CHAPTER 4
GROWTH OF MORPHOLOGICAL STRUCTURE

The cumulative reflection of social, economic and cultural dynamics operating through different time periods within a city is most discernible in its spatial or physical form, i.e. the morphology. The form of the city is the consequence of a constant evolutionary process fuelled by economic, political, demographic and social change: of new buildings replacing old and old buildings being adapted to new uses, of urban decay and renewal. While outlining the approaches to the study of urban landscape Conzen emphasized the relevance of studying urban landscape in interpreting the nature of an urban society in a specific habitat.

The morphology of a city reveals the intricate relationship between time and space, as governed by the changing needs of the inhabitants. It also reflects the administrative purview within which the city functions as a whole. Cantonment towns present one such case of period specific urban settlements, whose strict governance under separate rules primarily for regulating building activities and functional use of land in their civil areas earned them the distinction of being pockets of orderliness and tidiness. It is, therefore, proposed that the regulated environment under which the Civil Area of Jalandhar Cantonment has functioned since it was established in 1846 would have a dominant influence on its nature of growth as well as present morphology. This chapter focuses on the growth of morphological structure of the Civil Area with respect to types and phases of building activities; changes in landuse and existing morphology. These have been covered under three separate sections.

SECTION I: TYPES AND PHASES OF BUILDING ACTIVITIES (1907-1998)

Sources of Data

The data for this section were extracted and collated from 25 unpublished volumes of the Proceedings of the Cantonment Committee and Cantonment Board from 1907 to 1998. The year 1907 was chosen as the base year in the absence of mohalla wise data in the Proceedings of the Cantonment Committee from 1864-1906. Since prior sanction of the Cantonment Committee / Board was mandatory for undertaking any type of building activity within the Civil Area, therefore 6907 sanctioned applications out of a total of ten thousand building applications during 1907-1998 were considered for analysis. These are deemed to have resulted in a spatial modification of the Civil Area.
Methodology

Seven types of building activities carried out within the Civil Area during 1907-1998 were identified, viz. land for building, building, alteration, addition, rebuilding, addition and alteration, and unauthorised constructions. The analysis of building activities includes both temporal and spatial perspectives, which has been described under the following sub-heads:

A. Building activities before 1907

B. General trend in types of building activities (1907-1998)

C. Spatial pattern of building activities (1907-1998)

D. Phases of building activities (1907-1998): The entire period of building activities was divided into three phases distinguished on the basis of: (i) the implementation of the Cantonments Act, 1924 which enabled cantonment towns to function as municipal entities through the formation of Cantonment Boards for administration of their civil areas; and (ii) the gaining of Independence in 1947 and the subsequent Partition of the country which led to changes in the socio-spatial patterning within settlements, particularly across north and east India including cantonment towns, such as Jalandhar. The three phases of building activities identified for the Civil Area of Jalandhar Cantonment are:

Phase I: Pre-municipal period (1907-1924)

Phase II: Post-municipal to pre-Independence period (1925-1947)

Phase III: Post-Independence period (1948-1998)

Data Limitations

Lack of data pertaining to individual mohallas prior to 1907 has restricted the analysis for the period from 186 to 1906. Also, data were not available for 1918 when the Proceedings of the Cantonment Committee were not documented; during 1984-1989 and 2002-2008 when the meetings of the Cantonment Board were not held due to militancy in the State of Punjab and municipal elections not being held for the Civil Area respectively.
Cycle of Building Activities

Unlike the evolved towns in which successive physical expansion usually mark separate phases of growth (both spatial and functional), the case of planned towns, of which cantonment towns form a distinct group is quite different. This is largely related to the general layout or street pattern of planned towns usually being fixed in the initial phase itself, with rest of the components conforming to the layout as they develop with time. The layout thus, acts as the principal determinant and therefore, considerably constrains the horizontal increase in the area beyond what was laid out as an individual *mohalla*. In addition, the Civil Area of Jalandhar Cantonment, like the case in most cantonment towns, is characterised by restricted areal extent which has not undergone significant changes ever since the Cantonment was established in 1846. Thus, the spatial growth of the Civil Area was derived initially from an infilling of the demarcated and near static horizontal aspect and a vertical increment in the constituent buildings with subsequent subdivisions in both horizontal and the vertical aspects.

The growth of morphological structure of the Civil Area at *mohalla* level involved its constituent building structures which passed through successive cycles of building activities including building, additions, alterations and rebuilding (Fig. 4.1). It is proposed that, the cycle of building activities is initiated by a grant of land over which the actual construction of a structure would take place. This is followed by the building of structures for a variety of uses. Among these, residential structures undergo the cycle of building activities most profoundly, given the nature of their occupancy by members of a family or families and their evolution along with the family which inhabits them. It is widely known that growth in the size of family commences many changes within an individual building in terms of alterations and additions and finally rebuilding in order to accommodate and adjust to increasing demands for space. While addition is one of the earliest building activities which bring about partial changes in the building, rebuilding is at the farthest end and signifies complete change of existing structure. This also marks the completion of one cycle of building activities (Fig. 4.1). The cycle of building activities continues to run its full course until all the vacant sites in *mohallas* are allotted and built upon. Unauthorised construction activities form an offshoot of the three basic building activities (alteration, addition and rebuilding) and result from any type of building activity undertaken without prior sanction or construction in contravention of building norms.
Unauthorized Construction
Addition (expansion and incremental change due to requirements of additional space to accommodate increase in family size)
Alteration (adjustments to changing requirements as well as change in building norms, material of construction etc.)
Cycle resurgence after completion of one cycle
Building (actual construction)
Sanctions for Land for Building (initial grant of site)
Authorization of Building (actual construction)
Rebuilding (re-construction of building due to poor structural condition or upon subdivision of inherited property or enactment of new building norms)
Unauthorized Construction (offshoot of any one of the building activities involving changes without permission or in contravention of building norms or encroachment)
Cycle continuance at mohalla level till all vacant sites are occupied
Cycle of Building Activities

Fig 4.1
In the context of the Civil Area of Jalandhar Cantonment, this cycle of building activities is expected to have completed at least one or two rotations between the establishment of Jalandhar Cantonment in 1846 and the base year for this discussion, i.e. 1907. Therefore, this study pertains to the second or the third cycle of building activity.

A. Building Activities Before 1907

In the absence of mohalla level data prior to 1907, various building activities which took place within the Civil Area of Jalandhar Cantonment in the early decades of its establishment can at best be theoretically envisaged to have included six out of the seven building activities identified, viz. sanction for land for building, building, alteration, addition, addition and alteration and rebuilding. These are expected to have completed at least one cycle of building activity in the six decades preceding 1907 (between 1846 and 1906). The seventh building activity identified in the Civil Area, i.e. unauthorised construction emerged later as it was reported for the first time in 1925.

Corollary to the establishment of the Cantonment and its Civil Area, land for building and the building of structures formed the most prominent building activity during the early period. The grant of land so sanctioned was termed as Old Grant, and refers to plots given to the native Indian residents within cantonments, as per the Governor General’s Orders in respect of the three Presidencies (Madras, Bengal and Bombay) in which a particular cantonment was located. The Old Grants in Jalandhar Cantonment, which was a part of the Bengal Presidency, were given by the then cantonment administration in accordance with the Governor General Order No. 179 dated 12 September 1836. These grants were given on three main conditions:

(i) The government could resume land if a need arose by giving a month’s notice to the occupant and compensation paid for only such structures erected on the land which were authorised to be erected.

(ii) The government shall have the right of land ownership while the holder of occupancy rights is the owner. Thus, the land per se can not be sold, but houses or other property can be transferred.

(iii) The specific use of the site as stated in the order granting that site was to remain unaltered.
The policy of Old Grant given through the General Orders of the Governor or Governor General-in-Council continued until the enactment of the Cantonments Act of 1889 and was completely abolished upon the introduction of the Cantonment Code 1899. After 1899, sanctions for land for building were given on lease for an initial duration of 30 years, extendable up to 90 years, and in perpetuity in some cases, e.g. for religious or public purposes. As many as 2836 plots in the Civil Area of Jalandhar Cantonment are Old Grant properties, and only 44 are on lease. It is, therefore, concluded that a majority of the sanctions for land were granted during 1846-1889, and the sanctions for their building, therefore, predates 1889. This is further validated from the fact that the Cantonment Committee in September 1875, decided that ‘a limit should be put on the number of people permitted to reside in the Sadar Bazaar. It was resolved that ‘no permission will be granted for building new houses for some time’.

In fact, the Cantonment Committee decided to impose a rent on the plots within and outside the bazaar which were sanctioned for building but were reported to be vacant so as to encourage their occupancy.

Further, according to the Annual Sanitary Report of the Cantonment in 1876, the Commanding Officers of the British Infantry and Royal Artillery reported the crowding of their respective bazaars with persons not connected with their corps and sought the removal of houses in the backstreets of their respective bazaars on sanitary grounds. An increase in the number of inhabitants of Sadar Bazaar and the two regimental bazaars was also reported on arrival of troops in 1881. By 1907, no land was available for buildings in the bazaar which prompted the Cantonment Committee to restrict the sanctions for land and building. Thereafter, the sanction for land were granted almost a decade later in 1915. Overall very few applications were sanctioned for land for building and the actual building construction during 1907-1998, viz. 55 and 220 respectively as compared to those for other activities.

