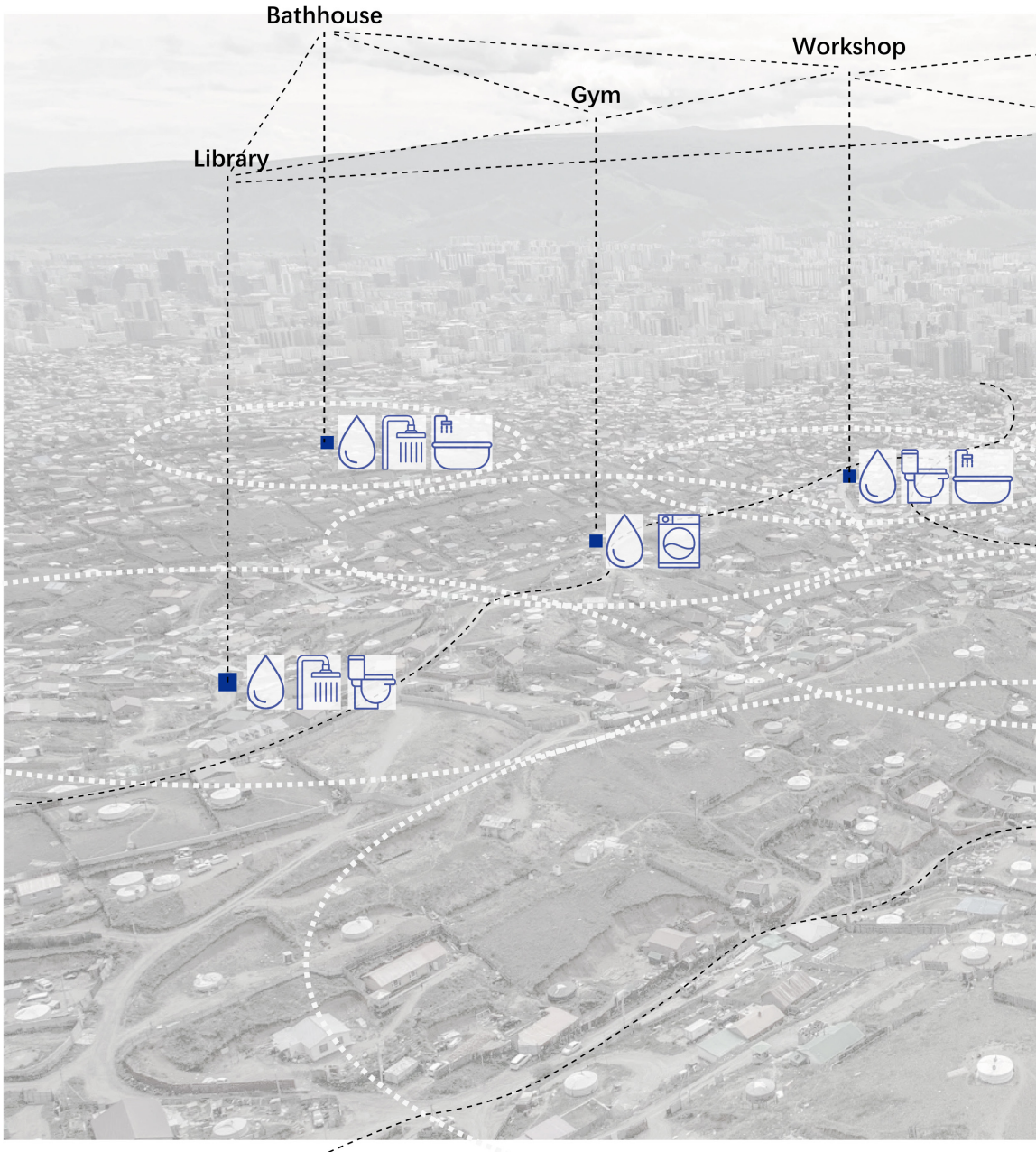
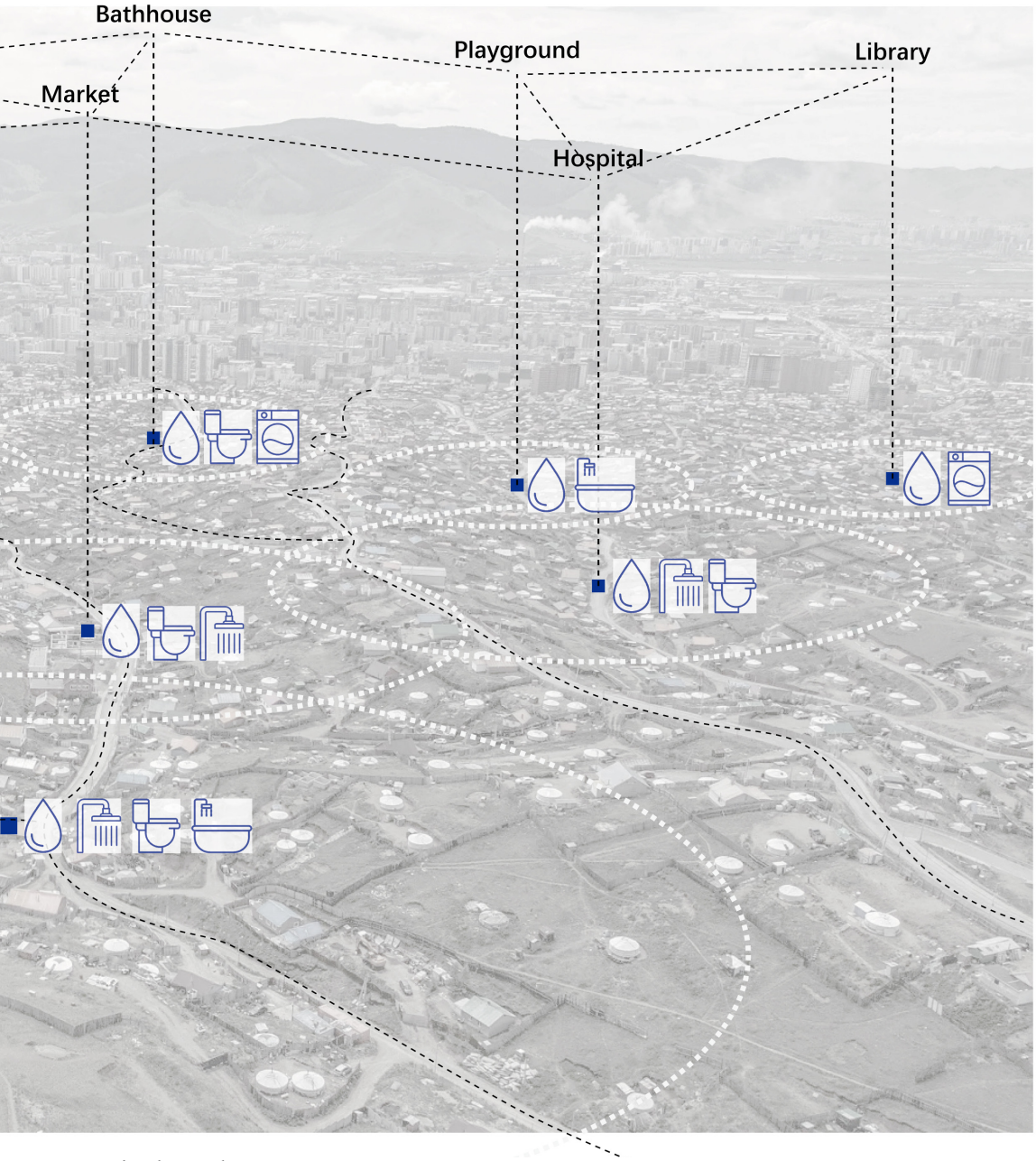


Fig 4.15 Kiosks network co



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CHAPTER 05 SITE ANALYSIS & DESIGN PROPOSAL

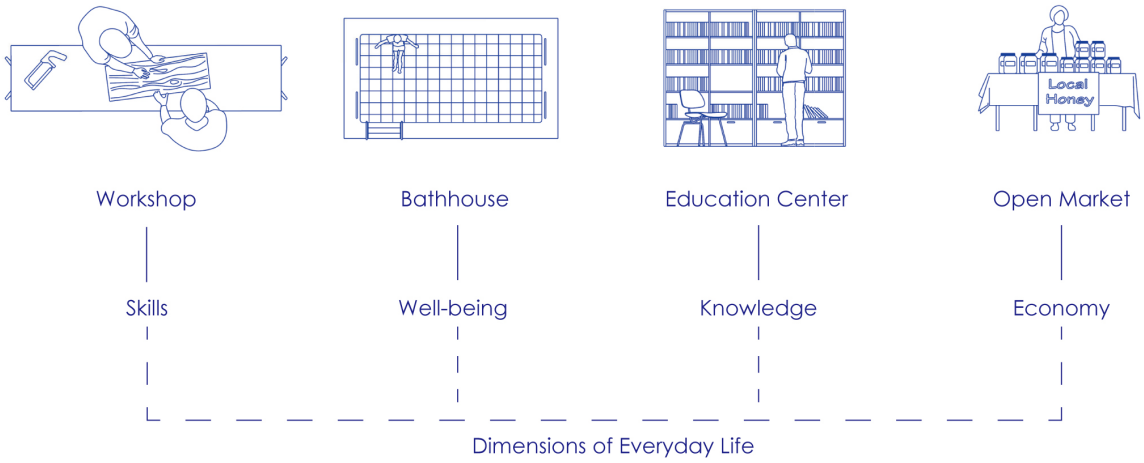


Fig 5.1 Proposal programming. Drawing by Author.

5.1 Bayangol District

In the second half of the 20th century, Ulaanbaatar underwent significant transformations in both infrastructure and housing. The Mongolia–Soviet mutual cooperation treaty of the 1960s included specific provisions for the development of Ulaanbaatar, marking the beginning of a new phase in the city's urbanization. In 1974, the Soviet Union gifted a series of large-scale development projects to the city, including two factories for prefabricated buildings and the construction of two residential neighborhoods. These neighborhoods were located in what is now the Bayangol (*Баянгол дүүрэг*) District (GerHub 2024).

Bayangol is one of Ulaanbaatar's nine administrative districts, comprising 23 subdistricts. It was originally named "October District" in memory of the 1917 Russian October Revolution, and its main street was called Brezhnev Avenue. At the time, this area was equipped with essential infrastructure, including kindergartens, schools, and hospitals, and was considered one of the most livable parts of the city. Today, Bayangol District encompasses not only the Soviet-built neighborhoods, but also includes an expanded area to the west covering much of western Ulaanbaatar, as well as a portion of the *ger* districts to the north. The included *ger* area comprises several khoroos and is one of the first *ger* districts to evolve from its initial stages to a fully consolidated and mature condition. However, in the urban planning of the 1970s, such areas were often seen as obstacles to modernization and were either rejected or ignored. Fifty years later, this area still exhibits a relatively low level of infrastructural development. Migration into and out of this zone continues, as it is one of the *ger* districts closest to the city center, offering relatively better access to education, employment, and other urban opportunities. Nevertheless, basic urban infrastructure has yet to be extended into the area. A distinct boundary between the *ger* area and urban area remains distinct on the map, beyond which only a small number of apartment buildings have been constructed. As such, this area represents one of the most urgent cases for public space improvement. The high coverage rate and population served by existing water kiosks make this zone a priority for infrastructure upgrading and integration into the citywide piped water system.

Therefore, I have selected an area near the main road, Revolution Rd, within the *ger* districts as the site for the design study. This area is one of the busiest *ger* districts in Ulaanbaatar. The selected site has a total area of approximately 0.39 square kilometers,



Fig 5.2 Site location. Drawing by Author.


Revolution Rd
To city center
300m
Kiosk A
Kiosk B
Kiosk C
Kiosk D

containing around 450 households. The area is backed by a hillside facing the city, with roads distributed along the terrain of the ravine, and a small river running through it. There are four water kiosks distributed within the area, providing relatively high coverage, allowing most residents to access water within a 200–300-meter walking distance. These water kiosks have been upgraded and equipped with smart systems, allowing 24-hour automated water dispensing, but they still rely on water delivery by trucks. The design proposal revolves around these water kiosks

5.2 Design Methodologies

The site analysis reveals a complex reality of topography, infrastructure, and population density. In response to these challenges, architectural design must not only adapt to the unique conditions of the site but also engage with broader theoretical frameworks and cultural contexts. The concept of critical regionalism offers a guiding principle. Frampton suggests that regionalism manifests as an architecture that consciously establishes boundaries, emphasizing that structures within a site create a sense of territory (Frampton 1983). The water kiosk, as a specific infrastructural site, generates a sense of territory through its functional role, while also engaging in a dialogue with the surrounding environment through its location and patterns of use, thereby fostering community relationships. Furthermore, Frampton emphasizes that critical regionalism is not a style but an architectural attitude, in which design should embody the building's response to local conditions such as topography, climate, material, and light. This thesis also takes these factors as key design considerations.

Building on this theoretical framework, the architectural design process is guided by site conditions, programming, and spatial intentions. Functional considerations serve as the starting point, with the overall strategy of upgrading the community framing the choice of programs such as an education center and an open market, each generating distinct spatial intentions. For instance, in the education center, the design takes the wooden tower as a prototype, open to daylight and offering views toward the city. This responds to the relationship between nature and the urban environment, while also recalling the skylight effect found in the ger. In the open market project, the initial concept envisioned a large-span space open to the street, a form that not only comes from the logic of market operations but also a circular circulation, a spatial pattern deeply rooted in Mongolian culture. Building on these intentions, the architectural massing was then shaped in response

to site conditions. Structural systems and material choices were subsequently developed with reference to the local context.

Throughout the design process, the project seeks to balance modernity and regional identity through the lens of critical regionalism. Modernity is reflected in structural expression and responses to contemporary life, while regional identity is expressed in the use of materials, site design shaped by topography, building forms and detailed patterns and textures. Moreover, the focus on the unique water kiosk network itself can be seen as another form of regionalism. In order to gain a deeper understanding of regionalism in Mongolia, it is necessary to look back at the country's long historical timeline, where residential and public buildings have followed two distinct trajectories of development:

Rooted in the enduring nomadic cultural tradition, the *ger* remains a vital housing form to this day. It has given rise to rich cultural practices, including interior layout, methods of assembling the structural frame, and decorative and furniture traditions. However, this nomadic lifestyle has also significantly constrained the development of settled housing.

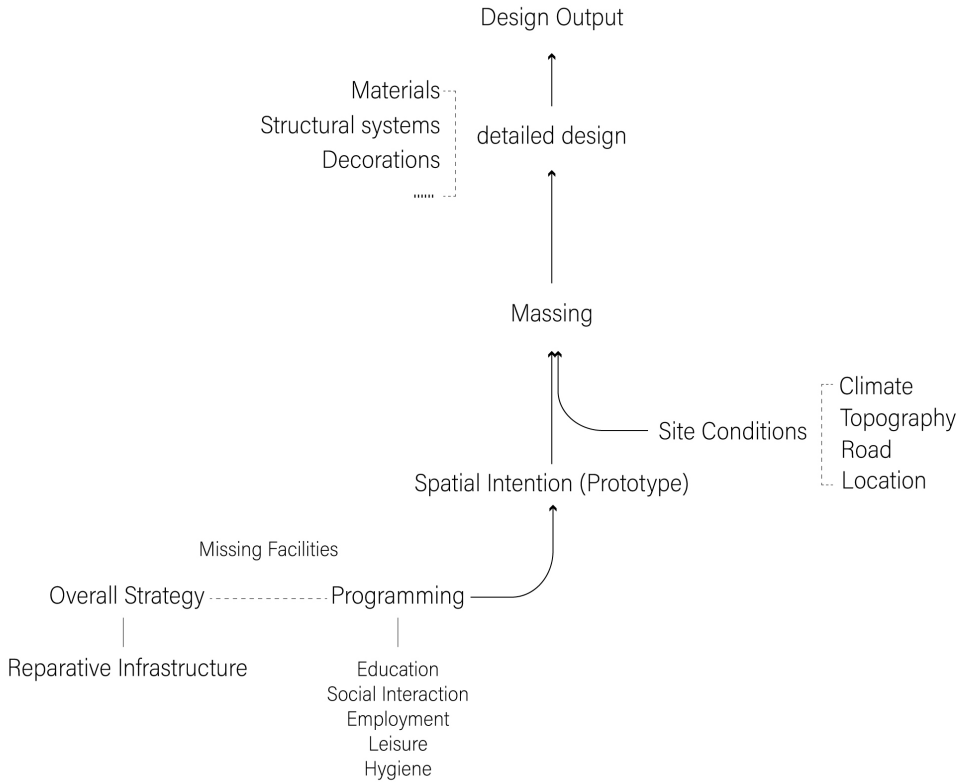


Fig 5.3 Design process. Drawing by Author.

