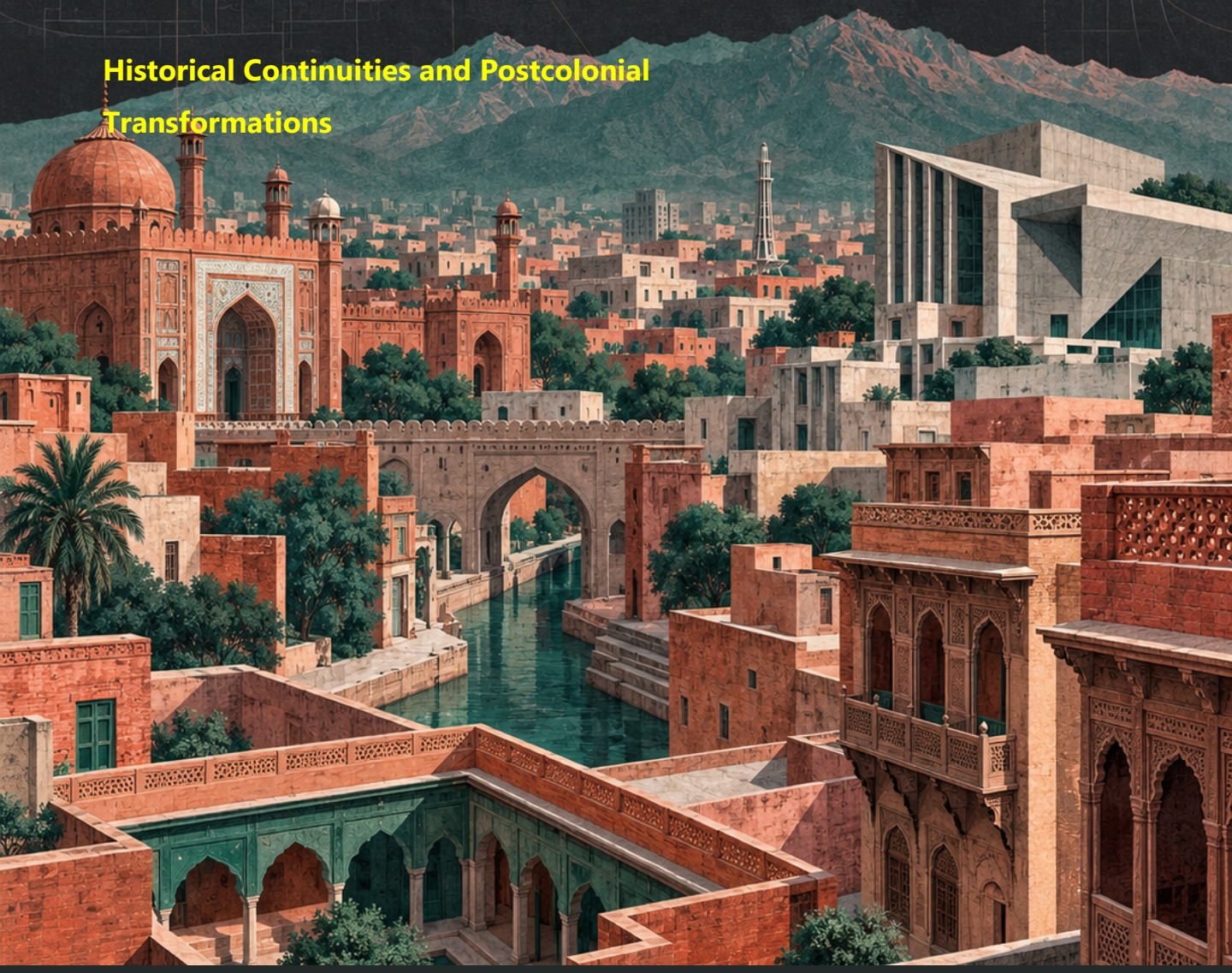
ARCHITECTURE / URBAN STUDIES

Architecture and Urban Form in Pakistan

Historical Continuities and Postcolonial Transformations



Mirza Muhammad Khurshid
Rida Zahra · Rameesha Khan

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Preface

Architecture and urban form record changing relationships between land, institutions, building practices, and everyday life. This book examines those relationships in Pakistan, asking what persists through historical change and what must be understood anew. A surviving street, courtyard, or administrative boundary may carry a different meaning as ownership, access, infrastructure, and use change around it.

The five chapters move from regional settlement and building traditions to colonial land administration, Partition and architectural production, contemporary housing and metropolitan expansion, and the linked tasks of conservation and environmental management. Case studies connect buildings and neighbourhoods to the wider networks, authorities, and livelihoods through which they operate.

The discussion draws on archaeological studies, architectural surveys, institutional records, legislation, and published research. It distinguishes observed conditions from proposals and simulations, and treats continuity as a claim requiring dated evidence. The tables organize comparisons and questions for further assessment; the figures simplify documented relationships without claiming the precision of measured site plans.

Written for students, researchers, architects, planners, and readers of urban history, the book encourages attention to both physical form and the conditions of habitation. Its practical concern is how historical understanding can support more careful decisions about buildings, services, and urban change.

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CHAPTER

01

Regional Settlement Patterns and Building Practices

IN THIS CHAPTER

1.1 Settlement Sites and Historical Continuity

1.2 Market Streets and Religious Precincts

1.3 Courtyard Houses and Neighbourhood Relations

1.4 Regional Materials and Building Craft

1.5 Alteration and Reuse of Inherited Buildings

Introduction

A historic city carries multiple histories. A road may be part of a long-established path, but the structures along the way will likely have changed. A home may contain a traditional courtyard, but will contain families whose rights to live there and earn their living are very different. A monumentally sized gate may continue to exist even though the purpose of the institution that commissioned it has since changed. Understanding these differences is important when tracing the development of architecture and urban patterns in Pakistan because a claim of continuity must identify the element that persists, such as a wall, and the period over which it survives. The age of a neighborhood's name does not tell you how old the homes are in that area. Similarly, if you see examples of architectural forms that survived to the present day, that does not mean the social organization that existed around them did too.

In addition to providing the opportunity to compare post-colonial transformations with colonial transformations, this chapter provides background information about regional conditions and building techniques and traditions in order to better understand where such comparisons occur. The primary argument of this chapter is that the "urban form" inherited by colonizers developed out of relationships between water, mobility, authority, household routines, source materials for new construction, and repetitive maintenance. Such relationships created different options in three types of communities -- alluvial settlements, heavily populated commercial neighborhoods, and mountain towns. In addition, they led to unequal distribution of space. For example, large estates and wealthy religious complexes had much larger needs for resources than ordinary households that lived in small houses above shops.

The geographic term "Pakistan," indicates the scope of this study. However, it does not indicate that all the settlements discussed were under a single governmental regime or shared an unbroken architectural tradition. The Indus settlements, the Taxila Valley Cities, Mughal Lahore and Hunza settlements were all under different regimes and economies. Including these areas allows us to explore similar relationships in different contexts rather than seeing them as sequential stages of a single national architectural development.

Colonization occurred at varying times across these regions. Therefore, we need to distinguish later studies of existing structures from evidence collected prior to colonization.

We draw upon archaeological publications, architectural surveys, institutional histories and documentation of preservation efforts. We treat Harappa as an example of an early urbanized location. Taxila illustrates how a settlement region may include successive urban centers. Two precincts centered on Wazir Khan Mosque in Lahore and Gor Khatri in Peshawar illustrate the relationship between institutions and accessibility. In addition to domestic data from Lahore, we consider construction data from the Karakoram Mountains. Finally, we examine both uses, structural developments and service changes in the Shahi Hammam and Baltit Fort as means of documenting individual building histories.

Here we treat infrastructure, household activities, maintenance and scales of continuity as historically-related issues. Regions allow us to formulate those issues in general terms; however, each statement must be supported by evidence relevant to its specific place and time. The Pakistani case studies are presented using individually identified sources. There have been no interviews conducted, measured surveys or experimental tests undertaken for this chapter. All tables and figures provided are author-developed analytical records. While they simplify documented spatial relationships and represent uncertainty, they are neither cadastral maps nor comprehensive reconstructed historical floor plans.

Thus we present a comparative document for inherited urban form. Each entry defines what continues to exist, documents the date of existence, and describes limitations of the comparative exercise. By doing so we develop a defensible starting point for subsequent chapters without assuming that a complete original city can be reconstructed from the surviving evidence.

1.1 Settlement Sites and Historical Continuity

A settlement site is a relationship between an occupied location and the resources, connections, and institutions that make occupation possible. Water at a nearby river is only one part of that relationship. Its seasonal availability, the elevation of cultivated land, the security of crossings, and the labour required to obtain it all affect how a location can be used. A defensible hilltop may depend on water conveyed from elsewhere. A productive floodplain may support settlement while exposing buildings and routes to inundation or channel movement. Site conditions should therefore be reconstructed historically rather than read directly from the present landscape.

Water and the agricultural hinterland

Harappa sits near where an older path of the Ravi existed; there was access to water, cultivation and trade. The amount of archeologically preserved materials in Harappa includes the remnants of many separate periods of use and activity rather than just the time the town was planned (Department of Archaeology and Museums, 2004a). The river relationship to the town is important because it links the town itself to the land and labor needed to sustain it. A description limited to streets and building placement would ignore the creation, transportation, and storage needs of an urban population.

The Beas Landscape and Settlement Survey looked at these larger relationships among settlements using a combination of settlement maps, artifact comparisons, and studies of the environment. The project connected rural sites to the chronological framework of the Harappa excavations, studied changes over time in the floodplain (Wright, Shuldenrein, & Mughal, n.d.), and made a particularly strong methodological contribution. It is essential to place a site's location, its period of occupation, and the history of a channel on a compatible timeline. Simply drawing a map illustrating a dry channel next to a mound containing artifacts does not prove that the channel became dry while that settlement was being used.

Water can affect whether a settlement will continue to exist without necessarily destroying it. Unreliability may result in less productive crops, changed times for travel, or require more effort to obtain reliable supplies. On the other hand, providing a new way to obtain water can provide an opportunity for continued occupation under conditions previously considered unfavorable. Mechanisms like these are possible to examine. Evidence linking a dated environmental change with changes in occupation, subsistence, or infrastructure is necessary to determine if such a mechanism actually occurred. However, failure to find evidence of this nature should remain clearly evident in the discussion.

Giosan and others (2012) associate changes in Harappan settlement locations with the changing shape of rivers and decreasing strength of monsoons. This research illustrates an initial period characterized by relatively stable riverine conditions favorable to agriculture followed by hydroclimatologic stress that increased the vulnerability of agricultural production. The research provides some evidence supporting evaluation of environmental pressures and variability in response throughout a large geographic area. However, the research does not represent a complete causal history for each abandoned mound. Additionally, simply establishing a regional correlation cannot identify the departure date, ultimate destination or decision-making processes for individual communities.

Harappa as a defined early urban predecessor

Meadow and Kenoyer (2001) distinguished the earlier Ravi and Kot Diji phases before the major Harappan urban phase (c. 2600-1900 BCE), in their excavation synthesis. They describe an initial urban character during the Kot Diji phase. They also identified late occupational and transformation activity. The sequence illustrated change occurring within a given archaeological site. Therefore, the sequence should not be condensed into an account in which a completely developed city instantaneously appears, remains unchanged, and then disappears in one event.

Useful architectural precedents occur when the comparative analysis addresses a specific problem: accessibility between buildings, management of water, organization of production, etc., or how construction relates to exchange. Similarity is not sufficient to demonstrate continuity. For example, a similar court design in a much later house may provide natural lighting, facilitate circulation, enhance privacy, or meet land-use requirements without descending from an unbroken lineage of Indus Valley dwellings. A claim of historical transmission would need evidence of practice, construction or social learning between related intermediates.

In addition to demonstrating the utility of archaeological data for identifying potential predecessors, the interpretation of Harappa also exemplifies the limitations imposed upon our understanding by archaeological visibility. Exposed portions of a given archaeological site constitute but a small portion of the previous settlement. Subsequent disturbance (by humans), erosion, and removal of structural elements all impact what currently survives. Gaps in visible architectural components may reflect either destruction or inadequate investigation as well as

cessation of occupancy. Similarly, artifacts recovered from later contexts may have been reused. The age of an artifact and the age of the final depositional context are distinct types of data.

Taxila and the movement of an urban centre

Taxila provides a clearer comparison between related settlement sites than an unsupported pairing of an Indus city with a contemporary metropolis. The World Heritage description identifies Bhir, Sirkap, and Sirsukh within a wider archaeological landscape. Bhir is associated with the earliest historic city; Sirkap, founded in the mid-second century BCE, has a substantially ordered street layout; and Sirsukh represents a later Kushan urban enclosure. Religious sites extend beyond these urban compounds (UNESCO World Heritage Centre, n.d.-b).

The distinction between these places changes the meaning of continuity. The region remained important across successive political settings, but its urban history cannot be represented by one unaltered footprint. Administrative investment and the establishment of a different urban enclosure could redistribute activity within an already connected landscape. Such a sequence may involve overlap, selective relocation, or the continued use of earlier places. The chronological relationship must be established site by site rather than reduced to a procession of capitals replacing one another immediately.

Political authority enters this explanation through concrete actions: commissioning an enclosure, maintaining a route, supporting a religious establishment, or directing resources towards a particular centre. A change of dynasty is a chronological marker, not a sufficient spatial mechanism. Similarly, the presence of traded objects indicates connections, but it does not by itself reveal the volume of exchange or prove that a particular road caused urban growth. The strongest account combines occupation evidence with the institutions and routes that can be documented for the same period.

Recording survival and interruption

Four terms should remain distinct. Survival refers to the continued existence of a specified feature. Continued occupation concerns use of a location across an identified interval. Relocation concerns a shift to another site, requiring evidence of the relationship between departure and arrival. Reoccupation concerns renewed use after an interruption. These categories can coexist within one settlement: an old wall can survive abandonment and later become part of a reoccupied compound.

Table 1.1 records selected comparisons without converting incomplete evidence into uninterrupted continuity. Its date ranges describe the cited evidence and should not be read as precise dates for every building. A fuller settlement profile would add map references, excavation areas, environmental samples, and competing interpretations. Where occupation is uncertain, the correct entry is an unresolved interval, not a continuous line drawn through missing information.

Table 1.1. Dated settlement profiles and limits of continuity

Site and reference period	Documented setting or sequence	What the comparison can track
Harappa Fourth to second millennia BCE	Earlier Ravi and Kot Diji phases; major urban phase around 2600-1900 BCE; subsequent occupation. Earlier Ravi channel setting.	Change within an excavated site. Later occupation does not establish a continuous bridge to a contemporary city.
Harappa hinterland Periods established by survey	Beas survey integrates sites, artefacts and landscape chronology.	Relationships between rural occupation and the urban centre; individual channels and sites require dated correlation.
Bhir, Taxila Early historic phase	Earliest historic urban centre in the cited synthesis, conventionally associated with the sixth century BCE.	A defined settlement footprint within a larger region; exact occupation transitions require excavation records.
Sirkap, Taxila From mid-second century BCE	A later fortified and more regularly laid-out urban site.	Comparison of urban sites and layouts; not proof of an instantaneous or complete population transfer.
Sirsukh, Taxila Kushan period	Later urban enclosure north of Sirkap.	Persistence of regional significance alongside a changed urban location; overlap and causes remain distinct questions.

Sources: Department of Archaeology and Museums (2004a); Meadow and Kenoyer (2001); Wright et al. (n.d.); UNESCO World Heritage Centre (n.d.-b). Dates are approximate and refer to source-defined phases.

1.2 Market Streets and Religious Precincts

A precinct is the spatial setting through which an institution operates. Its boundary may include a mosque or shrine, the streets approaching it, premises providing income or services, and spaces used at different times by worshippers, traders, residents, and visitors. Defining that setting requires more than drawing a line around a surviving monument. Entrances determine where people arrive; frontages determine where exchange can occur; and surrounding properties may support the institution economically while belonging to different categories of ownership and control.

The Wazir Khan precinct in Lahore

The 2012 conservation assessment places Wazir Khan Mosque within an ensemble established in the seventeenth century and supported by an endowment recorded in 1641. It describes shops, a specialised bazaar for calligraphers and bookbinders, a hammam, wells, and a serai among the associated components. The mosque's eastern approach meets the Chowk through its entrance system, while Kotwali Bazaar runs beside the northern frontage. The report treats the identification of the Chowk with the serai mentioned in the endowment as an interpretation, not a demonstrated equivalence (Aga Khan Cultural Services-Pakistan [AKCSP], 2012).

This arrangement makes commercial and religious activity part of the same spatial problem. A premises associated with an endowment can contribute to institutional maintenance while also accommodating a livelihood. Its entrance and frontage connect that financial relationship to the street. For historical analysis, however, a statement about endowed property must be separated from evidence of rent collection, actual occupancy, or expenditure on maintenance. An intended source of income does not prove that receipts were continuous or that they were always used as intended.

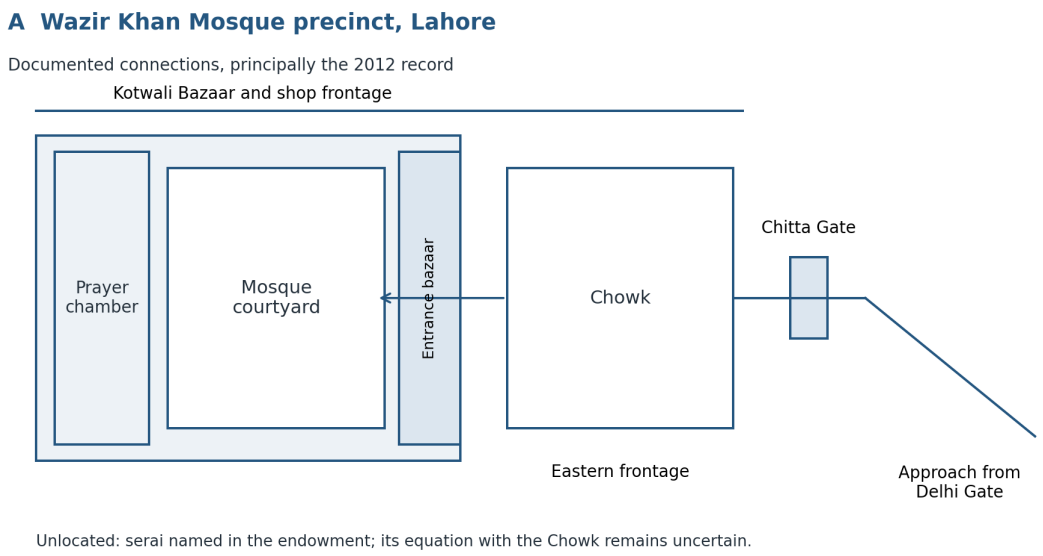
Movement through the precinct also had different destinations. A traveller following a principal route, a customer approaching a shop, and a resident turning into a side lane did not use space in identical ways. The position of an institution could draw activity towards a particular opening without determining every surrounding use. The important analytical unit is therefore a sequence of connections: route to frontage, frontage to entrance, and entrance to institutional grounds. A building's visual prominence and its practical accessibility should be recorded independently.

Gor Khatri in Peshawar

The Permanent Delegation of Pakistan to UNESCO (2026) describes successive religious, commercial, and administrative uses at Gor Khatri. Its near-square enclosure has eastern and western gateways, a central courtyard, and ranges of cells and chambers. Compared with the Wazir Khan precinct in Lahore, this arrangement focuses access through a bounded compound. The submission associates its Mughal caravanserai phase with accommodation, wells, a hammam, and a mosque. These facilities indicate provision for travelers, but do not establish how frequently services operated or the identities and numbers of users.

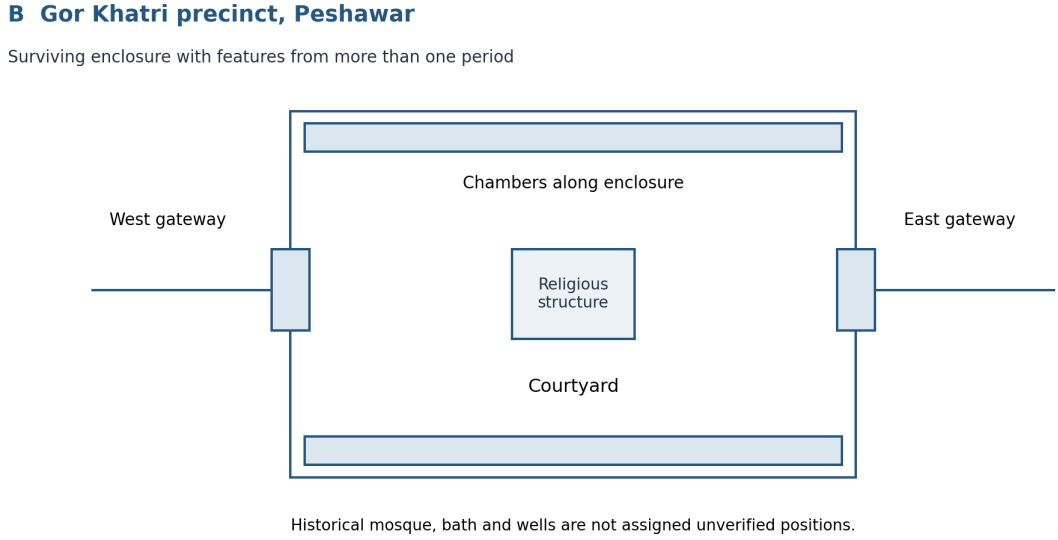
To represent the compound's changes in phases, an earlier religious use must not be assigned the footprint of a later structure merely because both occupied the same enclosure. Nor do two opposing gates establish unrestricted access at all times. Opening hours, restrictions, temporary markets, and ceremonial uses require additional historical documentation. Figure 1.1 distinguishes documented connections from historical elements whose positions remain uncertain.

Figure 1.1a. Institutional grounds and access in Lahore



Source: AKCSP (2012), executive summary. Author-developed schematic plan with no metric scale. Solid lines show documented relationships; geometry is simplified.

Figure 1.1b. Institutional grounds and access in Peshawar



Source: Permanent Delegation of Pakistan to UNESCO (2026). Schematic plan with no metric scale. Surviving features from several periods are combined; this is not the seventeenth-century layout.

Patronage and the organisation of access

The two precincts show why institutional influence should be analysed through mechanisms rather than assumed from proximity. Patronage could assemble land, fund construction, establish maintenance arrangements, and create entrances around which commercial activity developed. The resulting relationships could then outlast the original patron. To demonstrate that a particular institution shaped a street, one would seek dated plans, deeds, construction accounts, or descriptions that connect its establishment with the street's formation or alteration.

Religious gatherings introduce another temporal scale. A space adequate for ordinary passage may be used differently during prayer, a commemorative event, or a seasonal gathering. A plan records available space, but it does not record how long an activity lasted or who was temporarily displaced. A historical precinct study should therefore distinguish permanent premises, intermittent occupation, and routes that had to remain passable. Where gathering schedules are undocumented, spatial capacity can be discussed without inventing attendance or ritual routes.

The benefits of institutional proximity were also unlikely to be identical for every user. A busy frontage could offer customers while creating congestion for residents. A controlled entrance could provide security while restricting access. These are analytical possibilities, not findings about particular households in either precinct. They identify the social evidence needed to explain how a spatial arrangement worked: tenancy records, complaints, transaction histories, observations, and accounts from different categories of user.

Gardens and waterworks beyond the monument

Gardens extend the same approach beyond the commercial street. Lahore's Shalimar Gardens, constructed in 1641-1642, organise paths, buildings, and water across three terraces (UNESCO World Heritage Centre, n.d.-a). Their architectural form can be examined as a system of levels and controlled movement. The supply and distribution of water connect the enclosed garden to a larger territory, even when an architectural description begins at its boundary wall.

This connection cautions against treating water as decoration alone. A basin, channel, or cascade requires a supply, gradients, and maintenance. Historical investigation should identify the intake and conveyance system, rights of access, interruptions, and the labour involved, using evidence appropriate to the period. It should also distinguish an original arrangement from later repairs or substitutions. A surviving basin cannot establish that the entire historical water network remains operational.

Reading the precinct after change

Spatial legibility means that a relationship can still be identified; it does not mean that its original function continues. A shop opening may remain after a trade changes. An approach may still lead to a courtyard that has acquired a different use. Conversely, a religious institution may continue while an entrance is moved or adjacent property is rebuilt. Historical comparison is strongest when it records these components separately.

For each precinct, the practical record should contain a dated base plan, an entrance register, a frontage and use survey, an institutional property record, and a chronology of changes. Documented surviving elements should be drawn differently from vanished but securely located features. Features known only from texts should be listed without invented coordinates. This convention allows a plan to remain informative while making its evidential limits visible.

1.3 Courtyard Houses and Neighbourhood Relations

The courtyard house is an important part of the region's architectural record, but it cannot stand for every dwelling or every household. Houses differ in plot size, depth, shared boundaries, access to upper floors, and the amount of open space they contain. Within one street, a residence with an extensive court can coexist with buildings whose accommodation depends on rooms above commercial premises. Comparing these conditions requires attention to both the building and the rights through which people occupy it.

Comparing ordinary housing and the haveli

Yamane and colleagues (1999) distinguish Lahore houses with ground-level courtyards, houses with courtyard-like terraces above, and houses without courtyards. Their published plans include an ordinary shop-house, identified as No. 12 near Sootar Mandi Bazaar, and the much larger haveli of Jamadar Khushhal Singh. Table 1.2 preserves their different scales instead of presenting equal-sized drawings as equivalent dwellings. The ordinary example is dated to the mid-nineteenth century, so it illustrates surviving building practice rather than providing direct evidence of a precolonial household.

Table 1.2. Domestic comparison at the level of access and occupation

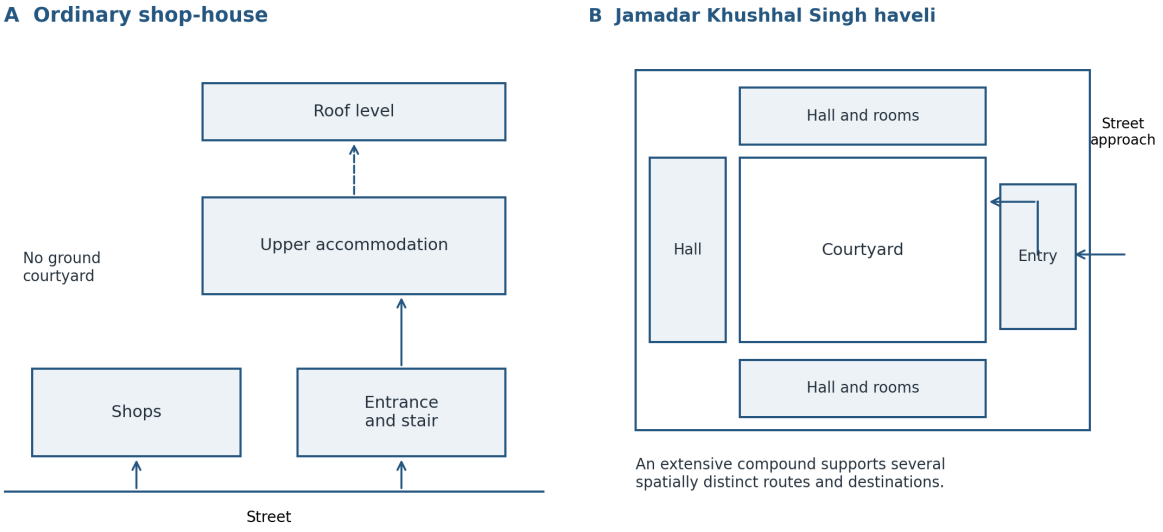
Comparison field	Ordinary example	Elite example
Source identification	No. 12, Sootar Mandi area, in Yamane et al. (1999), Table 1 and Figure 2.	Jamadar Khushhal Singh haveli, Figure 4 in the same study.
Reported plot area	62.4 m^2.	Approximately 7,750 m^2.
Plan relationship	Shops and entrance at street level; accommodation above; no courtyard.	Entrance passage, extensive courtyard and surrounding halls and rooms.
Historical limit	Mid-nineteenth-century date in the survey; not securely a precolonial example.	Sikh-period elite association; published plan records surviving form, not every original use.
Questions about work	Who occupied the shop and residence? Were access and services shared?	Which spaces accommodated reception, service work and household activities, and when?
Questions about control	Who controlled stairs, doors, roof access and alterations?	Which occupants could enter each space, and how were rules enforced or negotiated?