B. General Trend in Types of Building Activity (1907-1998)

Over a period spanning nine decades during 1907-1998, as many as 6907 building applications involving seven activities were sanctioned for the Civil Area. Among the seven types of building activity unauthorised construction was the most dominant within the Civil Area, and refers to any building activity carried out by the residents either without prior sanction or in contravention of approved building plan. These were mostly condoned after imposition of a fine as sanctioned by the Cantonment Board.
These recorded the maximum number of sanctions (2205) and accounted for 31.92 per cent of the total sanctions during 1907-1998 (Table 4.1).

Table 4.1
Jalandhar Cantonment (Civil Area): Types of Building Activity
(1907 – 1998)

<table>
<thead>
<tr>
<th>Types of Building Activity</th>
<th>Total No. of Sanctioned Applications (1907-1998)</th>
<th>Year of Maximum Sanctioned Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unauthorised Construction</td>
<td>2205 (31.92)</td>
<td>1978 (140)</td>
</tr>
<tr>
<td>Addition &amp; Alteration</td>
<td>1867 (27.03)</td>
<td>1940 (95)</td>
</tr>
<tr>
<td>Rebuilding</td>
<td>1289 (18.66)</td>
<td>1920 (97)</td>
</tr>
<tr>
<td>Addition</td>
<td>916 (13.26)</td>
<td>1927 (78)</td>
</tr>
<tr>
<td>Alteration</td>
<td>355 (5.14)</td>
<td>1939 (41)</td>
</tr>
<tr>
<td>Building</td>
<td>229 (3.39)</td>
<td>1932 (28)</td>
</tr>
<tr>
<td>Land for Building</td>
<td>55 (0.80)</td>
<td>1926, 1928 (10 each)</td>
</tr>
<tr>
<td>Total No. of Sanctioned Applications</td>
<td>6907 (100.00)</td>
<td>1933 (208)</td>
</tr>
</tbody>
</table>

Source: Figures calculated from Proceedings of Cantonment Committee 1907 to 1925; Cantonment Board 1925 to 1946; Bazaar Committee 1946 to 1955; Civil Area Committee 1955 to 1972
Note: Civil Area comprises Sadar Bazaar which includes Mohalla 1 to 32 and OSM: Outside Mohalla; BIB: British Infantry Bazaar; RAB: Royal Artillery Bazaar; KM: Kumhar Mandi
Figures in normal parentheses represent percentage of sanctioned application for individual activity in total sanctioned applications for all activities and those in curly parentheses represent the total number of sanctioned applications in that year.

These were recorded uninterrupted during 1927-1983 and 1992-1998, with the highest number of 140 sanctions in a single year recorded in 1978. Sanctions for condoning of unauthorised construction were most frequent in the decades after Partition mostly involving Muslim evacuee properties within the Civil Area. All the mohallas except Kumhar Mandi recorded sanctions for condoning of unauthorised construction.

A combination of addition and alteration to buildings numbered a total of 1867 sanctions which were recorded across the Civil Area except Kumhar Mandi. These comprised 27.03 per cent of all the building applications sanctioned during 1907-1998. During this broad period, a consistent trend in addition and alteration was recorded from 1919 to 1942 when 818 sanctions were given, with the highest of 95 in 1940.

Rebuilding constituted re-erection of the entire building or a part of it including blocking up arches of veranda and converting it into rooms, rebuilding with upper storeys or rebuilding as per revised plan etc. It was the third ranking activity with 1289 sanctions which accounted for 18.66 per cent of all the sanctioned building applications during 1907-1998 (Table 4.1). It was recorded in the entire Civil Area and spanned over 60 years, in which it was particularly extensive in 1917, 1920, 1931, 1944 and 1960 with 52, 97, 57, 79 and 21 sanctions respectively. Rebuilding followed phases of addition and/or alteration and was, therefore, more prominent in relatively old or early established mohallas.
Addition as a building activity included building of rooms, kitchen, bathroom, veranda, barsati, staircase, enlarging of doors, windows, construction of upper storeys etc. The sanctions for addition to the existing structure numbered 916 and formed 13.26 per cent of the total applications during 1907-1998 (Table 4.1). Sanctions for addition were given uninterrupted during 1907-1942, 1948-1957 and 1959-1962. However, maximum numbers of sanction (725) were granted during 1919-1942.

Alteration to buildings refers to change (increase or decrease) in the size, height or area of rooms, kitchen, bathroom, veranda etc., building of partition wall, raising the roof or changing its type, opening or closing of doors, windows, relocation of staircase etc. Sanctions for alterations numbered 355 during 1907-1998, which formed 5.14 per cent of the total number of sanctions. These were granted for successive years during 1909-1941 and 1949-1957, however, with the highest in 1939 (41). This type of building activity was recorded in all the mohallas except Mohalla 1, 2 and Kumhar Mandi.

The sanction for actual construction of a structure over a site is referred to as building. The number of applications sanctioned for this purpose during 1907-1998 was 220, which formed 3.19 per cent of the total number of sanctions. More than half of these (119) were granted during 1919-1934. However, their number of sanctions in individual years was not very significant, except for 28 sanctions granted in 1932. Mohalla 1, 8, 19 and Kumhar Mandi did not record any sanction for building.

The grant of a site for the purpose of construction known as land for building comprised a very small number (55) and proportion (0.80 per cent) in the total sanctions for different building activities during 1907-1998. Maximum number of sanctions for land (ten each) was granted in 1921 and 1926 (Table 4.1) whereas no sanctions for land were granted after 1970. This suggests that very few sites remained vacant within the Civil Area over which any building could be constructed. In fact, all these sites sanctioned for building were on Cantonment Code leases.

C. Spatial Pattern of Building Activities (1907-1998)

The Civil Area recorded a total of 6907 sanctions for seven building activities during 1907-1998, with an average of 192 sanctions per mohalla. However, the number of sanctions varied considerably in individual mohallas, with the highest of 489 sanctions recorded in BI Bazaar and only 2 sanctions in Kumhar Mandi. An equal number of mohallas (18 each) recorded above and below average number of sanctions for building.
activities. On the basis of number of sanctions for building activities during 1907-1998, the Civil Area has been divided into the following three categories (Map 4.1):

(i) Areas with high number of sanctions (more than 235 sanctions)
(ii) Areas with moderate number of sanctions (between 235 and 150 sanctions)
(iii) Areas with low number of sanctions (less than 150 sanctions)

(i) Areas with high number of sanctions (more than 235 sanctions): Fourteen mohallas recorded a high number of sanctions for building activities which ranged between 489 in BI Bazaar and 237 in Mohalla 26. The other mohallas include Mohalla 22 (325), 23 (300), 21 (282), 9 (268), 18 (260), 10 (256), 14 (256), RA Bazaar (252), Mohalla 27 (247), 13 (241), 17 (239) and 30 (239). Together these mohallas accounted for over half the total number of sanctions accorded for the Civil Area, i.e. 3891, which constituted 56.33 per cent of the total. This category formed a large cluster of contiguously located mohallas between Hardayal Road in the west and Moolraj Road in the east, and Cross Road 2 in the north and Cross Road 6 in the south (Map 4.1). Only BI Bazaar and RA Bazaar comprised the isolated pockets in this category. A high number of sanctions was attributed to old occupancy areas within the Civil Area, particularly in the central parts of Sadar Bazaar along Phagwara Road (Mohalla 21, 22, 23) and Patel Road (Mohalla 10, 14, 17, 18). Their building activities were also related to a significant component of commercial and residential-cum-commercial use. Addition and alteration as well as unauthorised construction were the two dominant building activities in these parts of the Civil Area.

(ii) Areas with moderate number of sanctions (between 235 and 150 sanctions): This category comprised of eleven mohallas, viz. Mohalla 15 (231), 29 (215), 24 (207), 31 (204), 25 (174), 12 (167), 16 (165), 32 (165), 6 (164), 11 (157) and 28 (154). The aggregate number of sanctions in these mohallas was 2003 which comprised 28.99 per cent of the total sanctions for the Civil Area. This category formed two distinct clusters of contiguously located mohallas along Ganga Road, one in the northeast and the other in the southeast. In addition, a small pocket of two mohallas along Hardayal Road in the southwest is also discernible. Mohalla 6 formed an isolated pocket in the north (Map 4.1). The southeast cluster mostly comprised mohallas of relatively early occupancy as compared to those in the northeast cluster. Rebuilding, unauthorised construction and addition and alteration constituted the main building activities in the mohallas comprising this category.
Areas with low number of sanctions (less than 150 sanctions): Eleven mohallas which recorded low number of sanctions for building activities include Mohalla 7 (144), Outside Mohalla (143), Mohalla 4 (135), 20 (118), 8 (106), 5 (102), 1 (80), 19 (78), 3 (73), 2 (32) and Kumhar Mandi (2). These mohallas recorded below Civil Area average number of sanctions (192) and together constituted 1013 sanctions out of a total of 6907. This category formed a distinct linear pattern along the northern periphery of Sadar Bazaar along Cross Road 1 and the western periphery along Hardayal Road, as well as a small pocket in the eastern parts along Cross Road 5 (Map 4.1). Only Kumhar Mandi formed an isolated pocket. Low number of sanctions of building activities was attributed to relatively late occupancy of these predominantly residential mohallas, and mostly related to addition, alteration, unauthorised construction and rebuilding.