Consequently, brick houses within the *ger* districts are extremely simple in layout and form, with very compact interior spaces typically ranging from 60 to 80 square meters, usually comprising a simple kitchen, living room, and bedroom. Most residents still set up a *ger* in their own yards as additional living space or as a summer bedroom. In this sense, residential architecture in Mongolia has developed in a relatively stable and singular way.

In contrast, the development of public architecture has been more fluctuating, closely tied to the dramatic social changes and national narratives since the 20th century. Before the establishment of the socialist state, public buildings were primarily monasteries, which were heavily influenced by Tibetan Buddhist architectural forms and played an important role in the lives of pastoralists. After the establishment of the socialist government, religious life was suppressed, and a new narrative inspired by Soviet modernism was introduced. Many institutions and government buildings were constructed during this period, shaping the urban landscape of Ulaanbaatar. Following the democratic revolution in the 1990s, this socialist architectural style was largely abandoned as people sought to reconnect with Mongolia's long historical culture to express a renewed national identity. More than twenty years into the new government, it remains unclear how Mongolian national narratives will articulate and reconcile connections with both recent and distant pasts, as well as with new global influences (Diener and Hagen 2013). Recent architectural practice in Mongolia and Inner Mongolia of China indicates a continuing interest in extracting architectural language from the *ger* and applying it to public buildings. While this approach is feasible, it often appears monotonous and is not suitable for all types of public buildings and spatial logics.

Therefore, the design seeks to align with critical regionalism in Mongolia across multiple dimensions:

Color: White is highly valued in Mongolian culture, symbolizing purity, sanctity, and good fortune. In Tibetan Buddhist architecture, the use of white exterior walls is widespread, often featuring distinctive brushed textures that prevent monotony and make the buildings visually striking and warm in the vast steppes and cold winters. Thus, the use of white is not derived from international modernist influences but is instead a choice rooted in regionalism.

Materials: A variety of materials are used in home construction, influenced by geography,

supply chains, and environmental performance. Wood and brick are the main construction materials. Although parts of northern Mongolia are forested, domestic timber supply is limited. However, Ulaanbaatar serves as a key transit hub on the Trans-Siberian Railway, facilitating the shipment of Siberian timber to Chinese seaports, and large quantities of imported timber are used in construction here. A considerable portion of bricks in Mongolia are produced locally. In recent years, numerous small and medium building-material factories have emerged, with brick output increasing significantly. These operations focus on basic construction materials—especially red bricks and concrete blocks—that figure prominently in Ulaanbaatar's urban development. The use of concrete has increased recently, but due to the lack of scientific enclosure systems, concrete walls typically lack thermal insulation and are generally perceived by residents as having poorer performance than brick walls (Miller 2013, 102). Although rammed earth and stone are primarily associated with historical structures, they hold considerable potential for integration into new architectural designs. Given Mongolia's climate and the local abundance of these materials, they represent environmentally sustainable and contextually appropriate construction alternatives.

Symbols and Decoration: Certain Mongolian cultural motifs are common in architecture. On one hand, religious influences imbue these patterns with meanings of blessing and spatial protection. On the other hand, these motifs are widely used in gers as expressions of cultural identity. Appropriately applied, patterns enrich visual experience, emphasize cultural belonging, and enhance architectural legibility.

Building Form: Mongolia's harsh winters and vast steppe landscapes have historically shaped local architectural massing and form. Buildings tend to be compact and solid, with thick walls and small windows that resist strong winds and retain interior warmth. Sloped roofs were traditionally common to shed snow and respond to climatic conditions. In recent years, however, flat roofs have become more prevalent, facilitated by advances in construction technology. Flat roofs not only accommodate modern building methods but also harmonize with the openness of the Mongolian landscape, maintaining visual connections to the expansive surroundings.

Interpersonal Dimension: The organization of architectural functions should reflect the sociality of space. In the unique context of *ger* districts, users' habits, light and shadow,







Fig 5.4 Megjid Janraisig temple, Ulaanbaatar
Fig 5.5 Lhozhag County Middle School in Tibet
Fig 5.6 Grassland Community Center in Inner Mongolia
Fig 5.7 Community center in Mulanweichang, Inner Mongolia



5.8

and the relationship between buildings and the site all respond to regionalist principles. For example, the design of gently sloping ramps within the site respects the natural topography, avoids excessive land flattening, and facilitates the transport of water, coal, and other household goods. More importantly, as residents walk and interact, they experience gradual changes in topography, extend their lines of sight, and cultivate a spatial and bodily connection with the place—a combination of modernity and regionalism.

In summary, the forms, materials, and spatial organization of Mongolian architecture are shaped both by the constraints of a harsh climate and expansive landscape and by rich cultural traditions and ways of life. These design principles, interpreted within the framework of Critical Regionalism, provide guidance for this design proposal

5.3 Design Proposals

The design proposes four interventions: a community education center, an open market, a skill-sharing workshop, and a public bathhouse, each inserted as an upgrade into one of four existing water kiosks. This thesis will concentrate on the design of two of them. Based on each kiosk's location and site conditions, different functions have been distributed, but all include one or more shared infrastructures like water kiosk, public washroom or laundry room, as general amenities. Since these kiosks are located relatively close to the city, the design proposes to connect them to the municipal supply and sewage systems. The municipal water network delivers water to the highest point of the terrain within the area, from where it is distributed to each kiosk by gravity. Each building is equipped with underground water tanks and filtration units, while heating and other technical services are put in the mechanical rooms. This approach minimizes the need for extensive pipeline installation while ensuring a reliable water supply for the kiosks.

The construction approach emphasizes the involvement of local residents and the use of familiar building techniques. In the education center, the modular timber frames allow for straightforward assembly, while the concrete block walls are both accessible and practical in the local context. Similarly, in the market project, the timber trusses rely on the skills of local workers, reinforcing the project's intention to integrate community participation into the construction process. Also, considering the existing electricity supply issues in *ger* districts, where residents mainly rely on informal connections, renewable energy has been included as part of the considerations. Both wind and solar energy are already being used by

local residents, who often install small wind turbines and solar panels. Among these, wind energy is limited in efficiency, while rooftop solar panels can provide a more substantial amount of electricity. Such initiatives help reduce pressure on the existing power grid and enhance residents' energy autonomy. In the market design, solar panels have been applied as part of this approach.

Due to the limited site area, these community hubs are designed on a smaller scale, averaging around 300 square meters, yet they basically meet the daily needs of residents. According to UN-Habitat's 2009 report Planning Sustainable Cities: Global Report on Human Settlements, "A neighbourhood with a population of 1,000–2,000 persons is a reasonable planning unit for decentralized service provision", and basic urban services should be accessible within a walking distance of 15 to 20 minutes (approximately 800–1,000 metres). The design area contains approximately 420 households, and statistics show that the vast majority of households in *ger* areas have 3–5 residents (Caldieron, n.d.). Therefore, it can be estimated that the total population within the area is between 1,200 and 2,000 people, which meets the criteria set out in the report, making it suitable to be developed as a complete neighbourhood. Under these conditions, the four basic infrastructure units can adequately serve the area while ensuring that walking distances remain under 1,000 metres.

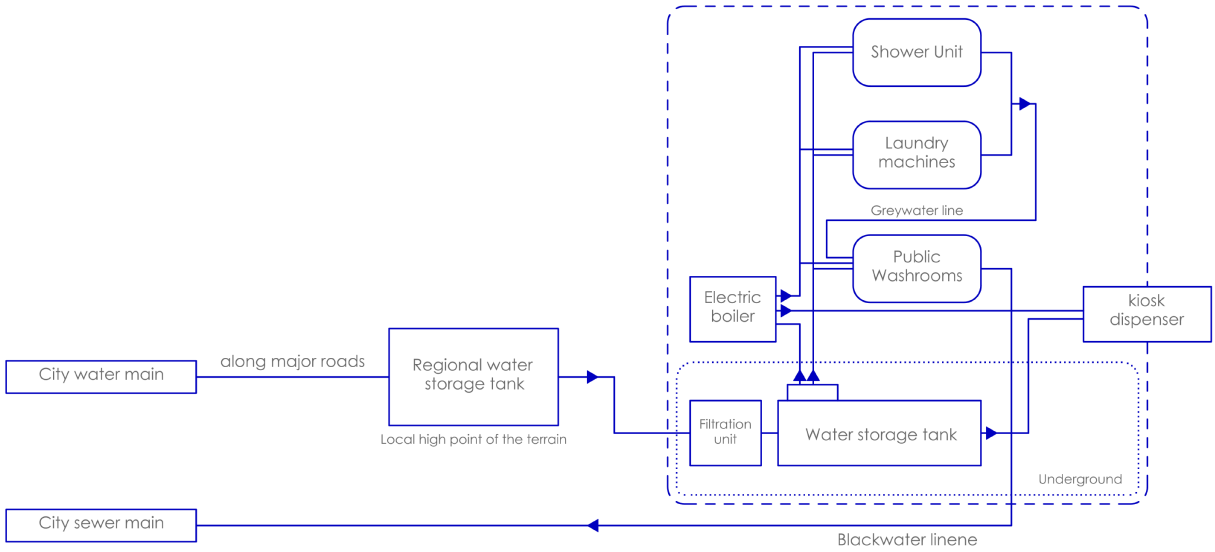


Fig 5.8 Proposed water system. Drawing by Author.

A. Community Education Center

A good educational framework is a vital prerequisite for the development of *ger* districts. Under existing conditions, children and adolescents lack dedicated spaces for both recreation and study outside of school. In many households, indoor activity space is limited, and there are few playgrounds, parks, or libraries nearby. After-school clubs, study lounges, and venues for social events like community festivals or public lectures are all located in the city core. Moreover, given Mongolia's long, harsh winters, a community education center can also serve as an emotional refuge and social gathering place. Thus, kiosk A will be upgraded into a community education center.

kiosk A is located at a bend on a secondary road, occupying a triangular plot. The site features a dramatic change in elevation yet offers excellent views. From here one can see the sweeping skyline of the city center, also giving the kiosk strong visibility, especially from the downhill side. So, the design proposes a highly identifiable wooden tower as the main exhibition and activity space, with supporting functions unfolding along the terrain around it. The tower is equipped with foldable doors, wheeled movable bookshelves, and mobile exhibition walls. This system greatly expands the potential uses of the space, allowing it to be transformed during the summer into a venue for community festivals or small musical performances. With sunlight streaming through skylights into the sloping ceiling, visitors could encounter a framed vista of the area. The building is divided into three main areas: a hall for water fetching and leisure, a wooden-structured exhibition and library space, and an infrastructure area containing public restrooms and a laundry room. In addition, the street-facing corner of the site is designed as a small leisure plaza.

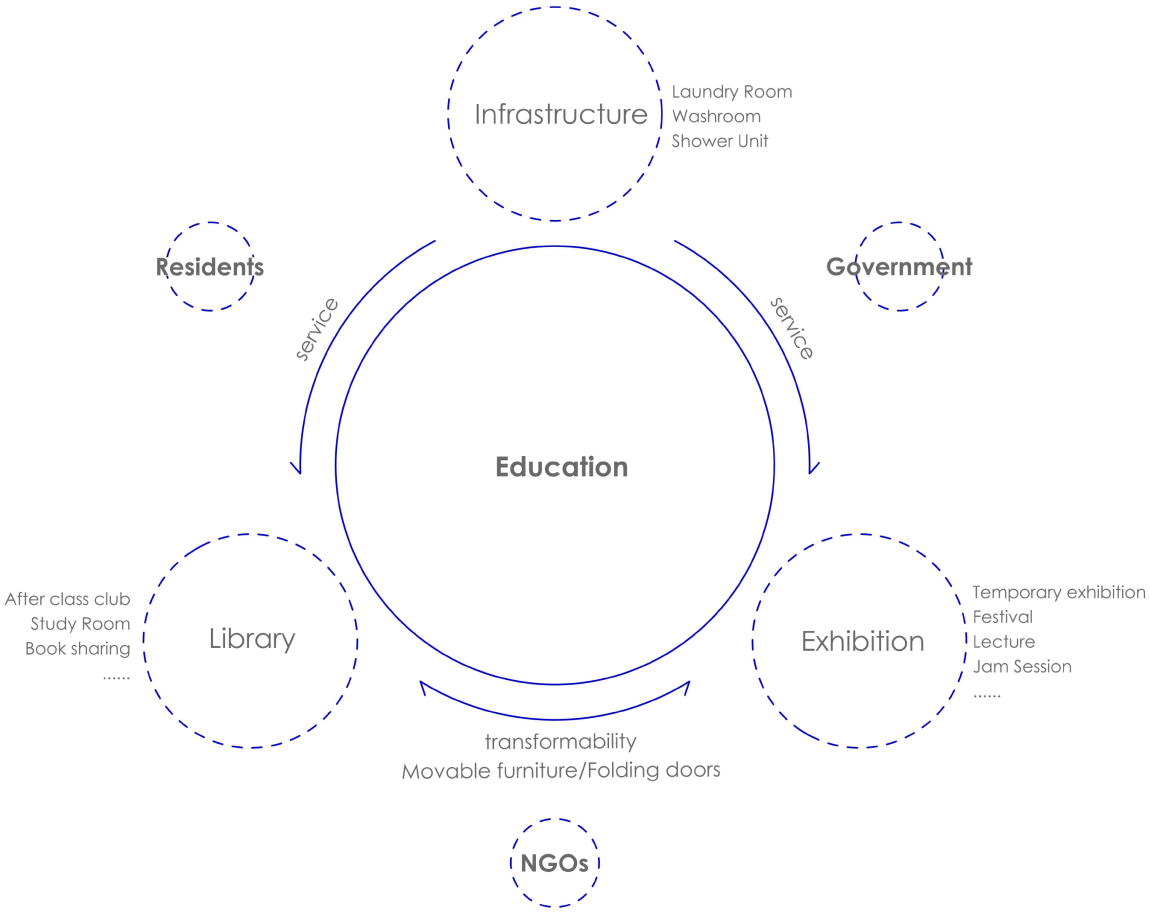
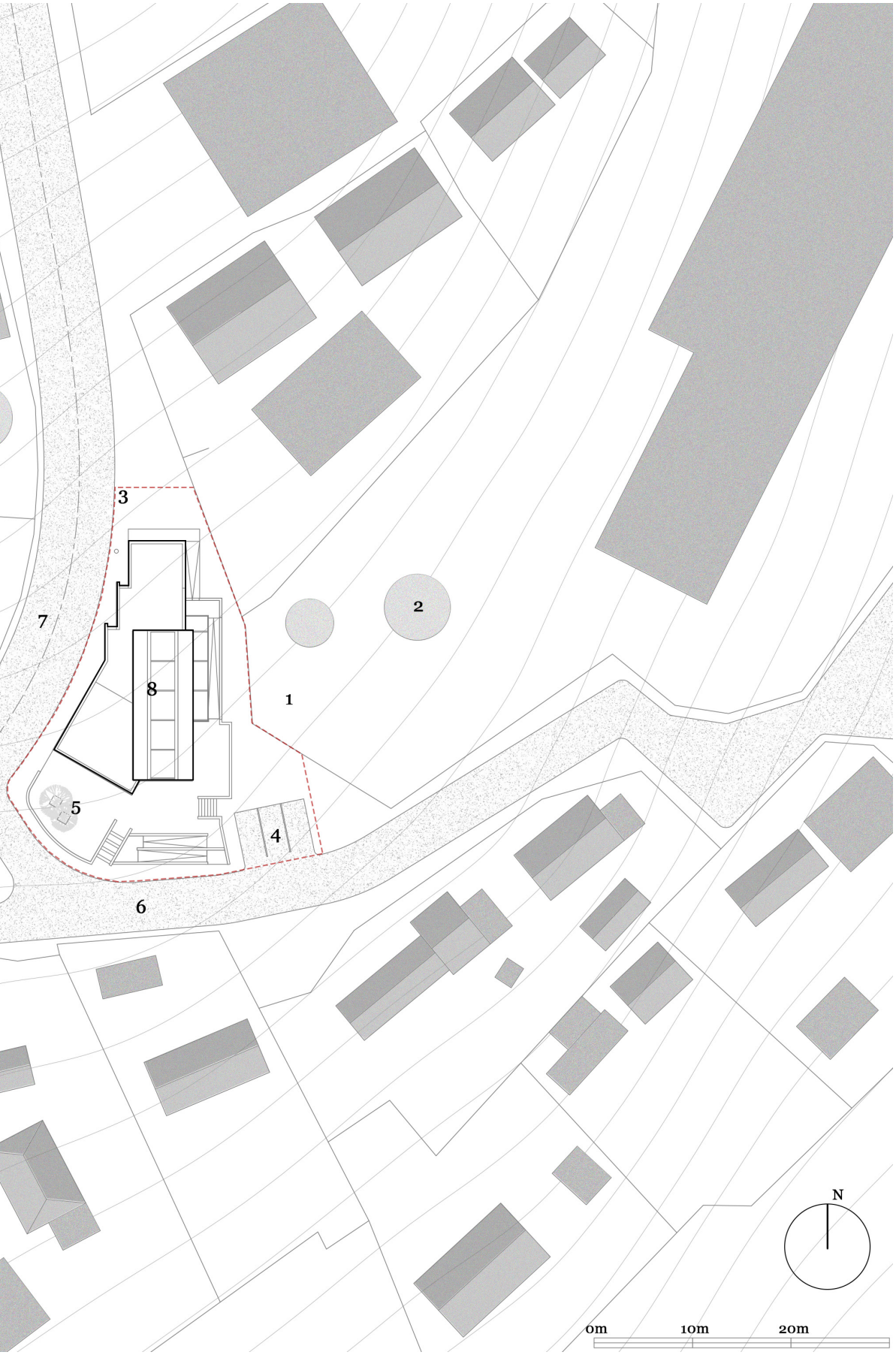