Source: Yamane et al. (1999), pp. 220-222. Questions in the final two rows are author-developed; they are not reported interview findings.

The comparison is made at the same analytical level: the route from street to entrance, the relationship between circulation and rooms, and the distinction between access to work and access to residence. Whole-property measurements have a different role. They establish the resources represented by the cases and prevent an elite compound from becoming an unspoken model for ordinary accommodation. A large courtyard can allow several activities to be separated spatially; a smaller building may require separation by floor, time, or household agreement.

Figure 1.2 is an access diagram drawn from these published examples. It does not reproduce their complete geometry or provide construction dimensions. A metrically scaled comparison would require the original measured drawings to be registered to the same scale and the same floor level. Enlarging the small house to fill one panel while shrinking the haveli to fill another would conceal their material inequality. The present diagram instead uses matching symbols for equivalent relationships and retains the reported difference in area in Table 1.2.

Figure 1.2. House and street access at a common analytical scale



Common analytical scale: street, threshold, circulation and rooms. No metric scale; the two properties are not equal in area. Dashed arrow: onward roof access to investigate in a complete floor-by-floor record; it is not a measured stair reconstruction.

Source: author-developed comparison based on Yamane et al. (1999), Figures 2 and 4. Geometry is simplified; the panels are not measured plans. Arrows indicate access relationships, not observed movements or the rights of particular occupants.

Thresholds and the control of encounter

A threshold can mediate several kinds of access. An entrance passage may interrupt a direct view into the interior while allowing people to reach rooms or stairs. A platform at the street edge can support sitting, trading, or conversation, depending on local use. An upper opening may permit observation of the street without requiring the observer to enter it. These physical possibilities should be separated from evidence of who was entitled to use them.

A turn in an entrance is observable in a plan. Its role in supporting privacy is an interpretation that can be strengthened by the position of doors, screens, and occupied spaces. The claim that it successfully protected every resident's privacy would need additional evidence. A tenant sharing circulation with another household, for example, may experience an inward-facing building differently from an owner controlling the whole property. Domestic privacy is a relationship among occupants, visitors, and authority as well as a characteristic of walls.

A Lahore study by Malik and Rashid (2016) describes a Mandi Bazaar haveli in which the entrance serves both visitors and residents and connects directly with the courtyard. The account also records shops along its eastern side. This case is useful because it complicates an idealised equation between a courtyard and complete separation. The authors interpret the building through religious norms; the spatial observations can be retained without assuming that a normative model fully explains the building's construction or every occupant's experience.

Domestic work and livelihood activity

A house-and-street comparison must include what people did in the spaces, where this is documented. Rooms and open areas could be used at different times for cooking, washing, storing goods, receiving visitors, or paid work. Physical accommodation for a task does not establish that the task occurred there. A large unlabelled room should not be converted into a workshop solely because workshop use would fit the chapter's argument.

The shop-house is nevertheless a concrete starting point for examining the relationship between residence and livelihood. Commercial access at street level and domestic circulation above or behind it create opportunities for proximity between work and home. The social consequences depend on ownership and occupancy. The person running the shop may occupy the residence, rent only the commercial premises, or employ people who live elsewhere. An architectural plan cannot decide among those arrangements.

Where the evidence permits, a daily-use record should identify the task, its location, the person undertaking it, the time involved, and the space or equipment that must be shared. Unpaid work deserves the same spatial attention as a named trade. Washing and food preparation may require water, drainage, storage, and movement between levels. Care work may depend on sightlines or proximity. These demands can compete with commercial storage or visitor reception even when the building's plan remains unchanged.

The distinction between physical alteration and negotiated use is particularly important. A household can change the use of a courtyard through timing, movable screens, or furniture without changing its permanent walls. Conversely, a partition may record an earlier agreement that no longer governs use. A survey conducted at one moment should therefore record both fixed features and temporary arrangements, while retrospective accounts should identify when a practice began and who remembers it.

Gender and unequal access to space

Gender is relevant to domestic organisation, but it should not be used as a universal explanation for every inward-facing plan. Privacy norms intersect with age, wealth, status, household composition, occupation, and the presence of visitors or employees. The arrangement of a wealthy residence may make spatial separation possible in ways unavailable to a smaller household. The existence of a designated reception area also says little about who cleaned it, served its users, or could enter it outside formal occasions.

Historical room names require careful interpretation. A term associated with men, women, guests, or service may indicate intended use, customary use, or the terminology of a later recorder. It is evidence of a classification, but the frequency and enforcement of that classification remain separate questions. Where personal accounts survive, they should be compared with the plan. Where they do not, the analysis can identify possible control points without inventing the movements of particular people.

Rooftops and shared walls further complicate the boundary between household and neighbourhood. A wall can support two buildings while separating their occupants. A roof may provide useful open space but depend on a stair controlled by one tenant. Changes in the height of an adjoining building may alter light and visibility without changing the first property's internal arrangement. Domestic space is therefore partly produced by neighbouring decisions, not only by the household's own rooms.

The meaning of the mohalla

The term mohalla should be defined according to its use in each source. An administrative division, a named locality, and a network of social affiliation need not have identical boundaries. A researcher may also use the term for a physically recognisable group of lanes. Transferring one meaning into another can produce a false impression that shared residence proves social cohesion or that a recorded boundary describes everyday interaction.

For comparison, the record should identify who named the neighbourhood, when the name was recorded, and which boundaries can actually be mapped. It should then distinguish links based on access, shared services, religious institutions, kinship, or occupation. The result may be overlapping areas rather than a single enclosed unit. This makes it possible to examine neighbourhood relations without assuming that all occupants shared resources equally or understood belonging in the same way.

1.4 Regional Materials and Building Craft

Building materials acquire architectural meaning through their assembly. Earth can form a wall, a mortar, a roof covering, or a repair layer; timber can span an opening, support a floor, or connect parts of a masonry structure. A useful regional comparison therefore examines foundations, walls, roofs, openings, and drainage together. Lists of materials alone cannot explain why a building stood, how it was maintained, or what conditions its occupants experienced.

The Lahore masonry assembly

The Lahore housing survey describes brick construction with timber components in floors and openings (Yamane et al., 1999). In such an assembly, wall mass, span, floor support, and exposure to moisture have to be considered together. The dimensions and condition of an individual wall matter more than a general statement that an old house was built with thick masonry. Added floors, altered openings, and the removal of internal support can change how an inherited assembly carries loads.

Brick also represents a chain of work beyond the site. Earth must be prepared, units formed, and, for fired brick, fuel and kiln labour supplied. Mortar and surface finishing require their own materials and skills. Transport conditions and patrons' resources influence which products can be obtained. These are the processes a craft history should reconstruct through accounts,

material analysis, and workshop evidence. The use of a locally familiar material does not prove that every input was local or that all builders had access to the same quality.

Lime similarly needs to be understood as part of a specified mixture and application rather than a timeless recipe. A record should distinguish bedding mortar, pointing, render, and decorative finish. Different layers can belong to different periods. Visual similarity is insufficient to establish identical composition, and a hard later repair may behave differently from the surrounding historic material. Where no analysis has been made, the description should remain at the level actually supported by observation.

Timber and stone in the Karakoram

The Karakoram evidence offers a contrasting setting in which stone, earth, and timber were combined in both domestic and monumental structures. Hughes (2005) describes substantial variation among local building forms and discusses the importance of roof maintenance and structural connections. His account distinguishes ordinary construction from more elaborate timber reinforcement in important buildings. It does not support assigning one uniform tradition to every mountain community.

At Baltit, the technical account identifies longitudinal timber members and cribbage at corners or wall junctions, combined with stone and earth infill. It also documents deterioration and problems associated with later additions (Tan, n.d.). The relevant lesson is that the contribution of timber depends on how members connect and on their condition. The visible presence of wood is not enough to establish the behaviour of the whole building.

This comparison also places craft labour within the explanation. Cutting and joining timber, selecting stone, preparing earth, and constructing a roof require different sequences of work. A household might have access to material while lacking the labour, specialist knowledge, or time needed to assemble it well. A patron could obtain skills unavailable to a small household. The distance to a supply source, the reuse of older components, and the availability of repair expertise all belong in the material record.

Environmental adaptation as a conditional relationship

An environmental explanation should specify a mechanism and the conditions under which it operates. Shading can reduce direct solar exposure, but its effect depends on orientation, season, and the space being shaded. Ventilation requires a usable path for air movement and an appropriate relationship between indoor and outdoor conditions. Thermal mass can moderate the timing of temperature change, but it does not generate cooling independently of the building’s wider heat balance. These principles identify questions for investigation; they are not performance results for the buildings discussed here.

Courtyards require the same care. Their proportions, surface finishes, shading, and connection to rooms affect exposure and movement of air. Occupants may change their use seasonally or during the day. A courtyard can be shaded for one period and receive substantial sun at another.

A convincing thermal claim therefore needs the date and conditions of observation, information about occupancy, and measurements or a transparent simulation. Describing a building as climatically responsive cannot substitute for those particulars.

In a cold setting, restricted openings and compact accommodation can reduce exposure while creating other requirements for daylight, air quality, and smoke removal. In a warm setting, an opening intended to admit air may remain closed for security, privacy, dust, or noise. A feature can thus cease to provide an expected benefit even when it remains physically intact. The relationship between environmental performance and household practice is part of the architecture, rather than a secondary complication.

Maintenance and the limits of transfer

Maintenance has its own geography and social organisation. Access to a roof may depend on a neighbouring property. Repairing a shared wall may require agreement between occupants with different priorities. A household may postpone work because materials are unavailable, because a tenancy arrangement makes responsibility uncertain, or because income arrives irregularly. The physical consequences can accumulate gradually, making the eventual failure appear sudden when its causes developed over a much longer interval.

The word “traditional” should therefore not function as a certificate of durability. A surviving structure may have received repeated repairs, benefited from unusually favourable conditions, or survived while less successful examples disappeared. Nor does a recent material necessarily produce a better result. The appropriate comparison concerns a complete assembly under specified conditions, including workmanship, maintenance, use, and changes to loading or moisture.

Transferring an inherited technique to another setting requires more than copying its appearance. A roof covering that depends on frequent attention may be unsuitable where access or labour is unavailable. An assembly documented in a relatively dry location cannot be assumed to behave identically under prolonged wetting. A change in storey count can alter structural demands. These limits should be evaluated explicitly before a historical example is converted into a contemporary design recommendation.

An assembly record

Table 1.3 brings the material comparison together. It records documented features separately from questions about performance. The absence of test data is not filled with an assumed temperature reduction, service life, or seismic rating. This is a historical and analytical record, not a construction specification. Its purpose is to identify the assembly that later chapters can follow as materials, labour markets, regulations, and household requirements change.

Table 1.3. Comparative building assembly record

Assembly field	Lahore housing and masonry context	Karakoram and Baltit context
Material system	Surveyed brick construction with timber floor and opening components. Record mortar and finish layers separately.	Stone and earth combined with timber; elaborate connections in selected monumental buildings.
Foundations and support	Record depth, bearing conditions, shared walls and later changes; no universal dimensions assumed.	Record slope, foundation medium and the relationship of additions to earlier support.
Roof and water	Identify covering, gradients, drainage, beam ends and sources of wetting.	Record earth roof layers, timber support, drainage and repair history.
Openings and exposure	Measure location, shading and actual opening practice rather than assuming ventilation.	Record openings, smoke removal, daylight and seasonal use without assigning a measured thermal benefit.
Labour and supply	Record brick production, fuel, transport, joinery, mortar preparation and who paid for each.	Record material access, cutting and joining, specialist labour and the availability of repair skills.
Performance evidence	No thermal monitoring or structural testing undertaken for this chapter.	Technical accounts identify mechanisms and defects; no general seismic rating is inferred.
Repair and transfer	Track changed loads, blocked drainage, altered openings and incompatible repair layers.	Track timber condition, joints, roof wetting, slope conditions and additional storeys.

Sources for documented components: Yamane et al. (1999); Hughes (2005); Tan (n.d.). Other entries specify the author-developed investigation record. This table is not a construction specification.

1.5 Alteration and Reuse of Inherited Buildings

A building history is a sequence of changes, each of which may affect a different part of the property. Occupants can change without an immediate change of plan. A new activity can require services while leaving the principal rooms intact. A retained frontage can conceal substantial reconstruction behind it. The expression “the same building” is therefore a starting point for investigation rather than a conclusion about material continuity.

Distinguishing the objects that persist

At least six objects can be followed separately: the site, the plot boundary, the structural fabric, the spatial arrangement, the use, and the institution or household associated with the property. Their dates need not coincide. A rebuilt house may retain a plot and address while replacing nearly all its fabric. An institution may move while retaining its name. A wall can be reused in a building with a different entrance and circulation pattern.

The scale of continuity cannot be ranked in advance. Broad street patterns often provide a useful framework for comparison, but road construction can remove them. Small components may survive in reused fabric when larger spatial arrangements disappear. Any general hierarchy of likely survival should therefore be treated as a hypothesis requiring local verification. Claims about the durability of urban patterns depend on the examination of particular streets, plots, and structures in Pakistan across clearly identified periods.

Consider a courtyard converted into covered accommodation. If the plot boundary and street access remain, continuity may persist at those levels while light, drainage, circulation, and patterns of encounter change. A later facade repair might then make the building appear externally coherent. This is an analytical example, not a reported intervention in either case below. It shows why photographs of the exterior must be combined with plans and sections before the extent of alteration is assessed.

The Shahi Hammam in Lahore

The Shahi Hammam was built in the 1630s as a public bathhouse near Delhi Gate. The Aga Khan Development Network's account records subsequent educational, medical, administrative, and commercial uses. It also describes external storefronts, obstructed drainage, and the later exposure of heating and water systems. Conservation completed in 2015 established a museum use (Aga Khan Development Network [AKDN], n.d.). These events demonstrate that continued occupation and the continuation of bathing were different histories.

The building makes services especially important to interpretation. Rooms used for bathing depended on water, drainage, and heat. Once those systems ceased operating, the surviving chambers could accommodate other activities. Their later occupation might preserve parts of the enclosure while obscuring earlier services. A chronology based only on room names or decorative finishes would miss this transformation in the building's capacity to function.

The available project account does not supply a complete date-by-date tenancy history for every chamber. Table 1.4 therefore records later uses without assigning invented commencement or termination years. The same caution applies to motivations. Evidence of rental occupation supports a commercial use, but the amount of income, the decision-maker, and the household circumstances of a trader require separate records. The historical analysis should preserve these gaps rather than turn them into a general story of neglect.

Baltit Fort in Hunza

Baltit illustrates change through accretion and adaptation within a retained complex. The technical account reports multiple construction phases, nineteenth-century defensive alterations, and early twentieth-century modifications that expanded its palatial accommodation. Full residential occupation ended in the 1940s (Tan, n.d.). These changes occurred within a structure whose earlier fabric and changing additions cannot be assigned a single construction date.

Published accounts differ in how they date the earliest core. Rather than choosing the oldest claim, the chronology distinguishes securely documented later events from earlier phases that require component-specific dating. Timber dates, for example, relate to the sampled material; reused timber may predate the wall in which it survives. A phased plan should identify the relationship between the dated component, adjoining masonry, and the proposed sequence of enlargement.

The conservation programme ran from 1992 to 1996 and was followed by museum and cultural-centre use (Aga Khan Trust for Culture [AKTC], n.d.). These dates provide a clear later reference point. They do not mean that every visible part of the fort was newly constructed during that interval, nor that the preceding residential arrangements continued within the museum. The effects and priorities of conservation will be evaluated in Chapter 5; the present task is to record what changed and the evidence by which that change can be traced.

Table 1.4a. Building history of the Shahi Hammam

Phase	Use and physical or service change	Confidence and unresolved questions
1630s foundation	Public bathhouse; chambers supported by water, drainage and heating systems.	M: historical attribution in institutional account. The original service network needs phase-specific mapping.
Later occupation Before 2013 work	Educational, medical, administrative and commercial uses reported; external storefronts and drainage obstruction documented.	M for use sequence; H for recorded pre-project condition. Exact occupancy dates and individual decisions remain unresolved.
2013-2015 project	Earlier services exposed; architectural fabric and access treated; completion in 2015.	H for project dates and recorded intervention. Excavated evidence must be distinguished from restored work.
After completion	Museum use under WCLA management.	H for reported conversion. Continuing use and visitor conditions require a separately dated update.

Source: AKDN (n.d.). H = comparatively strong documentary support for the stated event or observed condition; M = supported historical attribution or incomplete chronology. These labels apply to individual claims, not to the building as a whole.

Table 1.4b. Building history of Baltit Fort

Phase	Use and physical or service change	Confidence and unresolved questions
Earlier core and successive additions	An accumulated complex rather than a single construction event. Published earliest-date claims differ.	M: broad sequence; U: a single foundation date. Dating must identify the sampled component and possible reuse.
Nineteenth century	Defensive modifications recorded in the technical account.	M: phase attribution. Component-by-component plans are needed to delimit the work.
Early twentieth century	Palatial remodelling and additions to reception and residential accommodation.	M: documented historical sequence. Individual decisions and exact construction dates are unevenly recorded.
1940s onward	Full residential occupation ended; later limited occupation and deterioration followed.	M: interval-level chronology. Occupancy should not be confused with the condition of every room.
1992-1996 and subsequent use	Conservation programme, followed by museum and cultural-centre use.	H for programme interval and recorded conversion. Evaluation of the intervention belongs in Chapter 5.

Sources: Tan (n.d.); Department of Archaeology and Museums (2004b); AKTC (n.d.). H and M as in Table 1.4a; U = unresolved in the evidence used here.

Linking physical changes with decisions

A physical change should be linked to dated evidence and to the people or processes responsible for it. A property record may establish ownership or document a partition, but does not necessarily explain its purpose. A dated photograph can establish that a floor existed by the time of the image; it does not necessarily date its installation. Contracts and permits address authorization, while expenditure records and testimony may help explain decisions. These sources should be compared, and unresolved discrepancies recorded. Missing authorization documents do not invalidate photographic evidence of a physical condition.

A typical approach to gathering this type of historical information includes first identifying the physical change(s). What appeared? What disappeared? Did anything move? Was anything repaired? Identify the range of time in which this took place. Next locate all appropriate documentation related to changes in occupancy, permits, expenditures, contracts, or family changes. Determine if the documented new use of the space occurred within the same timeframe as the physical change. If so, determine if the physical change was required to facilitate this new use or simply capable of supporting it. This will also include determining if the physical change

had no relevance whatsoever to the new use. Coincidence in time supports further inquiry; however, it does not establish cause-and-effect.

In addition to providing a rational explanation for a specific historic event, it is also possible for both the rational and symbolic explanations to coexist. For example, the establishment of a new reception area in a home may serve as a means to receive visitors and simultaneously represent status. Similarly, subdividing a large house into smaller units may result from a number of different factors including inheritance, rent income or an increase in household size. Instead of choosing one explanation over another based upon your perception of which explanation is more compelling, develop evidence to support each possible explanation. Although it is possible to describe the effect of a layout change on access to other parts of a structure, if you do not have additional information about the intent behind such a layout change, you should refrain from attempting to infer this intent.

Similarly, in cases where there is little or no remaining original material in a building's construction, reuse of existing structural components such as brickwork or timber can be used as evidence of material movement; however, this alone does not necessarily mean that the original social meaning attached to this building has been maintained through subsequent generations. On the contrary, members of a community may choose to assign ongoing importance to a particular site long after many portions of the site's original physical infrastructure have been replaced. While preservation of material, continuity of function and memory of past associations are distinct elements of an overall account of how people relate to places, they should be recorded separately.

Creating a comparative record of inherited urban form

The primary outcome of the chapter's practical application is a set of interrelated records rather than a singular "heritage" rating. As mentioned above, the settlement profile establishes the context in terms of regionality and chronology. The precinct diagram establishes institutional ground boundaries and entrance points along with their connections. The domestic comparison assesses access to and usage patterns for open spaces and areas designated for work. The assembly record identifies materials and maintenance requirements. The two building histories illustrate how these spatial relationships evolve across successive stages of development.

Table 1.5 is a shared register connecting these records. Each recordable element should have a permanent designation/identifier while each individual recordable item should be dated and identified by its origin/source. A photograph taken in one year cannot by itself establish the conditions at that location seven years later. Likewise, when tracing lines from maps, ensure that you keep track of the scale, purpose, and positional accuracy associated with those maps. Also note that descriptions of planned use should be distinguished from observed activities or recollections of occupants.

Table 1.5. Register connecting the chapter's practical records

Record component	Information to retain	Comparison check
Identity and scope	Site, precinct, street or building code; location; period; source and observation date.	Do all entries refer to the same object and boundary?
Settlement profile	Environment, functions, occupation phases, interruptions and possible relocations.	Does the chronology support the proposed connection?
Precinct plan	Streets, entrances, institutional grounds, trading frontages and unlocated features.	Separate surviving, documented former and conjectural elements.
Domestic layout	Floor level, access sequence, open space, work areas, occupants and control.	Do not infer use or social rights from form alone.
Assembly record	Foundations, walls, roofs, openings, materials, repair history and skilled labour.	Keep documented performance distinct from a proposed mechanism.
Building history	Dated change in occupancy, use, layout, structure and services, each recorded separately.	Which scale persists, and which changes?
Decision evidence	Actor, stated reason, date, agreement, expenditure, testimony and contradictory evidence.	A coincident change is not automatically a demonstrated cause.
Uncertainty and next evidence	Confidence per claim, missing plans, inaccessible rooms, date ranges and unresolved questions.	Unknown is not zero, absence or uninterrupted continuity.

Author-developed synthesis of the chapter's recording method. Complete records should link back to the exact plan, image, document or testimony used.

This arrangement makes later comparison more precise. A colonial road intervention can be assessed against the recorded route and property pattern. A postcolonial change in housing demand can be examined through occupancy, subdivision, and service additions. The introduction of a different material can be related to the assembly it replaced and the labour required to maintain it. Each argument begins with an identified object of change and a stated baseline, rather than with a general claim that the city became modern.

The record also clarifies what remains unresolved. The source material is stronger for selected monuments than for ordinary dwellings, and stronger for some periods than for others. That

imbalance should guide further research rather than determine which people count as historically important. Household records, craft histories, property documents, and measured surveys of less prominent buildings can expand the account. Until then, surviving cases establish possibilities and specific sequences, not the prevalence of a form throughout a province or historical population.

Chapter 1 Key Arguments

The primary point is that a claim of continuity must identify what persists (the object) and over what period (the interval). It's possible for continued occupation of a site, the reuse of a site, the continuation of a road/route, and the preservation of structural elements of a building to be separate issues. An archaeological sequence can show how a defined area developed over time, but it cannot by itself establish an unbroken link to a later city in the same geographic area. As we see with the Harappa and Taxila examples, it is also important to examine the relationship between regional significance and the continuance of an individual urban footprint separately.

Secondly, the location of settlements was based on the relationship between various environmental factors such as water availability, production capabilities, transportation needs, and political influence. Water played a role in determining settlement location due to the availability of reliable water sources close to settlements, as well as its accessibility. Trade influenced settlement location through visible trade networks and trade institutions. Political power was important in establishing settlement locations since political decisions could redirect resources, create new infrastructure, etc. Dated changes in occupation can help explain how production, movement, and authority affected settlement over time. Contemporary maps or lists of rulers alone cannot establish those relationships.

Thirdly, institutions created the organization of urban spaces including the way people entered into the space, how property rights were determined and maintained, how services were delivered, and where activities were concentrated. A mosque, serai, or garden existed as part of larger organizational structures of routes/resources. The fact that a structure survives does not mean that the land uses and/or resource management organizations associated with that structure remained unaltered. Therefore, precinct analysis must document the relationships surrounding monuments as closely as documenting monuments themselves and distinguish clearly documented characteristics from those reconstructed without sufficient documentation.

Fourthly, houses were constructed according to available resources and negotiable uses. For example, a haveli cannot stand for all homes built during this time period nor can a courtyard alone define household composition, level of privacy experienced by members of households, or gender-based social interactions. By comparing ordinary shop-houses and homes lacking courtyards, the scope of comparability can be widened. Plans reveal levels of access and adjacency; however, accounts of usage and control are necessary to gain insight into working

conditions, tenantship agreements, caregiving responsibilities, and the experiences of occupants with differing socioeconomic status. Neighborhoods require source-specific definitions as well.

Fifthly, regional building practices represented systems of materials, skills, maintenance practices, and usage patterns. The performance of these systems was dependent upon their interconnectedness, exposure to environmental conditions, quality of craftsmanship, and operational conditions of occupants using them. Historical survivability represents that a specific structure survived and should not be considered as an indicator of success for either a material or technique. Comparing Lahore masonry and Karakoram composite construction reveals conditional relationships and demonstrates what types of evidence would be required to evaluate these relationships.

Finally, transformation may preserve one component of a place while replacing others. The histories of the Shahi Hammam and Baltit illustrate the utility of distinguishing between use, layout, structure, service provision, and institutional control in examining physical transformations. A logical explanation must connect each physical transformation to dated evidence and indicate uncertainty where there is no information regarding decision-making processes. This chapter provides those distinctions so that colonial and post-colonial transformations can be identified through specific inheritable relationships rather than assuming that a single prior state was transformed completely.

CHAPTER

02

Colonial Land Administration and Urban Development

IN THIS CHAPTER

2.1 Property Surveys and Municipal Boundaries

2.2 Cantonments and Civil Lines

2.3 Transport Infrastructure and Canal Colony Towns

2.4 Colonial Public Buildings and Residential Types

2.5 Institutional Continuities after Independence

Introduction

Changes in the way people viewed, utilized and moved on land (land use) during colonial urban development created the context to identify land for transfer, servicing and construction. For example, a surveyed plot could be entered into a property assessment. A municipal boundary defined whose responsibility it was to maintain drainage. A railway spur could increase the value of land that had little or no potential prior to its installation. While these developments took place through multiple institutions and resulted in many different cities, they did so through a variety of entities including municipalities, military authorities, port bodies, railway administrations, improvement trusts, and individual property owners with differing interests and responsibilities. Each entity made decisions that resulted in new construction while simultaneously modifying the previous street patterns, occupation types and relationship of access.

The preceding chapter provided the rationale for demonstrating historical continuity at a given spatial scale. Demonstrating historical continuity requires showing that something remains substantially unchanged over time. Showing that an organization continues to exist after a transition is insufficient proof that all aspects of the original organization continue to exist. Similarly, simply because an institution is replaced, does not mean that its land holdings, outstanding debt obligations, incomplete projects, or operational procedures cease to exist. In order to provide an explanation based upon colonialism, it is necessary to show how there existed a logical connection between an earlier decision and a subsequent result. Using terms such as "inheritance" may allow someone to substitute a general term describing the past for an actual description of what occurred.

This chapter examines three urban environments as case studies. Karachi will demonstrate how municipal governments, port operations, reclamation efforts and commercial transportation networks interact. Lahore will serve as a comparison between two well-established settlements (the old walled city versus the Civil Station), the movement of military personnel from one area to another, and the eventual involvement of municipal planning organizations. Finally, Lyallpur (now known as Faisalabad) will examine the connection between canal colonization in Punjab, the movement of agricultural products along railroads, and the creation of a planned market center. It is important to note that each of the cities examined above represent different levels of colonial influence and have vastly different functions. Therefore their comparative analysis allows us to understand why a port city cannot be studied using the same model as either a pre-existing provincial capital or a canal colony town.

Official documentation is considered evidence generated for a particular purpose. Official documentation may describe a town for purposes of providing geographical information about it, while at the same time documenting the success of state administrative actions. Official documentation may provide an accurate measurement of a boundary while failing to include all parties who used the land. Official documentation may document a designer's name while

ignoring those individuals involved in design activities (i.e., masons, carpenters, maintenance personnel and/or domestic employees). The omission of such information in official documentation does not render it useless. Rather it indicates that users must be able to differentiate what official documentation establishes from other social histories that may be relevant yet cannot be inferred from the documentation alone.

The position taken here is that urban differences are created by the interaction among land ownership rights, financing mechanisms, technological systems, and qualification/eligibility criteria. Street widths and architectural styles may make certain urban differences observable however they cannot individually provide explanations for urban differences. A large military settlement may have inadequate water supply facilities. Socially separate districts may utilize the same municipal supply system. A locally funded public facility may utilize a Euro-style architectural vocabulary without having been constructed within an entirely Euro-based building culture. The inter-relationship of these factors complicates any simplistic distinction between an indigenous city and a colonial extension.