In general, the old occupancy mohallas in central parts and western periphery of Sadar Bazaar, BI Bazaar and RA Bazaar emerged as the most dynamic with a high number of sanctions for various building activities during 1907-1998. On the other hand, mohallas in northern and eastern periphery recorded relatively low building activity.

D. Phases of Building Activities

Building activity within the Civil Area was influenced two important events which formed the benchmark for identifying the three phases of building activity, viz. the gaining of municipal administration functions with the introduction of the Cantonments Act of 1924, and gaining of Independence by India in 1947 followed by its Partition.

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Types of Building Application</td>
<td>No. of Sanctioned Applications</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unauthorised Construction</td>
<td>0 (0.00)</td>
<td>335 (15.19)</td>
<td>1870 (84.81)</td>
<td>2205</td>
</tr>
<tr>
<td>Addition &amp; Alteration</td>
<td>190 (10.18)</td>
<td>917 (49.11)</td>
<td>760 (40.71)</td>
<td>1867</td>
</tr>
<tr>
<td>Rebuilding</td>
<td>392 (30.41)</td>
<td>548 (42.51)</td>
<td>349 (27.08)</td>
<td>1289</td>
</tr>
<tr>
<td>Addition</td>
<td>256 (27.95)</td>
<td>592 (64.63)</td>
<td>68 (7.42)</td>
<td>916</td>
</tr>
<tr>
<td>Alteration</td>
<td>88 (24.79)</td>
<td>236 (66.48)</td>
<td>31 (8.72)</td>
<td>355</td>
</tr>
<tr>
<td>Building</td>
<td>25 (11.36)</td>
<td>129 (58.64)</td>
<td>66 (30.00)</td>
<td>220</td>
</tr>
<tr>
<td>Land for Building</td>
<td>15 (27.27)</td>
<td>34 (61.82)</td>
<td>6 (10.91)</td>
<td>55</td>
</tr>
</tbody>
</table>

Civil Area Total 966 (13.98) 2791 (40.41) 3150 (45.61) 6907

Source: Figures calculated from Proceedings of Cantonment Committee 1907 to 1925; Cantonment Board 1925 to 1946; Bazaar Committee 1946 to 1955; Civil Area Committee 1955 to 2002
Note: Civil Area comprises Sadar Bazaar which includes Mohalla 1 to 32 and OSM: Outside Mohalla, BIB: British Infantry Bazaar, RAB: Royal Artillery Bazaar, KM: Kumhar Mandi
Table is arranged in descending order of number of sanctions for building activity
Figures in parentheses indicates per cent of individual building activity in a phase to the total of that building activity.
Jalandhar Cantonment (Civil Area)
Total Sanctions for Building Activities (1907-1998)

Sadar Bazaar

No. of sanctioned building applications

<table>
<thead>
<tr>
<th>Mohalla number</th>
<th>Road/Street/Lane</th>
<th>235</th>
<th>Average: 192</th>
</tr>
</thead>
</table>

Data by mohallas

Source: Computed from data in Proceedings of Cantt. Committee, 1907 to 1998 Map 4.1
The pre-Independence period was characterised by two phases, viz. the pre-municipal phase from 1907-1924 and the post-municipal - pre-Independence phase from 1925-1947. The third phase of post-Independence period spanned from 1948-1998. The following features of building activity are discernible from Table 4.2:

(i) The first two phases recorded lower number of sanctions for building activities, i.e. 966 and 2791 respectively as compared to 3150 sanctions in the third phase.

(ii) The number of building applications sanctioned increased by three times from 966 during Phase I to 3150 in Phase III. The margin of increase in the number of sanctioned building applications between two consecutive phases was more in the first to second phase (by 1825 sanctions) as compared to from second to third phase (by 359 sanctions).

(iii) The three phases were dominated by different building activities, viz. rebuilding (392 sanctions) in Phase I, addition and alteration (917 sanctions) in Phase II and unauthorised construction (1870) in Phase III.

(iv) All the building activities were most dominant with their highest number of sanctions in the second phase from 1925 to 1947, except unauthorised construction whose sanctions for condoning were highest in Phase III.

(v) There was a steep decline in the number of sanctions for four building activities, viz. addition, building, alteration and sanctions for land in the third phase, whereas an overwhelming number of sanctions (1870) pertained to condoning of unauthorised construction.

D.1 Phase I: Pre-Municipal Period (1907-1924)

The first phase of building activity covering the period from 1907 to 1924 recorded the lowest number of sanctions, i.e. 966, which formed 13.98 per cent of the total. These were sanctioned for six building activities in the Civil Area, and involved five landuses (Table 4.3). Rebuilding was the most dominant building activity within the Civil Area which recorded the highest number of sanctions (392) and was particularly conspicuous during 1913-17. Rebuilding of residential and commercial structures involved the largest number of sanctions among different landuses, i.e. 877 and 58 sanctions respectively. The religious landscape of the Civil Area also witnessed rebuilding activities, mainly associated with the Muslim places of worship. The mosques in Mohalla 16, 17, 29 and BI Bazaar were rebuilt during the first phase.
Table 4.3
Jalandhar Cantonment (Civil Area): Building Activity and Landuse in Pre-Municipal Period
(1907–1924)

<table>
<thead>
<tr>
<th>Landuse</th>
<th>Rebuilding</th>
<th>Addition</th>
<th>Addition &amp; Alteration</th>
<th>Alteration</th>
<th>Building</th>
<th>Land for Building</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>364</td>
<td>229</td>
<td>177</td>
<td>77</td>
<td>17</td>
<td>13</td>
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<tr>
<td>Commercial</td>
<td>18</td>
<td>16</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Residential-cum-Commercial</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Religious</td>
<td>7</td>
<td>9</td>
<td>6</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Public Utility</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Civil Area Total</td>
<td>392 (40.58)</td>
<td>256 (26.50)</td>
<td>190 (19.67)</td>
<td>88 (9.11)</td>
<td>25 (2.59)</td>
<td>15 (1.55)</td>
</tr>
</tbody>
</table>

Source: Figures calculated from Proceedings of Cantonment Committee 1907 to 1925
Note: Civil Area comprises Sadar Bazaar which includes Mohalla 1 to 32 and OSM: Outside Mohalla; BIB: British Infantry Bazaar; RAB: Royal Artillery Bazaar; KM: Kumhar Mandi
Figures in curly parentheses refer to percentage of individual building activity in the total and those in common parentheses refer to percentage of total number of sanctions for a landuse in total number of sanctions.

Addition was the second dominant building activity with 256 sanctions. Its prominence among the building activities was related to the granting of permission for construction of an upper storey by the Cantonment Authority in mid-1920. Addition to existing structures, especially residential buildings (229 sanctions) signified growth in number of inhabitants within individual buildings, which in turn contributed to the overall growth of population and increased occupancy in the mohallas. This was mostly attributed to mohallas characterised by relatively late onset of large scale occupancy. In addition, growth in residential areas also influenced similar activity in the religious sphere as well, with sanctions for addition accorded to the Hindu temples located in various mohallas, viz. Kali Bari Mandir, Mahamaya Mandir and Arya Samaj Mandir in Mohalla 6, 15 and 19 respectively; Gurudwara Sri Singh Sabha in Mohalla 19 and a mosque in RA Bazaar.

Besides the two activities discussed above, addition and alteration was another prominent building activity during the first phase. Although a large number of sanctions (190) were given for addition and alteration during 1907-24, however, this activity does not display any marked sub-phase or concentration in some mohallas. Further, the bazaar area was reported to be completely occupied by the beginning of the first phase as the Cantonment Committee resolved “to be careful to sanction no more land for buildings in the bazaar and will when possible remove unsanitary buildings and make open space”. Several building applications were rejected because of the Committee’s opinion that “the Sadar Bazaar being too overcrowded already and there are grave sanitary reasons for not permitting any new or additional buildings or
15. Thus, sanctions for land for building were granted on lease terms and recorded very few sanctions (15). Similarly, sanctions for actual building numbered only 25. Only 13 sanctions for residential structures and 1 each for commercial and religious uses (Balmiki Mandir in Outside Mohalla) were accorded during the first phase of building activities.