Fig 5.9 Operating model of the education center. Drawing by Author.



Fig 5.10 Site plan of education center. Drawing by Author.


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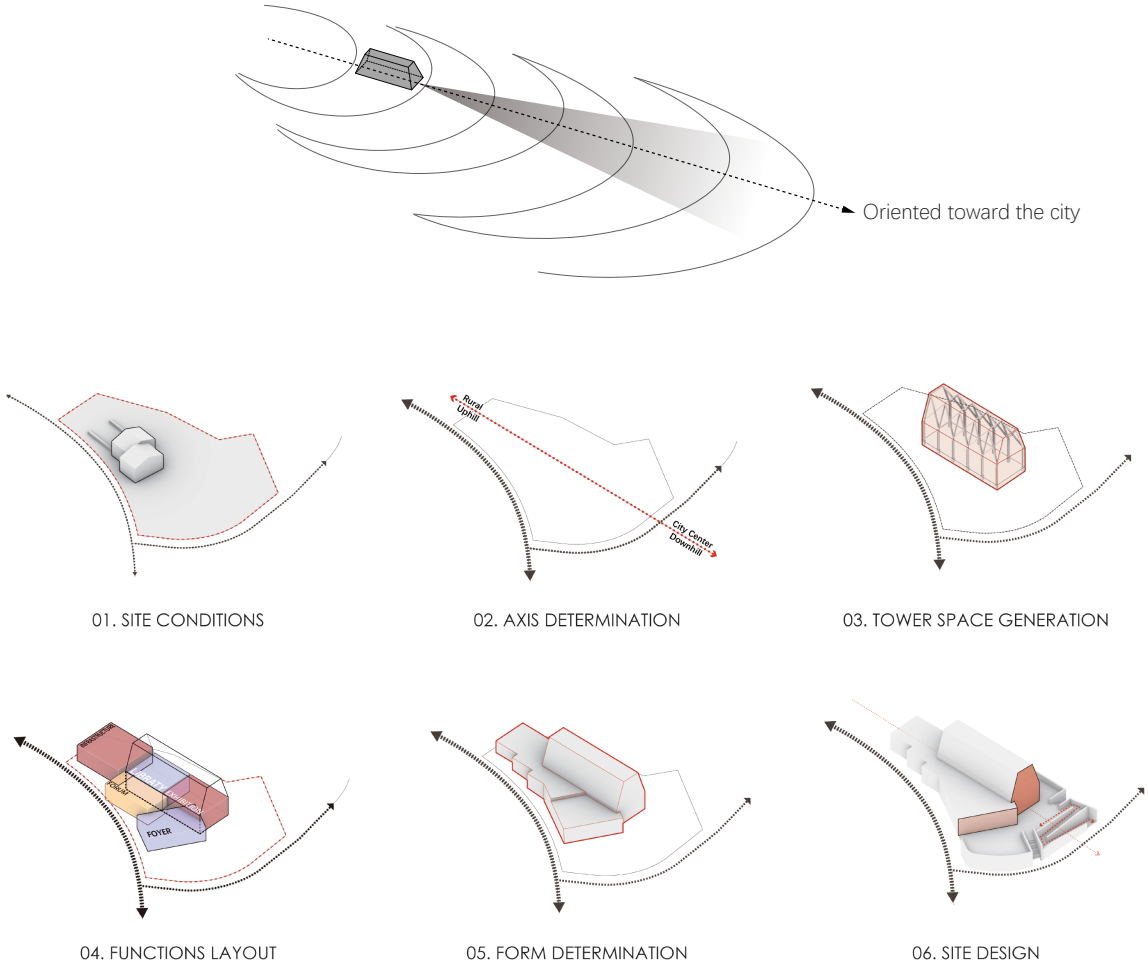


Fig 5.11 Design massing. Drawing by Author.

The design is shaped by the site conditions. The terrain and the north-south direction were used to establish the main axis facing the city. Along this axis, the tower mass was placed as the central space, with supporting functions organized inside the tower and around it. The final building form was then defined, and terraces and ramps were introduced in response to the slope and the axis.

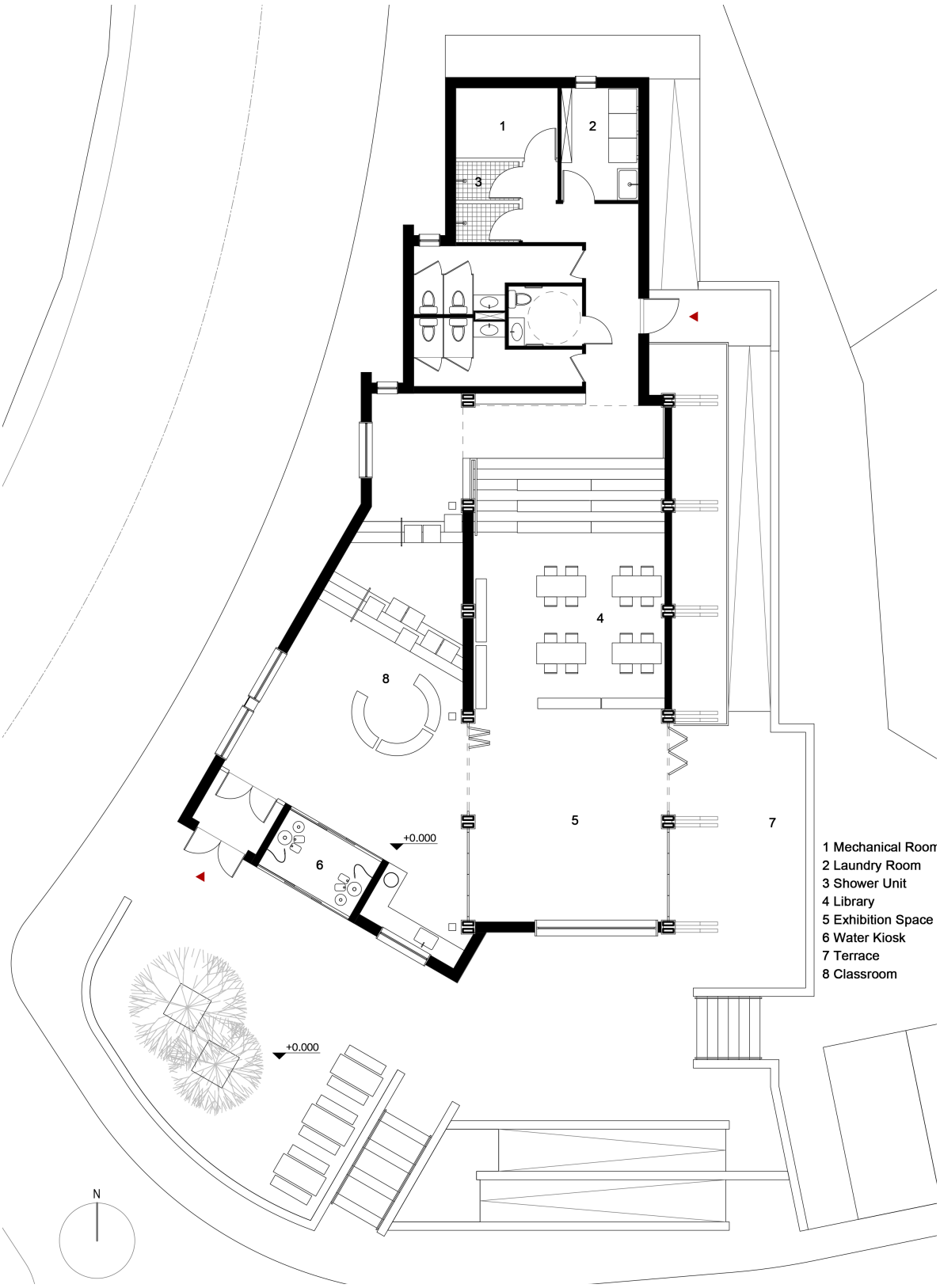


Fig 5.12 Architectural plan of the education center. Drawing by Author.



Fig 5.13 Perspective view of the mini library. Rendering by Author.

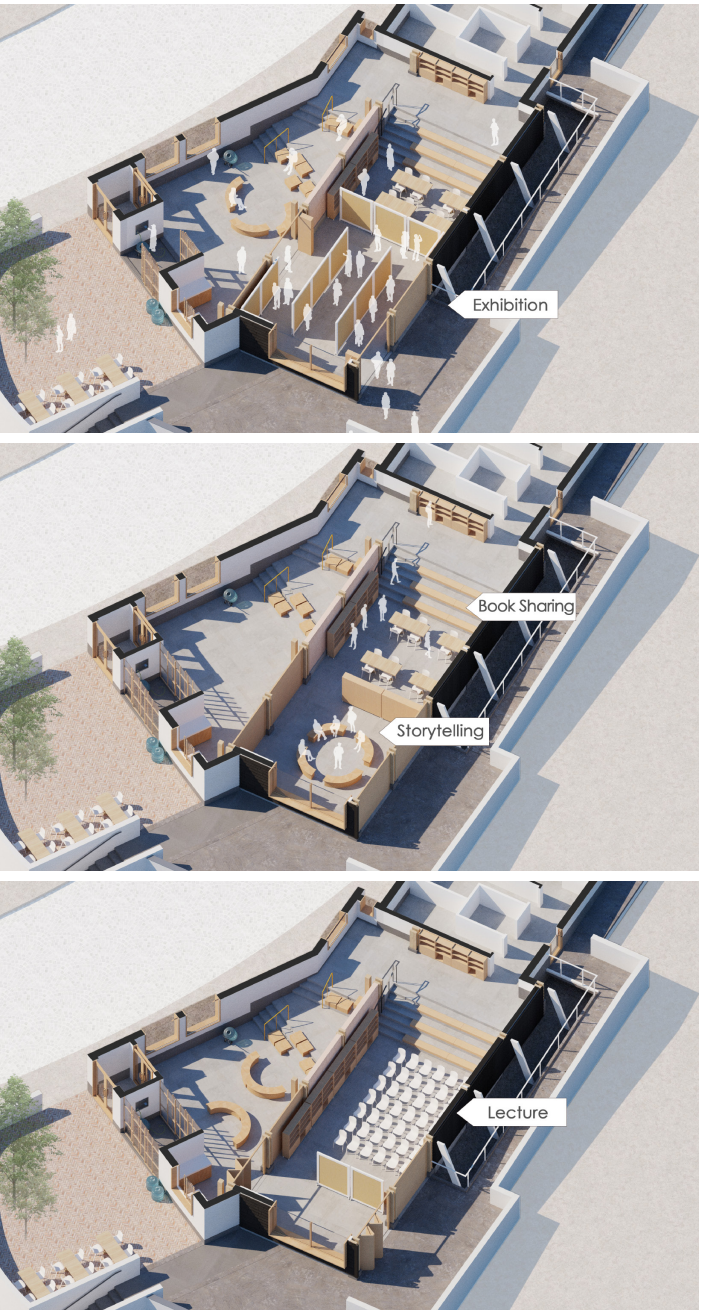


Fig 5.14 Functional Transformation. Rendering by Author.

Ulaanbaatar's climate, with long, dry winters and short, mild summers, made adaptability a key concern. Folding doors and movable furniture were therefore introduced, allowing spaces to shift easily between exhibitions, daily use, and lectures.

The tower employs a timber frame combined with steel cables and rammed earth infill walls. On the exterior, concrete walls and wooden beams were applied. The concrete was poured in two layers: the lower part provides structural stability, thicker insulation, and durability, while the upper part features a local white plaster finish. Two contrasting spatial experiences were thus created. Users can feel the shift in height and light between the tall tower and the lower surrounding structures.