The practical application of this research is a comparative historical data set containing documented administrative/spatial changes, paired district profiles, dated network diagrams illustrating technical systems/connections among locations/building types, and institutional timelines representing significant organizational milestones/events. The diagrams illustrate analytical concepts/schemata rather than reconstructed cadastral representations. Dates indicate when specific documents or events identified within this research were recorded; therefore later documentation is not presumed to be contemporaneous in nature. No field surveys measuring areas or conducting interviews with archive personnel were conducted specifically for this chapter.

2.1 Property Surveys and Municipal Boundaries

Property administration translated urban space into categories on which government could act. Survey sheets identified locations and boundaries; assessment records assigned fiscal responsibilities; municipal legislation defined an authority's territorial and functional reach. These operations were related but distinct. A map was not necessarily a register of title, and a tax demand was not a complete account of possession. Keeping those distinctions visible is essential when connecting administrative records to the physical development of a city.

Making Karachi administratively legible

Karachi's nineteenth century survey record serves as a traceable origin.

An 1874 Civil Lines sheet, F-12, at an 80-foot-to-the-inch scale with the name E.H. Laughton, is catalogued in the Lari Archive. The catalogue confirms the existence, date, subject, and scale of a specific survey document. However, due to the fact that I did not examine each parcel

individually for this Chapter, I am unable to utilize the sheet to associate a later transaction with a particular surveyed plot (Lari Archive, n.d.).

This makes a difference: Identifying a historical map marks the beginning of a spatial argument, but it does not mark its conclusion.

A survey at this scale can allow for comparisons of properties, roads, and public reservations. Its administrative utility rested upon stable references and being able to draw a relationship between a boundary line on paper and a point on land. However, the interests reflected in a document such as this will be dependent on the Legend, Schedule and Purpose of the document. An assessed owner may appear clearly named yet a tenant's use of an upstairs room, a vendor's typical position where he stands to vend his goods, or a tenant's right-of-way over an adjacent yard may remain unaccounted for. These are questions to apply to the sheet and related registers; they are not conditions that can be presumed from the term "Survey."

Municipal chronology is documented more directly. Smyth's Karachi District Gazetteer indicates that Bombay Act VI of 1873 was extended to Sindh on October 1st 1878, after which time Karachi became a City Municipality. That framework was then replaced by Bombay Act III of 1901. The jurisdiction under consideration is therefore the Bombay Presidency's municipal system as extended into Sindh, not some general set of rules applicable in like manner to all cities later part of Pakistan. Lahore's municipal and improvement legislation had a separate provincial history (Smyth, 1919, pp. 29-30).

It is further demonstrated that there were multiple avenues through which municipal representation occurred. As reported in Smyth (1919) the 42-member Council in 1915-16 comprised 24 members elected by wards, two elected by the Chamber of Commerce, two by the Indian Merchants' Association, and 14 nominated by the Commissioner in Sind. While this demonstrates formally identifiable commercial and governmental interest groups within the governing entity, without the electoral qualification and process, it cannot demonstrate whether Tenants, Labourers, Women or Smaller Traders etc., could effectively exercise their rights to influence a particular decision. Formal Representation and Effective Access to Government must be studied separately.

Boundaries and Financing Services

In 1903 Manora was designated a cantonment and removed from the municipal area. This was more than merely altering the boundaries of a Map. It altered the territorial parameters within which municipal population expenditures and obligations could be conceptualized. Therefore comparing municipal budgets prior to the alteration of the boundary and subsequent thereto must identify which functions and responsibilities were affected by said boundary alteration. The boundary alteration does not imply that residents immediately experienced improved or diminished services (Smyth, 1919, p. 30).

Karachi's municipal finance related movement and property to urban investment. Prior to 1915, Octroi provided more than fifty percent of Ordinary Income in the account described by Smyth; Terminal Tax supplanted Octroi in 1915. Water Rates, Conservancy Charges, House Taxes, Rents and Other Sources generated funds for a budget providing for Road Maintenance; Sanitation; Education; Water Supply; and Drainage. Major Works were financed through loans. Thus infrastructure was bound to recurring revenues and debts, and not solely to the Engineer's ability to conceive of a Network (Smyth, 1919, pp. 30-31). This fiscal structure creates an important distinction between paying into the city and receiving a particular service. A tax on incoming goods could affect commercial circulation without identifying the neighbourhood in which its revenue was spent. A house assessment could make an owner visible to the municipality while concealing the number and circumstances of people living within the assessed property. To investigate unequal investment, the useful comparison is between geographically located expenditure, actual service connections, and the people affected. Aggregate municipal income is insufficient.

The Thole Produce Yard as an administrative transaction

A specific land transaction brings these relationships into focus. In 1909 the Karachi Port Trust purchased 177 acres from the municipality for the Thole Produce Yard. Smyth describes much of the land as tidal swamp and records its reclamation for produce handling. The transaction links an identified date, two public institutions, an area of land, a physical operation, and a commercial purpose. It is stronger evidence of a development mechanism than a later map showing warehouses near the port (Smyth, 1919, p. 88).

The conversion required several changes at once. Municipal land became part of a port-related development programme; reclamation altered the usable ground; and produce storage created a destination within the goods network. The transaction therefore connected administrative ownership with an engineered surface and an operational use. It also shows that colonial urban development could proceed through transfers between public bodies, rather than only through the acquisition of privately owned houses or fields.

The description “tidal swamp” must nevertheless be read carefully. It describes a physical condition and an administrative understanding of land available for reclamation. It is not proof that the area had no existing users. The gazetteer does not provide a register of paths, fishing activity, grazing, temporary occupation, or other customary uses on these 177 acres. Nor does it document displacement from the site. An account of affected users must preserve both limits: absence from this source cannot establish either absence of use or a specific history of eviction.

The 1874 survey catalogue and the 1909 transaction should also remain separate until their spatial relationship is demonstrated. The Civil Lines sheet identified above is not presented as a map of the Thole site. A complete parcel history would require the relevant sheet, the municipal conveyance, the Port Trust acquisition plan, and the reclamation drawings. Table 2.1 records the links that are established and the missing evidence needed to make a more exact reconstruction.

Table 2.1. Karachi administrative and spatial change record

Date and record	Established relationship	Users and evidential limit
1874 survey catalogue	Civil Lines sheet F-12; eighty feet to one inch; named surveyor.	Catalogue consulted. Parcel contents and associated interests not verified.
1878 and 1901 municipal framework	Bombay municipal legislation applied to Karachi and was subsequently replaced.	Defines the institutional frame; individual enforcement needs decisions and notices.
1903 boundary change	Manora declared a cantonment and removed from the municipal area.	Different jurisdiction established; effects on particular services need accounts and transfer records.
1909 Thole transaction	Municipality sold 177 acres to Karachi Port Trust; reclamation for a produce yard followed.	Public owners and commercial purpose documented. Earlier customary users are not identified.
1915 fiscal change	Terminal tax replaced octroi in the municipal revenue system.	Revenue change documented; distribution of benefits needs geographically located expenditure.

Sources: Lari Archive (n.d.), catalogue entry KMR.LAD.CiQ.1874.F12; Smyth (1919), pp. 29-31, 88. The survey sheet and Thole transaction have not been matched parcel by parcel.

From a legal power to a physical outcome

Sanitation and building control depended on a comparable sequence. The existence of a municipal power did not establish that an order was issued, that work was financed, or that a building was altered. To explain the widening of a lane or the removal of a projection, the historian must connect the applicable rule to a dated notice, decision, payment, or executed plan. A later street photograph can demonstrate a changed frontage, but usually cannot reveal whether the change followed enforcement, voluntary rebuilding, a negotiated settlement, or another event.

Karachi therefore answers the questions of visibility and boundary effects in specific terms. Official records made institutions, assessed properties, revenue streams, and transferable land relatively legible. They were less complete as records of occupation and customary access. Administrative boundaries established the jurisdictions within which money and responsibilities were organized, while transactions such as the Thole purchase moved land between those jurisdictions. The physical city emerged through the implementation of these arrangements, with results that have to be checked against completed works and actual use.

2.2 Cantonments and Civil Lines

The contrast between a dense established neighbourhood and an open district of compounds is one of the most familiar images of colonial urbanism. It is also an incomplete explanation. A compound could separate household activities from the street without preventing all commercial or service movement across its boundary. A cantonment could possess substantial land while suffering from an inadequate water supply. The relationship between district form and social separation must therefore be examined through services, employment, regulation, and the purposes of individual sites.

A paired reading of the Upper Mall and Mozang

For Lahore around 1900-1908, the Imperial Gazetteer's descriptions of the civil station and Mozang provide a basis for comparison. As stated previously, the Upper Mall provided the main route through the new residential and institutional districts. The primary characteristics of this district included government establishments, European stores, public parks/gardens, and the large grounds of many institutional entities. Mozang was located to the south-east of the walled city and was said to be almost entirely surrounded on three sides by European dwellings. Therefore, while these two districts were proximal to one another and were physically connected, they represented distinct "urban" environments. The Imperial Gazetteer of India identified such differences in their respective urban environments, however, did not present comparative data regarding the dimensions of plots. For example, it would have been misleading to create a representative plot size for either the Upper Mall or a typical dwelling plot for Mozang. Rather, a valid comparison can only be made at the district level -- that is, regarding the distribution of grounds for residential and institutional purposes and their proximity to major routes and their relative positions within the supply systems. In order to make a density-based comparison between the Upper Mall and Mozang, maps contemporary with the period being compared would need to include both districts, and there would need to be a consistent methodology to differentiate plots from buildings.

A municipal water system was installed in Lahore in 1881 which served the city as a whole, as well as the civil station, the railway colony, and Mozang through a system consisting of wells, pumps, and connected storage tanks. Using the 1901 population census as its base, the gazetteer estimated that the municipal water system delivered about 10 gallons of water per person per day. However, this represents a system-wide estimate and is not indicative of actual delivery rates to each household nor whether all households had an individual water connection. The same gazetteer reports on drainage improvements completed in 1883 and subsequent modifications, indicating that service provision continued to evolve even after initial installation.

Therefore, it is difficult to interpret the information contained in this source using a model that assumes two completely separate urban realms existed. The existence of a single water network indicates shared infrastructure; it does not establish equal access to municipal services among

districts or residents. There exist many factors that determine whether individuals will have access to a particular resource; i.e., having a nearby stand pipe; an individual water connection; sufficient pressure; etc. Furthermore, the fact that a street drain exists on a district map does not indicate that each property has access to this drain or that the drain remains free-flowing. The critical issue here concerns how access was distributed throughout a connected system. The Upper Mall's institutional concentration also shaped the purposes of movement. A journey to a court, college, shop, or government office differed from admission to an official residence. The roadway could connect these destinations while each compound maintained its own thresholds. District openness and building access therefore operated at different scales. The gazetteer identifies destinations and routes, but does not provide a diary of workers commuting from Mozang or a register of traders admitted to compounds. Such movements cannot be assigned precise volumes or origins from this description alone.

Table 2.2. Paired district profile of Lahore around 1900-1908

Comparison field	Upper Mall and civil station	Mozang
Urban relationship	Principal route through newer residential and institutional grounds.	Established settlement adjoining the European residential district.
Plot and building scale	Compounds and institutional sites described; no matched parcel measurements used.	No comparable plot sample in the consulted account.
Institutional setting	Civil institutions within the broader municipal city; not equivalent to Mian Mir cantonment.	Included among areas served by municipal waterworks.
Water connection	Named part of the supply network opened in 1881.	Named part of the same supply network.
Service equality	System inclusion does not establish universal private connections or reliability.	Household collection, charges, and continuity of supply remain unmeasured.
Movement and thresholds	Road access connects institutions; admission to individual grounds requires separate evidence.	Adjacency establishes opportunity for movement, not a measured commuting pattern.

Source: Imperial Gazetteer of India (1908), vol. 16, pp. 112-113. The source combines observations and statistics from several dates; the comparison is an early-twentieth-century profile, not a single-day survey.

Military relocation and the limits of spacious planning

The cantonment introduces a different institutional history. Troops moved from Anarkali to Mian Mir in 1851-52, in response to the perceived unhealthy conditions of the earlier location. By the early twentieth century, Mian Mir occupied an open plain east of the civil station and was served by railway stations on different lines. Yet the Imperial Gazetteer also described its water supply as defective and associated the cantonment with persistent health difficulties. The move therefore did not simply replace a dangerous dense city with a successfully serviced military landscape (Imperial Gazetteer of India, 1908, vol. 16, pp. 114-115).

This evidence changes the interpretation of the plan. Open ground, avenues, and detached accommodation expressed particular preferences about settlement and health, but their presence did not guarantee an effective water system. Water quality, supply capacity, drainage, operation, and repair could undermine the intended advantages of location. Historical sanitary explanations must themselves be dated: official beliefs about disease influenced decisions even where those beliefs were incomplete or incorrect. The historian should explain their administrative effects without adopting them as present scientific conclusions.

Mian Mir also had a separate cantonment fund. That fact establishes an institutional distinction from municipal finance; it does not make a simple comparison of total expenditures meaningful. Different budgets could include different responsibilities, populations, and assets. Military capital expenditure might be recorded outside a local fund, while a municipal total might include schools or other services absent from the comparison. Claims of preferential spending require comparable functions and denominators, rather than two impressive but incompatible totals.

Crossing boundaries under unequal conditions

Maysoon Sheikh's study distinguishes the regulation of sex work around Anarkali from the registration, compulsory examination, and confinement imposed on women serving British soldiers at Mian Mir. Her discussion of the cantonment includes an 1890 registration ticket and the continued use of medical controls after their withdrawal elsewhere (Sheikh, 2018, pp. 93-96). This demonstrates how sanitary regulation constrained women's bodies and mobility. It does not establish a measured pattern of daily journeys between Anarkali and the cantonment.

Crossings of other types will have different types of evidence. For instance, a domestic worker entering a private dwelling might use a side entrance, whereas a goods supplier may enter the same building using a loading dock area, and individuals going to court might enter during designated hours. All three are examples of types of potential access arrangements to explore through records of households, architectural floorplans, employment documentation, and institutional policies. While there may be service entrances available to employees and suppliers, etc., that alone does not mean that they live in the “home” district of their employer, that they receive compensation for their labor, or that they are able to enter the property

through the primary entry point. Only when architectural circulation is tied to specific documented behaviors will it become social evidence.

As a result, the comparison supports a differential account of separation. Separation created by land designation and by the establishment of institutional locations, i.e. schools, hospitals, courts, etc. could isolate some residents from congested streets or from certain undesirable behaviors. At the same time, shared infrastructure and required labor provided links among the districts. In turn, the type of access one had within those linkages was determined by the individual's reason for visiting (purpose), social position/status, time/day/hour, and regulatory requirements. Inequality could therefore operate through rules of access and service provision as well as the physical form of compounds, neighborhoods, and roads.

Thus, for the subsequent chapters, the most useful features to trace include: identifiable routes, institutional premises, service corridors and jurisdictional lines. They can be identified and mapped. Additionally, the social meaning assigned to them must be recreated for each respective time frame. A former government office turned public facility retains its boundary but has changed user groups; a street may remain physically intact while new regulations restrict access to a destination along it.

2.3 Transport Infrastructure and Canal Colony Towns

Transport infrastructure reorganized cities by changing the relationship between distance, handling, storage, and exchange. Its urban consequences were especially visible where regional movement met local land: at a quay, railway siding, warehouse entrance, grain market, or cart route. Karachi and Lyallpur reveal different versions of this relationship. Karachi’s harbour works expanded and rearranged an established port environment. Lyallpur’s market centre developed within a canal colony whose agricultural production and transport connections were integral to its urban function.

Karachi and the changing edge of the port

The Karachi gazetteer describes a sequence of completed harbour works rather than a single founding intervention. The Manora breakwater was begun in 1869 and completed in 1873. The Merewether Ship Pier followed in 1882, while subsequent wharves, dredging, storage areas, and rail connections expanded the capacity and organization of the waterfront. This sequence matters because harbour protection, navigable depth, berthing, and landward handling performed different tasks. Improvement in one did not automatically remove constraints in the others (Smyth, 1919, pp. 85-88).

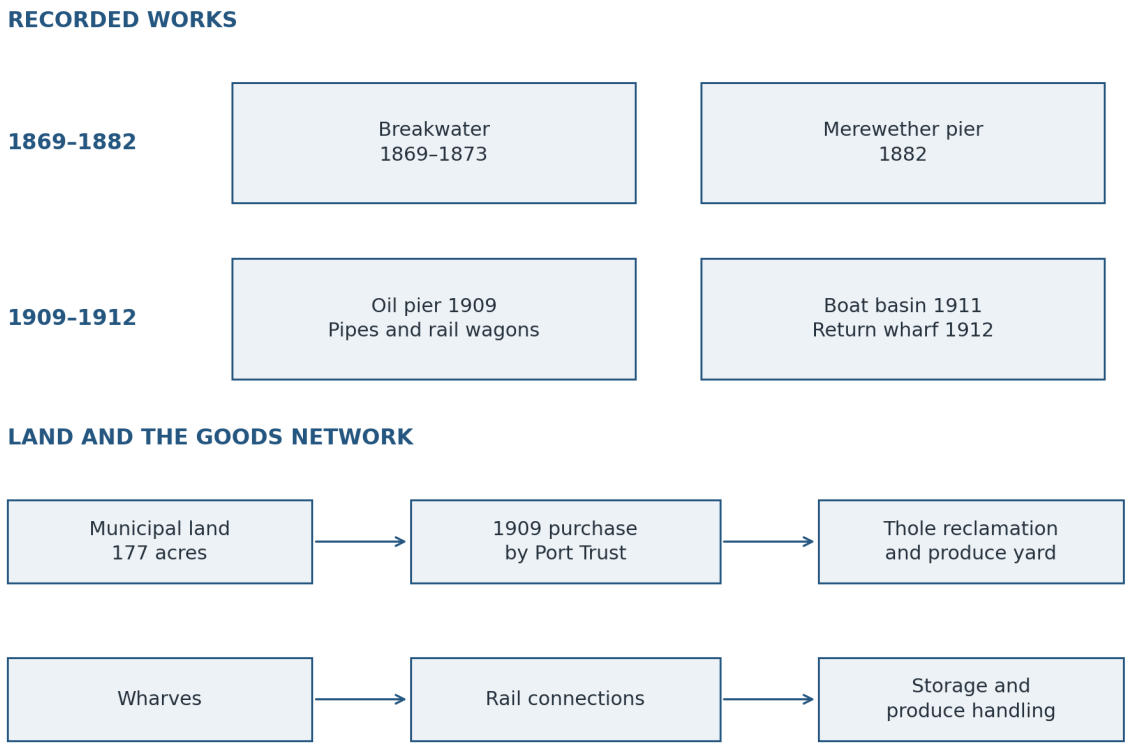
Nor did new construction always mean adding an entirely separate facility. The gazetteer records the replacement of the earlier Merewether pier by a wharf in 1909 and the partial removal of the Erskine Wharf during later changes. The Napier boat wharf underwent extensions, but a section was also removed for a railway bridge. The port edge was repeatedly

reworked to coordinate different modes of movement. These details are more informative than an image of infrastructure spreading steadily over empty land.

By 1909 a bulk oil pier connected unloading with pipes and railway wagons. A boat basin completed in 1911 had rail access and cranes, and a return wharf was recorded in 1912. These are dated facilities reported as completed, not simply lines on a proposal drawing. Together they show how handling requirements produced specialized surfaces, structures, and connections. The railway did not merely terminate near the harbour; it entered the operational arrangement of particular goods and transfer points (Smyth, 1919, pp. 86-87).

The urban significance extended beyond the quay. Produce yards and import storage required accessible land, while the movement between those facilities and the waterfront made some routes more consequential than others. The Thole transaction discussed in Section 2.1 and the reclamation of the Mansfield Import Yard connected land administration to these logistical requirements. Smyth records the latter as approximately sixty-one acres reclaimed after 1909. The physical relationship among yards, railways, and wharves was therefore produced through repeated investments and transfers, not through infrastructure alone (Smyth, 1919, p. 88).

Figure 2.1. Karachi infrastructure sequence and landward connections



Source: author-developed schematic based on Smyth (1919), pp. 85-88. Dates refer to recorded works and transactions. Arrows show functional or administrative links, not traffic volumes; positions and distances are not geographic.

Figure 2.1 separates the infrastructure sequence from the ownership transaction. Its arrows represent documented connections or functional relationships, not calculated freight volumes. The distinction prevents a common error in historical diagrams: making the existence of a connection appear to demonstrate its intensity of use. A rail-served yard could still contain unevenly occupied plots, and a wharf's capacity could exceed its traffic in a particular year. The effects of war, market conditions, maintenance, and seasonal demand would have to be examined through operational records.

The existence of the Native Jetty and warehousing before the Port Trust's development programme also qualifies the direction of causation. Later infrastructure served an existing trading place as well as encouraging further concentration. Commercial activity could help justify investment, while improved handling could subsequently attract additional activity. The resulting feedback is historically plausible, but its relative strength at each stage requires evidence from trade, freight charges, land transactions, and business location. The chapter does not assign the whole of Karachi's growth to the construction of a port facility.

Lyallpur and the organization of agricultural exchange

The city of Lyallpur is a different place to begin. According to the Imperial Gazetteer, it collected agricultural produce from the Chenab Colony and became a municipality in 1898. It had a reported population of 13,483 by 1906. These statements relate the town to both a fertile irrigation-based producing area and an organizational structure rather than viewing its street grid as simply a single independent design effort (Imperial Gazetteer of India, 1908, vol. 16, pp. 222-224).

Bokhari's historic reconstruction states that the first plans for the town were developed in 1896 and he describes a roughly 110 acre central area. Bokhari describes eight market streets, a grain market between Rail and Karkhana bazaars and railroad service to Wazirabad in 1896 and then to Khanewal in 1900. In addition, Bokhari reconstructs the town in 1904 where the grain market is related to the railroad, the canals, and the residential areas (Bokhari, 1971, pp. 3-6).

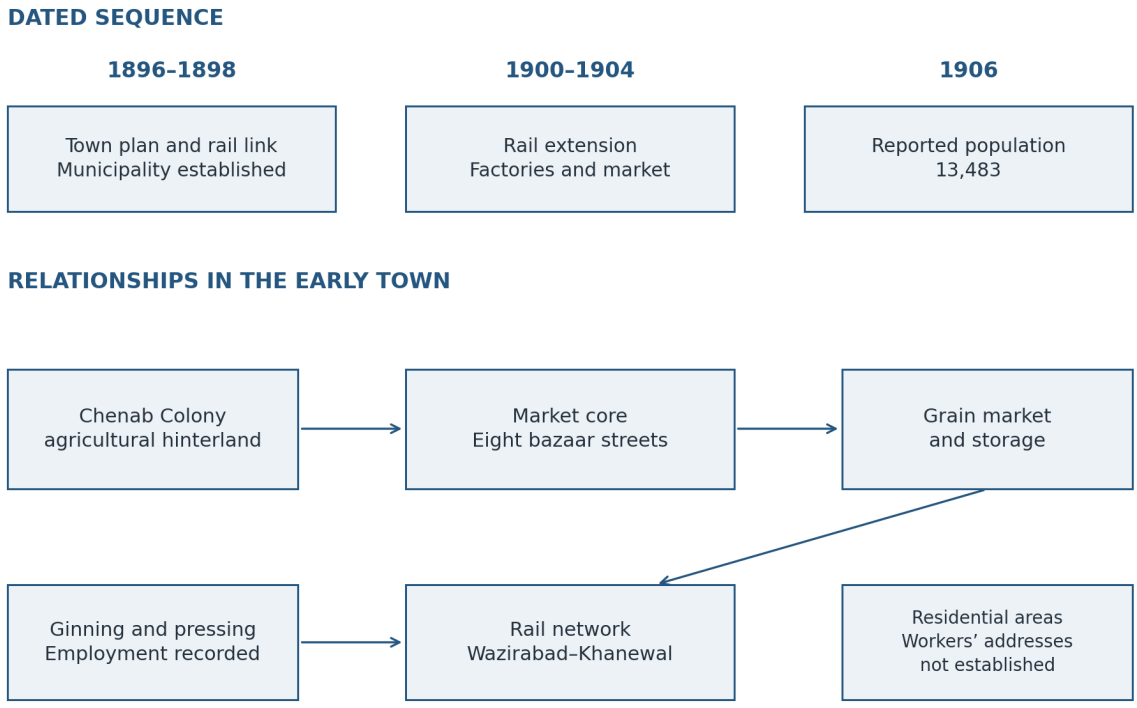
Bokhari's 1971 reconstruction of the town in 1904 must be distinguished from a map produced in 1904 itself.

Eight bazaar streets radiated from the central clock-tower area and were connected by a circular road. An important factor in their use was that they allowed for multiple avenues to enter into market space as well as allow for movement between the center of the town and other locations. A geometrically based system of land division may have been used; however, the use of each commercial frontage would depend on what type of occupancy existed there.

An example of the above relates to the grain market and how it connects with the railroad. Grain must arrive at a location, sit, be appraised or sold and then depart. Each of these processes requires ground floor access and some amount of storage. A warehouse near the railroad could reduce transfer distances, but actual costs would depend on rents, handling arrangements, and

access conditions. Additionally, housing for individuals involved in the transportation and production of grain forms yet another component of the relationship between the settlement and its market. As such, there are reasons why a market town can develop unevenly about a formally defined urban core.

Figure 2.2. Lyallpur network and settlement sequence



Sources: Imperial Gazetteer of India (1908), vol. 16, pp. 222-224; Bokhari (1971), pp. 3-6, including his retrospective 1904 map. The lower panel simplifies connections rather than reproducing the street plan. Arrows do not measure goods flows or establish a single cause of growth.

The gazetteer offers an especially useful check on the difference between a listed facility and an operating one. It identifies cotton ginning and pressing establishments, but also notes that an iron foundry and a flour mill were closed in 1904. The other recorded factories employed 581 workers in that year. A catalogue of industrial buildings would therefore overstate active production unless closure was recorded. Conversely, the workforce figure establishes industrial employment without showing where those workers lived or whether their accommodation belonged to an employer (Imperial Gazetteer of India, 1908, vol. 16, p. 224).

Municipal status, rail connection, market construction, and population growth should consequently be placed on separate timelines. Their proximity in time is significant but does not establish that one event alone caused the others. The town's collecting function depended on production outside its boundary, and the profitability of cultivation depended on more than the

availability of a rail connection. Land allocation, irrigation, labour, credit, and commodity demand formed part of the wider historical setting. A diagram of transport routes cannot substitute for that economic and institutional history.

Comparing networks and urban consequences

Karachi's port facilities and Lyallpur's market centre operated at different positions in a regional economy. The port joined landward transport to maritime exchange; the canal colony town organized collection, processing, and onward movement within an agricultural region. Their shared feature was the concentration of activity at transfer points. This concentration made some plots useful for large stores and handling areas, others for services and trade, and others for accommodation near work.

There were also important differences in land production. Karachi's reclamation created or consolidated usable ground at the waterfront through engineering and institutional investment. Lyallpur's development connected a planned town site to colonized agricultural land and a transport network. The administrative operation behind a piece of urban land therefore differed between the two cases. A comparison restricted to straight roads and rectangular plots would miss that difference.

Table 2.3. Infrastructure and settlement comparison

Field	Karachi	Lyallpur
Regional role	Harbour connecting maritime exchange with landward movement.	Collection of Chenab Colony agricultural produce.
Local interface	Wharves, rail connections, import storage, and produce yards.	Market streets, grain market, railway, and processing premises.
Land operation	Reclamation and transfers between municipality and Port Trust.	Planned market core linked to agricultural colonization and municipal development.
Evidence of operation	Gazetteer distinguishes completed and replaced facilities. Traffic requires separate records.	Factory employment recorded for 1904; foundry and flour mill identified as closed.
Causal limit	Existing trade preceded later improvements; total city growth cannot be assigned to one project.	Irrigation, production, markets, and railways developed together; sequence alone does not isolate their effects.

Sources: Smyth (1919), pp. 85-89; Imperial Gazetteer of India (1908), vol. 16, pp. 222-224; Bokhari (1971), pp. 3-6. Final row states the author's limits of inference.