**Spatial Pattern of Building Activities (1907-1924)**

The first phase recorded 13.98 per cent of the total building activity within the Civil Area, which varied considerably in individual mohallas. The highest proportion of building activity of 23.43 per cent was recorded in Mohalla 30 and the lowest of 5.48 per cent in Mohalla 3. Eighteen mohallas recorded a proportion of building activity more than 13.98 per cent during the first phase. Kumhar Mandi did not record even a single sanction for any building activity during this phase. On the basis of proportion of building activities during the first phase, three types of areas have been identified within the Civil Area (Map 4.2):

1. **Areas with high proportion of building activities (more than 15.00 per cent)**
2. **Areas with moderate proportion of building activities (between 15.00 and 10.00 per cent)**
3. **Areas with low proportion of building activities (less than 10.00 per cent)**

**i) Areas with high proportion of building activities (more than 15.00 per cent):**

Fourteen mohallas recorded a high proportion of building activity, which include Mohalla 30 (23.43 per cent), 29 (22.79 per cent), 4 (20.74 per cent), 5 (20.59 per cent), 15 (19.91 per cent), 19 (19.23 per cent), 27 (18.22 per cent), 13 (16.60 per cent), 2 (15.63 per cent), 10 (15.63 per cent), 12 (15.57 per cent), 11 (15.29 per cent), 21 (15.25 per cent) and 17 (15.06 per cent). This category mostly comprised contiguous located mohallas which formed linear pattern along Hardayal Road in the western periphery, eastern parts along Ganga Road, and in the north along Cross Road 2. Small pockets of high proportion of building activity were also discernible in the north along Cross Road 1 and south along Cross Road 6 (Map 4.2).

High proportion of building activity was related to an early occupancy of mohallas in central and southern parts of western periphery. Rebuilding was the most dominant building activity in all the mohallas, except Mohalla 11, 13 and 15 which recorded addition and Mohalla 19 which recorded addition and alteration as the dominant
building activity. Mohalla 27 was the only one to record all the six building activities within the Civil Area.

(ii) Areas with moderate proportion of building activities (between 15.00 and 10.00 per cent): Fourteen mohallas which formed this category include RA Bazaar (14.29 per cent), Mohalla 22 (14.15 per cent), 8 (14.15 per cent), 23 (14.00 per cent), 7 (13.89 per cent), 1 (13.75 per cent), 9 (13.43 per cent), 6 (13.41 per cent), 16 (12.73 per cent), 32 (12.73 per cent), 20 (12.71 per cent), 18 (12.31 per cent), 26 (12.24 per cent) and 14 (11.72 per cent). This category comprised of contiguously located mohallas adjoining those with high proportion of building activities, and formed a conspicuous linear pattern in a north to south direction along Patel Road, and an east-west pattern along Cross Road 1 and Phagwara Road. Small pockets along the eastern periphery and northwest, and an isolated pocket comprising RA Bazaar were also discernible (Map 4.2). Rebuilding was the most dominant building activity which was associated with early occupancy of several mohallas, particularly those located along Patel Road and Phagwara Road. The relatively later settled mohallas in the north were primarily associated with addition.

(iii) Areas with low proportion of building activities (less than 10.00 per cent): Seven mohallas comprised this category, viz. Mohalla 24 (9.18 per cent), 28 (9.09 per cent), Bl Bazaar (8.59 per cent), Outside Mohalla (8.39 per cent), Mohalla 31 (7.35 per cent), 25 (5.75 per cent) and 3 (5.48 per cent). The low proportion of building activities was a feature of mohallas located on the periphery of Sadar Bazaar most of which were non-contiguous, except a small pocket in the southeast (Map 4.2). Only Bl Bazaar formed an isolated pocket. Several mohallas comprised late occupancy areas, and were associated with high proportion (up to 35 per cent) of addition and alteration. Outside Mohalla was a new addition to the already existing thirty two mohallas of Sadar Bazaar, which attracted a high proportion of sanctions for land for building (33 per cent) and for building or construction (16.67 per cent).

Phase I was dominated by rebuilding of structures within the Civil Area which involved structural, material or architectural changes. This phase marked the culmination of a cycle of building activities in mohallas of early occupancy particularly in central and southern parts which recorded large number of sanctions. It also marked the beginning of another cycle of building activities.
Jalandhar Cantonment (Civil Area)
Sanctions for Building Activities in Phase - I (1907-1924)

Sadar Bazaar

Per cent in total sanctioned building applications

- 15
- 10
- Nil

Average: 13.98

Source: Computed from data in Proceedings of Cantt. Committee, 1907 to 1924 Map 4.2
D.2 Phase II: Post-Municipal to Pre-Independence Period (1925-1947)

The enactment of the Cantonments Act of 1924 gave an urban municipal status to cantonment towns in India, which were placed under a local self government body known as the Cantonment Board. This municipal body primarily regulates the municipal administration of their civil areas but consistent with their 'special function towns’ status and broadly compatible with military requirements.

Building bye laws enforced within the Civil Area of Jalandhar Cantonment after the introduction of the Cantonments Act of 1924 specified norms for building activity. These mandated free passage in front of the building to secure circulation of air and facilitate scavenging and prevention of fire; minimum superficial area not less than 100 square feet; height between 10 and 16 square feet; building or rebuilding of structure to be on lime concrete foundation at least two feet deep; one foot thick walls; burnt bricks in lime or mud mortar for external and partition walls; private lavatories of impermeable material on upper storeys and courtyards etc. In addition, several structures which were not sanctioned in the previous phase were sanctioned during the second phase, viz. culverts, hanging veranda, honeycomb partition walls, pucca platforms and veranda over platforms. Together these influenced the nature of building activities within the Civil Area.

Table 4.4
Jalandhar Cantonment (Civil Area): Building Activity and Landuse in Post-Municipal to Pre-Independence Period (1925 – 1947)

<table>
<thead>
<tr>
<th>Landuse</th>
<th>Addition &amp; Alteration</th>
<th>Addition</th>
<th>Rebuilding</th>
<th>Unauthorized Construction</th>
<th>Alteration</th>
<th>Building</th>
<th>Land for Building</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>839</td>
<td>485</td>
<td>504</td>
<td>250</td>
<td>191</td>
<td>117</td>
<td>14</td>
<td>2400</td>
</tr>
<tr>
<td></td>
<td>(86.00)</td>
<td></td>
<td>(64.12)</td>
<td>(61.12)</td>
<td>(61.12)</td>
<td>(63.12)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial</td>
<td>52</td>
<td>92</td>
<td>29</td>
<td>73</td>
<td>38</td>
<td>8</td>
<td>11</td>
<td>303</td>
</tr>
<tr>
<td></td>
<td>(10.85)</td>
<td></td>
<td>(25.97)</td>
<td>(33.97)</td>
<td>(20.97)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential-cum-Commercial</td>
<td>2</td>
<td>1</td>
<td>6</td>
<td>11</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>(0.75)</td>
<td></td>
<td>(2.21)</td>
<td>(2.21)</td>
<td>(0.00)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Religious</td>
<td>23</td>
<td>12</td>
<td>8</td>
<td>0</td>
<td>6</td>
<td>4</td>
<td>7</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>(2.15)</td>
<td></td>
<td>(2.15)</td>
<td>(0.00)</td>
<td>(2.15)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational Institution</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>(0.11)</td>
<td></td>
<td>(0.11)</td>
<td>(0.11)</td>
<td>(0.00)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Utility</td>
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<td>(0.07)</td>
<td>(0.07)</td>
<td></td>
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<td>Recreation</td>
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<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>(0.07)</td>
<td></td>
<td>(0.07)</td>
<td>(0.07)</td>
<td>(0.07)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Civil Area Total</td>
<td>917</td>
<td>592</td>
<td>548</td>
<td>335</td>
<td>236</td>
<td>129</td>
<td>34</td>
<td>2791</td>
</tr>
<tr>
<td></td>
<td>(32.86)</td>
<td>(21.21)</td>
<td>(19.63)</td>
<td>(12.00)</td>
<td>(8.46)</td>
<td>(4.62)</td>
<td>(1.22)</td>
<td>(100.00)</td>
</tr>
</tbody>
</table>

Source: Figures calculated from Proceedings of Cantonment Board 1925 to 1946; Bazaar Committee 1946 to 1955

Note: Civil Area comprises Sadar Bazaar which includes Mohalla 1 to 32 and OSM: Outside Mohalla; BIB: British Infantry Bazaar; RAB: Royal Artillery Bazaar; KMB: Kumhar Mandi

Figures in curly parentheses refer to percentage of individual building activity in the total and those in common parentheses refer to percentage of total number of sanctions for a landuse in total number of sanctions.

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The second phase of building activity covering the post-municipal-pre-Independence period between 1925 and 1947 was the most outstanding in terms of trends in building activities. Six out of seven building activities were most dominant in this phase as compared to the other two phases, with the exception of unauthorised construction.