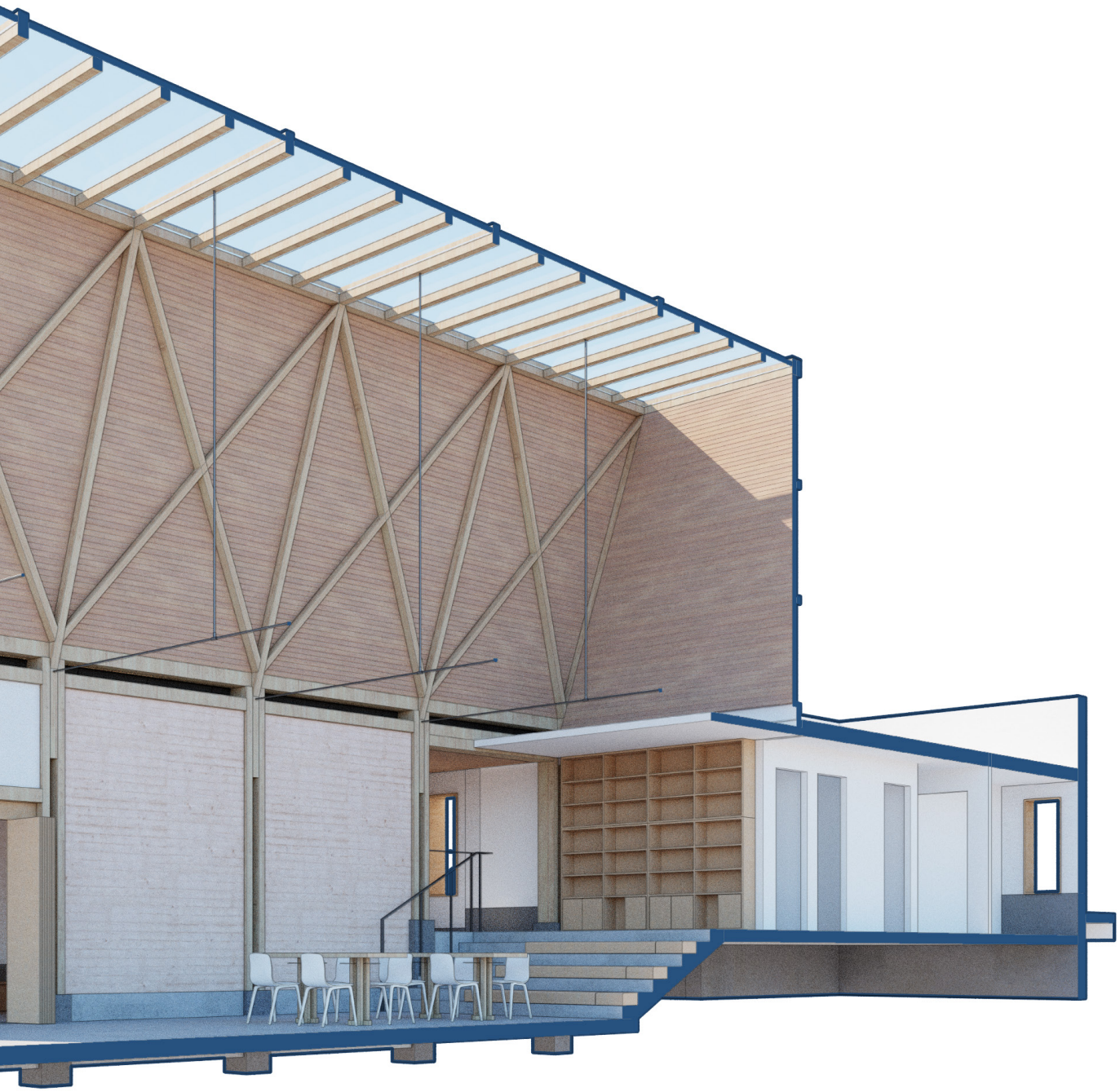


Fig 5.15 Perspective section. Rendering by Author.


Ус түгээх павильон



Fig 5.16 Perspective view of the entrance and kiosk. Rendering by Author.

Near the entrance, a seasonal water kiosk was designed. In summer, the outer sliding doors remain open for easy access to water; in winter, the doors can be closed to keep warmth inside, while the inner doors allow direct entry into the building when needed.





Fig 5.17 Perspective view of the classroom. Rendering by Author.

The site's level differences are transformed within the building into stepped classroom or as small gathering space


Ус тугээх павильон



Fig 5.18 Exterior view. Rendering by Author.

The tower's exterior siding consists of fired wooden panels. This enhances durability and creates a distinct visual identity. Wood a common building material in Mongolia, is here transformed through charring techniques to combine local tradition with modern construction methods.

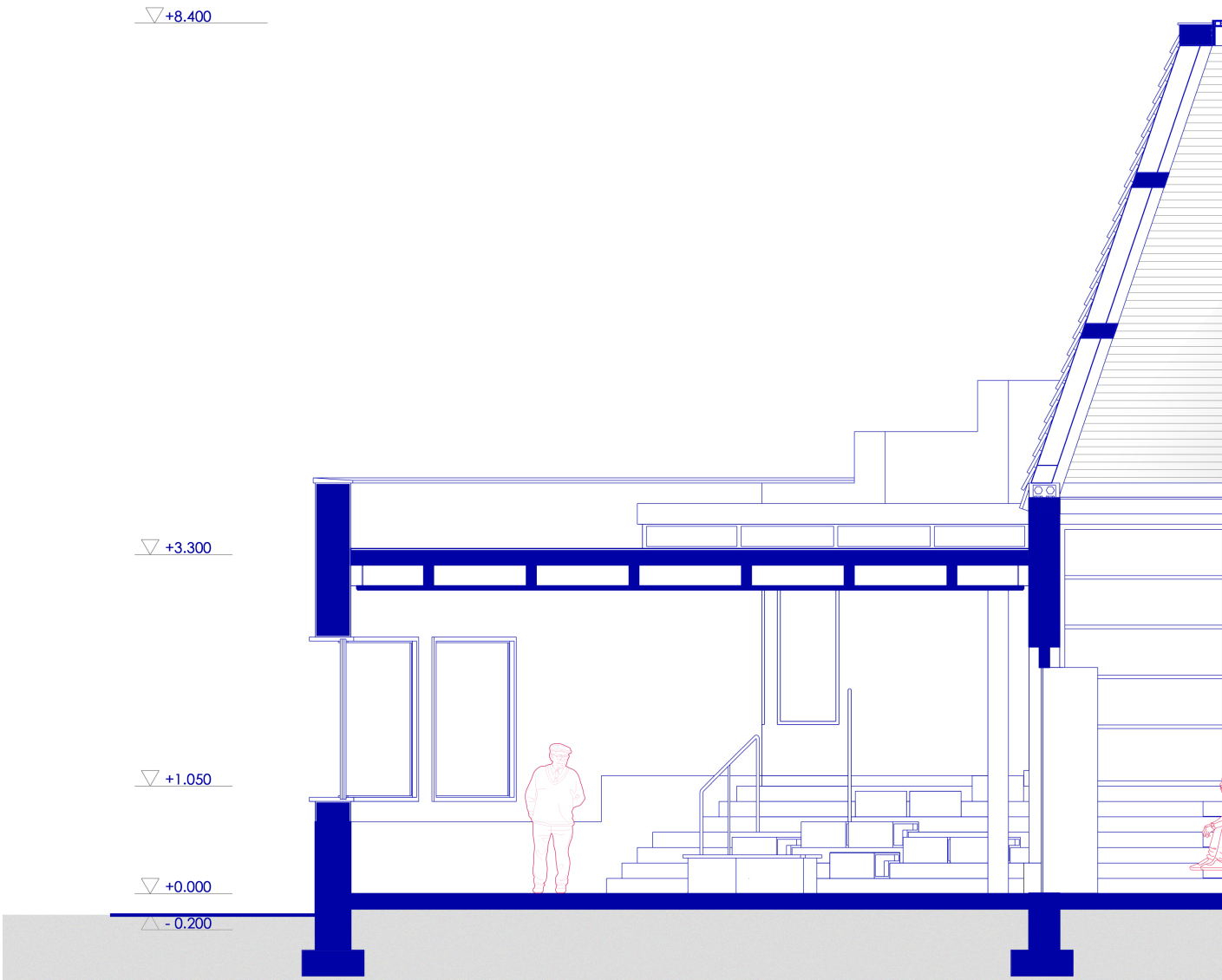
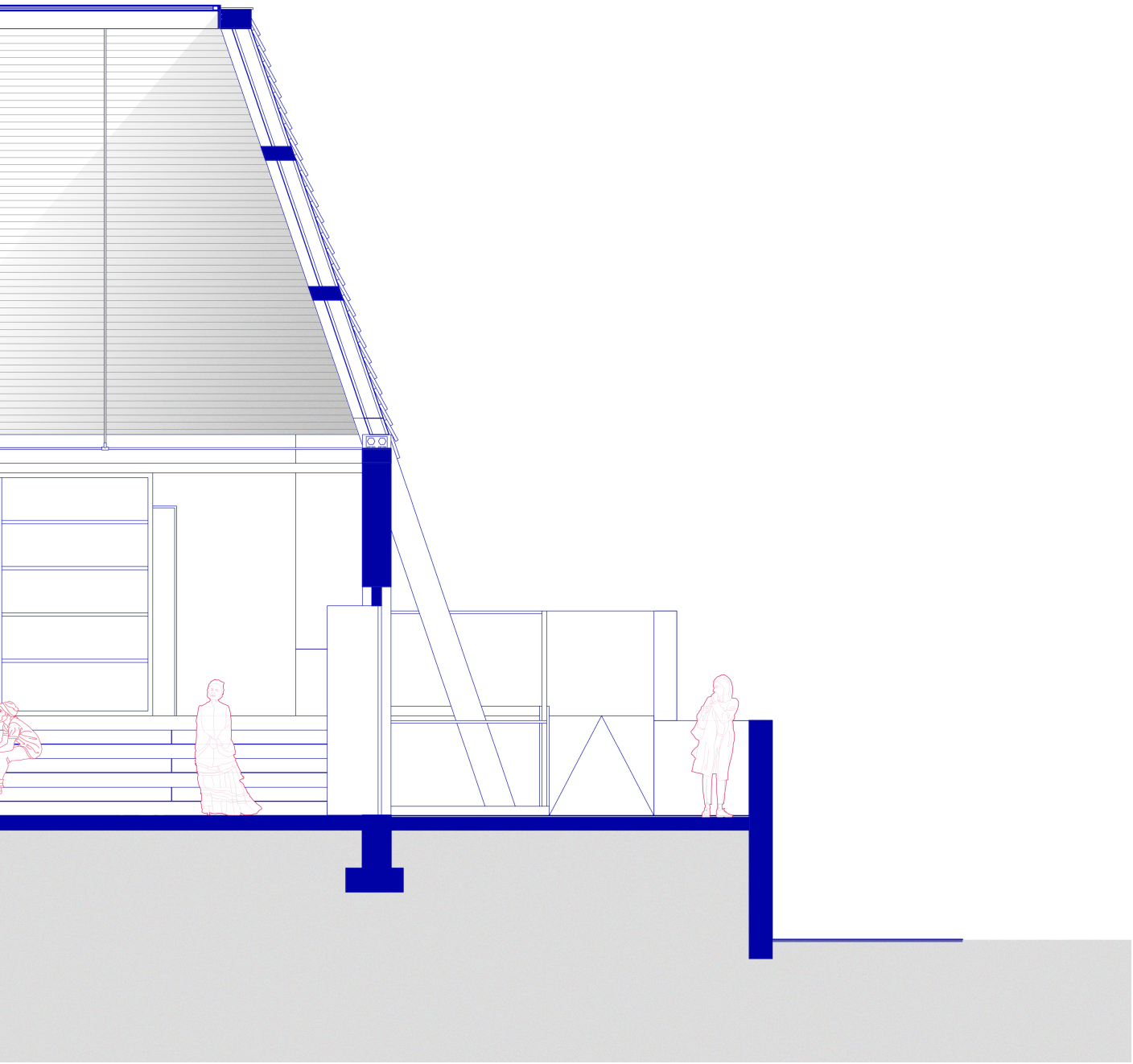


Fig 5.19 Section A. Drawing by Author.



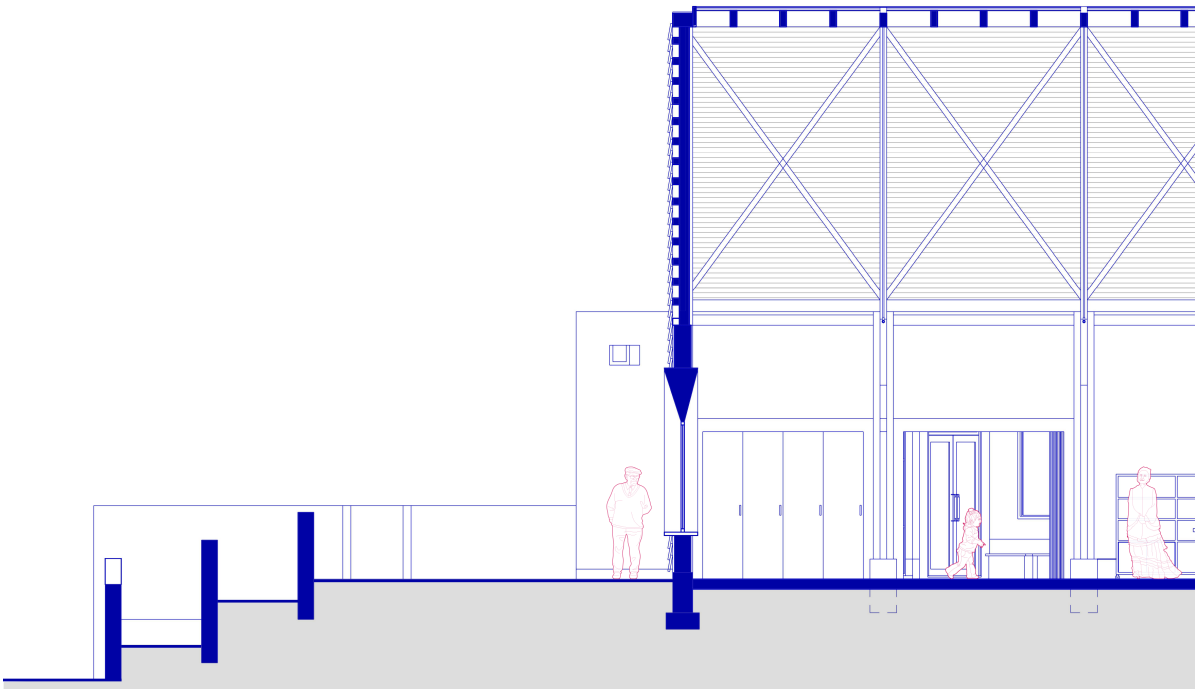
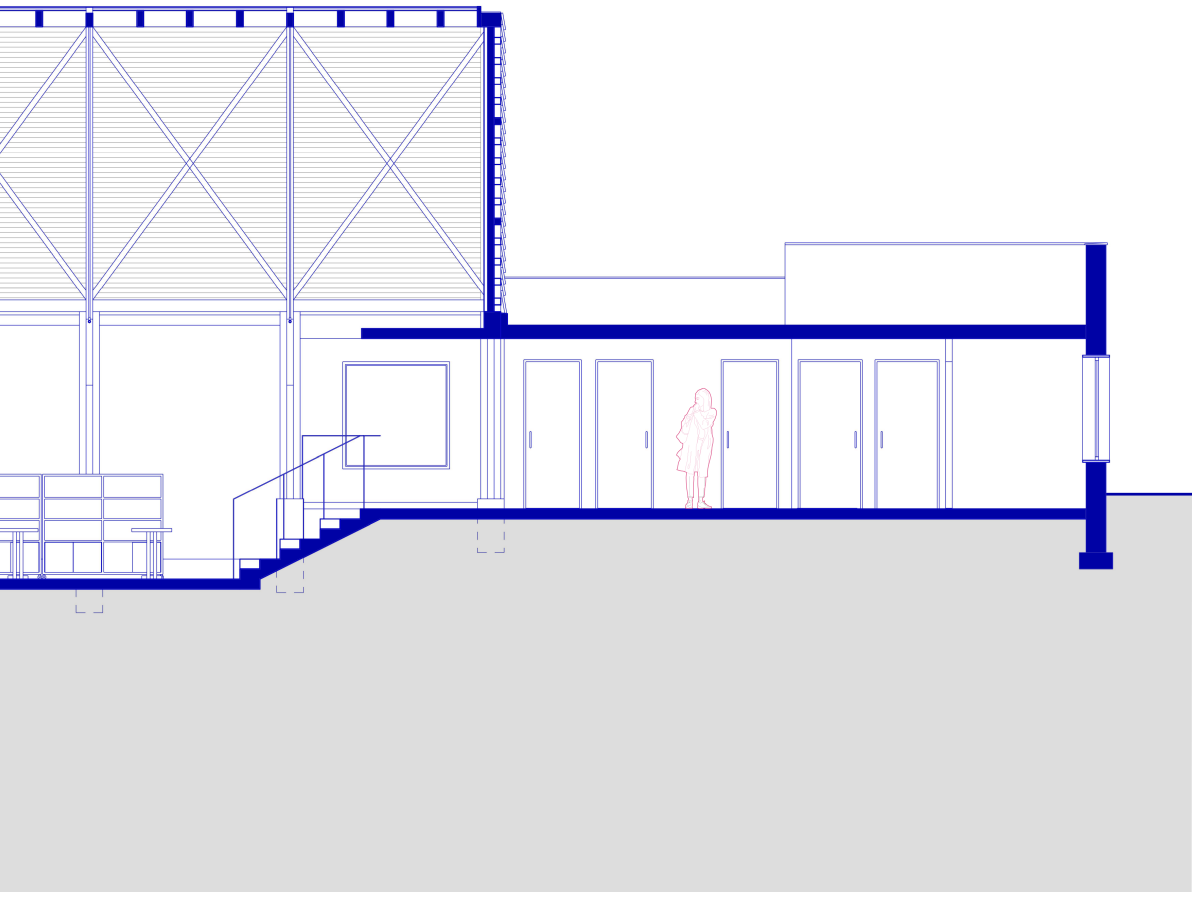


Fig 5.20 Section B. Drawing by Author.