The strongest causal account combines sequence with a mechanism and evidence of use. A completed siding linked to a documented warehouse operation provides more support than a

proposed line followed by later population growth. A relocation of firms after a recorded change in access strengthens the explanation further. For both cities, additional freight series, business directories, leases, and household records could refine the distributional account. The evidence already assembled establishes a narrower but substantial conclusion: regional infrastructure reorganized local space through identifiable interfaces of land control, handling, trade, and employment.

2.4 Colonial Public Buildings and Residential Types

Public buildings and residences made institutional distinctions visible at the scale of entrances, corridors, rooms, verandahs, and compounds. A court organized access around procedure; a college around instruction and supervision; a public hall around assembly; a bungalow around household life, reception, and service. Style could express prestige or affiliation, but it did not by itself explain how a building worked or who could use it. The following examples connect architectural form to documented patronage, circulation, materials, and the limits of the surviving record.

A college within a changing institutional geography

Government College Lahore occupied several earlier premises before moving into its purpose-built main building in 1876. The university's institutional history attributes the design to W. Purdon and construction supervision to the executive engineer Kannhaiya Lal; work extended from 1872 to 1877. It identifies a Gothic design using Lahori brick, stone from Chiniot, and roofing slate from Dalhousie, together with high interiors and deep verandahs providing access to teaching rooms (Government College University Lahore, n.d.).

The building can therefore be read through two connected histories: the establishment of a more permanent institutional home and the assembly of a regional material supply. The college's earlier occupation of existing premises also links this example to Chapter 1's discussion of reuse. A new educational institution did not necessarily begin with an entirely new building. Purpose-built accommodation changed its architectural possibilities, but the institutional sequence preceded the finished monument.

A verandah serving classrooms provided a circulation zone with a different relationship to outside space from an enclosed internal corridor. Its depth and exposure could affect shade, daylight, rain protection, and the conditions of movement between rooms. The institutional account supports the presence and intended usefulness of these provisions; it does not supply measured temperatures or ventilation rates. Their performance would depend on orientation, surrounding buildings, occupancy, opening practice, and maintenance. Architectural description should therefore remain separate from claims of quantified climatic success.

Civic patronage and the rooms of public life

In contrast to the older public structures, Denso Hall in Karachi is a relatively modern example of how patronage and programming may be integrated. Constructed in 1886 on Bunder Road, this structure was financed by both a memorial contribution by Denso's friends and municipal funds. Smyth identified James Strachan as architect and refers to the style as Venetian Gothic. On the lower level were located an entrance hall, a library and other small reading accommodations. An upper-level hall served as a very large public meeting area (Smyth, 1919, p. 72).

The described floor layout differentiated smaller reading spaces from an upper hall intended for larger gatherings. A vertical division allowed two uses of differing scales to coexist within a single civic building. However, the gazetteer does not describe all original entrances and stair arrangements. The fact that there was a library indicates that this building was not merely an object commemorating its donor, but supported programs which had daily importance based upon operating hours, memberships, staffing, and admissions policies - none of which are indicated by the description of architecture.

In many ways Khalikdina Hall provides a similar programmatic combination to that of Denso Hall. Its construction is recorded in the Gazetteer in 1906 using a bequest plus some municipal funding. This structure is said to contain a main hall, a major entrance portico and verandas along each side. The building housed the Native General Library under an agreement with the Municipality, which retained title to the property and bore responsibility for its upkeep. Therefore, we find a relationship between an institutional interior and an occupancy agreement recorded in the later gazetteer, rather than inferred by later naming conventions (Smyth, 1919, p. 72).

Therefore these two examples present obstacles to establishing a history focused solely on government contracts for civic structures. Municipal lands or funds were used in addition to those contributed privately in order to produce them, while their respective programs were dependent upon agreements as to who would occupy them and maintain them. Consequently, the "public" nature of such buildings was created by virtue of financing, ownership and usage. Such "public" status cannot be determined solely by the national identity of the architect(s) nor by where they derived the decorative vocabulary. Nor can it be assumed that any building designated "public" has opened its doors equally to all members of a community. Evidence of admissions procedures is required to support claims beyond that point.

The measurements for Khalikdina Hall illustrate its spatial hierarchy. There was a main room approximately seventy by forty five feet, a portico at the front of the structure and ten foot wide side verandahs. While these measurements indicate a large common space for collecting and intermediate areas surrounding it, they do not by themselves establish how a particular gathering approached or occupied the space. Furniture arrangements, platform positions, the

function of doors, and administrative practices could vary the use of the identical physical confines.

Domestic planning and local architectural agency

Residential evidence is supplied by House 36-B in Lahore's Co-operative Model Town Society. Anbrine reproduces its 1937 plans and section and attributes the design to I. A. Chishty. The drawing labels an entrance hall, drawing room, office, bedrooms, dining space, kitchen, verandahs, and a sleeping platform; upstairs it shows terraces and a barsati. The section depicts a layered flat roof. These are records of intended arrangements, not observations of every occupant's behaviour. The thesis reports that the selected historical houses no longer survived in their original form (Anbrine, 2014, pp. 258, 262, 277).

This evidence allows a careful distinction between room labels and domestic practice. An office label demonstrates provision for an activity within the residential plan; it does not identify all the work carried out in the house. Similarly, a separate drawing room indicates the architectural possibility of differentiating reception from other household activities. It does not prove that visitors followed one invariant route or that every member of the household had the same authority to admit them.

The house also raises a question about the reach of the word "colonial." A building designed by a local architect for a locally organized residential setting belonged to the colonial period without being reducible to a direct government commission. Its history must allow for household preferences, professional practice, property rules, and the circulation of design ideas. Treating every bungalow as a simple instrument of official residence would obscure these forms of agency.

Table 2.4. Building-type records

Building and patronage	Arrangement and construction evidence	Attribution and later change
Government College Lahore Public educational institution	Classroom access through verandahs; brick, stone, and slate identified by the institution.	Purdon: design; Kannhaiya Lal: supervision. Later campus additions require separate records.
Denso Hall, Karachi 1886; memorial subscription and municipal support	Library and reading spaces below an upper assembly hall. Full structural specification not supplied.	Strachan: design; Venetian Gothic in the gazetteer. Later internal changes not established here.
Khalikdina Hall, Karachi 1906; bequest and municipal support	Large hall, front portico, side verandahs; library occupancy under municipal agreement.	Builders and structural specification not identified in the cited passage. Later phases require a building history.
House 36-B, Model Town 1937; private residence	Labelled domestic and work rooms; terraces above; section survives in the drawing record.	I. A. Chishty: architect. Original form no longer survives, according to the thesis's sample account.

Sources: Government College University Lahore (n.d.); Smyth (1919), p. 72; Anbrine (2014), pp. 258, 262, 277. Unrecorded builders are not assumed to be the named designers. No measured environmental performance is claimed.

Structure, labour, and the limits of stylistic history

The comparison deliberately leaves some construction fields unresolved. The university account identifies materials and supervision, while the Karachi gazetteer is more detailed about patronage, room arrangements, and finance. The residential drawings provide evidence of a specified section, but that section cannot automatically establish every material actually installed. These are differences in documentary coverage, not reasons to fill the gaps with a standard colonial construction system.

A history of building production must also distinguish a designer from a builder. Drawing a façade, approving a specification, supervising a contract, supplying stone, making bricks, joining timber, and repairing a roof were different activities. The surviving sources name some participants and omit others. Kannhaiya Lal's recorded supervisory role, for example, should remain visible beside Purdon's design attribution. Where masons, carpenters, contractors, or suppliers are unnamed, their absence from the narrative should be understood as a documentary limitation rather than evidence that their contribution was negligible.

Procurement records could connect these activities more precisely. A tender might identify a specified stone while a variation order documented its substitution; a payment record might show that construction occurred in phases; a maintenance account could explain why an original

roof covering disappeared. Without such records, the use of a material in one part of a building should not be generalized to every addition. The date of a measured section also matters, especially where a surviving institutional complex contains several generations of construction.

The same discipline applies to environmental provisions. Verandahs, high rooms, shaded openings, and roof layers can be explained as mechanisms affecting exposure and heat transfer. Their success depends on how the building is occupied and maintained. Enclosing a verandah changes circulation and exposure; inserting partitions changes the relationship between openings and rooms; a new roof covering changes loading and water behaviour. These are analytical consequences to examine in later building histories, not proof that every surviving colonial building originally achieved equivalent comfort.

Gothic and Venetian Gothic are retained here because the consulted accounts use those classifications for the particular buildings. The labels help describe an architectural vocabulary, but leave patronage, construction labour, room use, and admission unresolved. A more complete building history places style alongside these other fields. It also distinguishes the surviving object from the broader type: the continued existence of a prominent college or hall does not establish how typical its provision was across the colonial city.

2.5 Institutional Continuities after Independence

Independence in 1947 changed sovereignty and the political setting in which urban institutions operated. It did not require every estate to be resurveyed or every building to be replaced. Nor did the survival of an organization prevent changes in its governing law, leadership, users, or objectives. The relevant historical question is therefore which mechanisms continued, through what authority, and with what subsequent modifications. Karachi Port Trust and the succession from Lahore Improvement Trust to Lahore Development Authority provide two distinct answers.

Karachi Port Trust across sovereignty and statutory change

The Karachi Port Trust's colonial framework was established through the Karachi Port Trust Act of 1886, Bombay Act VI of 1886. The institution's official list of chairmen begins in 1887 and records D. B. Brow in 1945-47, followed by Mian Aminuddin in 1947-49. This sequence documents organizational continuity and a transition in leadership across independence. It does not, by itself, establish that every lease, office, staffing rule, or access arrangement remained unchanged (Karachi Port Trust, n.d.-a, n.d.-b; Pakistan, 1974).

The pre-independence estate was already historically layered. As Section 2.3 showed, it included earlier harbour facilities, replacement wharves, reclaimed yards, and land obtained from the municipality. Continuity of the Port Trust could preserve the administrative capacity to manage such an estate, but a complete property history would still need the instruments governing

individual parcels. Institutional survival and the uninterrupted title of a particular tenant or occupier are different claims.

The 1974 amendment demonstrates why the colonial statute cannot be treated as an unchanged governing text. It replaced references to the Central Government with the Federal Government, but also altered operative provisions. Changes to section 44 addressed the sanction required for remissions and the delegation of powers to the chairman or an officer. Changes to section 50A concerned unclaimed goods and periods prescribed through by-laws. These were postcolonial decisions about authority and port administration, not merely a change of institutional vocabulary (Pakistan, 1974, sections 2-4).

The spatial implications are best understood through management. Rules concerning charges, custody, and removal of goods can affect the use of stores and handling areas, while delegated powers determine who may act within the organization. The amendment alone does not show that a named yard was rebuilt or that a particular trader lost access. Establishing such an outcome would require the relevant by-law, decision, lease, or operational record. Nevertheless, the law supplies a concrete example of inherited machinery being revised within the Pakistani state.

Table 2.5. Karachi Port Trust institutional timeline

Phase	Authority and estate	Continuity and limit
1886-1887	Statutory framework established; official leadership sequence begins in 1887.	Distinguish legislation from the start of the recorded chairmanship.
1909 and later works	Municipal land purchased for Thole; yards and waterfront facilities developed.	Identified estate formation; individual conveyances remain necessary for precise parcel history.
1945-1949	Official list records Brow before independence and Aminuddin after it.	Organizational continuity demonstrated; not proof that every rule or tenancy continued.
1974 amendment	Federal governmental terminology; revised remission, delegation, and unclaimed-goods provisions.	Inherited framework altered by national legislation. Physical effects require operational records.

Sources: Karachi Port Trust (n.d.-a, n.d.-b); Smyth (1919), pp. 85-88; Pakistan (1974), sections 2-4. This is a historical sequence, not a statement of the law currently in force.

This timeline identifies three different continuities: an estate assembled before independence, an organization whose leadership continued across 1947, and a statutory framework subsequently amended. None should stand in for the others. A continuing institution could introduce a new allocation policy; a continuing building could accommodate a different

function; and a statutory amendment could change management without immediately changing the physical site. The colonial origin remains relevant because it helps explain the assembled estate and institutional starting point, while later decisions explain subsequent uses of that inheritance.

From Lahore Improvement Trust to Lahore Development Authority

Lahore's planning history provides a case of institutional replacement with explicit legal succession. The Lahore Improvement Trust was established in 1936 under the Punjab Town Improvement Act of 1922. Abbas and Wakil's historical synthesis places its subsequent housing and development work on both sides of independence, including the post-Partition development of Samanabad and Gulberg. Their account makes clear that the Trust's history cannot be confined to the colonial period simply because its legal origin preceded 1947 (Abbas & Wakil, 2023, pp. 11-12, 43-46).

The decisive evidence of succession is section 47 of the Lahore Development Authority Act of 1975. It provided for the transfer of the Trust's functions concerning schemes, water supply, sewerage, and drainage to the new Authority, together with the Trust's properties, assets, and liabilities. This is a documented mechanism connecting institutions. It establishes much more than a similarity between the names or activities of two planning bodies (Punjab, 1975, section 47).

Section 48, read in the cited consolidated text, adds a distinction that is easy to lose in broad accounts of continuity. The Town Improvement Act of 1922 ceased to apply to the area covered by the new arrangement, while unfinished schemes were taken over. Its savings provisions retain compatible existing rules, notifications, acquisitions, contracts, rights, and proceedings. The cited edition marks subsection 48(3) as substituted by the 1976 amendment, effective from 12 February 1976. The institutional transition therefore combined replacement, transfer, and conditional retention. It was neither a complete administrative beginning nor the simple continuation of an untouched colonial body (Punjab, 1975, section 48).

The cited legal edition is a consolidated text containing later amendments. Its annotations must be checked before a provision is assigned to 1975. Likewise, a contemporary description of the Authority's territory or board cannot be projected back onto its establishment without consulting the relevant version and notifications. Dating the institutional framework is as necessary as dating a map.

Table 2.6. Lahore planning institutions and legal succession

Phase	Institutional or spatial record	Meaning for continuity
1922 and 1936	Punjab town-improvement legislation preceded establishment of Lahore Improvement Trust.	Colonial legal and organizational starting point.
After 1947	Trust continued development work; later housing schemes included Samanabad and Gulberg.	Postcolonial decisions within an inherited institution; scheme phases need individual dating.
1975 Act, section 47	Scheme and service functions, properties, assets, and liabilities transferred to Lahore Development Authority.	Explicit succession links the institutions and estate.
1975 Act, section 48, as amended	Earlier framework ceased to apply in the area; unfinished schemes and compatible existing actions retained.	Institutional replacement combined with conditional continuity.
Subsequent comparison	Identify later amendments, scheme decisions, allocations, and service delivery separately.	The 1975 transfer cannot explain every later outcome without intermediate evidence.

Sources: Abbas and Wakil (2023), pp. 11-12, 43-46; Punjab (1975), sections 47-48, consolidated text with amendment annotations. The final row defines the evidence needed for later chapters.

The transfer of liabilities is particularly important for understanding physical outcomes. An inherited property could come with financial obligations, unfinished works, agreements, or pending disputes. A successor institution's freedom to alter a site would therefore depend on more than possession of the land. Equally, succession in service functions did not mean that an effective pipe, drain, or staffed maintenance system existed everywhere within the relevant area. Statutory responsibility and delivered provision remain separate fields in the comparison.

Post-1947 housing pressure and later planning choices also change the explanation. The use of a detached-house layout in a postcolonial scheme may have drawn on an established planning practice, but the decision to finance it, select its beneficiaries, determine plot sizes, or extend services was made within a later political setting. Colonial precedent can help explain the options available to officials. It cannot excuse the historian from identifying the decisions through which an option was retained, enlarged, or modified.

Retained names and changing rules

Cantonment administration offers a further illustration of the same problem. The continuing title of the Cantonments Act, 1924 can suggest permanence, but the Pakistani consolidated text records numerous later adaptations. A distinct 2015 amendment to the Cantonments Ordinance, 2002 addressed ward delimitation and electoral arrangements. These documents belong to different dates and legal instruments. They cannot be collapsed into a single timeless "colonial cantonment system" (Pakistan, 1924, as amended; Pakistan, 2015).

This observation does not establish that every later change produced equal representation or access. It establishes that the mechanism has to be reconstructed. For a particular cantonment, the historian would need the dated boundary, applicable electoral and property rules, service accounts, and records of decisions affecting the group under study. An inherited perimeter might coexist with substantially altered politics inside it, while a new rule might leave important estate relationships intact.

Attributing a present spatial inequality to an inherited institution therefore requires a chain of evidence. The earlier arrangement must first be identified, including the people and territory it affected. Its persistence or transfer must then be demonstrated through the relevant intermediate period. Finally, later changes in population, policy, finance, and access must be considered. A colonial origin is strongest as an explanation when it identifies a continuing constraint or advantage whose operation can be observed. It is weaker when it functions only as a label attached to an old building or institution.

Comparative Record and Key Arguments

The chapter's comparison pack connects administrative decisions to specific spatial outcomes. Table 2.1 traces municipal jurisdiction and a port land transaction; Table 2.2 pairs adjacent Lahore settings without inventing unavailable measurements. Figures 2.1 and 2.2 separate dated infrastructure sequences from schematic local relationships. The building record identifies what is known about patronage, design, arrangement, and construction. The institutional timelines distinguish continued organization from legal succession and later amendment. Together, these records provide identifiable objects that later chapters can follow through time.

Several conclusions emerge from the comparison. First, official legibility was selective. A surveyed or assessed property could be precisely described while its occupants and customary users remained difficult to see. Second, administrative boundaries organized responsibility and finance, but their effects on service access depended on implementation. Lahore's connected water system and Mian Mir's defective supply demonstrate why district form alone is an unreliable measure of provision.

Third, infrastructure changed local space through transfer points and land operations. Karachi's reclaimed yards and specialized waterfront facilities followed a different development process

from Lyallpur's agricultural collecting centre. Both depended on connections beyond the urban boundary, and neither can be explained solely by a plan's geometry. Evidence of completed works and operating establishments is essential to distinguish intended development from development in use.

Fourth, architectural production combined institutional programmes, multiple sources of finance, regional materials, and labour that is unevenly represented in the record. A named style or designer explains only part of this process. Finally, postcolonial continuity was actively maintained or remade. The Port Trust's amended framework and the explicit transfer from Lahore Improvement Trust to Lahore Development Authority show how inheritance operated through decisions, rather than through the passive survival of forms.

These findings establish the basis for examining postcolonial transformation. The inherited city comprised properties, routes, buildings, networks, obligations, and institutional powers with different histories. Later change could preserve one component while replacing another. Following those components separately makes it possible to explain what independence and subsequent urban development transformed, what they retained, and which later choices gave an inherited arrangement a new social consequence.

CHAPTER

03

Partition and Postcolonial Architectural Production

IN THIS CHAPTER

3.1 Migration and the Reallocation of Urban Property

3.2 Capital Planning in Karachi and Islamabad

3.3 Public Architecture and National Representation

3.4 Housing Authorities and Plan Implementation

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Introduction

Independence changed the people, institutions, and resources through which urban space was produced. The displacement accompanying Partition placed houses, shops, religious premises, and public buildings within new relationships of possession and authority. At the same time, a national government needed offices and accommodation; universities required space for expanding programmes; and public commissions gave architectural form to competing ideas of the state. These processes overlapped. A building could become an emergency shelter before its legal status was resolved, while a newly planned settlement could acquire occupants before it acquired dependable services.

The central argument of this chapter is that postcolonial architecture emerged through decisions extending well beyond the preparation of a design. Property classification determined who could claim a building. Allocation procedures determined who could enter a housing scheme. Budgets and contracts determined which parts of a proposal could be constructed. Residents, suppliers, and masons subsequently altered the buildings available to them. The occupied city was consequently the outcome of several forms of authorship, operating at different times and with unequal power.

This argument develops the preceding chapters' distinction between physical survival and historical continuity. A bungalow occupied by a different household might retain its walls while losing its former social relationships. A sector plan might remain visible even after houses were combined and commercial uses spread. An institution could continue to occupy a prestigious building while its authority, constituency, or maintenance arrangements changed. Continuity must therefore be located: in a structure, plot, network, organization, or practice, rather than attributed to an entire urban landscape.

The discussion moves between Lahore, Karachi, Islamabad, and Hyderabad. Model Town provides a bounded account of Partition and inherited property. Karachi and Islamabad reveal different ways of accommodating national institutions and their employees. Three commissions - a memorial, a mosque, and a university campus - show how representation depended on patronage, construction, and use. Khuda-ki-Basti and Korangi make housing implementation visible at the scale of the plot and neighbourhood. Orangi extends the account to building production outside a conventional architect-client commission. A short comparison with Dhaka identifies the changing political geography of projects begun before 1971.

These cases do not represent every region or social group in Pakistan. They provide project histories in which particular decisions can be connected to spatial consequences. The chapter's tables distinguish dated events from later observations; its diagrams explain relationships without claiming to reproduce surveyed plans. Official accounts, designers' publications, field studies, and residents' reported experiences are read together, with attention to the different questions each can answer.

3.1 Migration and the Reallocation of Urban Property

Model Town and the separation of property from occupation

Partition transformed an existing settlement as well as creating demand for new accommodation. In Model Town, Lahore, the co-operative framework, bungalow plots, commercial premises, and religious sites preceded the departure of many Hindu and Sikh residents and the arrival of Muslim households. The society's institutional account records 1,089 Hindu and Sikh members within a membership of 1,366 at Partition. It also records the declaration of the society as evacuee property and its recognition as a legal entity by the Chief Settlement and Rehabilitation Commissioner in 1960 (Model Town Society, n.d.). These are different events: population displacement, administrative classification, and organizational recognition.

A membership total cannot describe everyone who lived or worked in Model Town. Employees, tenants, dependants, shop assistants, and visitors did not necessarily appear as members. Nor does the religious classification of members establish a uniform experience of departure. Wealth, family networks, employment, timing, and access to transport could affect how a household left and what it was able to carry. The same caution applies to incoming residents. The category "refugee" identified displacement, but did not erase differences in resources or the capacity to secure accommodation.

Anbrine's architectural and social history brings published recollections into the neighbourhood account. Her discussion of Som Anand's memoir records deserted houses, closed shops, and changes in the people encountered in Model Town. These recollections preserve the disruption of familiar surroundings, but they are retrospective and socially situated. They cannot identify the legal status of every arriving household. Her later fieldwork documents a different kind of evidence: parts of the mandir used by a girls' primary school and a residence, a gurdwara occupied as housing, and shops surrounding the mandir site (Anbrine, 2014, pp. 65-66, 187-188).

Together, these sources establish a change in occupation and institutional use. They do not establish a continuous, property-by-property sequence between 1947 and the surveyed condition. A religious building used as a dwelling at the time of fieldwork might have passed through several earlier uses. A shop frontage surrounding a former religious precinct might be the product of later subdivision or rebuilding. Neither should be assigned automatically to the first months of resettlement.

What an allotment established

The Pakistan (Administration of Evacuee Property) Act, 1957 makes several distinctions essential to architectural history. In the consolidated West Pakistan text, section 7 vested evacuee property in the Custodian with retrospective effect from 1 March 1947. Section 8 addressed occupancy and tenancy interests as well as ownership-related questions. Section 18 empowered a Rehabilitation Authority to allot property, required particulars to be furnished to the Custodian, and provided for terms and conditions governing its occupation. Allotment therefore operated within an administrative relationship; it should not be translated automatically into unrestricted ownership (Pakistan, 1957, ss. 7-8, 18).

The Act also distinguished religious or charitable trust property. Section 7(2) provided for the appointment of replacement trustees and for the application of trust property and income, as far as possible, to the trust's purpose pending that appointment. This provision is evidence of a legal category, not proof of what happened to a particular mandir or gurdwara. Connecting it to a building requires its trust record, classification, allotment file, and subsequent decisions. The observed residential use of a former religious building cannot, on its own, establish the legality or date of that use.

Four questions consequently need separate answers. Who held the relevant property interest before departure? Who physically entered or remained in the premises? What order, tenancy, licence, or informal agreement supported that occupation? When, if ever, was a more permanent interest recognized? These distinctions explain how a house could be inhabited, repaired, or divided before its documentary history became settled. They also prevent a later deed from being mistaken for the date at which a family first made the building its home.

The 1957 legislation consolidated an evolving administrative field; it was not the beginning of every local arrangement. Its recognition of earlier allotments explicitly reached back to the period after March 1947. Reading the law alongside Model Town's institutional chronology therefore reveals an extended process of reallocation. The society's recognition in 1960 did not by itself settle the title, tenancy, or occupation of each individual property. Organizational continuity and household tenure remained separate scales of inquiry.

Table 3.1. Model Town property and occupation timeline

Period and evidence	Established event or condition	Meaning and unresolved link
Before and during 1947	Co-operative membership and property preceded the departure and arrival of households.	Membership is not a census of all tenants, employees, and dependants.
Partition and its aftermath	Society account records evacuee-property classification; published memoirs describe disrupted occupation.	Neither supplies a complete dated register of temporary accommodation or household succession.
1957 statutory framework	Custodianship, allotment, tenancy interests, and trust property distinguished.	A legal category cannot substitute for a particular property file. Earlier arrangements also require investigation.
1960 recognition	Settlement authorities recognized the society as a legal entity.	Organizational recognition does not establish title or possession of every house.
Fieldwork reported in 2014	Former religious premises contained domestic and educational uses; commercial frontage surrounded the mandir.	Use is documented at survey time. Dates of conversion, intermediate occupants, and relevant authorizations remain unresolved.

Sources: Model Town Society (n.d.); Anbrine (2014), pp. 65-66, 187-188; Pakistan (1957), sections 7-8 and 18. The sequence combines institutional records, published recollections, and later architectural fieldwork; it is not a parcel-level adjudication.

Houses and institutions after resettlement

The architectural consequences of population replacement were uneven. A household entering an existing house inherited a spatial arrangement produced for someone else: a sequence of thresholds, rooms, service areas, and outdoor spaces. Whether that arrangement remained useful depended on the incoming household's size, livelihood, resources, and relations with other occupants. Additional entrances could support separate occupation; a partition could make a room lettable; and shared service spaces could become points of negotiation. These are possible mechanisms to test against dated plans, rather than alterations attributed here to unidentified Model Town houses.

The documented reuse of religious premises demonstrates a more secure connection between social change and building use. Spaces formerly organized around a congregation became parts of educational and domestic routines. The surviving enclosure or landmark could continue to orient the neighbourhood while the authority governing entry changed. In this sense, spatial legibility outlasted institutional continuity. The loss of a congregation and the accommodation

needs of later occupants belong in the same history, without either being reduced to a decorative account of architectural survival.

Testimony requires comparable care. Published memories can establish what a narrator saw, feared, or remembered; they do not automatically settle competing property claims. Accounts that describe newcomers through class prejudice should be treated as evidence of the narrator's outlook. Architectural histories should also avoid identifying present occupants as wrongful possessors merely because their homes occupy older religious or residential fabric. The appropriate conclusion for Model Town is precise: migration changed the neighbourhood's users and the functions of surviving buildings, while the available record leaves the timing and legal basis of many individual alterations unresolved.

3.2 Capital Planning in Karachi and Islamabad

Accommodating government in an existing city

Karachi's first role as national capital depended partly on the occupation of buildings already available. The Constituent Assembly first met in the Sindh Assembly building on 10 August 1947. The Ministry of External Affairs began functioning at Mohatta Palace on 15 August, according to the Foreign Office's institutional history (National Assembly of Pakistan, n.d.; Ministry of Foreign Affairs, n.d.). These examples locate state formation within an inherited civic district and a former private residence. They also show that ceremonial, legislative, and administrative occupation could precede a purpose-built federal setting.

The two buildings should not be combined into an imaginary unified government campus. Their significance lies in the dispersed accommodation of functions within an existing city. Reuse gave the government premises quickly, but the available room arrangements, approaches, and surrounding land uses were inherited constraints. A parliamentary sitting establishes that a chamber was operational on a particular date; it does not establish that every supporting office or service had suitable accommodation. Similarly, an institutional address proves use without resolving the full transaction through which possession was obtained.

Housing employees was another part of making the capital function. Karachi Urban Lab's 2021 study places the Federal Quarters within a post-Partition housing initiative and dates the planned settlement to 1953. Its research in Martin and Clayton Quarters records a long conflict between residence and the terms of government accommodation: eviction notices extended back to 1972, while residents understood promises of alternative housing as continuing obligations. The study's 2018-2020 fieldwork shows how retirement and succession could place established households at risk even after decades of residence (Karachi Urban Lab, 2021, pp. 2, 9-10).