During the second phase, addition and alteration was the most dominant building activity with nearly a third, i.e. 917 out of 2791 sanctioned building applications (Table 4.4). These sanctions were particularly high during 1925-1942 within the broad period and covered as many as sixteen mohallas out of a total of thirty six mohallas. Addition and alteration was followed by an almost equal number of sanctions for addition and rebuilding, viz. 592 and 548 respectively. This is not unexpected considering that permission for construction of an upper storey was granted in 1920, following which a large number of sanctions for building upper storey were given during the initial years of the second phase. Sanctions for residential use, therefore, formed the highest number in these three building activities, i.e. 839, 485 and 504 (Table 4.4).

A new aspect, i.e. unauthorized construction was first reported in 1925, which comprised any form of building activity carried out without permission and in contravention of building plan as well as any encroachment on land. The sanctions for condoning of unauthorised construction numbered 335 and formed a little over ten per cent of the total sanctions during 1925-47 (Table 4.4). A majority of these pertained to residential (250) and commercial use (73). It became the second most dominant activity at the end of the second phase in 1947. On the other hand, the number of sanctions for alteration, building and land for building were less, viz. 236, 129 and 34 respectively.

The domination of Phase II by addition and alterations, and addition reflect the growth of the Civil Area. An increasing population necessitated increase in the built up space, which, unlike the practice of colonisation of additional area as prevalent in other towns and cities, was met through an expansion and alteration to the existing built up space at individual house level. This is evident from an overwhelming increase in the number of sanctions for residential landuse. As compared to the previous phase, sanctions pertaining to residential structures involving various activities increased by nearly three times to 2400 (Tables 4.3 and 4.4). Similarly, the number of sanctions for commercial use increased by five times to 303 and the need for cultural expression grew further as the second phase witnessed the maximum number of sanctions (60) for religious structures for all types of building activities in the Civil Area. Two Balmiki Temples
were constructed, one each in Mohalla 20 and 24, in 1925 and 1939 respectively. Shri Sanatan Dharam Shiv Mandir was constructed in Mohalla 27 by Pandit Tulsi Ram in 1926 and Sri Satsangh Sabha was built in Outside Mohalla in 1939. Besides these, several temples, mosques and gurudwara in various mohallas underwent different building activities. For example, sanction for addition and alteration was given for Hanuman Mandir in Mohalla 11, Arya Samaj Temple in Mohalla 19, Mosque in Mohalla 29; and rebuilding of Temples in Mohalla 12 and 20 and of Mosques in Mohalla 4, 17, 18, 32 and BI Bazaar. Among other uses, addition and alterations were sanctioned for wells, and a piece of ground for recreational purpose was sanctioned in Outside Mohalla in 1926.

The scale and extent of various building activities multiplied in the second phase leading to overall changes in the Civil Area. Former residential mohallas transformed into mixed landuse or residential-cum-commercial areas due to invasion of street front residential use by commercial use.

**Spatial Pattern of Building Activities (1925-1947)**

The Civil Area recorded 40.41 per cent of the total sanctions for building activities during the second phase. The proportion of building activity in this phase varied between 55.13 per cent in Mohalla 19 and 25.12 per cent in Mohalla 29. Only six mohallas recorded all the seven building activities, viz. Mohalla 13, 20, 24, 29, 31 and BI Bazaar. The spatial pattern of building activity in this phase reflects a gradation from high proportion in central parts to low proportion in the periphery in mohallas of Sadar Bazaar. On the basis of proportion of building activities within the Civil Area during this phase, three types of areas have been identified (Map 4.3):

(i) Areas with high proportion of building activities (more than 45.00 per cent)

(ii) Areas with moderate proportion of building activities (between 45.00 and 37.00 per cent)

(iii) Areas with low proportion of building activities (less than 37.00 per cent)

**Areas with high proportion of building activities (more than 45.00 per cent):**

Ten mohallas registered a high proportion of building activity during this phase, viz. Mohalla 19 (55.13 per cent), 31 (53.43 per cent), 23 (50.00 per cent), Kumhar Mandi (50.00 per cent), 22 (49.85 per cent), 1 (47.50 per cent), 3 (46.58 per cent), 20 (45.76 per cent), 9 (45.15 per cent) and 18 (45.00 per cent). Spatially, this category formed a
cluster of contiguously located mohallas in central part of Sadar Bazaar between Cross Road 5 and Phagwara Road. The remaining mohallas formed isolated pockets (Map 4.3). This category mostly comprised old occupancy and intensely built up parts of the Civil Area associated with both residential and commercial uses, which had registered moderate to low proportion of building activities in the first phase. A high proportion of building activity was related to the dominance of addition and alteration and above average proportion of rebuilding (19.63 per cent) and unauthorised construction (12 per cent) in a majority of the mohallas. Only Mohalla 22 was dominated by addition whereas Mohalla 31 and Kumhar Mandi were dominated by rebuilding.

(ii) Areas with moderate proportion of building activities (between 45.00 and 37.00 per cent): Fifteen mohallas which comprised this category include Mohalla 14 (44.92 per cent), RA Bazaar (44.44 per cent), 25 (44.25 per cent), BI Bazaar (43.76 per cent), Mohalla 2 (43.75 per cent), 7 (43.75 per cent), 21 (41.84 per cent), 26 (41.35 per cent), 13 (41.08 per cent), 32 (40.00 per cent), 16 (38.18 per cent), 15 (38.10 per cent), 27 (37.25 per cent), 6 (37.20 per cent) and 10 (37.11 per cent). Moderate proportion of building activity was characterised by a distinct linear pattern formed by mohallas along Patel Road and Cross Road 3 in the northern parts and those along Phagwara Road in south-western parts of Sadar Bazaar. Isolated pockets formed by Mohalla 32 and RA Bazaar were also discernible (Map 4.3). This category was associated with some of the relatively late occupancy northern areas of Sadar Bazaar, which were, therefore, dominated by addition and alteration. Rebuilding dominated some of the old occupancy areas in the southern parts.

(iii) Areas with low proportion of building activities (less than 37.00 per cent): This category comprised of eleven mohallas, viz. Mohalla 30 (36.40 per cent), 11 (36.31 per cent), 17 (33.47 per cent), 12 (32.93 per cent), 4 (32.59 per cent), 24 (31.88 per cent), Outside Mohalla (31.47 per cent), 5 (29.41 per cent), 28 (27.27 per cent), 8 (25.47 per cent) and 29 (25.12 per cent). A majority of these mohallas were characterised by peripheral locations, and formed linear pattern in the eastern and western parts of Sadar Bazaar (Map 4.3). Although addition and alteration was the dominant building activity, however, rebuilding and alteration constituted above average proportions in most of the mohallas. Only Outside Mohalla was characterised by a significant proportion of sanctions for land for building (28.89 per cent of the total sanctions). This was related to its late occupancy amongst all the mohallas of Civil Area.
Jalandhar Cantonment (Civil Area)
Sanctions for Building Activities in Phase - II (1925-1947)

Sadar Bazaar

Per cent in total sanctioned building applications

<table>
<thead>
<tr>
<th>Mohalla number</th>
<th>Metres</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>37</td>
</tr>
</tbody>
</table>

Average: 40.41

Source: Computed from data in Proceedings of Cantt. Board, 1925 to 1947

Map 4.3

The gaining of Independence by India and its Partition in 1947 was an important political and administrative event which had wide socio-economic impact on settlements, particularly in northwest and east India. The Civil Area which formed the residential and commercial hub of the native Indian population within Jalandhar Cantonment witnessed distinct building activities after the occupation of Muslim evacuee properties by displaced population comprising the Hindus and Sikhs from Pakistan. As a result, the highest number of sanctions (3150) for seven building activities was granted during the third phase from 1948 to 1998. These formed 45.61 per cent of all the sanctions for building activities during 1907-1998.

<table>
<thead>
<tr>
<th>Landuse</th>
<th>Building Activity</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unauthorized Construction</td>
<td>Addition &amp; Alteration</td>
</tr>
<tr>
<td>Residential</td>
<td>1534</td>
<td>581</td>
</tr>
<tr>
<td>Commercial</td>
<td>276</td>
<td>119</td>
</tr>
<tr>
<td>Residential-cum-Commercial</td>
<td>46</td>
<td>37</td>
</tr>
<tr>
<td>Religious</td>
<td>11</td>
<td>22</td>
</tr>
<tr>
<td>Educational Institution</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Civil Area Total</td>
<td>1870</td>
<td>760</td>
</tr>
</tbody>
</table>

Table 4.5

During the third phase, nearly 60 per cent of all the sanctions totalling 1870 were given for condoning of unauthorised construction, which included the highest number of sanctions across all landuse categories except religious structures (Table 4.5). Such sanctions were most common during 1952-1961 and 1967-1983 when 410 and 1196 building applications were sanctioned for condoning of unauthorised constructions.

This building activity was spatially pervasive since it was recorded in all the mohallas of Civil Area except Kumhar Mandi. Unauthorised construction identified through field work in the Civil Area in recent years involved internal structural modifications, renovations to a part of the building (kitchen, bathroom etc.) and facelift of the building.
and its façade. Addition and alteration and rebuilding were the two other building activities which recorded significant number of sanctions, viz. 760 and 349 respectively. Sanctions for the remaining four building activities were considerably small in number.