B. Open Market

In traditional nomadic life, the exchange of livestock and daily goods often took place at monasteries. In *ger* districts, however, residents have limited access to trade supplies. Many households build simple greenhouses in their yards to grow vegetables to reduce living expenses. Additionally, Mongolia's meat- and dairy-based diet has led to the creation of a wide variety of traditional dairy products. Residents often enjoy making and sharing these at home, both as a cultural tradition and as a way to have supplementary incomes. In this context, a community market would provide more opportunities for social interaction and local trade. Residents could subscribe to and rotate stall spaces to sell food, vegetables, and even handmade textiles and furniture. Unlike conventional supermarkets, this market would be self-managed by community members, with goods produced within the district.

The site of this water kiosk is flat and spacious. Its rectangular shape offers a long street frontage, making it well-suited for a market building. The existing kiosk on the site is currently unused and underutilized. Behind the site, there is a basketball court and a children's playground, both of which could contribute to a lively market atmosphere. The design follows the natural character of the site, unfolding horizontally across the plot. The building is divided by a central hall into a market zone and an infrastructure zone. Its structural system consists of load-bearing walls combined with an open truss roof, allowing natural light to enter the market. Along the street-facing edge, a series of operable doors enables the building to open up during the summer, transforming the space into a semi-outdoor market. Taking into account the existing basketball court and playground within the site, the design seeks to integrate the space. At the higher level, it functions as a market, while at the lower level, it forms a multifunctional small plaza. The central fire pit and the patterned paving of the plaza reflect Mongolian cultural heritage, making the space suitable for summer bonfire gatherings.

A portion of the market roof, approximately 18 m × 4 m, is available for solar panel installation, with an effective area of around 50 m². Although the roof is not fully south-facing, panels with 20% efficiency could generate roughly 40 kWh per day. This solar energy would primarily supply the building's lighting, small-scale refrigeration, and water pump systems, providing a large part of their daytime electricity demand, while peak loads may still require grid or storage support.

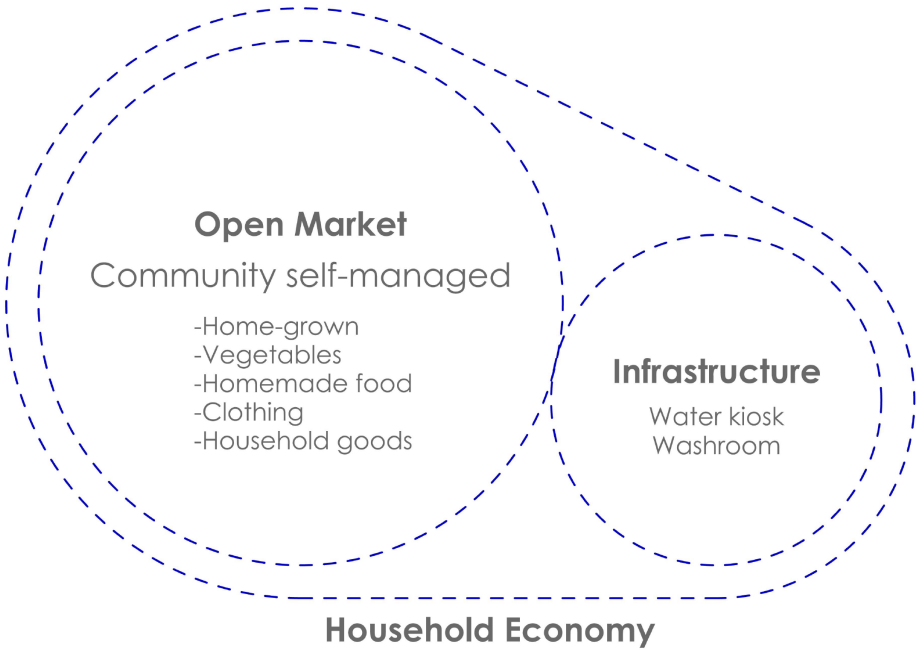


Fig 5.21 Operating model of the open market. Drawing by Author.

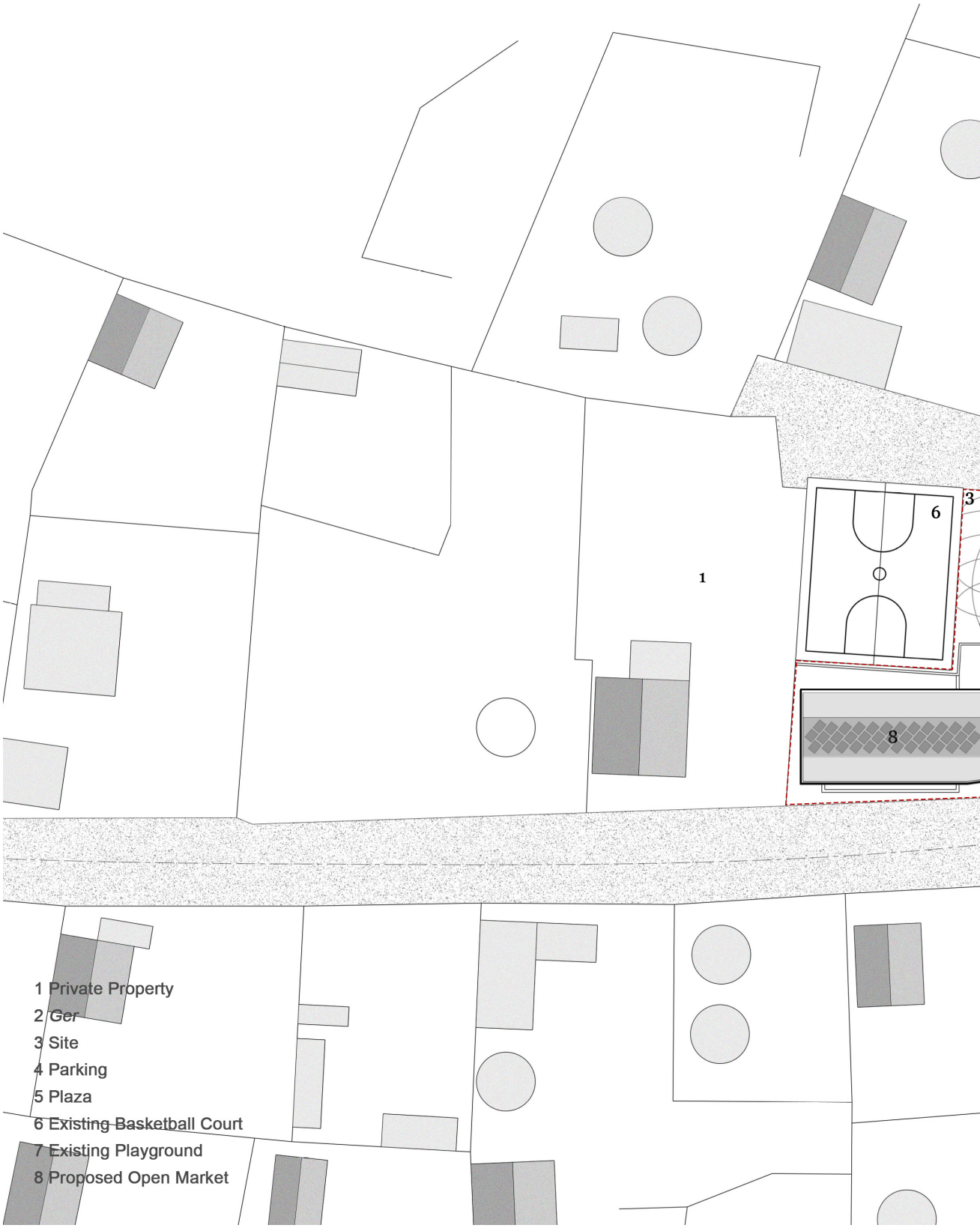
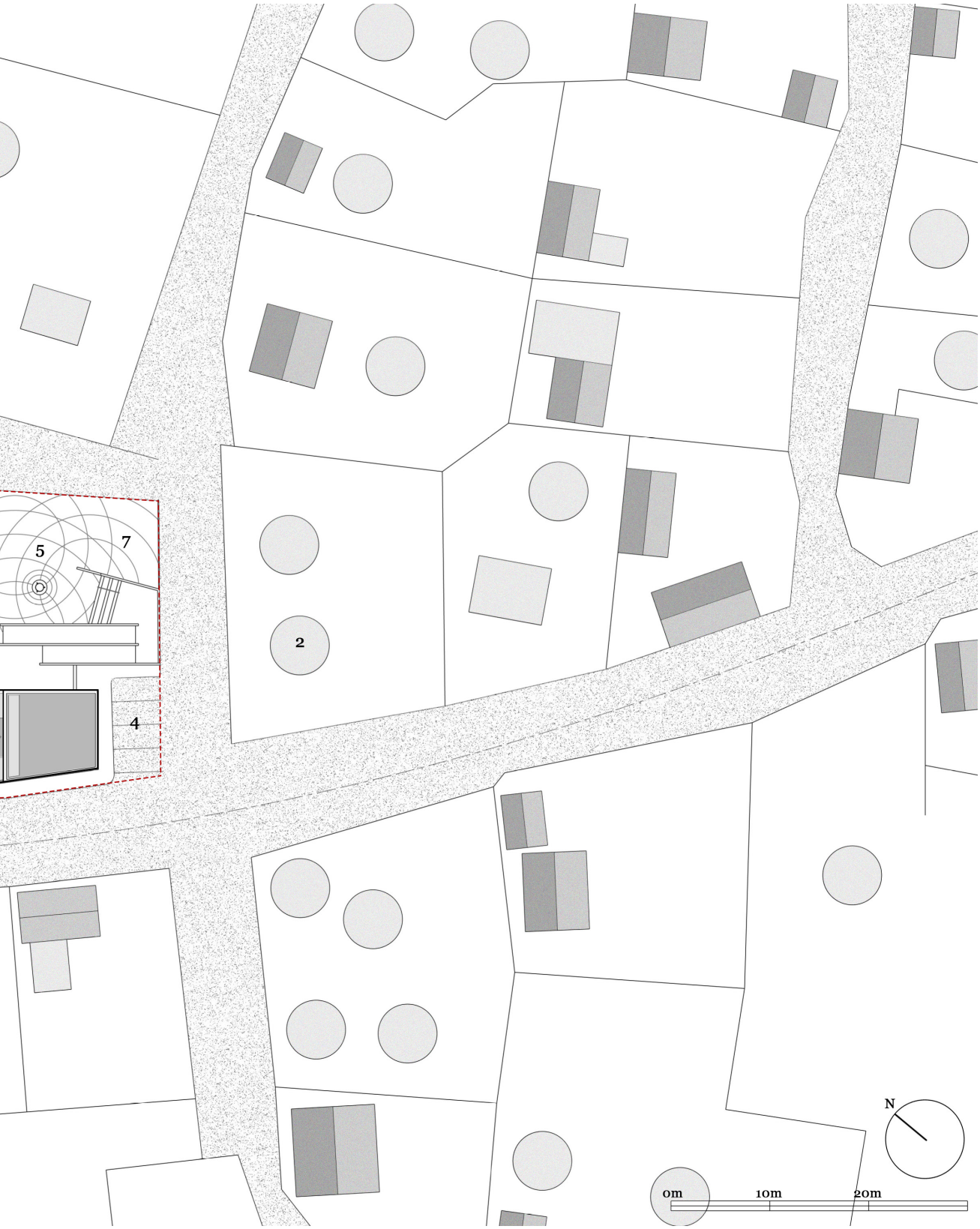
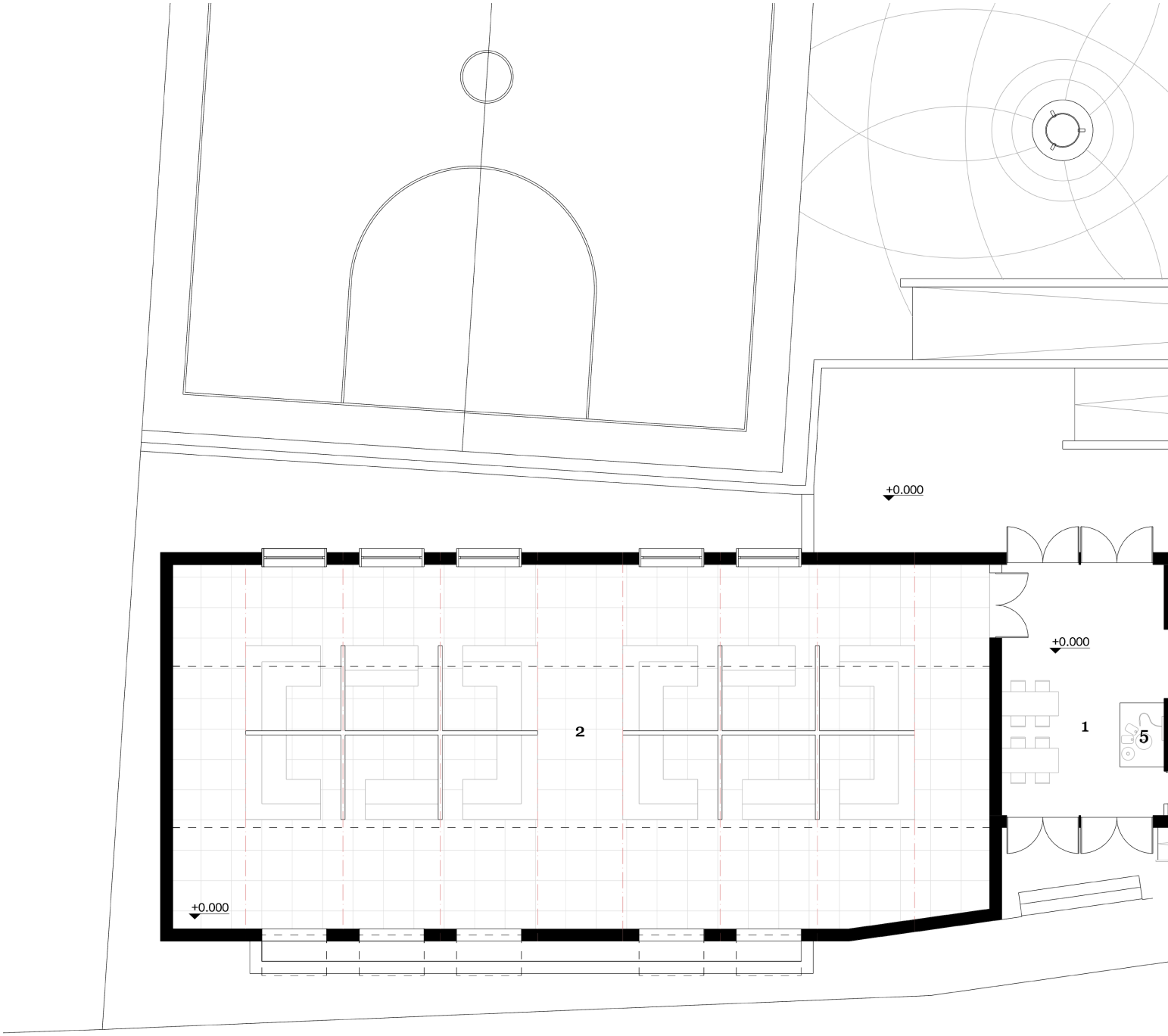
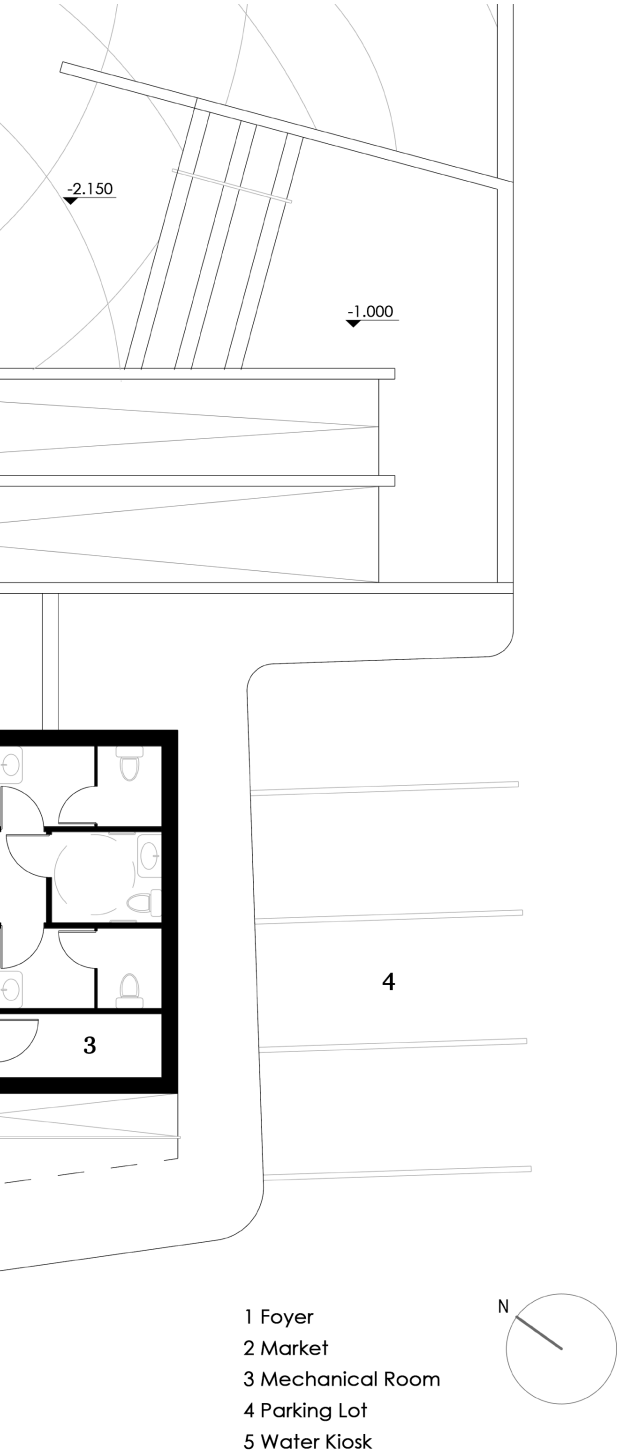