This evidence changes the meaning of "temporary" accommodation. A dwelling tied to employment could become the centre of a family's social and economic life without becoming its privately owned asset. Successive generations might experience continuity in place while the

Estate Office interpreted entitlement through the service status of an employee. Neither the length of occupation nor the administrative category alone adequately describes that relationship. The capital's residential legacy therefore continued after federal functions moved elsewhere.

Islamabad as a phased urban project

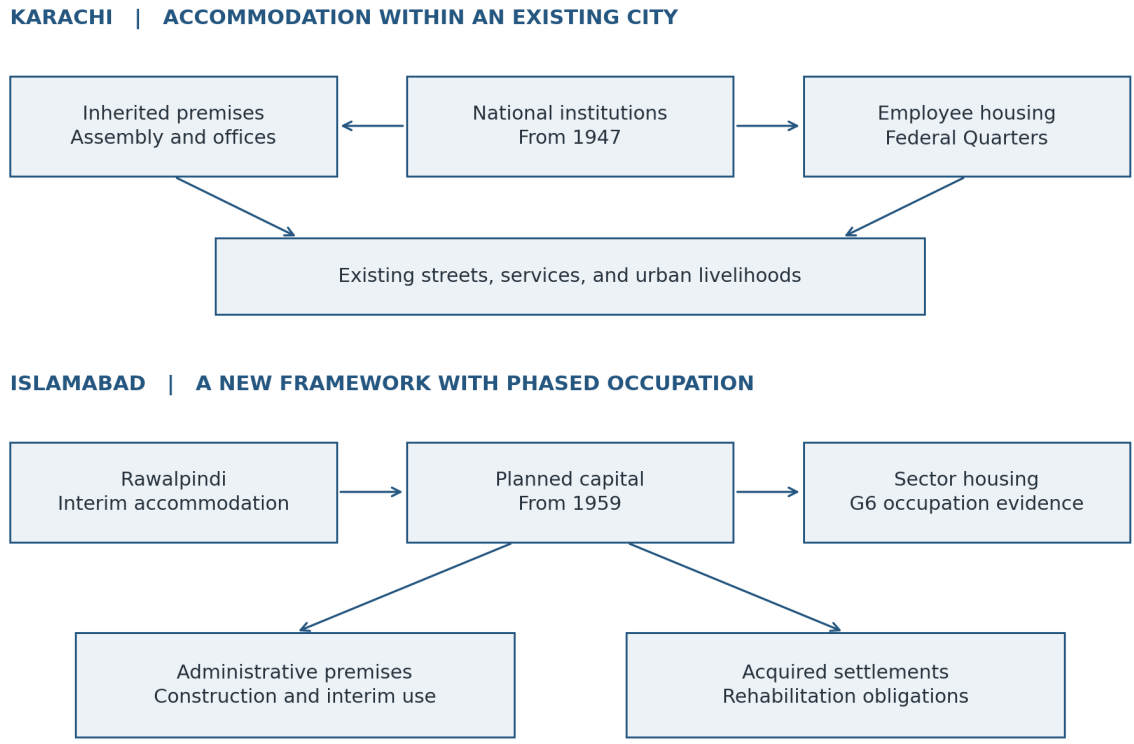
Islamabad offered a different relationship between government and urban form. Doxiadis's 1965 account dated the project's conception to 1959, planning to 1959-1963, and implementation from 1961. It presented a hierarchy of communities within a grid, with local pedestrian movement distinguished from the larger road network. The same publication juxtaposed models of G6 and its subdivisions with photographs captioned as inhabited lower-income housing and an aerial view of G6-1 and G6-2 (Doxiadis, 1965, figs. 31-38). Proposal and occupation were thus present in the designer's own account, but they were different kinds of evidence.

The models show intended organization; the photographs show that at least some housing had been built and entered. They do not provide a census of completed units, the length of a waiting list, or the reliability of services. Nor does the existence of pedestrian space establish equal access to employment. A resident's journey depended on the location of work, transport availability, household duties, and the rules governing admission to institutional grounds. A plan's walking distances describe a spatial intention whose practical value varies between users.

The project publication also placed Islamabad within a metropolitan relationship with Rawalpindi. The existing city supplied an immediate urban setting while the new capital developed; the scheme anticipated a larger relationship between the two rather than an isolated settlement. The planning team's arrival in Rawalpindi in November 1959 and the naming of Islamabad in February 1960 mark early administrative stages, not the completion of a functioning capital (Doxiadis Associates, n.d.-a).

Institutional occupation followed its own sequence. The National Assembly's history records a session at Ayub Hall, Rawalpindi, in June 1962 and a session at the State Bank building in Islamabad in April 1972. These dates demonstrate the use of interim premises across the transition (National Assembly of Pakistan, n.d.). A capital planned around specialized administrative buildings could still depend on adaptation and temporary accommodation. The difference from Karachi lay in the scope of the new urban framework, not in the complete disappearance of provisional arrangements.

Figure 3.1. Capital accommodation and urban relationships



Author's analytical diagram based on National Assembly of Pakistan (n.d.), Ministry of Foreign Affairs (n.d.), Doxiadis (1965), Doxiadis Associates (n.d.-a), and Karachi Urban Lab (2021). Arrows show functional relationships, not measured travel routes. This is not a geographical plan.

Existing settlements and the costs of land assembly

The planned site was also inhabited territory. A later judicial record makes the consequences of acquisition unusually explicit. In Noman Ahmed and 14 others v. Capital Development Authority, decided on 14 June 2021, the Islamabad High Court recorded the first acquisition award as 12 February 1961. It traced successive rehabilitation policies and criticized the later practice of announcing separate, non-simultaneous awards for land and built property. The judgment also documented outstanding compensation and an arrangement at Kurri that excluded female heirs from eligibility, which the court condemned (Islamabad High Court, 2021, pp. 13-16).

This is evidence from litigation many decades after the founding plan, and its historical value is specific. It demonstrates that legal acquisition, compensation, and rehabilitation did not necessarily occur together. It does not establish the experience of every village acquired for Islamabad. The changing policies identified by the court also prevent the entire outcome from

being attributed to one decision in 1960. Later administrative choices reproduced or altered the consequences of the original acquisition framework.

For an affected household, the interval between losing land and receiving compensation was itself a spatial condition. It could determine whether the household could rebuild, remain near work, or obtain a usable replacement plot. Separating land from built-property awards divided a lived holding into administrative components with different timetables. The court record therefore exposes a relationship that is largely absent from a sector diagram: accommodation for the capital's beneficiaries could advance while obligations to previous landholders remained unresolved.

Table 3.2. Capital plans and occupation comparison

Area and period	Provision and intended beneficiaries	Occupation and implementation evidence
Karachi civic district From 1947	Existing legislative premises accommodated the national assembly; federal offices also used other inherited buildings.	A recorded sitting establishes operational use. Office capacity, alterations, and acquisition terms require separate records.
Martin and Clayton Quarters 1950s onward	Federal accommodation linked housing to government employment in the post-Partition city.	Later fieldwork identifies conflict over retirement, continuing residence, and promised alternatives. Residence did not automatically become ownership.
Islamabad administrative area From 1959-1961	Planned government functions within a new capital and a wider metropolitan relationship with Rawalpindi.	Interim legislative accommodation persisted: Rawalpindi in 1962; State Bank building, Islamabad, in 1972.
Islamabad G6 housing By the 1965 publication	Neighbourhood hierarchy and housing within the sector system.	Design models and photographs establish distinct stages. Photographed occupation does not establish full completion, eligibility, or service reliability.
Acquired settlements 1961-2021 record	Land assembly supported the capital; rehabilitation created obligations to affected people.	Court record documents separated awards and unsettled obligations. Different policies and dates must be retained.

Sources: National Assembly of Pakistan (n.d.); Ministry of Foreign Affairs (n.d.); Karachi Urban Lab (2021); Doxiadis (1965); Doxiadis Associates (n.d.-a); Islamabad High Court (2021). The last row records a relationship affecting the planned areas, not an additional equivalent district.

The comparison reveals two distributions of accommodation. Karachi incorporated national institutions and employee housing into an existing metropolis; Islamabad organized them through a new planning and acquisition apparatus while relying on Rawalpindi and interim

premises. In both, an address, allotment, or completed building was only one stage of access. Employment, household succession, compensation, and transport continued to shape who could use the accommodation provided.

3.3 Public Architecture and National Representation

Public architecture gave national institutions visible form, but its meanings were negotiated through particular commissions. The three projects examined here differ in function and patronage: the Mazar-e-Quaid in Karachi, Faisal Mosque in Islamabad, and the University of the Punjab's new campus in Lahore. They should not be treated as examples of one coherent national style. Their records connect commemorative authority, religious diplomacy, and educational expansion to distinct spatial programmes.

Mazar-e-Quaid and the construction of commemoration

The Mazar Management Board's account identifies Fatima Jinnah's support for Yahya C. Merchant's design, submitted in December 1959. Work began in 1960; the account distinguishes completion in June 1970 from public inauguration in January 1971. It also identifies public donations, committee oversight, civil engineers, construction workers, and specialist stonemasons. The memorial's white marble exterior encloses a structure that includes a reinforced-concrete dome; the actual grave lies below the ceremonial representation in the main chamber (Quaid-i-Azam Mazar Management Board, n.d.).

This arrangement gives commemoration a spatial sequence. Approaching the monument, entering its principal chamber, and encountering the representation of the grave are different acts from entering the burial space below. The building's public meaning depends partly on that separation. Visibility and ceremonial participation need not imply unrestricted access to every part of the structure. Monumentality is therefore produced through controlled relationships between exterior approach, collective encounter, and the location of the remains.

The Board describes the design through a combination of Muslim tradition and modern architecture. That is a statement of institutional interpretation. It does not demonstrate agreement among all those who financed, built, visited, or lived near the memorial. The same account reports the removal of migrant shelters from the site and relocation elsewhere, presenting the departure as voluntary. Without corresponding household records or testimony, that characterization remains the institution's account rather than an independently established account of consent.

The commission consequently links national representation to land and labour. A finished photograph can obscure both. Marble gives the exterior visual coherence, while the construction chronology reveals different structural and finishing operations. A named architect organizes the attribution, while the work required engineering, setting out, concrete construction, and

stone finishing. Recording those contributions changes the object of architectural history from a design image to the production of a public place.

Faisal Mosque and a transnational commission

Faisal Mosque connected a Pakistani capital project with Saudi patronage and an international architectural competition. The Da'wah Academy's history relates King Faisal's offer of support to his 1966 visit. The Capital Development Authority (CDA) and Institute of Architects Pakistan organized the competition under the International Union of Architects; Vedat Dalokay's proposal was selected in November 1969. The same account dates construction to 1976-1986, inauguration to 1987, and the first regular Friday congregation to 24 June 1988 (Da'wah Academy, n.d.-a). These milestones distinguish selection, building work, ceremony, and recurrent use.

The Academy describes the concrete shell as evoking a tent. Its account of the building identifies the prayer hall, courtyard, porticoes, entrance verandah, and women's gallery, together with stone, metalwork, ceramic decoration, and calligraphic elements (Da'wah Academy, n.d.-b). Religious reference here operates through geometry, liturgical orientation, materials, and the organization of gathering. It cannot be reduced to the reproduction of a historical dome. Equally, the use of concrete does not make the commission's religious or diplomatic purposes incidental.

The large gathering space also requires a distinction between designed capacity and observed participation. Published capacity figures are not attendance records. A photograph of a major congregation cannot establish how the building works on an ordinary weekday, or how visitors and worshippers negotiate shared routes. The documented existence of a women's gallery identifies a differentiated space; assessing the experience of access would require observation of entrances, circulation, management, and use at specified times.

Educational occupation adds another layer. The International Islamic University's institutional account identifies offices and hostels in the mosque annex and dates completion of the first phase of its new campus to February 2003 (International Islamic University Islamabad, n.d.). The mosque complex therefore supported activities extending beyond the principal prayer hall. The relationship between religious representation and everyday operation included teaching, administration, residence, and maintenance. These uses demonstrate that a national monument can also function as a working institutional estate.

Punjab University and an architecture of expansion

Doxiadis Associates' account records its commission for the University of the Punjab in April 1959, an agreement in May, and the first phase from 1960. The proposal organized departments along a principal pedestrian connection, with further additions and transverse expansion anticipated. The Institute of Education grouped rooms around an open court; hostel rooms incorporated covered outdoor space. The designers explicitly related their spatial approach to Taxila and Mughal sequences of enclosed and open space (Doxiadis Associates, n.d.-b).

These references were part of the designers' explanation of a modern educational project. They establish an intended association with regional history, not a direct line of descent from an ancient settlement or palace. The more consequential continuity was operational: courts, covered circulation, and outdoor rooms were selected as elements through which a growing institution might work. Their environmental intentions remain distinct from measured performance, which would require data on temperature, air movement, energy use, and actual patterns of occupation.

The university's departmental record helps test the relation between master plan and use. Botany moved to the new campus in 1963, occupied several buildings, and obtained its present departmental building in 1973 (University of the Punjab, n.d.). This ten-year sequence shows that movement to the campus did not mean immediate occupation of a final purpose-built home. A functioning university developed through provisional placement as well as new construction. Teaching could begin within an incomplete larger plan, while later buildings redistributed departments and their connections.

The campus represents national development through education rather than a single ceremonial image. Its success cannot be judged only by the consistency of its elevations or the clarity of its diagram. Access to courses, laboratories, accommodation, and everyday movement determines how the institutional promise becomes usable. The available project publication documents intentions and selected built arrangements; the departmental history establishes a particular occupation sequence. Neither supplies a complete post-occupancy assessment of the whole campus.

Table 3.3. Public commission records

Commission and chronology	Patronage and documented intention	Built use and interpretation
Mazar-e-Quaid Karachi 1960-1971 milestones	Memorial committee and public support; Merchant selected with Fatima Jinnah's backing. Institutional account combines Muslim tradition and modern architecture.	Ceremonial chamber and burial space differentiated. National commemoration depended on construction labour, managed access, and the treatment of the site.
Faisal Mosque Islamabad 1969 selection; 1976-1988 construction and opening stages	Saudi support; Pakistani institutions organized competition; Dalokay's proposal selected. Monumental national mosque within a planned capital.	Worship, visiting, and educational occupation coexist within the complex. Completion, inauguration, and regular congregational use have separate dates.
Punjab University new campus Lahore 1959 commission; phases from 1960	University client; Doxiadis Associates. Expandable educational framework with explicit references to regional spatial precedents.	Departmental moves and final buildings occurred at different times. Regional analogy is a stated design intention, not proof of historical descent or measured performance.

Sources: Quaid-i-Azam Mazar Management Board (n.d.); Da'wah Academy (n.d.-a, n.d.-b); International Islamic University Islamabad (n.d.); Doxiadis Associates (n.d.-b); University of the Punjab (n.d.). Interpretations in the final column are the author's. No common completion date is imposed on each entire complex.

The political geography of commissions before 1971

Projects commissioned before 1971 must be located within the Pakistan of their time, including East Pakistan. Louis I. Kahn's National Assembly project at Dhaka began within that political setting and was completed for Bangladesh. The Aga Khan Award record credits Kahn and David Wisdom and Associates after 1979, names Bangladesh's Public Works Department as client, and lists completion in 1983. Bangladesh's parliamentary history records use of the new building in February 1982 (Aga Khan Award for Architecture, n.d.-b; Bangladesh Parliament, n.d.). The records give different dates for completion and parliamentary use; the cited accounts do not explain the discrepancy.

Dhaka is therefore a comparison across a political rupture, not a present-day Pakistani project. It shows how a commission could acquire a different national constituency during its construction. The surviving design cannot make its successive political meanings identical. Across the four examples, national representation was produced by patrons and institutions, then sustained or altered by use. No formal vocabulary alone could settle whose nation, which public, or what kind of access a building represented.

3.4 Housing Authorities and Plan Implementation

Khuda-ki-Basti and the sequence of provision

A housing programme becomes accessible through a sequence of decisions: obtaining land, defining eligibility, collecting payments, delivering infrastructure, permitting construction, and supporting occupation. The order matters. A fully serviced plot may remain inaccessible if its initial payment is too high. A cheaper plot may become unusable if transport and water are delayed. Khuda-ki-Basti in the Hyderabad area is useful because its implementation deliberately changed this sequence and because an early evaluation records revisions while the scheme was still developing.

The Hyderabad Development Authority (HDA), with Tasneem Ahmed Siddiqui, developed Khuda-ki-Basti as an incremental housing scheme. The Aga Khan Award record credits the authority and Siddiqui and describes residents pooling resources to obtain services at block level while improving their dwellings over time. It lists 1989 as a completion milestone (Aga Khan Award for Architecture, n.d.-a). In a project based on continuing improvement, that label cannot mean that every house and service had reached a final state.

Hasan's evaluation for the House Building Finance Corporation places the scheme within the larger Gulshan-i-Shahbaz development and dates its launch to 25 March 1986. Initial allotments did not produce the intended occupation. Procedures changed in August: possession followed payment, while ownership documents depended on completion of payments. A reception area introduced later in 1986 required applicants to demonstrate residence with their families. Complaints about privacy and facilities prompted the construction of more suitable temporary rooms and courtyards (Hasan, 1990, pp. 7, 10-11).

The revision reveals how an eligibility rule can become an architectural programme. The reception area was a physical filter through which applicants had to pass. Its arrangement affected whether a family could comply with the rule without sacrificing privacy or basic domestic routines. Improving that accommodation was therefore a change in the delivery system itself. It was not merely a cosmetic response to a poorly designed waiting area.

The same procedure contained a tension. Requiring actual residence could reduce the attraction of plots to speculative purchasers, but an urgent move could be difficult for people whose work, schooling, care responsibilities, or existing tenancy could not be reorganized immediately. This is a possible exclusion produced by the rule, rather than a quantified finding about rejected applicants. Evaluating the programme requires attention to both the households admitted and those unable to meet its conditions.

Infrastructure and household construction

The World Habitat account describes minimal initial provision, followed by water connections, sewerage, electricity, and gas as residents financed improvement. It records plot costs spread over eight years and treats household initiative as central to construction (World Habitat, 1994). This arrangement reduced the amount that had to be provided before occupation. It also distributed construction and payment over time, making the pace of improvement dependent on household income and collective organization.

An edited account of ESCAP's housing-finance guidelines identifies block organizations, separate accounts, resident representatives, and the HDA project manager as part of the delivery structure. It describes flexible building materials and the use of local skilled labour for services, with the authority assisting estimates (Lacheret, 1994). The resulting urban form was produced through repeated decisions about what could be afforded next. A plot boundary could be fixed while the dwelling, connections, and street environment remained under development.

This division of work should not be understood as the withdrawal of institutions from housing. The authority still controlled access to land, set conditions, assisted technical decisions, and related the settlement to larger networks. Residents' ability to finance a lane-level improvement did not confer control over the external system to which it connected. The distinction is crucial when deciding whether a missing service resulted from an agreed phase, a household payment problem, or a failure by the responsible agency.

Nor should the use of temporary materials be treated automatically as evidence of a failed plan. Where an initial shelter was permitted as part of a documented progression, replacement and enlargement were anticipated. The relevant questions concern duration and consequence. Could a household improve the structure when resources became available? Did early decisions obstruct later connections or expansion? Did temporary conditions persist because of predictable financing limits, institutional delay, or an external shock?

Table 3.4. Khuda-ki-Basti implementation record

Stage	Documented approach or change	What counts as delivery
Land and project setting	HDA scheme within a larger township, launched in 1986.	Available land and connections to larger infrastructure; an individual plot still needed a clear possession record.
Entry and allocation	Initial procedure revised; reception accommodation used to test intended residence.	Admission, permission to occupy, and final ownership documents were different stages.
Temporary accommodation	Resident concerns prompted improved reception facilities.	A change responding to domestic needs; the burden of demonstrating eligibility also needs assessment.
Infrastructure	Minimal initial services followed by improvements financed over time.	Record the service, operating date, payer, and responsible institution separately.
Construction	Households could use affordable materials and improve buildings progressively.	Built shelter is a distinct measure from plot allocation or completion of every connection.
Occupation and continuity	Early evaluation distinguished allotment, building, and vacancy; insecurity and transport disruption affected residence.	Count occupied units at a stated date and explain departures with evidence. Vacancy is not a single diagnosis.

Sources: Hasan (1990), pp. 7, 10-11, 31; World Habitat (1994); Lacheret (1994); Aga Khan Award for Architecture (n.d.-a). The final column defines the analytical distinction used in this chapter; it is not a quotation of HDA rules.

Hasan's evaluation provides one warning against combining different measures of progress. It records 2,883 allotted plots and 708 unoccupied constructed plots in January 1990. Residents connected vacancies to insecurity and transport disruption during civil strife (Hasan, 1990, p. 31). These figures belong to that survey and period. They cannot be merged with later award summaries to produce a single undated "success rate." An allotted plot, a constructed shelter, and an occupied home are different outcomes.

Korangi as a test of the same constraints

Korangi provides an earlier comparison in which the relationship between housing delivery and livelihood was central. The Doxiadis archive identifies a final master-plan report dated 30 September 1959, prepared for the Government of Pakistan's Ministry of Rehabilitation. Daechsel's historical study distinguishes the planner's conception from implementation under Ayub Khan, arguing that rapid resettlement and the display of executive capacity did not produce sustained realization of the original programme (Doxiadis Archives, 1959a; Daechsel, 2011).

In a later interview about Karachi's satellite-town resettlement, Arif Hasan described a lag between industrial employment and residential relocation: people continued to return to Karachi for work (Campion, 2016). This retrospective explanation directs attention to the timing of different investments. A dwelling delivered at the periphery was not equivalent to a complete livelihood arrangement. Housing and industry could appear adjacent in a plan while becoming operational at different times.

Korangi's subsequent history also complicates the language of failure. Shah's comparison of original records with fieldwork in 2018 and 2019 identifies Sector 36A as occupied from 1960 and documents changes to dwellings and land uses (Shah, 2021). The persistence of the settlement matters. An interrupted programme could leave a durable street and plot structure within which later residents produced a different urban fabric. That later capacity does not erase the costs of initial displacement, but it prevents the history from ending at the withdrawal or incompleteness of the original programme.

Khuda-ki-Basti and Korangi therefore test different stages of housing access. In the former, the delivery procedure was revised to connect affordable entry with actual residence; services and buildings were intended to develop incrementally. In the latter, relocation, housing construction, and the availability of employment did not necessarily advance together. Both cases demonstrate why counting units is insufficient. A housing history must connect the unit to payments, rights, services, work, and the household's ability to remain.

3.5 Construction Practices and Professional Roles

The low-income dwelling as a changing building type

The low-income house provides a useful comparison between early state-sponsored resettlement and later supported self-construction. Korangi's first dwellings and Orangi's household-built housing were produced through different arrangements of authority and labour. Neither can be understood adequately through the label "modern." Their dimensions, components, service connections, and capacity for extension depended on procurement and technical decisions as much as on visual preferences.

For Korangi, the Doxiadis archive's July-December 1959 report catalogue identifies work on 922 type AO1 houses in Sector D2, discussion of machine-made doors and windows, and reports on the effects of the first rains. This is evidence that standardized production, component supply, and performance feedback formed part of the project's working concerns. The catalogue does not provide the underlying specifications or establish the precise defects discussed (Doxiadis Archives, 1959b). A construction history should preserve that distinction rather than convert a subject heading into an engineering finding.

Standardization could coordinate dimensions across repeated dwellings and make purchasing and supervision more manageable. It also located many initial choices outside the household. The future occupant might receive a unit whose opening sizes, roof arrangement, or service position had already been selected. The scope for later change depended on how those decisions related to plot width, shared boundaries, and structural capacity. Repetition at the construction stage did not guarantee repetition throughout the building's life.

Shah's study identifies the AO1 dwelling in Sector 36A as a one-bedroom unit with an open patio. Later changes included internal rearrangement, added rooms and floors, and the combination of several houses into apartment buildings, sometimes with ground-floor shops. The study also records commerce outside originally designated premises and changes to circulation (Shah, 2021, pp. 71-72). These observations establish physical transformation, while the motives and financing of each alteration require household-specific evidence.

A filled courtyard, an additional floor, and a merged plot should therefore be recorded separately. The first changes light, ventilation, and the relation between rooms; the second changes loading, stairs, and the distribution of household space; the third changes the development unit itself. They may all increase floor area, but they do so through different construction operations. Their benefits and costs also vary between an owner, a tenant, a neighbouring household, and a person whose work depends on street access.

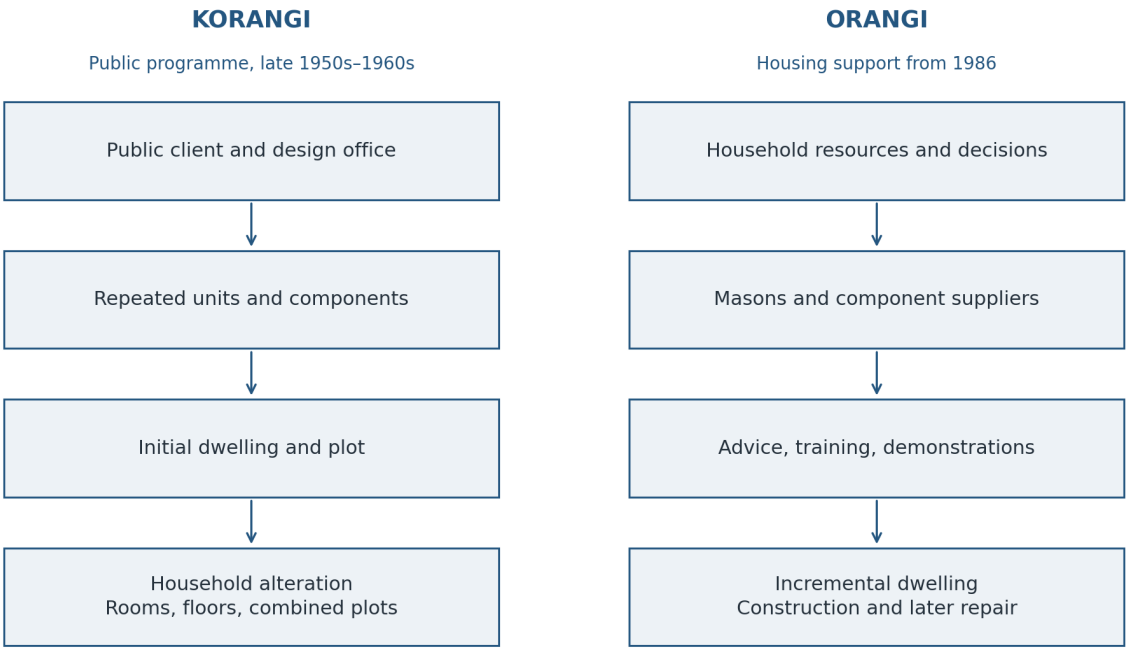
Orangi and the organization of technical support

Perween Rahman's account describes households already building with concrete blocks and sheet roofing, while local thallas, or building-component yards, supplied materials and credit. The Orangi Pilot Project (OPP) housing programme began in 1986 through discussions with owners, masons, and suppliers. Technical work addressed components and construction practices, and training later supported a role between the architect and the mason, including the Technical Training Resource Centre (Rahman, 2005, pp. 52-54). The professional contribution entered an existing production system rather than originating every house.

The 148th quarterly report of the Orangi Pilot Project-Research and Training Institute (OPP-RTI) records research into weak hand-made blocks, construction defects, insufficient ventilation, and difficulties associated with adding conventional reinforced-concrete roofs to inadequate structures. Its response included mechanized block production, experiments with roofing components, standard details, demonstrations, and mason training. It dates the first

thalla mechanization to 1987 and describes later extension through local support organizations (OPP-RTI, 2016, pp. 52-53). These are programme findings and activities, not a universal specification for houses elsewhere.

Figure 3.2. Two arrangements for producing and altering housing



Authority, payment, execution, and upkeep remain separate questions.

Author's process comparison based on Doxiadis Archives (1959b), Shah (2021), Rahman (2005), and OPP-RTI (2016). The diagram identifies documented roles; it does not reconstruct an individual contract or imply that every participant had equal influence.