Building activity in the post-Independence period characterised by large scale unauthorised construction was primarily related to increasing pressure of population on the static physical expanse of the Civil Area and only a few vacant sites for construction. The rehabilitation of displaced families in Muslim evacuee plots after the Partition also contributed to this pressure. Thus, maximum number of sanctions in the third phase were recorded for residential use (2513) involving unauthorised construction (1534), addition and alteration (581) and rebuilding (272). Sanctions for building of new houses numbered only 53. This phase also witnessed highest building activity in commercial (492 sanctions) and residential-cum-commercial landuse (104 sanctions), attributed to the operation of economic processes which basically contributed to changes in landuse.

Building activities related to religious structures largely involved conversion of the pre-Independence period Mosques located in various mohallas into Temples and Gurudwaras. Thus, addition and alterations (22) and condoning of unauthorised constructions (11) formed the building activities related to religious structures. The only temple to have been rebuilt was the Jain Temple in Mohalla 14 in 1962. Among the educational institutions, very few reported any kind of building activity. Addition in K.L. Arya Girls High School located in Mohalla 19 was carried out in 1952. N.C. Model School located in the same mohalla recorded addition and alterations in 1969. Only one educational institution, viz. Tulsi S.D. Girls High School in Mohalla 10 was rebuilt in 1969. It also reported unauthorised construction in its main as well as its primary branch in Mohalla 15 during this period.

**Spatial Pattern of Building Activities (1948-1998)**

The third phase of building activity recorded 45.61 per cent of the total sanctions for the Civil Area. As many as nineteen out of thirty six mohallas recorded higher proportion than the Civil Area average. The proportion of building activity in individual mohallas ranged between 63.64 per cent in Mohalla 28 and 25.64 per cent in Mohalla 19. Only two mohallas recorded all the seven building activities, viz. Mohalla 20 and Outside Mohalla. On the basis of proportion of building activities during this phase, the Civil Area has been divided into the following three types of areas (Map 4.4):

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Jalandhar Cantonment (Civil Area)
Sanctions for Building Activities in Phase - III (1948-1998)

Sadar Bazaar

Per cent in total sanctioned building applications

49
42
Average: 45.61


Map 4.4
Areas with high proportion of building activities (more than 49.00 per cent)

Twelve mohallas recorded high proportion of building activities, viz. Mohalla 28 (63.64 per cent), 8 (60.38 per cent), Outside Mohalla (60.14 per cent), 24 (58.94 per cent), 29 (52.09 per cent), 12 (51.50 per cent), 17 (51.46 per cent), 5 (50.00 per cent), 25 (50.00 per cent), Kumhar Mandi (50.00 per cent), 6 (49.39 per cent) and 16 (49.09 per cent). This category formed a linear pattern of almost contiguously located mohallas along Ganga Road in the east and Hardayal Road in the western periphery of Sadar Bazaar (Map 4.4). Kumhar Mandi comprised an isolated pocket, in which rebuilding was the only building activity. A high proportion of building activities with a predominance of unauthorised construction was largely attributed to the rehabilitation of displaced population in Muslim evacuee properties in these mohallas.

Areas with moderate proportion of building activities (between 49.00 and 42.00 per cent)

Thirteen mohallas comprised this category, viz. Mohalla 11 (48.41 per cent), 3 (47.95 per cent), BI Bazaar (47.65 per cent), 32 (47.27 per cent), 10 (47.27 per cent), 4 (46.67 per cent), 26 (46.41 per cent), 27 (44.53 per cent), 14 (43.36 per cent), 21 (42.91 per cent), 18 (42.69 per cent), 7 (42.36 per cent) and 13 (42.32 per cent). The mohallas in this category formed a conspicuous belt in north and central parts of Sadar Bazaar. Three mohallas located outside this belt in southern parts along Phagwara Road and an isolated pocket comprising BI Bazaar were also discernible (Map 4.4). Unauthorised construction was the predominant building activity in as many as ten mohallas, in which it constituted more than 50 per cent of all the sanctions during this period. Addition and alteration was the dominant building activity in the remaining three mohallas, i.e. 3, 7 and 11. Further, several erstwhile Muslim dominated mohallas, viz. Mohalla 4, 21, 26, 27 and 32 recorded a mix of all the building activities.

Areas with low proportion of building activities (less than 42.00 per cent)

Eleven mohallas which comprised this category include Mohalla 15 (41.99 per cent), 20 (41.53 per cent), 9 (41.42 per cent), RA Bazaar (41.27 per cent), 2 (40.63 per cent), 30 (40.17 per cent), 31 (39.22 per cent), 1 (38.75 per cent), 22 (36.00 per cent), 23 (36.00 per cent) and 19 (25.64 per cent). This category formed a distinct cluster in
central and eastern periphery of Sadar Bazaar comprising contiguously located mohallas as well as small clusters in its northern and southern periphery (Map 4.4). Only mohalla 9 and RA Bazaar formed isolated pockets. A low proportion of building activities were associated with some of the early settled mohallas in central parts of Sadar Bazaar which had run through most of the prominent phases of a particular building activity. Further, these mohallas being largely occupied by Hindu groups such as the Banias, Brahmins as well as early Sikh settlers, had remained relatively immune from the unsettling and resettling process involving displaced population as well as the flux of different types of building activities recorded in erstwhile Muslim dominated mohallas. Unauthorised construction was the dominant building activity, followed by addition and alteration in all the mohallas of this category.

Broadly, the overall trends suggest an end of distinct phases of building activity in the Civil Area and unauthorised construction emerging as the single largest building activity. This is construed from the fact that while the number of sanctioned applications (3150) during Phase III were the highest ever, however, given the longer duration of this phase, an increase in the number of sanctions over the previous phase was marginal (by 359 sanctions) as compared to an increase by 1825 sanctions between Phase I and Phase II. Similar trends were recorded across different landuses. This suggests not only a saturation of any existing space for construction, but also limits up to which any type of building activity was carried out within the ambit of authorised construction through sanctioned applications.

SECTION II: CHANGES IN LANDUSE (1939 AND 2007)

Sources of Data
Two unpublished documents were referred for data for this section, viz. (i) the General Land Register (GLR) of 1939, and (ii) Assessment Registers of 2007. The General Land Register (GLR) contains details of occupancy of individual plots of land within the cantonment, which was originally prepared in 1930 for the Civil Area of Jalandhar Cantonment, and was revised in 1939. A total of 36 volumes of the revised General Land Register were consulted to collect data on 3064 individual land parcels (including 111 street segments) and pertained to landuse, size and area of plots for the year 1939. Three volumes of Assessment Register of 2007 were consulted to collect data on landuse of individual houses. Field surveys were carried out during 2009 for substantiating the secondary data.
Methodology

On the basis of data, ten types of landuses were identified in the Civil Area, viz. residential, commercial, residential-cum-commercial, religious, educational institution, recreation, vacant, administrative, others and streets. The following attributes of landuse in the Civil Area were studied:

A. Types of landuses (1939): The different landuses have been discussed in terms of the number and proportion of plots in 1939 and buildings in 2007. Brief overview of the size of plots in 1939 has also been incorporated for two of the three main landuses, viz. residential and commercial, which recorded a significant number of plots.

B. Changes in landuse (1939-2007): This highlights change in proportion as well as the spatial pattern of change in the three main landuses, i.e. residential, commercial and residential-cum-commercial during 1939-2007. Since the proportions of change in other landuses were quite minimal, therefore, absolute changes have been discussed.

C. Changes in pattern of landuse: A broad view on the spatial pattern of landuses within the Civil Area has been presented in relation to the functional characteristics of the mohallas based on varying predominance of landuses. These include five categories:

(i) Residential (more than 75 per cent of plots/buildings under residential use).
(ii) Residential with commercial and/or residential-cum-commercial (residential use between 55 to 75 per cent of plots/buildings).
(iii) Commercial (more than 50 per cent plots/buildings under commercial use).
(iv) Mixed landuse (residential use less than 55 per cent of plots/buildings and correspondingly significant proportion under commercial and/or residential-cum-commercial use).
(v) Others (low proportion of three main landuses).

D. Intensity of plots (1939) and buildings (2007): This part is devoted to the distribution of number of plots and buildings in mohallas of the Civil Area and forms a background against which part E has been discussed.

E. Types of changes in plots (1939 and 2007): In an attempt to comprehend the socio-economic dynamics that operate through time at plot level and bring about change in its number, three types of change in plot, viz. subdivision, consolidation and subdivision and consolidation were identified by collating GLR data of 1939 with Assessment data.
of 2007. On the basis of absolute numbers of change, the spatial pattern of changes in plots has been discussed.

Further, spatial implications of administrative rules as contained in the Cantonments Act of 2006 and building byelaws applicable to Jalandhar Cantonment have been incorporated at relevant places in order to understand its influence on morphology. Relevant data have been presented in tables and the spatial patterns of various attributes have been shown through choropleth maps for 1939 and 2007.