Fig 5.22 Site plan of the open market. Drawing by Author.


5
7
2
4
N
0m
10m
20m


+0.000
+0.000
+0.000
2
1
5



1 Foyer
2 Market
3 Mechanical Room
4 Parking Lot
5 Water Kiosk

Fig 5.23 Architectural plan of the open market. Drawing by Author.

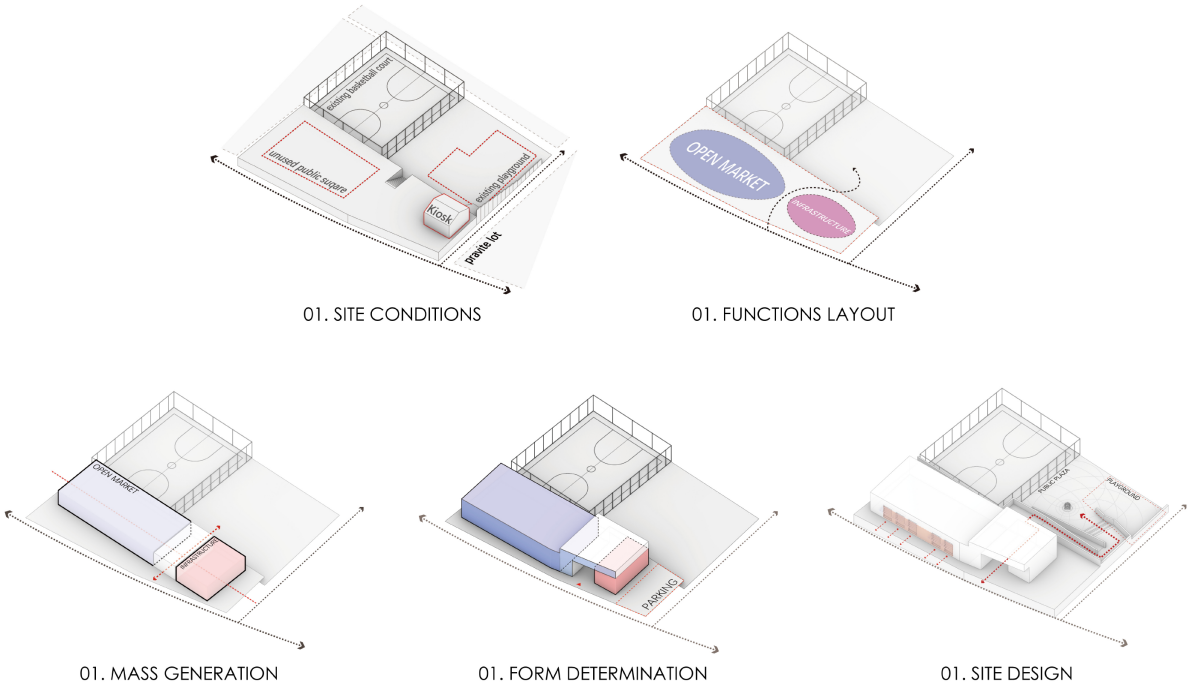


Fig 5.24 Architectural massing. Drawing by Author.

The current site consists of an underused small plaza, a basketball court, and a children's playground. To maximize the street frontage while preserving access to the rear areas, the building mass was divided into two parts. These volumes were aligned along the street corner, with portions raised in height to enhance the building's visibility and legibility.

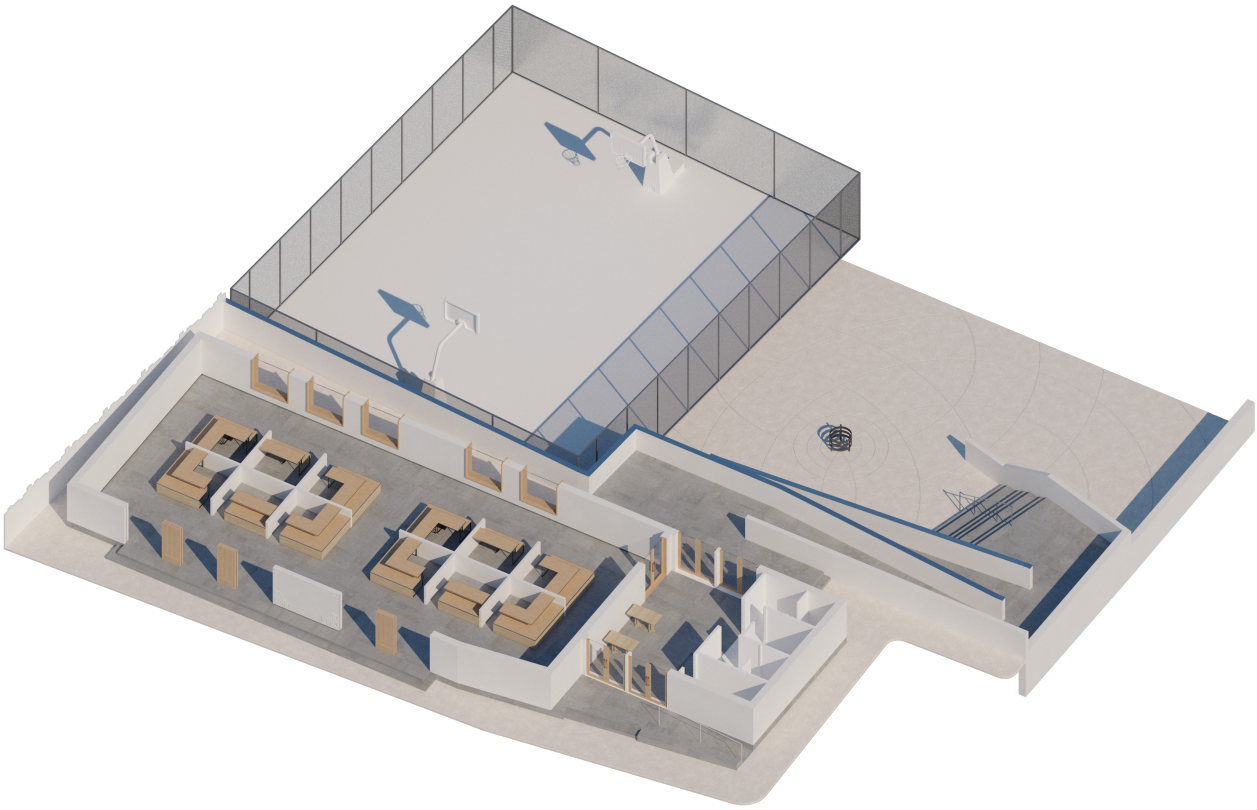


Fig 5.25 Axonometric view of the site. Drawing by Author.

The existing height difference of about 1.8 meters on the site was resolved through ramps and steps. The steps are also facing the basketball court. And a traditional fire pit was placed at the center of the plaza. In summer, people can gather around it for dancing or sharing food. The existing playground is retained.

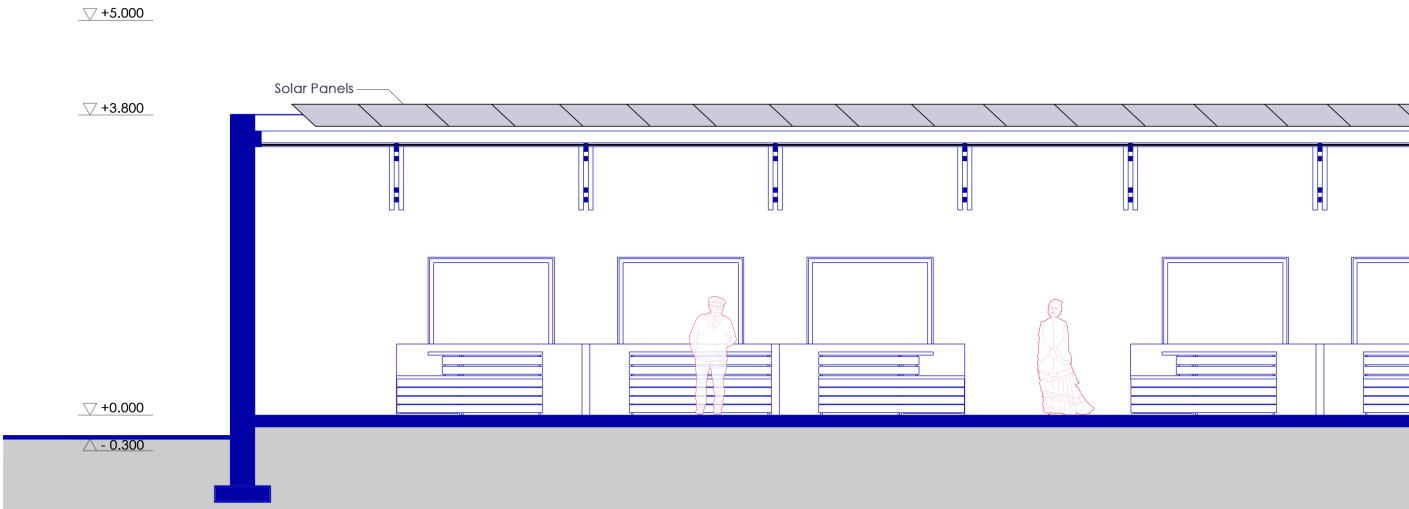
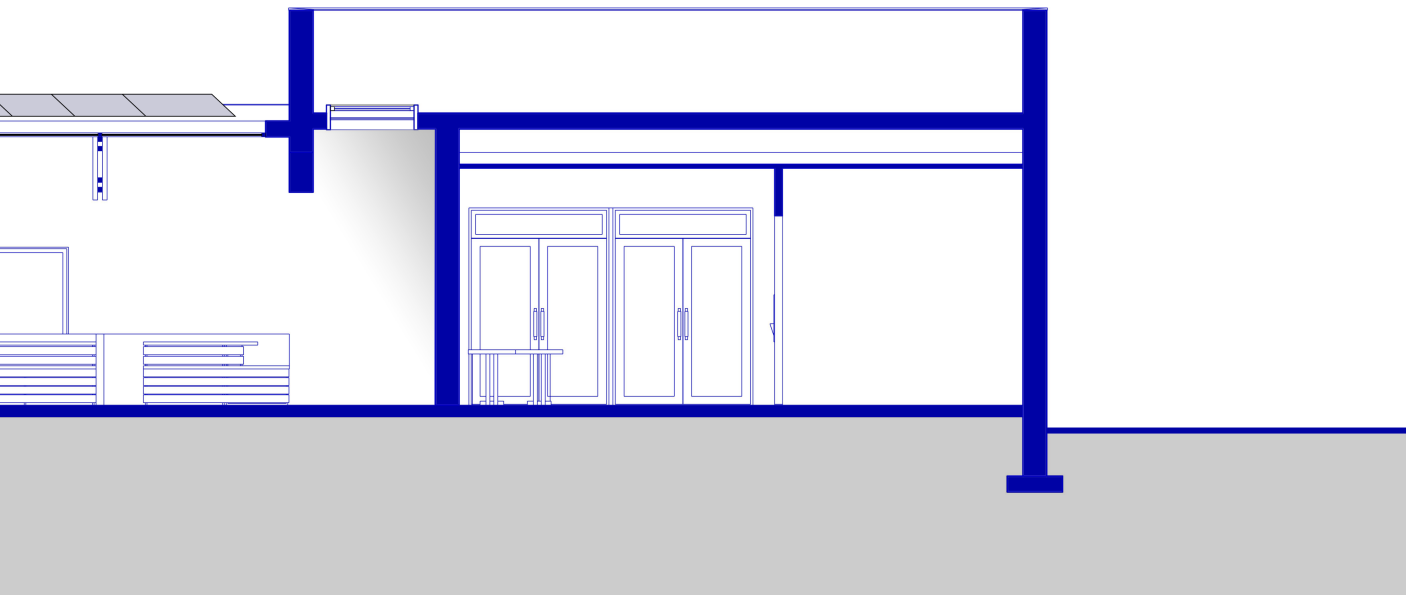


Fig 5.26 Section A of the open market. Drawing by Author.