This intervention changed the point at which expertise entered construction. Improving a component yard could affect houses whose owners never commissioned an architect. Training a mason could influence the placement of an opening or the execution of a joint across many small jobs. An estimate could change what a household attempted in one season. Technical advice therefore circulated through suppliers, tools, demonstration work, and trusted local relationships as well as through drawings.

The comparison also reveals different forms of standardization. Korangi coordinated repeated units within a publicly sponsored programme. Orangi's support work sought repeatable improvements within individually financed construction. In both, a standard could reduce uncertainty and organize labour. Its effect depended on what was standardized, who could revise it, and whether the surrounding conditions remained suitable. A component intended for

one loading arrangement could become problematic when an owner added a storey without corresponding changes below.

Services and maintenance as part of production

Rahman links housing to sanitation through a division of responsibilities: residents financed, managed, and maintained internal facilities and lane-level systems, while external networks remained governmental responsibilities. Technical support included surveying, estimating, design, and supervision (Rahman, 2005, pp. 52-53). The house was consequently connected to a collective construction process beyond its plot. A domestic improvement could depend on neighbours agreeing on a route, contribution, or maintenance arrangement.

This relationship prevents "self-help" from becoming an explanation that erases paid labour or public obligations. A household might contribute money and decisions while hiring a mason, purchasing components on credit, and relying on an external drainage connection. Unpaid coordination and paid construction belonged to the same process but should not be confused. Where records do not identify wages, contracts, or the distribution of household labour, those contributions should remain unquantified rather than disappear from the account.

Table 3.5. Low-income housing construction and alteration record

Decision or component	Korangi state-sponsored housing	Orangi supported household construction
Initial decision-making	Public programme and design office set the initial spatial and production framework.	Households and local builders already produced housing; technical support entered that process.
Components and supply	Archive catalogue identifies repeated house types and discussion of manufactured openings.	Thallas supplied materials and credit; research addressed blocks and roof components.
Professional contribution	Coordination of a larger project; full contracts and individual subcontracting arrangements not established here.	Advice, estimates, demonstration work, mason training, and local technical organizations.
Subsequent change	Field study records room additions, extra floors, plot combinations, and changed uses.	Incremental investment made component quality and advice during extension significant.
Services and repair	Alterations require separate records of structure, drainage, access, and responsibility.	House and lane works linked household investment to collective systems and governmental external networks.
Evidence boundary	Catalogue descriptions are not specifications; observed alterations do not establish every owner's motive.	Programme reports identify practices and reported problems; they do not replace site-specific assessment.

Sources: Doxiadis Archives (1959b), catalogue description; Shah (2021), pp. 71-72; Rahman (2005), pp. 52-54; OPP-RTI (2016), pp. 52-53. Comparisons concern the documented programmes and samples, not every house in either settlement.

Materials also changed the obligations of ownership. A roof used as an occupied terrace requires more than an image of a flat surface; it depends on structural provision, waterproofing, access, and continuing repair. A larger opening changes the relationship between wall and support. Enclosing an outdoor space changes drainage and servicing as well as room area. These are consequences to trace through drawings and building histories, without treating the appearance of concrete as sufficient evidence of progress or decline.

The historical comparison does not support a simple movement from craft to profession. Designers, engineers, contractors, masons, suppliers, and users occupied different positions in different projects, and those positions changed during a building's life. The authority to approve a plan was distinct from the ability to finance construction, select a component, execute a joint, or organize a repair. Architectural production becomes clearer when each of those decisions is assigned to the actor and stage for which evidence exists.

Conclusion

Partition and postcolonial development transformed urban space through several connected processes. In Model Town, demographic rupture and property administration altered the users and functions of inherited buildings. Karachi's early national institutions occupied existing premises, while employee housing created lasting relationships between residence and government service. Islamabad established a new planning framework, yet its development depended on interim accommodation, metropolitan connections, and land-acquisition obligations that continued long after the first sectors were built.

Public commissions made national purposes visible without fixing their meaning permanently. The memorial, mosque, and university campus organized different forms of gathering and access. Their histories also show why authorship must include clients, committees, institutions, builders, and later users. Dhaka makes the point especially clearly: a project can cross a change of sovereignty and acquire a new national constituency while construction continues.

Housing histories bring these relationships into ordinary building practice. Khuda-ki-Basti altered the order of payment, occupation, and infrastructure; Korangi left a framework that residents subsequently transformed; and Orangi's technical support worked through household decisions and local production networks. The significant question is not whether occupied space departed from a plan, but which decision produced the departure and what it changed for particular users. An added room, a delayed sewer, and an unpaid compensation claim belong to different causal histories.

Table 3.6. Postcolonial project histories and their causal links

History	Decision connecting proposal and occupation	What later chapters can track
Model Town	Property administration and incoming occupation reassigned inherited spaces.	Plot persistence, changed institutional use, later subdivision, and unresolved household sequences.
Karachi and Islamabad	Reuse, employee accommodation, phased construction, and acquisition distributed access differently.	Employment relationships, interim premises, residential adaptation, and rehabilitation obligations.
Public commissions	Patron selection and phased funding shaped buildings subsequently used by changing publics.	Entrances, circulation, institutional occupation, material upkeep, and changing interpretation.
Khuda-ki-Basti and Korangi	Allocation procedures, service timing, and access to work shaped whether provision became usable housing.	Occupation, extensions, service completion, transport, and the consequences of revised rules.
Orangi construction support	Component improvement and local technical advice influenced individually financed buildings.	Material supply, skills, repair, structural alteration, and collective service responsibilities.

Author's synthesis of the project records developed in sections 3.1-3.5. These are mechanisms supported at the scales specified in the chapter; they are not claims of uniform national outcomes.

The chapter's comparative record establishes the relationships that later chapters can follow: allocation and possession, planned location and employment access, institutional intention and public use, standardized production and household alteration. These relationships connect architecture to the distribution of land, resources, and authority. They also provide a basis for examining later urban expansion and environmental change without assuming that either a surviving form or an inherited institution explains its own consequences.

CHAPTER

04

Housing Markets and Metropolitan Expansion

IN THIS CHAPTER

4.1 Incremental Housing and Rental Subdivision

4.2 Private Housing Schemes and Property Investment

4.3 Village Incorporation and Agricultural Land Conversion

4.4 Transport Networks and Access to Urban Opportunities

4.5 Water Supply and Neighbourhood Services

Metropolitan expansion takes place inside occupied houses as well as beyond the built-up edge. An additional room may accommodate a married child, become a rental unit, or allow paid work to continue at home. A sale of agricultural land may finance a household's move while removing another household's source of employment. A new transport corridor may bring a distant workplace within reach, yet leave the journey from a narrow residential lane to the station difficult. These changes connect architecture to the organization of land, money, labour, and public services. Their significance becomes clear when the building and the wider urban system are examined together.

The previous chapter traced the institutions and construction processes through which postcolonial plans became occupied places. This chapter follows housing after initial provision and examines the markets and service relationships that support its continuing transformation. Its central argument is that additional property development and additional usable accommodation are different outcomes. The relationship between them depends on the timing of construction, the terms of access, everyday mobility, and the capacity to maintain shared infrastructure. Neither a plot-sale total nor a metropolitan built-up-area estimate adequately describes that relationship.

The discussion moves through five bounded comparisons: alteration in Nawalane and Paposh Nagar in Karachi; the development stages of Bahria Town Karachi; village change on Lahore's Barki-Bedian fringe; access associated with Peshawar's bus rapid transit system; and water and sanitation arrangements in Orangi. Their evidence covers different periods. They are compared through common questions rather than presented as a synchronized national survey. Published field studies, court orders, project records, and land-cover research establish particular events and conditions. The chapter's interpretations connect these findings without supplying missing property histories, household budgets, or travel measurements.

This approach also changes the meaning of continuity. A plot may persist while its building, occupants, and service demands change. A village name may survive after cultivation disappears. A water connection may remain physically present while delivery becomes intermittent. The practical record developed here therefore follows both material form and the arrangements that make it usable.

4.1 Incremental Housing and Rental Subdivision

Building through successive household decisions

Incremental construction distributes expenditure over time. Land access, an initial enclosure, a roof, additional rooms, and a separate upper-floor entrance need not be financed together. This permits households to respond to changing resources and composition, but it also creates dependencies between stages. An early decision about foundations or stair position can restrict later additions. A household may afford a room before it can afford independent water storage or adequate drainage. The unfinished dwelling is consequently a continuing investment and an occupied place at the same time.

Karachi's Nawalane and Aurangabad within Paposh Nagar provide a useful comparison because their different origins did not prevent both from changing substantially. Hasan, Sadiq and Ahmed's survey, undertaken in 2008-2009 and published in 2010, describes Nawalane's regularization in 1976 and its subsequent vertical growth. Aurangabad began as formal migrant housing in 1954, with small, single-storey houses, and later acquired additional floors and street encroachments. These histories establish alteration in both settings. They do not constitute repeated measurements of the same households over five decades (Hasan, Sadiq and Ahmed, 2010).

The comparison challenges a simple division between a completed formal city and a changing informal one. Initial provision establishes a starting arrangement; occupation introduces new needs and opportunities. A dwelling that suited one household at allocation may later contain several related households. A street originally serving a small number of entrances may carry more pedestrians, deliveries, parked vehicles, and service connections without becoming wider. In this process the relevant unit of architectural change is often the house and its adjoining lane, rather than the house alone.

Hasan, Pervaiz and Raza distinguish several forms of housing intensification in Karachi: owners expanding for family occupation, owners adding accommodation for rent, and developers acquiring property for redevelopment through arrangements that can include apartments for the former owner. These routes distribute finance, control, and future accommodation differently (2017). They should not be compressed into a single category of self-help. Where a developer controls replacement, the original household may retain a claim to future space while losing immediate control over construction. Where the owner adds one room, that household may retain control but carry the cost and technical decisions directly.

Tenure and the distribution of usable space

Five conditions require separate treatment: an ownership claim, actual occupancy, statutory recognition of the settlement, permission for particular building work, and the adequacy of the structure. Evidence for one does not establish the others. The Sind Katchi Abadis Act of 1987 provides a later statutory framework for recognition and development; it is not the explanation for Nawalane's earlier regularization. Even within a recognized settlement, an individual property file is necessary to establish the interest held and the conditions attached to it (Government of Sindh, 1987).

This distinction matters to the architectural record. A built upper floor proves that construction occurred. It does not identify the person who financed it, whether it was authorized, or whether the original structure was assessed for the added load. Similarly, two cooking areas do not by themselves prove a landlord-tenant relationship. They may belong to related households sharing property. Rental subdivision should be identified through occupancy and payment evidence, with kinship and tenancy recorded separately where they overlap.

Subdivision can lower the initial amount needed to obtain accommodation because a household rents part of an existing building rather than purchasing a plot and constructing a dwelling. The owner may gain income that supports repairs or living costs. Its benefits are conditional on what space and services accompany the room. A nominally separate unit can depend on another household for access to a staircase, toilet, meter, or water tank. These arrangements can be workable, but they make control of common space consequential. A locked roof door or a changed entrance may alter daily life without changing the building's external dimensions.

Home-based work further complicates a room count. Akhtar's statistical profile identifies home-based employment as a significant component of work in Pakistan and documents its gendered composition (2020). It does not identify the use of every dwelling in the Karachi cases. Its relevance is to the interpretation of space: a room used for paid production, storage, and sleeping cannot be assessed solely as a bedroom. Adding a tenant may produce rental income while reducing work space or increasing unpaid tasks associated with cleaning and shared facilities. Establishing that trade-off requires the activities and users to be recorded, rather than inferred from the plan.

Table 4.1. Dwelling change in two Karachi neighbourhoods

Record field	Nawalane in Lyari	Aurangabad in Paposh Nagar
Starting condition	Settlement subsequently regularized in 1976.	Formal housing scheme established in 1954.
Recorded change	Earlier low-rise houses acquired additional floors and household divisions.	Original small houses were extended vertically and into parts of the street.
Access and occupancy	Family connections supported continued residence.	Additional households occupied existing plots; tenancy needs separate evidence.
Expenditure stages	Additions and fitting-out: household cost histories unavailable.	Public provision followed by private alteration; expenditure series unavailable.
Services and work	Record connections and capacity for additional domestic or work uses.	Record shared meters, drains, storage, stairs, and upkeep.
Unresolved evidence	Verify title, permits, load capacity, and tenancy at property level.	Formal origin does not certify the authorization or safety of additions.

Source: Hasan, Sadiq and Ahmed (2010), fieldwork in 2008-2009. The final three rows identify missing records and analytical requirements. This comparison does not track two individual houses longitudinally.

Additional accommodation and its limits

The Karachi survey also shows why resident evaluation and external assessment should both be retained. In Paposh Nagar, the authors' concerns about aspects of housing quality coexist with favourable resident responses to some conditions. Satisfaction can reflect valued location, familiarity, and alternatives as well as the physical qualities under examination. It is not a substitute for measurement, but neither should it be discarded because it differs from a professional judgment (Hasan, Sadiq and Ahmed, 2010).

An adequate dwelling-change record therefore asks what an alteration makes possible and what it consumes. A new floor increases enclosed area, but may occupy a roof previously used for work, washing, or shared activity. A new internal passage can separate households while taking area from a room. More toilets can improve privacy while increasing dependence on a common drain. These are spatial relationships to investigate, not automatic consequences of every extension.

The institutional arrangements that make incremental building possible include sufficiently secure access to a plot or dwelling, the ability to invest in stages, access to builders and materials, and workable agreements over shared spaces. The household arrangements include

pooling resources, accommodating relatives, and sometimes obtaining rent. Subdivision improves access when the added accommodation remains usable and its recurring costs are manageable. It creates new pressures when extra occupancy is financed through the loss of essential common space, unassessed construction, or service demands that no actor has agreed to meet. The difference lies in the particular arrangement, not in density alone.

4.2 Private Housing Schemes and Property Investment

Property development on several schedules

A private housing scheme brings together land assembly, planning authorization, finance, construction, and the production of a marketable address. These activities can proceed at different speeds. Sales may begin before houses exist; some purchasers may hold an interest for future occupation while others seek resale or rental income. The developer's cash flow, a purchaser's asset, and an occupant's home are related but distinct. A project assessment must follow the transitions between them.

Bahria Town Karachi offers a documented case in which promotional, judicial, and field-research accounts describe different aspects of development. The company identifies 2014 as the project's launch and presents an extensive package of housing, commercial activity, and amenities. Its project description is evidence of the product being offered and the urban life being promised. It is not an independently verified occupancy register (Bahria Town, n.d.). A March 2017 publicity report of apartment-key handovers establishes a publicly announced delivery milestone, but does not establish how many recipients subsequently lived there or which services operated continuously (Bahria Town publicity, 2017).

The distinction has an architectural consequence. Completed streets and buildings can provide a convincing image of a settled district while containing different degrees of occupation. Conversely, households may occupy completed buildings before all the surroundings are finished. Empty land within a scheme may represent a later development phase, disputed delivery, or an owner's deferred building decision. Without dated records, its appearance alone cannot distinguish these conditions.

Land arrangements and delivery obligations

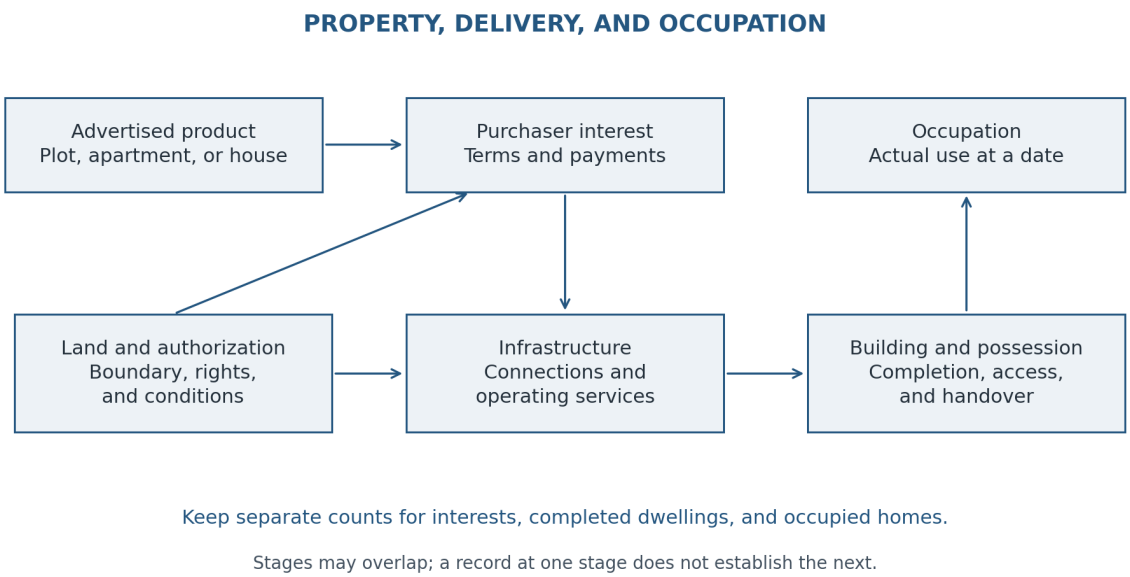
The Supreme Court's order of 21 March 2019 accepted an offer of Rs460 billion in relation to 16,896 acres defined by a site plan. The proceedings also recorded the developer's claims concerning allottee interests and obligations affecting allotments outside that defined area. These are legally important distinctions between the specified land, third-party expectations, and the terms of implementation (Supreme Court of Pakistan, 2019). The order itself does not prove that every payment, conveyance, or dwelling delivery subsequently occurred.

On 23 November 2023, the Supreme Court rejected the developer's alleged land shortfall, dismissed its applications for relief, and held it in default of its payment obligations. The order

records a Survey of Pakistan assessment of 19,931.63 acres in its possession, exceeding the 16,896 acres covered by the 2019 arrangement (Supreme Court of Pakistan, 2023, paras. 6, 8-14). The developer's claims about roads, drains, utility corridors, and existing villages did not establish a shortfall. This illustrates why marketed boundaries, physical possession, developable land, and legally recognized interests must be distinguished.

The case also demonstrates the difference between an approval and the performance of an obligation. Authorization can prescribe an area or condition without establishing the completion of infrastructure. A transfer can concern an interest in land without supplying a habitable house. A handover can provide possession while leaving questions about title, defects, or maintenance unresolved. These are separate inquiries even when a sales document presents them as one purchase.

Figure 4.1. Different stages between a property offer and an occupied home



Author's analytical diagram informed by the Bahria Town Karachi record. Arrows show dependencies to investigate, not a verified sequence for every purchaser. Legal review, financing, and building work may overlap; an advertised interest is not necessarily an interest in a completed dwelling.

For this reason, project finance cannot be reconstructed from sales publicity alone. The sequence of receipts and expenditure would require dated accounts, contracts, and delivery records. The historical evidence assembled here establishes that marketing, claimed allotments, announced handovers, and land litigation overlapped. It does not support a calculation of profit, a ranking of returns, or an assumption that receipts from a specified purchaser funded a specified road.

Demand within the scheme and costs beyond it

Nazir and Yousuf's qualitative study provides a small-scale view of occupation and neighbouring settlements. Interviewed residents described benefits associated with the scheme's environment and services; interviewees in nearby goths reported coercion and damage associated with development. The authors also examined property-market accounts. These are situated accounts from limited samples, not a representative survey of all buyers, residents, or affected villagers, and reported allegations cannot adjudicate an individual parcel's ownership (Nazir and Yousuf, 2021).

Their juxtaposition nevertheless identifies an important question for metropolitan analysis: the area receiving organized services and the area bearing development costs need not coincide. A household can reasonably value a reliable local environment while neighbouring residents experience altered access or uncertainty. Examining both does not require treating either group as uniform. Buyers differ in resources and intentions; village residents differ in landholding, employment, and bargaining power.

Table 4.2. Bahria Town Karachi project-stage assessment

Stage and date	Evidence available	Delivery or access still to establish
Launch 2014	Developer identifies the project's launch and advertises residential and commercial products.	Original approval conditions and the approved boundary of each phase.
Handover March 2017	Developer publicity reports apartment keys handed to owners.	Units physically habitable, units continuously occupied, and actual service provision.
Land arrangement 21 March 2019	Supreme Court order specifies a mapped land area and a financial settlement.	Parcel conveyance and payment compliance are distinct from the order itself.
Third-party interests 2019 order	Allottee claims and adjustment or refund obligations appear in the proceedings.	An allotment count is not a dwelling or resident count; resolve the status of each affected interest.
Use and neighbours 2021 study	Small qualitative samples describe resident benefits and neighbouring villagers' grievances.	No representative occupancy census or comprehensive determination of disputed land rights.
Implementation dispute 23 November 2023	The Court rejects the alleged land shortfall, dismisses the applications, and finds payment default.	The recorded possession exceeded the 2019 area; parcel rights and subsequent compliance require separate records.

Sources: Bahria Town (n.d.); Bahria Town publicity (2017); Supreme Court of Pakistan (2019, 2023); Nazir and Yousuf (2021). Historical assessment ends on 23 November 2023. It does not state the scheme's present legal or investment status.

Hasan's analysis of land contestation in Karachi places housing development within struggles over land value and control (2015). At the project level, this directs attention to how value is created and who can claim it. An internal road may increase the marketability of plots, while a connection to a wider road depends on public investment. Security arrangements may shape access for visitors, workers, and neighbouring residents differently. These relationships require evidence of operating rules and actual movement, rather than a conclusion drawn solely from the presence of a gate.

Investment demand and household demand are not mutually exclusive. A purchaser may intend to occupy later, rent temporarily, or sell if employment or family circumstances change. Establishing speculative behaviour requires more than observing a resale or an unfinished plot. Repeated transactions, holding periods, financing arrangements, and occupancy evidence would provide a stronger basis. Similarly, a growing number of occupied homes does not settle disputes about land assembly or external costs.

The scheme's contribution to housing should therefore be assessed through usable accommodation at a stated date and under stated conditions. This means distinguishing advertised opportunities, allocated interests, completed dwellings, and occupied homes. The historical assessment in Table 4.2 ends with the November 2023 proceedings. Its purpose is to explain development stages and evidentiary differences, not to offer a present judgment on purchasing property in the project.

4.3 Village Incorporation and Agricultural Land Conversion

Different meanings of an expanding urban edge

The urban fringe is not a vacant surface awaiting development. It contains residences, cultivation, paths, water channels, workplaces, and claims to land that may not share the same boundaries. Urban incorporation can leave a residential core in place while transforming its surrounding fields. It can enclose a settlement within a new scheme, replace buildings, or introduce workshops and commercial premises incrementally. These changes produce different relationships between inherited settlement form and metropolitan growth.

Remote sensing provides evidence of physical expansion, but it cannot identify all these relationships by itself. Ramzan and colleagues' Lahore study reports an increase in built-up share from 14.7 to 56.5 per cent between 1992 and 2020 (2022, Table 2). These are study-specific estimates. The paper describes Lahore as covering 405 km², while its land-cover table totals approximately 1,770 km², so the spatial boundary requires reconciliation before the percentages are used as citywide measurements. They are not a conversion rate for a particular village, an estimate of households displaced, or proof that every area classified as built-up contains occupied housing.

The locally focused case here is the Barki-Bedian fringe considered in Javaid's research, with particular attention to village sites reported as replaced or enclosed. Her account draws on fieldwork between 2014 and 2022 and distinguishes trajectories including the replacement of Pathanwala and the enclosure of Charar and Harpalkay (Javaid, 2023). This is a bounded comparison of named settlement situations within a corridor, rather than a new hectare-based survey of south-eastern Lahore. The mapped land-cover series and the village histories operate at different scales and are not merged into a single statistic.

Parcels and livelihoods do not share one boundary

The most significant unit of change may be a household's set of connections rather than the boundary of its dwelling. A family can remain in the same house while fields, grazing access, or a route to work change around it. An agricultural tenant may lose access to cultivated land without owning the parcel that changes hands. A landowner may receive sale proceeds without all household members exercising equal control over them. Workers and shopkeepers may depend on agricultural activity through relationships that do not appear in ownership registers.

Javaid's discussion of gain and loss questions whether a monetary payment adequately describes what residents experience during conversion (2023). The implication for architectural history is precise: continued occupation of a village house should not be treated as evidence that the earlier settlement system survives. Its relationship to surrounding productive land may have been altered. Equally, the construction of new housing should not automatically be described as the destruction of every previous livelihood. The direction and extent of change must be established for the relevant group.

A limited comparison from Faisalabad reinforces the need to separate groups and methods. Farah and colleagues interviewed 180 farming households in six villages and compared reported conditions in 2006 and 2015. Their evidence concerns reported landholding and agricultural changes, including sales for housing and shifts in work (2016). It is retrospective evidence from a farming-household sample, not a panel following the same measured variables annually and not a survey representing every landless worker. It supports a differentiated account of agricultural change without providing a universal trajectory for the Lahore villages.

These distinctions affect the evaluation of benefit. A sale may convert an illiquid landholding into money that finances education, a business, or a new house. Whether it produces a durable improvement depends on the subsequent use of the proceeds and the costs of replacement accommodation. A new road may attract commerce while reducing access across former fields. Identifying these outcomes requires household and local-business histories; the visible presence of new buildings cannot supply them.

Roads and jurisdiction during conversion

Parcel subdivision creates new requirements for access. A route that once served cultivation may become the frontage for housing or storage. As entrances multiply, the relation between through movement and local access changes. A newly raised or widened road can also affect how water moves between parcels. These are mechanisms for investigation along the fringe, rather than claims that every new road in the selected corridor produced the same effects.

Administrative incorporation adds another layer. A change in jurisdiction can alter which institution is expected to collect waste, maintain streets, or approve construction. It does not itself demonstrate that those services have arrived. Conversely, a settlement may become physically continuous with a city before its administrative classification changes. A conversion profile should therefore place the dates of observable building beside the dates of any verified jurisdictional decision. In the evidence assembled here, no complete, parcel-by-parcel sequence of those decisions is available for the named Lahore villages.

Table 4.3. Lahore fringe conversion profile and scale controls

Spatial and temporal unit	Documented indicator	Interpretation and limit
Lahore study footprint 1992-2020	Remote-sensing classifications record a rising built-up share.	Study-specific context; the published area totals and village boundaries require separate checks.
Barki-Bedian fringe 2014-2022	Interviews, observation, photographs, and spatial evidence.	Local histories; no common corridor conversion percentage calculated.
Village sites	Pathanwala reported replaced; Charar and Harpalkay enclosed.	Replacement and enclosure are different outcomes.
Agricultural parcels	Subdivision can separate a village core from former fields.	Retained buildings do not establish continued cultivation or common access.
Access and drainage	Investigate connections across roads and scheme edges.	No complete dated parcel survey assembled here.
Affected groups	Owners, tenants, workers, and other residents hold different interests.	Displacement and livelihood change need evidence beyond imagery.

Sources: Ramzan et al. (2022); Javaid (2023). The final three rows identify analytical requirements, not new field measurements. Barki is also transliterated as Burki. Land-cover change does not establish administrative reclassification.

Comparable imagery is most useful when each image covers the same boundary, uses compatible classification rules, and accounts for season. Bare or recently harvested land should not be classified as permanently abandoned agriculture merely because it appears uncultivated

on one date. Roads and completed roofs can indicate development, but the interval between two images rarely supplies an exact transaction date. An image can locate a change that interviews or documents explain; it cannot establish compensation or consent.

Village incorporation thus has several possible spatial expressions. Replacement removes an earlier building fabric; enclosure retains a core while changing its connections; conversion of surrounding fields can alter livelihood relations with little immediate change to the core. The benefits and costs follow different interests within these processes. The central finding is not that urban conversion has one uniformly positive or negative effect, but that ownership, residence, and dependence on land place people differently within the same changing landscape.

4.4 Transport Networks and Access to Urban Opportunities

The corridor and the complete journey

Housing location becomes useful through the journeys it permits. A comparatively inexpensive dwelling may impose high recurring costs if employment requires several paid transfers. A faster trunk route may enlarge the area from which a workplace can be reached, but only if a traveller can enter the system, travel at the required time, and complete the last leg. Accessibility therefore concerns a specified origin, destination, user, and schedule. It cannot be read directly from kilometres of road or transit infrastructure.