It is pertinent to define some of the terms used in this section:

(a) Plot: an individual land parcel bearing a survey number which is constructed upon with buildings used for different landuses, viz. residential, commercial, residential-cum-commercial, religious etc. The numbers of plots are primarily static as given in the General Land Register of 1939. Stringent regulations governing the mutation of property does not permit a subdivision of plot, change of purpose and encroachment or unauthorised construction upon a plot.

(b) Building: a structure used for residential, commercial or any other use. These are taken to be coterminous with individual plots since a single building stands over a plot, which by regulations governing the mutation of property within the Civil Area of cantonment towns, can not be subdivided.

(c) Intensity of plots or buildings: the number of plots in 1939 or buildings in 2007 used for specific purposes within a mohalla.

Data Limitations

Since the sources of data are more than one, i.e. the amended General Land Register of 1939 (regarding individual land parcels) and Assessment Register of 2007, comparability across data, though desirable, has been difficult to achieve at individual plot level. However, a holistic picture at mohalla level has been presented.

The urban landscape is characterised by various types of functional areas, such as residential, commercial, industrial, educational etc., which not only occupy specific locations within the settlement but also differ in their intensity across the settlement. Among the three components of morphology, landuse is the most transient and is characterised by an inherent dynamism that is reflective of changing needs of the urban society, for specific use of urban space, through different times. Landuse pattern,
therefore, evolves through history and reflects changes in the functional character of the city and the ways of living of its people.

Landuse within the civil area of cantonment towns has evolved within the framework of specific regulations for the administration of cantonment towns and the lands under them. Such rules restricted change in the use and subdivision of a plot for purpose of mutation of property in the General Land Register (GLR). Further, the land policy for cantonment towns as directed by the Government of India in 1968, regulated construction on old grant sites through sanctions accorded by it and involved taking out lease in respect of the following:

(i) Change of purpose, i.e. conversion from one use to another.
(ii) Subdivision either through construction or any change causing an increase in the number of tenements.
(iii) Construction of additional storeys or increasing the number of storeys.
(iv) Addition to the existing plinth or floor area only in the form of appurtenances such as bathrooms, kitchens but no additional room, outhouses and annexes, and subject to a maximum of 10 per cent of authorized floor space.
(v) Demolition of existing construction and putting up new constructions, i.e. rebuilding an existing structure.
(vi) Any new construction on a vacant site.

The above norms regarding use of plot, building activity, physical dimensions etc. in principle restrict change in landuse, increasing built up area through modifications to existing structures, rebuilding of structures, vertical expansion and the intensity of their use. Such rules were, therefore, formulated with the objective of regulating these factors which contribute to overcrowding. Further, different landuses within the civil area were accommodated by sanctioning of use of different land parcels (plots) in different mohallas which resulted in mixed landuse, but with predominance of one use over the others. This is in contrast to a general trend of differentiating areas into residential, commercial, industrial etc. in towns and cities.

Generalities in Landuse (1939 and 2007)

Ten types of landuses were identified in the Civil Area of Jalandhar Cantonment which occupied varying proportion of area as well as actual number of plots and building in 1939 and 2007 (Table 4.6).
Table 4.6
Jalandhar Cantonment (Civil Area): Area, Number of Plots and Buildings under Different Landuses (1939 and 2007)

<table>
<thead>
<tr>
<th>Landuse Category</th>
<th>Area (Square Metres)</th>
<th>No. of Plots (1939)</th>
<th>No. of Buildings (2007)</th>
<th>Change in Number of plots/buildings and Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>171871 (40.44)</td>
<td>2054 (69.56)</td>
<td>2106 (58.24)</td>
<td>52 [-11.32]</td>
</tr>
<tr>
<td>Vacant</td>
<td>89521 (21.06)</td>
<td>24 (0.81)</td>
<td>23 (0.64)</td>
<td>-1 [-0.17]</td>
</tr>
<tr>
<td>Streets</td>
<td>70740 (16.64)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Commercial</td>
<td>40232 (9.47)</td>
<td>718 (24.31)</td>
<td>835 (23.09)</td>
<td>117 [-1.22]</td>
</tr>
<tr>
<td>Religious</td>
<td>16723 (3.83)</td>
<td>55 (1.86)</td>
<td>34* (0.94)</td>
<td>-21 [-0.92]</td>
</tr>
<tr>
<td>Recreation</td>
<td>15207 (3.58)</td>
<td>2 (0.07)</td>
<td>4* (0.11)</td>
<td>2 (0.04)</td>
</tr>
<tr>
<td>Others</td>
<td>8982 (2.11)</td>
<td>32 (1.08)</td>
<td>5* (0.14)</td>
<td>-27 [-0.94]</td>
</tr>
<tr>
<td>Residential-cum-Commercial</td>
<td>5573 (1.31)</td>
<td>57 (1.93)</td>
<td>595 (16.45)</td>
<td>538 [14.52]</td>
</tr>
<tr>
<td>Educational Institution</td>
<td>3375 (0.79)</td>
<td>8 (0.27)</td>
<td>12* (0.33)</td>
<td>4 [0.06]</td>
</tr>
<tr>
<td>Administrative</td>
<td>2800 (0.66)</td>
<td>3 (0.10)</td>
<td>2* (0.06)</td>
<td>-1 [-0.04]</td>
</tr>
<tr>
<td>Civil Area Total</td>
<td>425023 (100.00)</td>
<td>2953</td>
<td>3616</td>
<td>663</td>
</tr>
</tbody>
</table>

Source: Figures calculated from GLR 1939, Assessment Registers 2007 and Field Work 2009*
Note: Area figures pertain to 1939 only
Figures in curly parentheses are in per cent of area in landuse category to total area of the Civil Area.
Figures in normal parentheses are in per cent of number of plots and buildings in a landuse category to the total landuse units in 1939 and 2007 respectively.
Figures in square parentheses in the column of change refer to percentile change.

Fig. 4.2: Jalandhar Cantonment (Civil Area): Area under Different Landuses (1939)

The residential use covered the highest area (171871 square metres, i.e. 0.171871 square kilometres) amongst all landuses and formed 40.44 per cent of the total area of the Civil Area in 1939 (Table 4.6 and Fig. 4.2). It was the first ranking landuse category with 2054 plots in 1939 and 2106 buildings in 2007. It was the predominant landuse...
within the Civil Area which formed 69.56 per cent of the total plots in 1939 and 58.24 per cent of the total buildings in 2007. This implies a high intensity of residential use within the Civil Area. Although a marginal absolute increase of 52 residential buildings was recorded during 1939-2007, however, the proportion of residential units declined by 11.32 per cent points during the same period.

The area under vacant landuse category was second ranking with 21.06 per cent of the total Civil Area in 1939 (Fig. 4.2). This comprised 24 plots in 1939 which included land adjoining the streets and plots not built upon. In 2007, 23 pockets were identified as vacant which comprised 0.64 per cent of all the landuses. The area under streets was 89521 square metres (0.089521 square kilometres) in 1939. It comprised 16.64 per cent of the Civil Area and ranked third among all landuses (Fig. 4.2). A high proportion of area under streets is related to the planned layout of Civil Area. In fact, this proportion was higher as compared to most towns and cities in India which generally have less than 10 per cent of their area devoted to the circulation system.

The commercial use covered an area of 40232 square metres and formed 9.47 per cent of the total area (Fig. 4.2). It was the second most dominant landuse after residential use with 718 plots in 1939 and 835 buildings in 2007 which formed nearly a quarter of all the plots and buildings respectively. Despite the number of buildings used for commercial purpose having increased by 117 during 1939-2007, however, its proportion declined by an insignificant 1.22 per cent points during this period.

In 1939 the Civil Area was characterised by a near absence of residential-cum-commercial use, i.e. mixed use of buildings involving juxtaposition of residential with commercial use which is typical of Indian cities. Residential-cum-commercial use comprised only 1.31 per cent of the area and 1.93 per cent of all the plots in 1939, but became the third dominant landuse with 16.45 per cent of all the buildings in 2007. It recorded the highest absolute increase (538) among all landuses (Table 4.6).

Besides the aforementioned uses, land within the Civil Area was also occupied by religious, recreation, others, educational institutions and administrative uses, each of which occupied relatively small proportion in the total area (between 3.93 and 0.66 per cent), and below one per cent of total plots and buildings in 1939 and 2007 (Table 4.6). The numbers of plots under these uses were quite less, viz. 55, 2, 32, 8 and 3 respectively in 1939. The corresponding figures in 2007 were 34, 4, 5, 12 and 2.
respectively. Among these uses, only recreation and educational institutions recorded positive percentile change during 1939-2007, viz. 0.04 and 0.06 per cent points respectively, whereas religious, others and administrative uses declined in proportion by -0.92, -0.94 and -0.04 per cent points respectively.