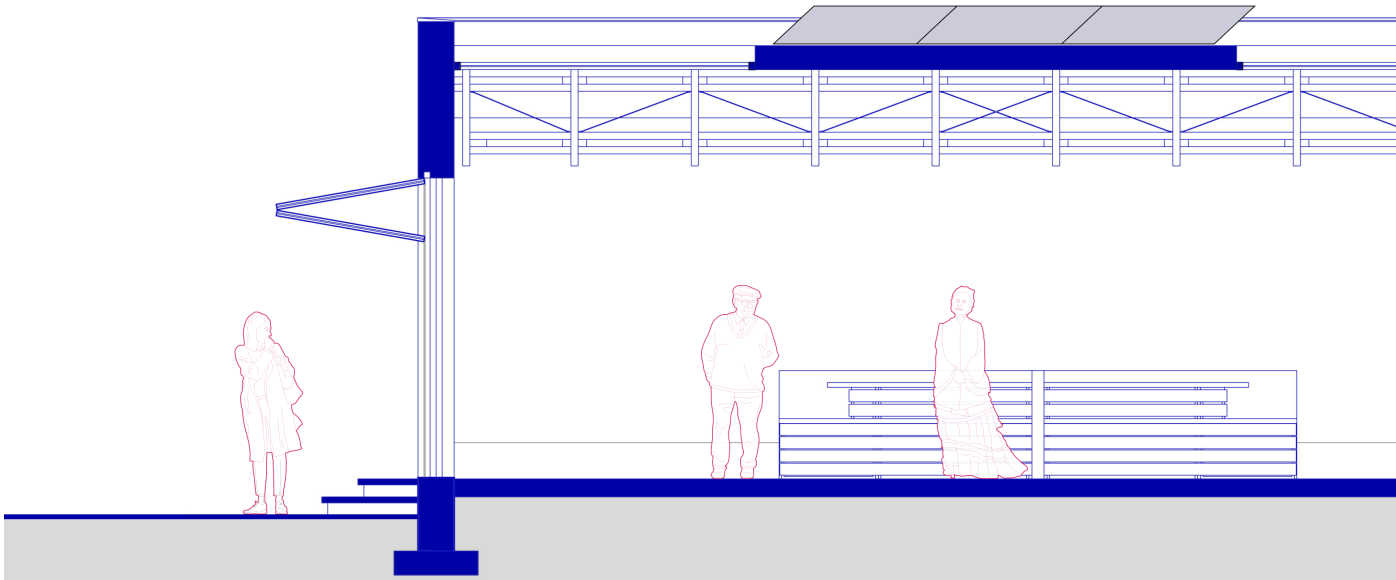


Fig 5.27 Section B of the open market. Drawing by Author.

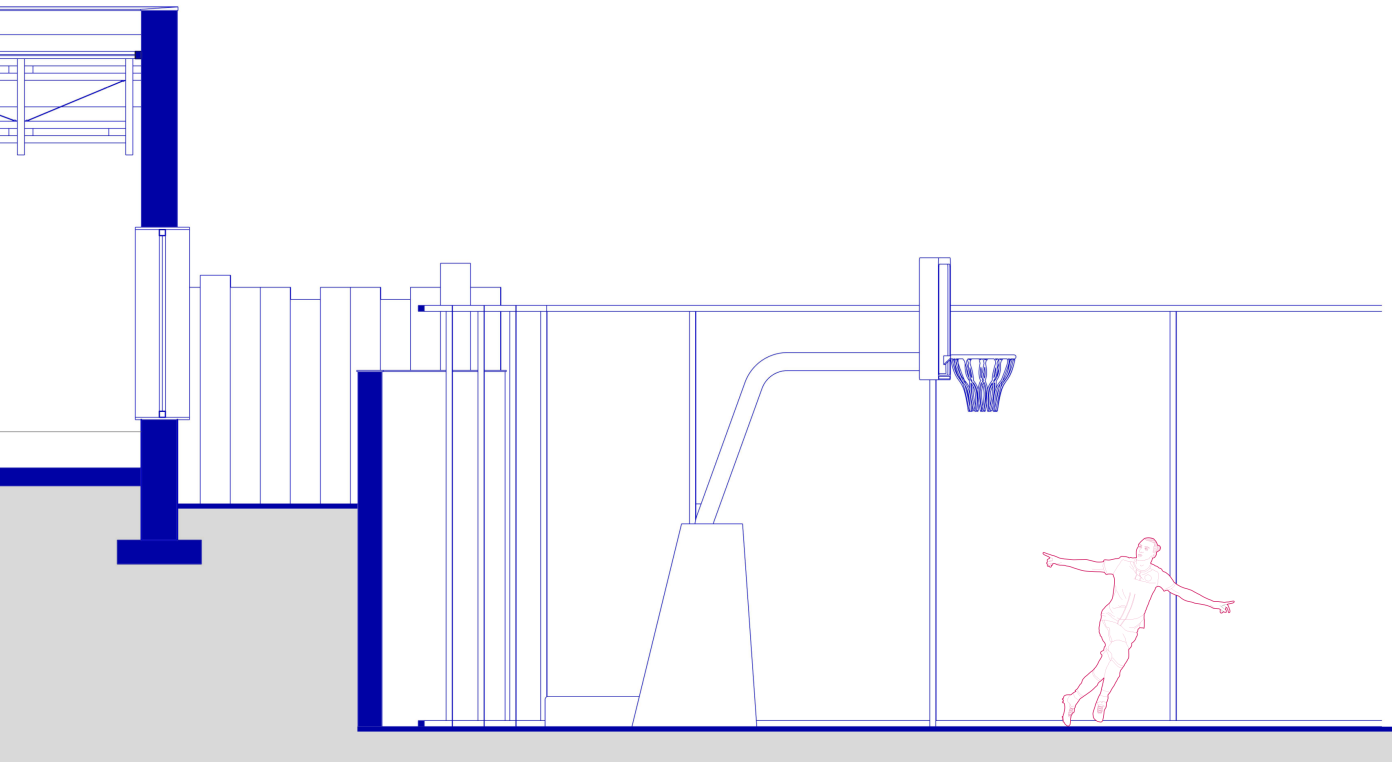




Fig 5.28 Perspective view of the open market. Rendering by Author.



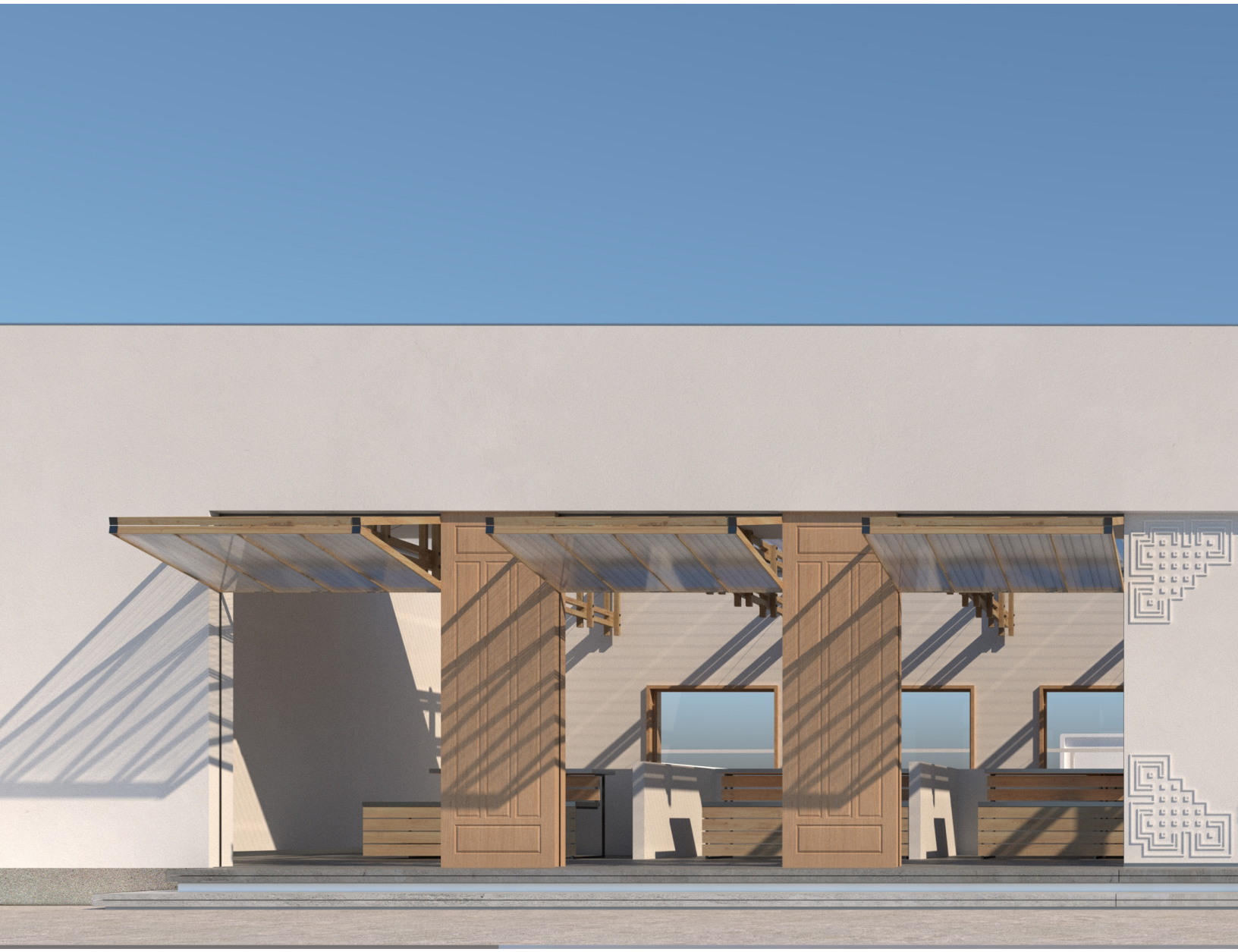


Fig 5.29 Perspective view of the open market. Rendering by Author.



C. Site C&D

Two additional interventions are proposed as conceptual projects, without detailed design at this stage. Site C is located near a main road with convenient access and relatively high traffic, making it suitable to serve a slightly broader community as a skill-sharing workshop. This space can provide basic training and production areas for woodworking, handicrafts, repairs, and sewing. In addition, some traditional skills that are gradually fading—such as Mongolian deel (traditional robe) making, *ger* construction, traditional food preparation, and traditional jewelry crafting—can also be shared and preserved here.

Recognizing the scarcity of bathing facilities in *ger* districts and the significance of hygiene and leisure during Mongolia's harsh winters, another water kiosk is proposed to be upgraded into a larger, centralized bathhouse. This facility will incorporate the soaking pools preferred by residents, providing a space not only to refresh themselves but also to engage in social interaction, especially during the cold season. While smaller shower unit may be included in other kiosks as well, this bathhouse will serve as the main facility with a higher density of application within the overall strategy, ensuring broader accessibility and a greater impact on community wellbeing.

D. Water Fetching Belt

The design also envisions a minor retrofit to facilitate residents' water fetching routes by upgrading the currently narrow, unpaved internal community roads. These roads often have steep elevation changes, become muddy during rain, and can be slippery in winter. A relatively low-cost solution involves installing wheel track belts, permeable, anti-ice tracks made of recycled bricks, alongside which residents can easily push their homemade water carts. These belts smooth out elevation changes on steep slopes by ramps, improving mobility and safety. Along the routes, small green spaces and benches are provided for residents to rest. Solar-powered streetlights will also be installed to enhance safety. These measures aim to improve the water fetching paths within the community affordably.

Beyond facilitating water collection, these retrofits also contribute to a broader urban form strategy. The *ger* districts currently exhibits a highly homogeneous and sprawling pattern, fragmented only by a few major city roads. While administrative boundaries exist, there is little sense of community. The upgraded internal paths serve as the starting point of

formalizing community streets, with intersections along major roads functioning as “gates” into each neighborhood. These nodes can later be developed into small public spaces, gradually clarifying the spatial structure of the area.

5.4 Future Development

Building on the design analysis presented above, this thesis also imagines possible future developments for the water kiosks. In the first stage, corresponding to the current situation, most kiosks rely on water trucks and have no direct connection with the city network or individual households. The second stage represents the interventions proposed in this project, where kiosks are connected to the city water supply and integrated with community functions. In the third stage, as the *ger* districts consolidate, kiosks could be upgraded into secondary water distribution stations, equipped with storage tanks and pumps to supply water directly to households. Within this framework, the primary focus of the thesis remains the spatial network of water kiosks, with the two projects presented serving as pilot interventions.

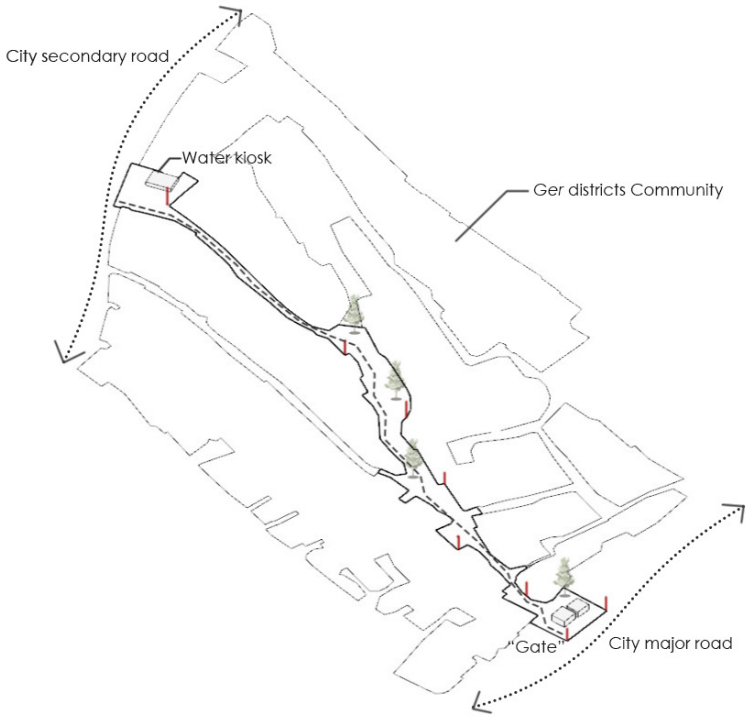
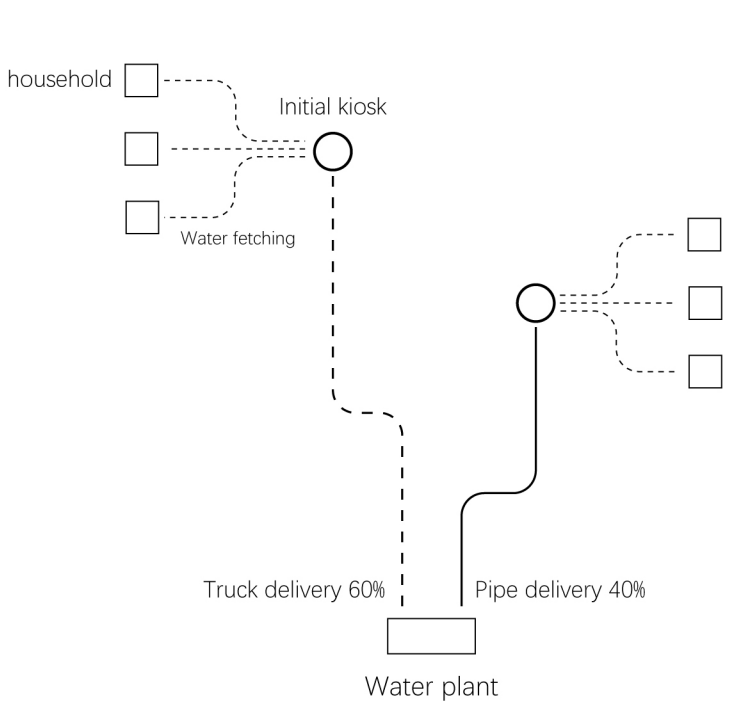
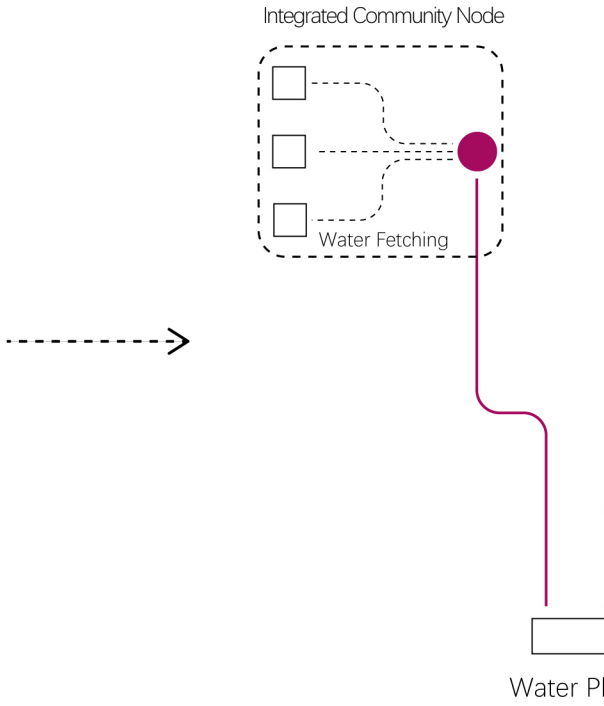


Fig 5.30 Concept of water Fetching Belt. Drawing by Author.