Peshawar's BRT system began operation in August 2020. ADB's subsequent completion report describes a dedicated corridor together with routes operating beyond it, making the connection between the main line and surrounding neighbourhoods central to the project's function (ADB, 2026). Its significance for housing lies in this network relationship: a metropolitan route can change the usefulness of existing residential locations without changing their buildings.

The early project account provides concrete but limited evidence. In January 2021, ADB reported an express journey between Karkhano Market and Chamkani taking 45 minutes compared with an earlier journey of about two hours. It also presented Muskan, a Hayatabad resident travelling to university and work, and Shabuddin, a wheelchair user travelling to his office, describing improvements in their ability to travel (ADB, 2021). These accounts identify meaningful benefits and particular users. They do not form a matched, representative before-and-after survey of the population.

For the cross-city journey, the reported time difference is substantial, but its boundary matters. If the timing starts at a stop, it does not include leaving the home, reaching the stop, waiting, or reaching the final destination. For the wheelchair user, independent boarding can remove an important obstacle while conditions on the approach street remain a separate question. The appropriate conclusion is that the cited users and journey experienced improvements, with broader access requiring additional evidence.

Walking and paid access remain part of the system

Ayaz and colleagues surveyed women using Peshawar BRT between January and June 2023. They describe a sample of 295 and report walking as the access mode for 39 per cent of respondents and the onward mode for 45 per cent; rickshaws or taxis also formed substantial parts of these journeys. Their study records experiences of harassment as well as travel purposes and patterns (2024). The findings direct attention beyond the bus interior. They also concern users already present at stations, rather than women excluded from the system altogether.

The architectural implication is that a station's entrance is part of a longer sequence of thresholds. Pavement continuity, crossings, queuing space, and the connection to side streets influence whether the designed facility can be reached. A main-road improvement can shorten movement along the corridor while requiring a longer route across it. Evaluating that possibility requires the position and operation of crossings, together with local destinations, not simply a count of pedestrian bridges.

The household cost of travel similarly extends beyond the fare charged by the main operator. If a paid access leg is necessary at both ends, that cost may determine whether the journey is affordable. Accompanying children or other dependants can change both expenditure and scheduling. A fare comparison must hold the journey and user group constant; substituting a subsidized corridor fare for the former cost of an entire door-to-door journey would exaggerate the improvement. The studies used here do not supply complete, matched expenditure diaries, so no new household savings estimate is calculated.

Operating hours are equally important. Ayaz and colleagues describe a 06:00-22:00 service window in their study context (2024). Under that timetable, a return after 22:00 would require another arrangement. This is a simple schedule-based inference, not evidence that a particular surveyed worker missed a bus. It illustrates why access to a hospital, market, or workplace depends on opening hours and shifts as well as the proximity of a route.

Table 4.4. Peshawar accessibility assessment with explicit evidence limits

Journey or user group	Available evidence and time frame	Whole-journey finding and missing element
Karkhano Market to Chamkani Express service	ADB's January 2021 account reports a change from about two hours to 45 minutes.	Selected cross-city journey claim; walking, waiting, and onward travel are not separately timed.
Hayatabad home to university and work	A named commuter in the 2021 account reports improved convenience, security, and affordability.	Evidence of individual benefit; campus, timetable, transfer costs, and complete before-and-after logs are not supplied.
Wheelchair user to office	A named commuter in the same account describes travelling independently after BRT opened.	Meaningful reported gain; home and destination access cannot be generalized to all wheelchair users.
Women using BRT stations January-June 2023	Ayaz et al. survey access modes, trip purposes, and experiences of harassment.	Walking and paid access legs remain significant. Station users exclude women unable to reach the system.
Return after 22:00 Analytical scenario	The 2024 study describes operating hours of 06:00-22:00 for its study context.	A later return would require another arrangement under that timetable. This is an inference, not an observed passenger journey.
Project evaluation 2026 report	Economic evaluation models travel-time savings; a separate perception survey has a heavily male sample.	Model outputs and satisfaction do not establish equal access across age, disability, gender, or work schedules.

Sources: ADB (2021, 2026); Ayaz et al. (2024). No new route timings have been measured. Hours describe the cited study period, not a verified current timetable. Origins and destinations are retained at the precision actually supplied by each source.

Public investment and local street change

ADB's 2026 evaluation uses modelled travel-time savings in its economic analysis. It also reports a 2022 perception survey of 3,010 respondents, of whom 86 per cent were men, and notes limits in assessing wider outcomes for particular groups (ADB, 2026). Modelled benefits, stated satisfaction, and observed journeys answer different questions. A model can compare scenarios under defined assumptions; it cannot establish the daily experience of users absent from its underlying evidence.

Transport construction also changes frontage and access. ADB's early account describes corridor works that included footpaths and other street improvements (2021). Those works indicate investment in the spaces around transit. They do not alone demonstrate that every shop gained customers, that rents increased because of BRT, or that residents were displaced. Such claims

require dated business, rental, and occupancy evidence, ideally compared with locations outside the immediate intervention.

The distribution of benefits is therefore a matter of practical reach. Residents able to connect to reliable routes during operating hours can gain access to work, education, and other destinations. Others may remain dependent on additional transport or face barriers along the approach. Age and disability should be examined through actual travel conditions rather than assumed from the presence of priority seating. Gendered differences likewise require both accounts of improved mobility and evidence of remaining restrictions.

This case shows how metropolitan expansion and housing markets are connected to transport without reducing them to a simple infrastructure-led growth story. Improved journeys may make some locations more usable, but proving an effect on building activity or land prices requires a separate temporal record. The chapter establishes documented changes in travel opportunities and identifies the local connections through which those opportunities are realized.

4.5 Water Supply and Neighbourhood Services

A connection is one part of a service

The practical value of a dwelling depends on receiving water, disposing of wastewater, and maintaining shared surroundings. These functions cross property boundaries. A household can pay for its own pipe or tank yet remain dependent on pumping, supply schedules, and infrastructure elsewhere. Service analysis therefore begins with the chain linking the dwelling to the wider network, including the arrangements households adopt when that chain is unreliable.

Orangi provides a documented case of this relationship over several periods. Ahmed, Sohail and Ekwam's research, undertaken between June 2022 and May 2023, records major differences between localities. In Ghaziabad, some blocks were reported to receive only a brief monthly supply while others received none through the described arrangement. Households combined municipal delivery with vendors, tankers, storage, or other sources (2024). These findings cannot be applied as one uniform schedule to all of Orangi, but they show why the existence of a connection is insufficient evidence of service.

Intermittency changes the organization of domestic space. Storage takes room; the position of a tank and the means of filling it affect the use of a roof or courtyard. A subdivided building may have several households drawing on one storage arrangement. The person who controls the pump, tank, or valve can consequently influence access to an essential resource. These are spatial and organizational dependencies that should be recorded alongside pipe diameter and connection status.

The distinction between quality and quantity is also necessary. Water available for washing cannot automatically be treated as drinking water. Mixing supplies from different sources can

make household practice more flexible while complicating an assessment of quality. A reliable account would identify the source and use, and distinguish laboratory results from a resident's perception of taste or cleanliness. No water-testing programme has been undertaken for this chapter.

Resident organization and its external dependencies

Ahmed and Sohail's earlier study of Awami tanks examined shared water arrangements organized in Orangi (2003). This historical evidence is important because it demonstrates collective provision within an underserved settlement rather than an absence of organization. A tank, however, is a storage and distribution facility; it does not create a water source. Its usefulness depends on continued filling, maintenance, management, and access rules.

The later study describes deterioration in some shared arrangements when maintenance lacked institutional support and residents could not mobilize for repairs (Ahmed, Sohail and Ekwam, 2024). The comparison should not be turned into a uniform story of success followed by failure across the whole settlement. It identifies the conditions under which particular facilities remain useful. The costs of construction and the costs of keeping a service operating occur at different times and may fall on different people.

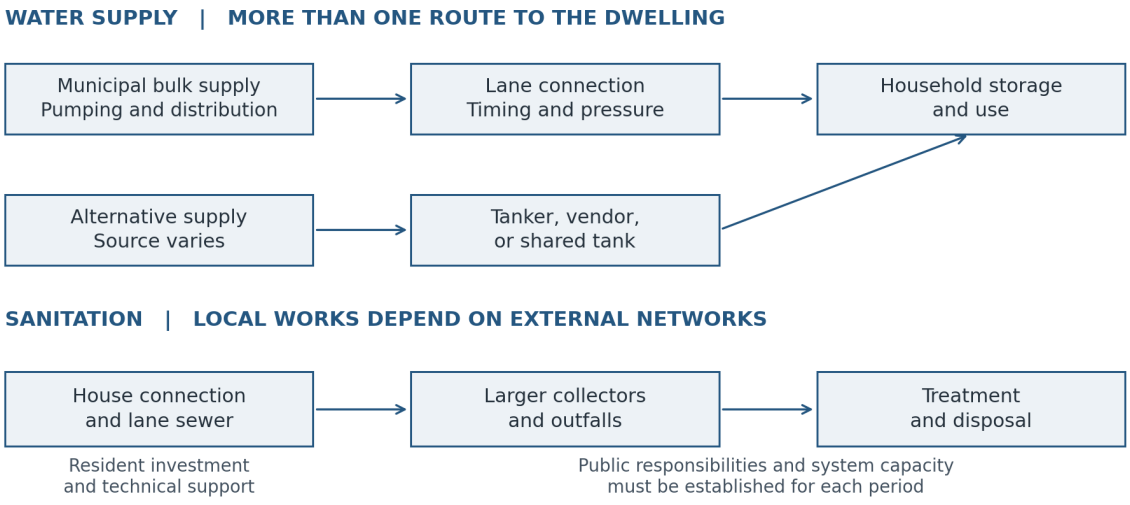
Resident contributions also include work. Anwar, Sawas and Mustafa's analysis of water insecurity in Karachi emphasizes the gendered and political relations through which everyday access is negotiated (2020). Applied to the housing record, this means counting the time spent arranging delivery, waiting, storing, cleaning, or seeking help rather than considering only a bill. A low cash charge may coexist with a large burden of unpaid work. Tenants, older residents, and people with limited mobility may have different abilities to participate in collective arrangements or to obtain an alternative supply.

The responsibility record should therefore identify who decides, who pays, who performs maintenance, and who can obtain redress. These roles may be divided among a landlord, residents' group, vendor, utility, and local authority. Calling the result a community service can conceal those differences. Collective management is an institutional arrangement with access rules and labour requirements, not a guarantee that every resident participates equally.

Sanitation from the house to the city

Orangi's sanitation experience provides a related lesson at a different point in the service chain. Pervaiz, Rahman and Hasan describe the OPP approach to resident-financed internal sanitation and the role of public agencies in external networks. Mapping and documentation made existing local investment visible and supported engagement with institutions responsible for larger infrastructure (2008). The household and lane works were consequently linked to a metropolitan system rather than treated as self-sufficient substitutes for it.

Figure 4.2. Orangi water and sanitation as linked service chains



Author's functional schematic based on Pervaiz, Rahman and Hasan (2008) and Ahmed, Sohail and Ekwam (2024). It represents reported arrangements and responsibilities, not surveyed alignments, capacities, water quality, or complete treatment coverage. Alternative supply routes vary by locality and period.

For building analysis, the critical connection is from toilet to lane sewer and then to a functioning collector, outfall, and appropriate treatment arrangement. Improvement at the first stage does not establish adequate performance at the final stage. Conversely, a large public project can overlook useful local infrastructure if its baseline map treats the settlement as unserved. The map is therefore both a technical record and an account of who has already invested.

Street form affects these relationships without explaining every failure. Narrow lanes constrain maintenance access and the delivery of bulky materials; elevation influences how water or wastewater can move; subdivision increases the number of users sharing a connection. Yet the same physical form can receive different levels of service under different supply schedules and maintenance arrangements. Density should be evaluated together with available capacity, operating conditions, and responsibility, rather than used as a general diagnosis.

Table 4.5. Orangi service chain and responsibility record

Connection or interface	Actors and documented arrangement	Failure point and evidence required
Bulk water to local network	Utility supply, pumping, valves, and distribution outside household control.	Supply schedule and pressure at the lane; a network map alone does not establish delivery.
Lane to dwelling	Connections, domestic storage, and household arrangements for receiving water.	Interruption, storage capacity, electricity, and shared access; compare use over time.
Alternative supply	Tankers, small vendors, bore sources, and community storage supplement the network.	Source quality, volume, price, and delivery differ. Water for washing cannot be assumed potable.
Shared tanks	Residents can finance, manage, and distribute a shared supply.	Continuity depends on filling, maintenance, collection of contributions, and accountable access.
House and lane sanitation	OPP's approach supported resident-financed internal works and technical organization.	Pipe gradient, blockage, repair payments, and tenant participation require lane-level records.
External sanitation	Public agencies remain necessary for larger collectors, outfalls, and treatment.	A functioning house drain does not prove adequate disposal or treatment downstream.
Solid waste	Collection and onward removal involve responsibilities beyond the individual dwelling.	Clear allocation of collection, transfer, and disposal duties; no comparable collection-frequency series is established here.

Sources: Pervaiz, Rahman and Hasan (2008); Ahmed and Sohail (2003); Ahmed, Sohail and Ekwam (2024). The table is a functional responsibility map, not a surveyed pipe plan. Historical agency arrangements should not be read as a current division of statutory powers.

Drainage and solid waste add further interfaces. Waste left in streets or drains can obstruct local systems, but responsibility cannot be assigned to residents merely from the presence of a blockage. The account must establish collection arrangements, access for removal, maintenance, and downstream conditions. The published sources used here provide a stronger record for water and sanitation than for comparable waste-collection frequencies. That difference in coverage remains explicit rather than being filled with a generalized claim about neighbourhood cleanliness.

A nominal connection fails to provide a usable service when delivery is too irregular, quality is unsuitable for the intended use, access is unaffordable, or maintenance cannot be obtained.

Neighbourhood organization can improve distribution and accountability, but depends on supply and infrastructure beyond residents' control. This interdependence is the main finding of the Orangi case. It links domestic adaptation to public responsibility without assuming that either household initiative or metropolitan investment is sufficient on its own.

Metropolitan Form and the Conditions of Habitation

The cases show metropolitan space being produced through decisions at several scales. In Karachi, additional floors and subdivisions change the use of inherited plots. At Bahria Town, the schedules of sales, land arrangements, construction, and occupation require separate records. On Lahore's fringe, surviving village cores can acquire very different relations to former fields and new development. Peshawar's BRT changes some journeys while leaving access legs and schedules central to opportunity. Orangi's service arrangements connect household investment to networks and decisions beyond the neighbourhood.

Table 4.6. Metropolitan comparison dossier

Case and unit	Mechanism supported by the record	Measure to carry into later comparison
Karachi dwelling change House and lane	Households extend and divide existing property; formal origin does not prevent later modification.	Occupancy, usable floor area, service sharing, work space, and rights of access at dated stages.
Bahria Town Karachi Project and adjoining villages	Sales, land arrangements, building delivery, and occupation operate on different schedules.	Approved area, transferred interest, habitable unit, occupied home, and external obligations counted separately.
Lahore fringe Village and former fields	Enclosure, replacement, and parcel conversion generate different patterns of incorporation.	Comparable land cover plus records of rights, access, compensation, and livelihoods.
Peshawar BRT Journey and station catchment	Faster corridor movement can improve opportunity while access legs and schedules remain decisive.	Door-to-door time, cash cost, opening hours, accessibility, and reported safety for defined users.
Orangi services Dwelling to metropolitan network	Resident investment depends on bulk supply, public networks, and sustained maintenance.	Reliability, quality, affordability, unpaid work, and responsibility at each interface.

Author's synthesis of the chapter's bounded case records. These measures are proposed for consistent comparison; the chapter does not claim that a complete, common dataset already exists.

These processes interact. A low entry price for housing can be offset by expensive journeys and purchased water. A well-located rental room may offer better access to work than a distant owned plot, while providing less control over shared facilities. A new scheme can deliver

desirable accommodation to occupants and generate unresolved costs in adjacent settlements. The relevant comparison concerns the complete conditions of habitation, not a single measure of property value, floor area, or distance from the centre.

The dossier makes three types of continuity available for later analysis. Material continuity concerns plots, routes, structures, and network components that remain. Institutional continuity concerns the allocation of rights and responsibilities around them. Continuity of use concerns the activities those arrangements permit over time. These may diverge: an unchanged lane can serve many more households, and a retained connection can deliver much less water. A convincing account follows their interaction rather than treating physical survival as sufficient evidence.

The record also establishes the limits of comparison. The housing survey is not a household expenditure panel; the scheme record is not an occupancy census; land-cover imagery is not a register of dispossession; a transport model is not a travel diary; and a service map is not a measure of reliability. Each source remains useful within its scope. Together, they support an explanation of how market activity, household adaptation, and institutional decisions produce specific spatial outcomes.

Chapter 5 can build on these histories when evaluating environmental performance, hazards, and conservation. The task established here is prior to that evaluation: to identify what was built or altered, who could use it, how it was connected, and who carried the continuing costs. Metropolitan expansion becomes intelligible through these relationships between development and everyday habitation.

CHAPTER

05

Conservation and Urban Environmental Management

IN THIS CHAPTER

5.1 Adaptive Reuse and Resident Retention

5.2 Building Retrofit for Thermal Comfort

5.3 Environmental Hazards and Urban Site Development

5.4 Metropolitan Responsibilities and Development Control

5.5 Comparative Assessment and Implementation Priorities

The preceding chapters have treated architecture and urban form as the outcomes of decisions about land, movement, labour, investment, and occupation. Their records show that buildings can survive while uses change, that institutions can retain property while their responsibilities are revised, and that households can improve accommodation through alterations that also create new service demands. Conservation and environmental management must begin with these distinctions. The continued presence of an old wall, a functioning water connection, and a household's ability to remain in its neighbourhood are different achievements. A project should identify which of them it intends to secure and how its effects will be checked.

This chapter examines practical choices through a small number of documented cases. Residential rehabilitation in Gali Surjan Singh and the reuse of Lahore's Shahi Hammam establish different relationships between fabric and occupation. A monitored house in Quetta provides a reference for evaluating thermal alterations, with a Lahore simulation study used to test the limits of transfer. Karachi's drainage system and Quetta's seismic setting then demonstrate why a building cannot be assessed independently of its site and wider networks. The final sections connect these findings to institutional responsibilities and a phased implementation framework.

The evidence is uneven. Conservation records describe construction more thoroughly than long-term tenancy; building simulations explore options that have not necessarily been installed; hazard models operate at scales larger than individual plots; and legal mandates do not establish operational capacity. These differences are retained throughout the chapter. Agency accounts are identified as such, independent studies are read with attention to their samples, and proposed assessments are separated from completed investigations. The case arguments rest on identifiable studies and institutional documents, with their limits carried into the proposed assessments.

The central proposition is that useful intervention depends on connecting three records: what physically exists, how people use and obtain access to it, and who can authorize and maintain change. None can substitute for the others. Architectural continuity becomes a practical objective when it is tied to specified material, spatial, and social relationships, with resources for their continued care.

5.1 Adaptive Reuse and Resident Retention

Conservation as a change in an inhabited place

Material repair, reconstruction, facade retention, and adaptive reuse should be recorded separately. Repair conserves existing material through work such as patching or consolidation. Reconstruction introduces replacement fabric to recover a missing or damaged configuration. Facade retention preserves an external element while permitting potentially extensive change behind it. Adaptive reuse establishes a different use in an inherited building. A single project may combine these operations, but calling all of them restoration conceals their different consequences for historical evidence and occupation.

Chapter 1 established the importance of following both buildings and plots through alteration. For conservation assessment, that record must extend to occupants and activities. A retained courtyard may support household work, ventilation, and shared access; it may also become a visitor space from which former users are excluded. A repaired street frontage may continue to accommodate small shops or become a uniform display for new commercial uses. The appropriate question is therefore which relationships are preserved, modified, or ended, and whose experience establishes the answer.

Gali Surjan Singh: improvement with conditions

AKDN dates the Gali Surjan Singh intervention to 2010 and describes it as historic housing improvement combined with municipal service upgrading, supported partly by the German Embassy through an agreement with the Government of Punjab. The street branches from Lahore's Shahi Guzargah and contains homes and small storefronts (AKDN, n.d.). Its value for this chapter lies in the connection between everyday accommodation and a wider heritage precinct.

Salman et al. (2018) investigated architectural change and interviewed seven families from nineteen conserved properties. They report structural and service work, improved domestic facilities, temporary relocation, and residents' return. The first model house received full subsidy; later residents were asked to contribute 10-20 per cent. Their post-occupancy findings also identify peeling finishes and roof-water outlets discharging into the street. Residents generally welcomed the intervention, but the small, retrospective sample does not establish long-term affordability for every household or trader.

This combination of findings changes the interpretation of success. Better services and residents' reported satisfaction support a positive assessment of the studied experience. They do not demonstrate that every original tenancy survived, that commercial rents remained affordable, or that maintenance costs could be met without assistance. Those propositions require different evidence. An occupancy register must distinguish owners, tenants, subtenants, workers, and temporarily absent households, rather than treating a property as one socially uniform unit.

Subsidy should also be assessed through its timing and distribution. A household contribution that appears small as a share of capital cost may still exceed the cash available to a tenant or low-income owner. The relevant comparison is between the required payment and the household's resources, including temporary accommodation, interrupted work, borrowing, and later repairs. This is an assessment requirement, not a claim that unaffordable costs were demonstrated in Gali Surjan Singh. The available study supports the importance of assistance while leaving the full distribution of costs unresolved.

The reported roof-water problem illustrates the need to test a repaired building under ordinary use. A detail can appear satisfactory in a completion photograph while performing poorly when laundry, storage, cooking, or roof access resumes. For future projects, the acceptance inspection should therefore include the activities identified in the household survey. Where damp or finish deterioration is observed, the material itself, its preparation, water entry, drainage, and workmanship should be investigated together. Residents' complaints are evidence of a problem; attributing its cause requires a technical diagnosis.

Table 5.1. Conservation assessment: evidence and unresolved outcomes

Assessment field	Gali Surjan Singh: residential rehabilitation	Shahi Hammam: museum reuse
Intervention	Housing and services improved through a programme beginning in 2010.	Conservation completed in 2015; later museum management by WCLA.
Fabric and use	Record retained material, replacement, new services, and domestic alterations separately.	Record conserved fabric, reconstructed elements, interpretation, and visitor access separately.
Decisions and payment	Agency, government, funding partners, and residents; subsidy and contributions reported.	Conservation and management agencies; trader compensation reported by AKDN.
Who remains?	Study reports return; no complete longitudinal register of tenancies or businesses supplied.	Relocation reported; comparable independent livelihood follow-up not established here.
Evidence of benefits	Small post-occupancy study supports reported improvement with remaining defects.	Agency records establish works and new use; visitor access needs separate evaluation.
Next assessment	Verify occupants, rent, contributions, defects, and upkeep at a new baseline and follow-up.	Verify management costs, access, surrounding trade, and outcomes for relocated businesses.

Sources: AKDN (n.d.); Salman et al. (2018). The final row and the recording requirements are proposed assessment tasks. Reported return is not proof of unchanged tenancy, affordability, or long-term retention.

Shahi Hammam: fabric conserved through a different use

The Shahi Hammam offers a contrasting form of continuity. AKDN records conservation completed in 2015, the exposure of historic water and heating systems, treatment of water ingress, and conservation of frescoes. The building is managed by the Walled City of Lahore Authority as a museum. The same account states that traders occupying its exterior were compensated to relocate (AKDN, n.d.). These are project-agency statements about works and arrangements, not an independent evaluation of traders' subsequent livelihoods.

The bathhouse's architectural and technological evidence can consequently become more legible while its relationship with everyday commerce changes. This is adaptive reuse rather than the recovery of a functioning public bath. An assessment should examine the visitor route, accessibility, admission conditions, maintenance expenditure, and the place of surrounding businesses in the new precinct. The date of physical completion should be recorded separately from opening arrangements and subsequent management. A conservation award or visitor count cannot answer whether a relocated shop retained its customers or whether local residents can use the site on acceptable terms.

The two Lahore cases should not be ranked through a single measure of visual improvement. Residential rehabilitation must be evaluated against continued habitation and domestic service requirements. Museum reuse must be evaluated against the survival and interpretation of material evidence, public access, and the consequences of replacing earlier activities. Both require a maintenance agreement that identifies routine tasks, specialist repairs, payment responsibilities, and a route for reporting defects. Public investment is more defensible when these obligations and the distribution of benefits are visible from the beginning.

5.2 Building Retrofit for Thermal Comfort

Establishing the building and its occupants

Thermal retrofit begins with a specified building, climate, and pattern of use. Orientation, roof exposure, window shading, neighbouring walls, and the location of occupied rooms define the physical starting point. Occupancy schedules, clothing, cooking, heating, fans, and the ability to open windows define another part of the same system. A daily average temperature cannot show whether a bedroom is intolerable at night or a workroom becomes unusable during its busiest hours. Nor does reduced electricity consumption necessarily mean improved comfort: households may already ration cooling because of cost or interrupted supply.

Mahar et al. (2019) studied an occupied, single-storey house in northern Quetta with a covered area of 112.6 square metres and eight residents. The reinforced-concrete-frame house had single glazing and gas heating. Temperature and humidity monitoring during four-week summer and winter periods in 2017-2018 supported calibration of an EnergyPlus model. Using the study's selected ASHRAE 55 adaptive comfort criterion, simulated annual comfort hours increased from 42.9 per cent in the heated reference case to 53.6 per cent with the tested roof insulation and

58.5 per cent with a combined envelope-and-summer-ventilation package. These are modeled outcomes, not measured performance after installation.

The distinction matters for implementation. Calibration gives a model a closer relationship to observed conditions, but it does not establish that a proposed assembly will be affordable, built as specified, or operated according to the simulated schedule. The combined result also leaves a substantial part of the year outside the chosen comfort range. A pilot should therefore retain the model as a way of comparing options while testing actual occupied-room conditions before and after work. A new household, changed heating practice, or different weather would require the comparison to be reconsidered.

Comparing feasible alterations

Roof insulation deserves early investigation for a house of this type because the published comparison identifies a potentially useful improvement. However, replacing a modeled roof construction with a locally available retrofit requires a separate design. The specification must address waterproofing, load, fire performance, junctions, service penetrations, and future access. Adding insulation above a roof can affect parapet heights and drainage outlets; an internal lining can affect headroom and access to wiring. These issues determine whether the thermal proposal can become a maintainable building detail.

Shading should be considered in relation to season and use. An external screen or adjustable shade may reduce unwanted summer sun, but a permanently shaded opening can remove useful winter solar gain. Existing orientation cannot be changed as an ordinary retrofit. It can instead inform the placement and operation of shading, the choice of occupied rooms, and the timing of ventilation. Any attachment to historic fabric requires a fixing detail that protects the substrate and permits maintenance. Roof shade must preserve safe movement and access to tanks, drains, and other equipment.

A reflective roof treatment works through reduced solar absorption, a different mechanism from insulation. The United States Department of Energy's guidance explains both its cooling potential and the possible increase in winter heating demand (US DOE, 2011). Those principles justify evaluation; its American costs and savings should not be transferred to Pakistan. For Quetta, annual heating and cooling effects need to be considered together. For a hot-season trial elsewhere, roof-surface temperature alone is an inadequate outcome: occupied-room conditions and actual energy use are the measures relevant to residents.

Khalid et al. (2021) examined a Lahore residence through simulation and lifecycle-cost analysis, considering envelope improvements alongside other energy measures. Their work reinforces the importance of evaluating combinations and costs within a defined case. It does not establish that its preferred configuration is suitable for Quetta, every Lahore house, or a subdivided dwelling in Karachi. Local procurement, available skills, wall construction, tenure, and heating or cooling practices must enter the decision before a modeled package is adopted.