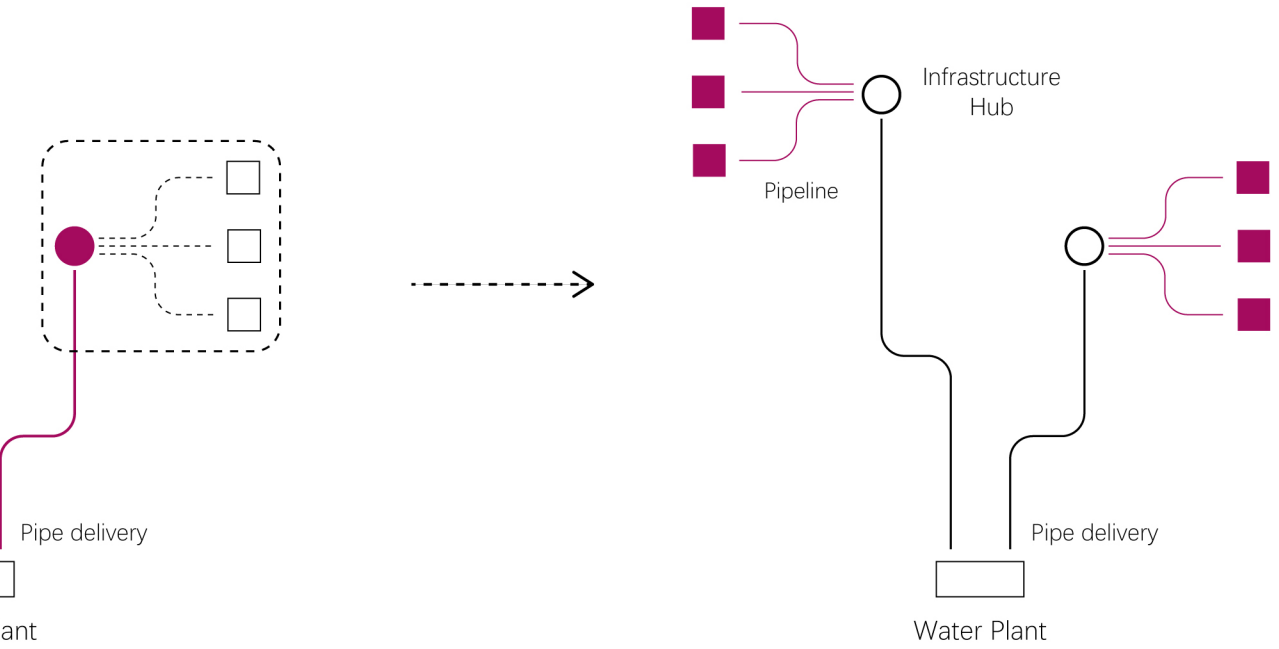
Currently, a large number of water kiosks are still supplied by water trucks, while only a few located closer to the city are connected to the piped network. Residents continue to rely on self-made water carts for daily collection from the kiosks. However, due to complex property rights and construction barriers, the water network cannot be extended to individual households, as pipelines are primarily laid along the city's main roads.

AT PRESENT

After the project is completed, t
connected to the city's piped netwo
urban water supply. As a result, a
bathhouses, public toilets, and laun
the kiosks, allowing part of reside
on-site. However, at this stage, res
water from the kiosks.

IN NEXT

Fig 5.31 Development sta



ne water kiosks will first be
ork, serving as the frontline of
additional functions such as
ndries can be integrated into
nts' water needs to be met
idents will still need to collect

15 YEARS

In Phase Three, as the existing ger districts undergo further consolidation, the widely distributed and evenly spaced water kiosks can be retrofitted with storage tanks and booster pumps to function as secondary distribution stations. This upgrade creates the technical possibility of extending the piped water network directly into individual households, enabling household-level connections and more reliable local water provision.

IN NEXT **30** YEARS

Household
Kiosk
Connected to the municipal system
Unconnected to the municipal system

ages. Drawing by Author.

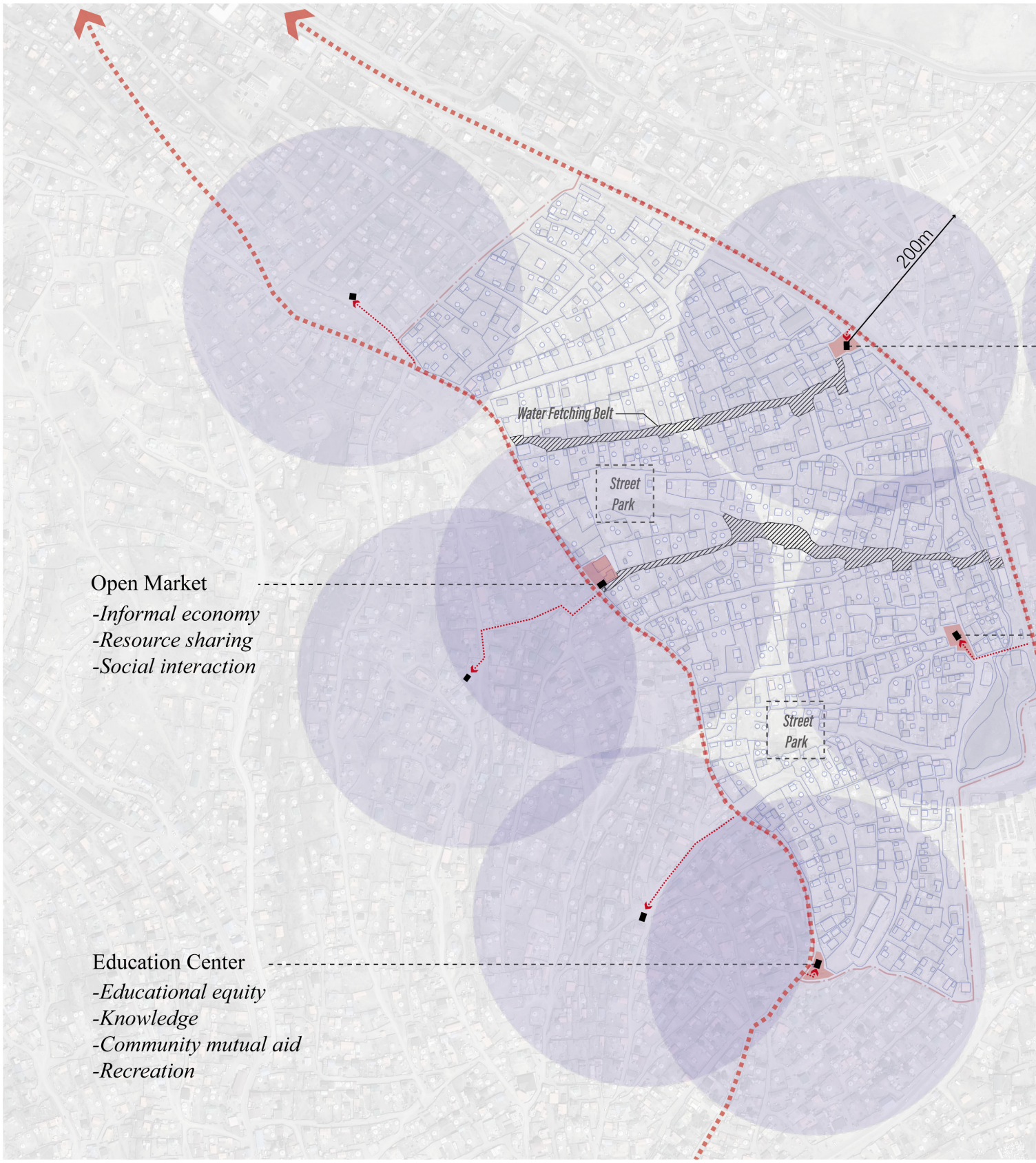
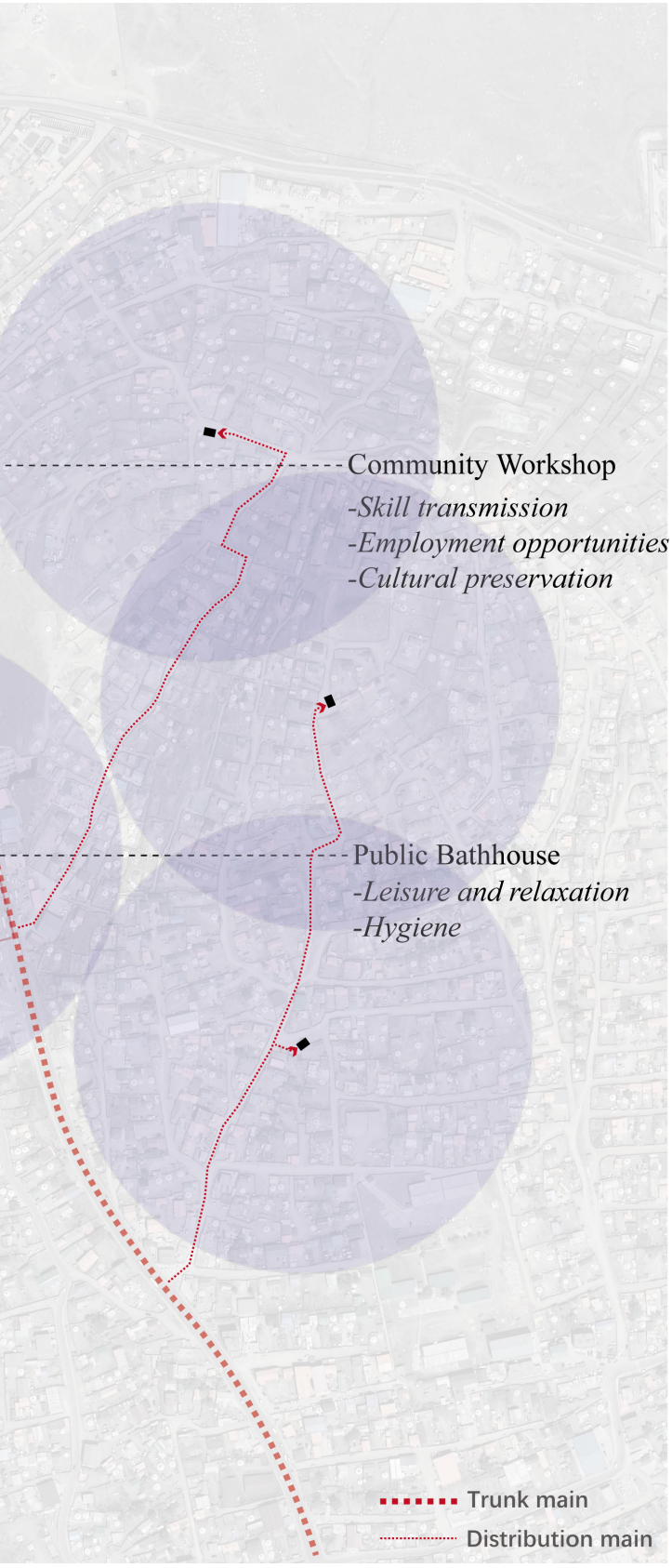
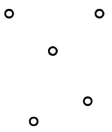


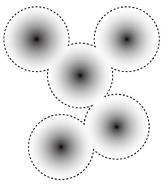
Fig 5.32 Site mapping. Drawing by Author.



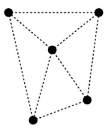
In the first two phases of the development, beyond improvements to infrastructure, the process also facilitates the gradual formation of community networks. The water kiosks, as nodes for daily water collection and social interaction, possess an inherent social quality: they not only provide public services but also create opportunities for interaction. As the piped water system is upgraded and the functional necessity diminishes, the spaces and social connections they have created can continue to be maintained and repurposed as new community nodes. This foresighted urban strategy ensures that these emerging community centers are preserved over the long term; in other words, through careful planning of infrastructure, the future community hubs of the area are effectively established.



a. Establishment of the First-Generation Water Kiosks: Scattered Distribution Shaping Residents' Water-Use Habits



b. Gradual Upgrade of Kiosks into Public Space Nodes with Infrastructure Services: Creating Public Life and Shaping Social Habits



c. Transition of Water Kiosks into Community Service Centers: Preserving the Established Community Development Networks

Fig 5.33 Formation of community networks. Drawing by Author.

CHAPTER 06 CONCLUSION

This thesis investigates the explosive expansion of Ulaanbaatar's *ger* districts by analyzing the city's historical, cultural, and land ownership systems. It identifies the complex social, political, and economic factors that have contributed to the districts' growth. Building on an in-depth analysis of current infrastructural conditions, the thesis proposes an alternative strategy for upgrading public infrastructure through a distributed network of water kiosks. Unlike conventional approaches that rely on large-scale developments, this strategy adopts light, incremental interventions aimed at improving infrastructure, activating public space, and fostering social interaction, while also responding to the nomadic values of flexibility and mobility.

The design research focuses on a selected area within Bayankhoshuu District and centers on the transformation of four existing water kiosks. Among them, two reimagined as a community education center and a open market, are developed in detail. The thesis also envisions the water kiosk network as a catalyst for broader community development, linking the sites spatially and socially across the district.

That said, the research also acknowledges its limitations. Due to the absence of fieldwork and surveys, much of the data is drawn from literature reviews and online available sources, leaving gaps in understanding the specific needs and behaviors of local residents. Nevertheless, the proposed strategy can serve as a conceptual "anchor point" for future development. With minimal intervention, it seeks to leverage infrastructure upgrades and spatial improvements in a replicable manner that aligns with the logic of incremental urban growth—particularly relevant for informal settlements worldwide.

The *ger* districts hold significant potential for future development. In addressing their unbounded sprawl, the government should consider staged and structured planning strategies, introducing clear boundaries and regulatory mechanisms while gradually formalizing road systems and infrastructure networks. By connecting the kiosks to the main water supply network, it becomes possible to extend piped water directly into individual households. Beyond the provision of basic utilities, the kiosks also serve as community nodes, integrating spaces for social interaction, education, and commerce that are largely absent in the *ger* districts. In doing so, the project seeks to restore the interconnectivity between infrastructure and community, reflecting the traditional cultural overlap of resources such as water, food, and communal life, which is often severed in contemporary urban contexts. Through small-scale, site-specific interventions, architecture can support both reliable infrastructure and accessible community spaces, contributing to the incremental improvement of everyday life in informal settlements.

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