Table 5.2. Retrofit options for a dwelling of the Quetta reference type

Option and evidence	Expected effect and conditions to test	Cost, disruption, and affected users
Baseline	Use the published case to frame a new survey; measure the pilot house separately.	Fund monitoring, drawings, occupancy interviews, and technical inspection before pricing work.
Roof insulation Modeled support	Potential annual comfort gain; verify the proposed assembly, moisture control, and junctions.	Price area, materials, labour, safe access, and waterproofing; protect roof activities during work.
Seasonal shade Proposed option	Control unwanted sun while retaining useful winter gain; test shading at occupied hours.	Price fixings and replacement; check maintenance access, wind effects, daylight, and privacy.
Reflective roof Conditional option	Reduced solar absorption; assess winter penalty and occupied-room effects.	Price preparation and recoating; check compatibility with existing roof and household use.
Controlled airflow Proposed adaptation	Test opening schedules against weather, dust, pollution, security, and noise.	Price screens, hardware, or mechanical provision; identify who can operate and clean it.
Glazing or wall work Further appraisal	Compare incremental benefit with roof work; avoid direct transfer of a modeled wall assembly.	More extensive replacement may disrupt rooms and finishes; require detailed quotations and review.
Planting or courtyard change Unmeasured here	Assess shade, airflow, water demand, and loss or gain of usable space.	Account for watering and care; roof loads and structural changes require specialist review.
Verification	Monitor hot and cold periods, occupied-hour comfort, energy where measurable, and complaints.	No installed retrofit outcomes or comparable local prices are claimed in this table.

Basis: Mahar et al. (2019), with climate-transfer cautions informed by Khalid et al. (2021) and US DOE (2011). Rows identify a proposed appraisal, not a construction specification. Published simulation percentages appear in the text; none is a promised pilot outcome.

Airflow, privacy, and the costs of operation

Ventilation requires an operating rule rather than an instruction to leave windows open continuously. A feasible arrangement must consider outdoor temperature, humidity, dust, pollution, noise, security, and privacy. The screening questions are practical: can the occupant control the opening, is cross-flow obstructed by subdivisions, and does the proposed route draw air from a kitchen, vehicle area, or contaminated street? A fan, an opening, and an air-conditioning system perform different functions. Their contribution should be assessed within the whole room rather than represented by a single label such as natural cooling.

Planting and courtyards also require conditional assessment. Shade may be valuable, but planting needs soil or containers, water, drainage, and continuing care. A roof garden introduces loads and waterproofing demands that cannot be justified by its appearance. A courtyard that formerly supported night ventilation may have been covered to provide rental accommodation or household workspace. Reopening it would redistribute usable floor area as well as change the thermal environment. Chapter 4's dwelling-change record is therefore a necessary companion to the retrofit plan.

The cost record should separate survey and design, materials, labour, temporary disruption, energy, and maintenance. No reliable, comparable current quotations have been assembled here, so rupee costs and payback periods are not supplied. A pilot budget should use measured quantities and dated local quotations, with explicit responsibility for replacement and cleaning. The tenant who receives a cooler room, the owner who finances the roof, and the household member who maintains a screen may be different people. A financially viable proposal must identify these relationships rather than assume a single building user.

Before implementation, alterations affecting structure, fire safety, combustion appliances, or ventilation require review by appropriately qualified practitioners and the relevant approving authority. Performance monitoring should cover both hot and cold periods, document outdoor conditions and occupancy, and retain a record of complaints and adjustments. Where possible, an unchanged comparison room or similar dwelling can help distinguish the intervention from weather variation. The result should be reported as a measured change under stated conditions, with model predictions shown separately.

5.3 Environmental Hazards and Urban Site Development

From a hazard map to a site decision

Hazard, exposure, vulnerability, and capacity describe different parts of risk. A hazardous event is not the same as the presence of people and assets in its path. Building condition, livelihood dependence, and access to assistance influence what happens when exposure occurs. The UNDRR framework similarly treats disaster risk as a relationship among these components and recognizes that risk remains after protective measures are introduced (UNDRR, 2017). This distinction prevents a regional map from becoming a substitute for a building inspection or a justification for indiscriminate clearance.

For the cases in this chapter, the principal concerns are urban drainage in Karachi and seismic exposure in Quetta. Coastal processes, groundwater, unstable slopes, and other hazards should enter an assessment where location and evidence make them relevant. They should not be attached to every case merely because they occur somewhere in Pakistan. Screening defines what needs investigation; it does not certify safety. The record should state the map date, spatial resolution, assumed event, affected uses, and uncertainty before conclusions are drawn.

Karachi: drainage decisions beyond the plot

The Auditor-General's special audit of Karachi's 2020-2021 rain emergency reported sewage discharge into storm-water drains and questioned aspects of cleaning expenditure and supporting documentation. It recorded KMC's explanation that unavailable machinery had led to outsourcing, while noting inadequate records to substantiate work in the cases examined (Auditor-General of Pakistan, n.d.). This is evidence of operational and accountability problems in a defined audit period, rather than a hydraulic model assigning a share of flooding to each cause.

The site implication is that drainage performance cannot be read from the condition of the frontage alone. A cleared inlet may discharge into an obstructed downstream reach; an elevated road may interrupt a former overland route; and new paving may alter the timing and quantity of runoff. These are mechanisms that a catchment investigation should test. They require surveyed levels, channel sections, culvert information, rainfall assumptions, and an account of maintenance. A city-scale drainage diagram can locate relationships, but it cannot determine the depth of water in a particular house.

Flood-reduction work also has a social footprint. In June 2021, UN human rights experts raised concerns about evictions along Gujjar and Orangi nullahs, including consultation, relocation, and compensation (OHCHR, 2021). Human Rights Watch's later investigation documents loss of housing and livelihoods in Karachi eviction cases and reports instances of services being cut while occupants remained (Human Rights Watch, 2024). These sources establish serious reported consequences; they do not replace a technical comparison of alternative drainage designs or determine the status of every parcel.

The assessment proposed here would examine channel maintenance, waste interception and removal, sewer rehabilitation, crossing design, and other feasible measures before accepting a particular clearance width as necessary. Where displacement is proposed, the technical option, legal basis, affected interests, compensation arrangements, and usable alternative accommodation must be recorded separately. A reduced obstruction count cannot stand as evidence of improved welfare. Follow-up should include access to work, schooling, services, and remaining social support, including for households moved beyond the project boundary.

Quetta: regional shaking and individual buildings

Saif et al. (2024) produced a probabilistic seismic hazard assessment for Quetta using multiple source models and a grid of 0.1 degrees by 0.1 degrees. The study provides a regional account of shaking hazard and its uncertainty. Its grid does not resolve the foundation conditions, structural connections, alterations, or maintenance history of an individual building. Neither the age of a house nor its location in a mapped zone establishes its resistance to a particular earthquake.

For conservation or infill, the required next step is a building-specific assessment by qualified specialists. The record should identify the structural system, floor and roof connections, wall openings, vertical additions, adjacent structures, and evidence of movement or deterioration. Ground conditions and any relevant slope or fault issues require suitable geotechnical input. The building type used for the thermal comparison in Section 5.2 is not thereby certified structurally adequate; thermal monitoring and seismic evaluation answer different questions.

The Pakistan Engineering Council's Building Code of Pakistan 2021 provides a technical reference, including provisions concerning existing buildings and seismic assessment (PEC, 2021). Its Appendix A guidelines for seismic evaluation and retrofit are not mandatory unless specifically referenced in an adopting ordinance. The applicable edition, local adoption, and requirements for the particular work must be confirmed with the competent authority. Code references should be recorded in the project file alongside the assessment method. This chapter does not translate a regional hazard value into a design acceleration or prescribe a strengthening detail without the necessary structural investigation.

Table 5.3. Site-screening record for two different hazard settings

Screening field	Karachi: a defined drainage catchment	Quetta: an existing building and plot
Available evidence	2020-2021 audit, institutional records, and reported social outcomes of clearance.	2024 regional seismic study and a national technical code reference.
Hazard and resolution	Flooding: no property-depth model established here; survey the connected drainage route.	Earthquake shaking: 0.1° model grid; no building-specific clearance implied.
Exposed uses	Identify homes, shops, workshops, routes, and critical services within the assessed footprint.	Identify occupancy, adjoining buildings, falling-object exposure, and emergency access.
Vulnerability and capacity	Inspect building condition, service failures, warning access, and households' response options.	Inspect structural system, alterations, connections, deterioration, and response arrangements.
Beyond the boundary	Test upstream runoff, crossings, downstream restrictions, sewage, and waste pathways.	Assess adjacent structures and relevant ground, fault, or slope conditions with specialists.
Missing investigation	Survey levels and sections; obtain rainfall and outfall conditions; compare feasible designs.	Commission structural assessment and appropriate geotechnical investigation.
Decision and record	Record technical and social reasons for the selected option, permissions, and maintenance.	Record assessment method, applicable requirements, necessary strengthening, and use restrictions.
Review trigger	Before works, before the wet season, after a significant event, and after catchment changes.	Before alteration; after a significant earthquake, new damage, or material building changes.

Sources: Auditor-General of Pakistan (n.d.); OHCHR (2021); Human Rights Watch (2024); Saif et al. (2024); PEC (2021). This is an author-proposed screening instrument, not a completed engineering assessment or a property-level hazard map.

Development approval as a sequence of tests

The screening record should end with a decision about evidence and responsibility. Some proposals can proceed to detailed design after routine surveys; others require hydraulic, geotechnical, or structural investigation before a layout is fixed. A heritage designation does not remove these requirements, and a new development approval does not establish that downstream drainage or emergency access will remain adequate. The responsible practitioner should identify the uncertainty that could change the decision and the investigation needed to resolve it.

Where information is missing, the response should be proportionate to the possible consequence. An unresolved defect affecting a proposed additional floor warrants a different decision from uncertainty about a replaceable shade. The record should distinguish work that can proceed, work requiring redesign, and work that must await specialist findings. Emergency measures may be necessary before a full conservation programme, but their extent, reversibility, and effect on occupants still need documentation. Risk management is therefore part of the building history, not an external checklist appended after design.

5.4 Metropolitan Responsibilities and Development Control

Karachi drainage as a problem across agencies

Karachi's drainage chain provides a bounded institutional case: water and waste move between household connections, local drains, major channels, and receiving waters, crossing administrative and operational responsibilities. The following account uses the 2013 local-government legislation, the 2020-2021 audit, and institutional documents from 2023. It is a dated responsibility framework for a proposed pilot, not a claim that every segment has been assigned to a verified current operator. Asset custody, subsequent notifications, contracts, and local boundaries must be checked when the pilot begins.

Schedule II of the Sindh Local Government Act 2013, as amended, assigns the metropolitan corporation functions concerning inter-district infrastructure and storm-water drains, alongside local drainage functions elsewhere in the schedule. The Karachi Water and Sewerage Corporation Act 2023 establishes the water and sewerage corporation, defines its service responsibilities, and provides for customer services and asset management (Government of Sindh, 2013, 2023). These instruments distinguish statutory responsibilities, but the presence of sewage in a storm drain still creates an operational interface requiring agreement over the work to be done.

The 2023 environmental and social management framework for the Solid Waste Emergency and Efficiency Project describes the Sindh Solid Waste Management Board's responsibilities for collection, transfer, and disposal through contracted arrangements. It also records an important revision: although the original project envisaged support for nullah cleaning, the Government of Sindh and World Bank agreed in April 2021 that the allocation under Component 1 would not finance nullah cleaning or related studies, retrospectively or prospectively (SSWMB, 2023; World Bank, 2020). The initial proposal should therefore not be cited as proof that SWEEP delivered or financed those works.

This distinction parallels the plan-and-occupation comparisons in Chapter 3. An approved project, a revised funding agreement, a work order, and completed maintenance are separate events. An institutional map becomes useful when it follows these transitions. The document naming a lead agency should be linked to a budget, a defined asset, an authorized task, and

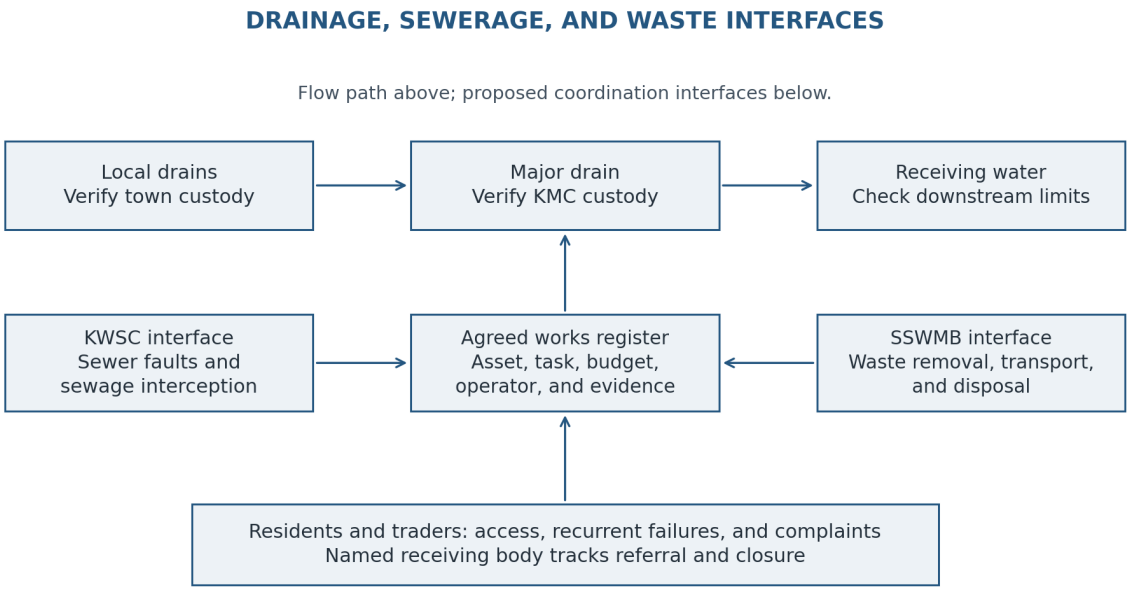
evidence of completion. Otherwise, overlapping descriptions of responsibility can conceal a gap in practical delivery.

Table 5.4. Karachi drainage: dated responsibilities and a proposed coordination record

Body or interface	Documented basis	Pilot task and dependency to confirm
KMC	Metropolitan infrastructure and storm-drain functions under the 2013 local-government framework.	Proposed convenor for a verified KMC major-drain segment; confirm custody, budget, and access.
Relevant town body	Local drainage responsibilities within the local-government framework; structures changed over time.	Identify connected lane assets, inspection teams, work boundaries, and current notifications.
KWSC KWSB in earlier records	Water and sewerage corporation established under the 2023 Act.	Agree sewer fault and discharge work; verify interfaces with storm drains and asset ownership.
SSWMB and contractors	Collection, transfer, and disposal arrangements described in the 2023 SWEEP framework.	Agree removal, transport, receiving facility, and evidence of disposal; verify current contract limits.
Provincial departments	Provincial legal, administrative, and project-financing framework.	Confirm approvals, fund release, unresolved jurisdiction, and escalation of decisions.
Land, building, and environmental authorities	Permissions depend on the proposed work and the actual site jurisdiction.	Identify each required consent before structural, property, access, or disposal changes.
Residents and traders	Affected users supply observations and experience; participation does not transfer statutory duties.	Include tenants and vulnerable users; agree access, disruption mitigation, and complaint follow-up.

Sources: Government of Sindh (2013, 2023); SSWMB (2023); Auditor-General of Pakistan (n.d.). Institutional evidence is dated to the cited records. The right-hand column is a proposal requiring current verification at T0, not an assertion of new legal powers.

Figure 5.1. Functional interfaces in the proposed Karachi drainage pilot



Author's schematic informed by Government of Sindh (2013, 2023) and SSWMB (2023). It is not a geographic map or a survey of actual pipe connections. Verify custody and jurisdiction for every asset. Sewage and solid waste require their own service routes; their presence in a storm drain does not make that drain a treatment system.

From proposal to operation and complaint handling

For a pilot on an identified KMC major-drain segment and its connected lanes, KMC is proposed as the convenor, subject to confirmation of asset custody and authority. This is a recommendation for coordination, not a claim that KMC can direct every other institution. The first meeting should produce an agreed catchment boundary, an asset list, named focal persons, and a record of unresolved responsibilities. Household representatives, including tenants and traders, should be able to identify recurrent failures and access constraints before the works programme is finalized.

The technical proposal would then separate drain clearance, sewer repairs, waste collection, crossing alterations, and any changes to land or buildings. Each requires the relevant owner's agreement and any applicable permissions. The approved package should state who funds the work, who carries it out, who supervises it, and who accepts the completed asset. The procurement record should include quantities and disposal requirements, so that removed material does not merely reappear along another watercourse. The audit findings make this documentation a substantive part of environmental management rather than a clerical afterthought.

Operation begins before the contractor leaves. Access for inspection and cleaning must be tested, the responsible crew identified, and recurrent costs entered in the operating budget. A completion photograph can show that a channel was clear on one date; it cannot establish that waste collection, sewer maintenance, and downstream capacity will preserve that condition. The proposed monitoring schedule therefore combines routine inspections with pre-monsoon and post-event checks. When flooding or blockage occurs, the record should show the location, weather conditions, suspected cause, action taken, and remaining uncertainty.

Residents need an entry point that does not require them to diagnose the agency responsible. A shared complaint register can issue a case number, record the initial recipient, and track referral to the appropriate operator. The receiving body should remain identifiable until another body acknowledges responsibility. Closure should require a reported action and, where feasible, confirmation from the affected users. The 2023 water and sewerage legislation's customer-service provisions offer an institutional point of connection, but the existence and performance of particular centres or systems must be verified locally.

Coordination within authority and changes beyond it

A shared asset register, joint inspection calendar, referral protocol, and agreed work sequence can be proposed without assuming that all institutions must first be merged. Their feasibility depends on staff time, access to records, budget commitments, and approval by the participating bodies. These measures address identifiable interruptions: uncertainty about the asset, a sewer fault that undermines cleaning, waste left without onward transport, or a complaint repeatedly transferred without action.

Other changes may require new agreements, delegated powers, statutory amendment, or a different financing arrangement. A project team cannot create authority over another agency's land through a coordination diagram. Where a corridor meets cantonment, railway, port, or other separately administered property, the relevant jurisdiction and permissions must be established for that interface. The historical land arrangements examined in Chapter 2 explain why such boundaries deserve attention; they do not by themselves identify the contemporary decision-maker for every parcel.

The practical objective is an accountable sequence. One body should coordinate the defined problem, while each participating institution retains a clearly documented responsibility for its own work. An unresolved overlap must remain visible with a named escalation route and decision date. Creating another committee without resources or a defined decision would reproduce the problem in a new organizational form.

5.5 Comparative Assessment and Implementation Priorities

What continues, and at which scale?

Across the book, persistence, adaptation, combination, displacement, and selective revival describe different relationships between inherited and later urban form. Persistence means that a specified element or arrangement remains identifiable. Adaptation changes it to support altered uses or conditions. Combination brings elements produced through different periods or institutions into one functioning setting. Displacement ends or relocates a use, population, or material arrangement. Selective revival recovers particular features while leaving other parts of the historical situation absent. These categories can coexist in a single project.

The comparison must therefore name its scale. A plot can persist while a courtyard disappears; a street can retain its alignment while residents leave; an institution can keep an estate while changing eligibility and access. Conversely, the replacement of a service pipe may support continued habitation in an old building. Physical change is not automatically the loss of every continuity, and material survival is not sufficient evidence of social continuity. Table 5.5 applies these distinctions to the records developed in Chapters 1-4 and the cases assessed here.

Table 5.5. Continuity and transformation across the book's cases

Case and scale	Relationship identified	Implication for intervention
Early settlement Regional and site	Survival, abandonment, and relocation require dated evidence; proximity alone is insufficient (Section 1.1).	Conserve and interpret the documented history without inventing an unbroken urban lineage.
Courtyard and plot Building and parcel	Plot persistence can coexist with changed rooms, roofs, and uses (Sections 1.3 and 1.5).	Specify whether an intervention protects fabric, spatial relationships, domestic work, or access.
Institutional estates Authority and land	Continued landholding can coexist with revised powers and institutional replacement (Section 2.5).	Trace the current mandate and decisions before attributing an outcome to colonial origin.
Housing provision Project and dwelling	Approved designs, eligibility, services, and occupation follow distinct sequences (Section 3.4).	Assess access and use at each stage; record resident adaptations and service shortfalls separately.
Karachi subdivision House and lane	Formal and incremental origins can lead to similar visible additions (Section 4.1).	Check rights, structure, occupancy, and services individually; appearance does not establish them.
Lahore fringe Village and fields	Enclosure and replacement are different outcomes; assess residential and livelihood displacement separately (Section 4.3).	Retained buildings do not prove retained livelihoods or access to former agricultural land.
Lahore conservation Building and precinct	Domestic adaptation and museum reuse conserve different relationships; selective revival changes use (Section 5.1).	Track existing users alongside retained fabric and new public access.
Quetta and Karachi Building and network	Thermal, structural, and service performance depend on different evidence and operating conditions.	Coordinate assessments while retaining separate measures and specialist responsibilities.

The cases support three explanations across settings. First, development follows sequences in which authorization, construction, occupation, and maintenance often occur at different times. Second, local improvements depend on wider systems: a house depends on the lane, the lane on a network, and a repaired building on materials and skills for future work. Third, access is distributed through tenure, eligibility, payment, and everyday operating arrangements as well as through architectural form. These explanations identify mechanisms to investigate rather than a single historical path shared by all Pakistani cities.

The counterexamples are equally consequential. Additional floors in a formal housing area and an incrementally built settlement can produce similar visible forms through different property

histories. Museum reuse and residential rehabilitation can both conserve fabric while producing different access conditions. A reflective roof can have different annual effects in a heating-dominated climate and a cooling-dominated one. The same maintenance instruction can yield different results where one neighbourhood has a functioning downstream network and another does not. These limits prevent the comparison from becoming a catalogue of universally desirable forms.

A small set of justified actions

Four linked pilots are proposed. A Lahore conservation pilot would attach a resident-and-trader retention record to physical repair. A Quetta thermal pilot would translate a carefully selected option into a technically reviewed detail and measure occupied-room effects across seasons. A Quetta site-assessment pilot would establish the structural and ground information needed before conservation, infill, or vertical extension. A Karachi drainage pilot would test a shared maintenance and complaint sequence over one defined catchment interface. None is represented as an approved programme or an intervention already carried out.

The priorities follow the evidence gaps. Conservation accounts require better longitudinal information about occupants and costs. Thermal modeling requires construction and post-occupancy verification. Broad hazard knowledge requires building- and site-specific investigation. Statutory responsibilities require an operational record connecting agencies to assets and maintenance. Each pilot should begin with a manageable unit, a named lead, a funded baseline, and a decision about who can halt or modify work when adverse effects appear.

Figure 5.2. A review sequence linking technical work and existing users

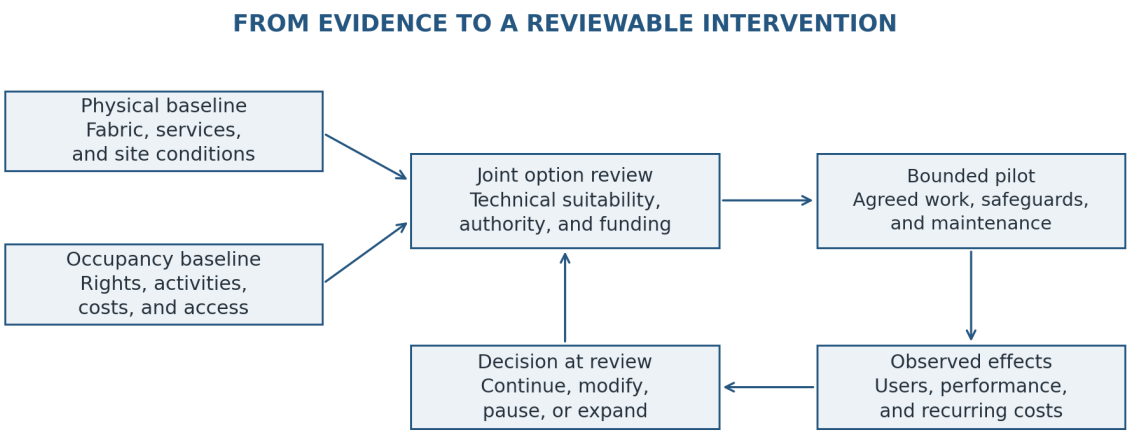


Table 5.6. Proposed implementation matrix and review schedule

Action and lead	Baseline, prerequisites, resources, and maintenance	Review and effects on existing users
Lahore retention pilot WCLA with owners and resident/trader representatives	At T0: fabric, occupancy, tenancy, costs, services, and defects. Secure consent, funding, temporary arrangements, and a repair agreement. Fund survey, works, and upkeep.	Review at T0 + 3, 6, and 12 months. Track return and retention, departures, rent and work interruption, service reliability, and defect resolution.
Quetta thermal pilot Owner/client with qualified designer, engineer, and monitoring partner	At T0: surveyed dwelling, occupied-room conditions, equipment use, and user needs. Obtain technical review and quotations. Fund sensors, installation, supervision, and agreed maintenance.	Review after installation and through hot and cold periods within 12 months; extend if a season is missed. Compare measured conditions, costs, energy, privacy, and complaints.
Quetta site-assessment pilot Owner/client and qualified specialists; competent approving authority	Before design approval: building and ground records, occupancy, alterations, and damage. Fund structural and geotechnical investigation where required. Assign inspection and repair duties.	Review before works and occupation changes, then at agreed inspections and after significant events. Verify that findings inform decisions and that affected occupants have workable arrangements.
Karachi drainage pilot KMC proposed convenor with town body, KWSC, and SSWMB	At T0: verified asset/catchment register, faults, complaints, disposal route, and affected users. Agree authority, budgets, works sequence, and operating crews. Fund surveys, equipment, supervision, and maintenance.	Monthly action log; quarterly coordination review; pre-monsoon and post-event inspection; annual assessment. Track resolved faults, disposal records, access disruption, recurrence, and households affected.

Baselines, review dates, and distributional effects

For the proposed programme, T0 denotes the formally recorded pilot start date, after funding and permissions are confirmed. It is not a calendar date supplied by this chapter. The implementation record should replace T0 and all relative review points with actual dates when a pilot is authorized. The lead body should issue a versioned baseline and action log, update the log monthly during works, and conduct the substantive reviews shown in Table 5.6. An annual review should decide whether to continue, change, expand, or discontinue the intervention.

The baseline must distinguish what has already been established from what still needs collection. The published Gali Surjan Singh study supplies a historical comparison, not a current occupancy census. The Quetta thermal model supplies a tested analytical reference, not the measured baseline of a new pilot house. Karachi's laws and project documents supply an

institutional starting point, not an agreed inventory of every drain. Recording these differences avoids presenting a proposed assessment instrument as a completed database.

Monitoring should include the people most likely to disappear from a project's own records. A household that moves out, a trader who closes, or a tenant who cannot be contacted may represent an adverse outcome rather than a harmless missing entry. With consent and suitable protection of personal information, follow-up should record destination, reason for leaving, changes in cost, and access to work and services. Aggregate reporting should distinguish confirmed retention, confirmed departure, and unresolved cases. It should not count every unavailable respondent as successfully accommodated.

Measured outcomes should be selected for the problem. Conservation requires both a fabric record and evidence of continued or altered access. Thermal retrofit requires occupied-hour conditions, user responses, energy use where measurable, and maintenance costs. Site screening requires completed specialist investigations and decisions that respond to them, rather than a numerical score suggesting false precision. Drainage management requires reliable inspections, documented removal and disposal, resolved faults, and evidence of effects during relevant rainfall. A dry season without flooding cannot by itself demonstrate improved hydraulic performance.

Resource needs extend beyond capital works. Each pilot needs survey time, technical review, resident participation, supervision, record-keeping, and maintenance finance. These should appear in the budget before construction begins. Where households contribute labour or time, the record should identify who provides it and whether participation is voluntary. A project that appears inexpensive because it shifts recurring work to already burdened residents has not established an equitable saving.

Conservation and environmental management as continuing practice

The book's historical comparisons show why responsible intervention must remain open to revision. Inherited buildings and institutions contain useful capacities, but their age does not establish performance or fairness. New materials, infrastructure, and administrative arrangements can improve living conditions, yet their introduction does not guarantee delivery or access. The relevant question is how a particular decision changes the relationships among fabric, occupation, services, and authority over time.

The framework developed here makes those relationships reviewable. It connects the settlement and building histories of Chapter 1, the institutional records of Chapter 2, the implementation histories of Chapter 3, and the household and metropolitan evidence of Chapter 4. Its purpose is to support a limited number of actions that can be justified, funded, maintained, and assessed with existing users. Where evidence remains incomplete, the uncertainty is itself part of the decision record. Urban continuity is then understood as something actively negotiated through repair, use, access, and public responsibility, rather than assumed from the survival of an architectural image.

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