Overall, residential, commercial and residential-cum-commercial uses comprised the three main landuses within the Civil Area. These together accounted for 95.80 per cent of the total plots in 1939 and 97.78 per cent of all the buildings in 2007. A brief discussion on individual landuses is presented below:

A. TYPES OF LANDUSES (1939)

A.1 Residential Landuse

Residential use formed the predominant landuse within the Civil Area with 69.56 per cent of all the plots (2054 out of 2953 plots) in 1939. It was the most extensive landuse within the Civil Area which primarily occupied inner areas of individual *mohallas* as well as street front locations in a few *mohallas* (Map 4.5). More than half the area was under residential use in a majority of the *mohallas* (21 out of 36). On the other hand, it comprised less than twenty per cent of the area in *Mohalla* 11, 19, *Outside Mohalla* and *Kumhar Mandi*, in which commercial, administrative and vacant uses comprised a significant proportion.

### Table 4.7

<table>
<thead>
<tr>
<th>Average Size of Residential Plot</th>
<th>No. &amp; % of Plots</th>
<th>Mohallas in Size Category</th>
<th>General Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large sized (&gt; 100)</td>
<td>440 (21.42)</td>
<td>OSM, 2, 1, 6, 3, 4, 7, 12, 18, 25, 9, 8, 14</td>
<td>Size range between 923-100 square metres; low intensity of residential plots in <em>mohallas</em> in the size category; 23 <em>ahatas</em> in 9 out of 13 <em>mohallas</em>; <em>spatial concentration in north and eastern parts of SB</em></td>
</tr>
<tr>
<td>Medium sized (70-100)</td>
<td>269 (13.10)</td>
<td>13, 5, 15, 24, 16, 11, 21, 31, 10, 22, 29</td>
<td>Size range between 94-70 square metres; moderate to high intensity of residential plots in <em>mohallas</em> in the size category; 14 <em>ahatas</em> in 6 out of 11 <em>mohallas</em>; <em>spatial concentration in small clusters in north and central parts of SB</em></td>
</tr>
<tr>
<td>Small sized (&lt; 70)</td>
<td>1345 (65.48)</td>
<td>19, 32, 28, 23, 17, 20, 26, 27, 30, RAB, BIB, KM</td>
<td>Size range between 67-34 square metres; high intensity of residential plots; 17 <em>ahatas</em> in 8 out of 12 <em>mohallas</em>; <em>spatial concentration in south and eastern periphery of SB, RAB, BIB, KM</em></td>
</tr>
<tr>
<td>Civil Area Total</td>
<td>2054 (100.00)</td>
<td>36</td>
<td>Decreasing average size of residential plots from north to south and towards periphery.</td>
</tr>
</tbody>
</table>

Source: Figures calculated from General Land Register 1939

Note: Civil Area comprises *Sadar Bazaar* (SB) which includes *Mohalla* (M) 1 to 32 and OSM. *Outside Mohalla*, BIB: British Infantry Bazaar, RAB: Royal Artillery Bazaar, KM: Kumhar Mandi.

Area is in square meters. Average size of residential plots within the Civil Area is 84 square metres.

Figures in parentheses are in per cent of no. of plots in a size category to total no. of residential plots.

Intensity of residential plots: High (>65 plots), Moderate (65-45 plots), Low (<45 plots).

* Refer Map 4.6 for spatial pattern of distribution of average size of residential plots.

The average size of residential plots in the Civil Area was 84 square metres. The average size of residential plots in individual *mohallas* varied between 923 square
Jalandhar Cantonment (Civil Area)
Landuse Pattern and Location of Important Landuse Features (1939)

Sadar Bazaar

Source: Computed from data in General Land Register, 1939

Map 4.5
metres in Outside Mohalla and 34 square metres in Kumhar Mandi. Three categories of size of residential plots were identified on the basis of average size (Table 4.7). The Civil Area was characterised by a predominance of small sized residential plots of less than 70 square metres which formed 65.48 per cent of all the residential plots; followed by large residential plots which measured more than 100 square metres (21.42 per cent). The medium sized residential plots measuring between 100 and 70 square metres comprised the lowest proportion of 13.10 per cent. However, individual mohallas recorded residential plots of the three sizes in varying proportions, viz. more than 75 per cent of the residential plots in Mohalla 31, 20, 32, BI Bazaar, Kumhar Mandi were small sized plots; more than 25 per cent of residential plots in Mohalla 22, 15, 18, 14 were medium sized; and more than 50 per cent residential plots in Outside Mohalla, Mohalla 6, 7 and 12 were large sized.

Further, several mohallas in each size category were characterised by the presence of ahatas, or large open space around which several individual houses were built. In general, these ahatas covered a large area for construction of additional structures at a later time. They comprised between 2 and 39 individual residential plots around a common courtyard, each consisting of one to two room houses. Shared utilities such as bathrooms and toilets characterised ahatas with a large number of individual residential houses, which is related to their evolution in the context of housing for the migrants.

The spatial distribution of average size of residential plots within the Civil Area decreased from north to south, with central mohallas of Sadar Bazaar characterised by medium sized plots (Map 4.6). The size of residential plots was intricately linked with its intensity and formed an inverse relationship. Mohallas with large sized residential plots were characterised by low intensity of residential plots of less than 45 plots per mohalla, whereas those with small sized plots recorded high intensity of residential plots of more than 65 plots (Map 4.7). Further, the size and intensity of residential plots also reflected the social status of the residents, with large sized plots mostly found in high class residential mohallas, whereas small sized plots were associated with low class residential areas.

A.2 Commercial Landuse

Commercial landuse distinctly occupied street front locations along the two main commercial arteries, viz. Phagwara Road and Patel Road (Map 4.5) and was the second dominant use in the Civil Area in terms of the number and proportion of plots. Nearly a
quarter of all the plots (24.31 per cent) were under commercial use in 1939. Commercial use was found in all the mohallas of the Civil Area in 1939, except six, viz. Mohalla 4, 5, 19, 20, 32 and Kumhar Mandi. While the total area under commercial use was quite low at 9.47 per cent in 1939, however, it formed a significant proportion of area (between 20 and 50 per cent) in mohallas with a predominance of commercial use, viz. Mohalla 11, 22, 14, and 21. The significance of this use emerged from its accessible location along Phagwara Road and Patel Road in central parts, with a convenient access to both the Cantonment as well as Jalandhar City.

### Table 4.8

Jalandhar Cantonment (Civil Area): Size of Commercial Plots (1939)

<table>
<thead>
<tr>
<th>Size of Commercial Plot</th>
<th>No. &amp; % of Plots</th>
<th>Mohallas in Size Category</th>
<th>General Attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large (&gt;70)</td>
<td>96 (13.37)</td>
<td>2, 8, OSM, 3, 16, 30, 1, 24</td>
<td>Size range between 1303 - 74 square metres; associated with banks, flour mills, wholesale shops, godowns requiring large storage space, low intensity of commercial plots; *spatial concentration along arterial road-Hardayal Road in west and sub-arterial roads-Cross Road 1 in north, Ganga Road in east.</td>
</tr>
<tr>
<td>Medium (40 – 70)</td>
<td>163 (22.70)</td>
<td>11, 13, 21, 15, 7, 10, 25, 27, 14, 22, BIB</td>
<td>Size range between 66 - 40 square metres; associated with wholesale and retail trade of commodities; high to moderate intensity of commercial plots; *spatial concentration in north around wholesale grain market of Mohalla 11; and in south-west along arterial road-Phagwara Road which is the oldest commercial artery.</td>
</tr>
<tr>
<td>Small (&lt;40)</td>
<td>459 (63.93)</td>
<td>RAB, 18, 6, 17, 9, 23, 28, 28, 12, 29, 31</td>
<td>Size range between 39 - 22 square metres; associated with neighbourhood daily provisions shops, small repair shops requiring small space for transactions; moderate to low intensity; dispersed pattern.</td>
</tr>
<tr>
<td>Civil Area Total</td>
<td>718 (100.00)</td>
<td>30</td>
<td>Increasing average size of commercial plots from central parts along commercial arteries Patel Road and Phagwara Road towards northern and eastern periphery.</td>
</tr>
</tbody>
</table>

Source: Figures calculated from General Land Register 1939

Note: Civil Area comprises Sadar Bazaar which includes Mohalla (M) 1 to 32 and OSM: Outside Mohalla, BIB: British Infantry Bazaar, RAB: Royal Artillery Bazaar, KM: Kumhar Mandi.

Area is in square meters. Average size of commercial plots within the Civil Area is 56 square metres.

Figures in parentheses are in per cent of no. of plots in a size category to total no. of commercial plots.

Civil Area average intensity of commercial plots: 24 plots; High (>32 plots); Moderate (32-10 plots); Low (<10 plots).

* Refer Map 4.8 for spatial pattern of distribution of average size of commercial plots.

The average size of commercial plots was 56 square metres in the Civil Area, but their size in individual mohallas ranged between 1303 square metres in Mohalla 2 and only 22 square metres in Mohalla 31. Three categories of size of commercial plots were identified on the basis of average size (Table 4.8). The small sized commercial plots measuring less than 40 square metres were most numerous (459 out of 718), comprised the highest proportion of the total number of commercial plots (63.93 per cent) and were recorded in eleven mohallas in the Civil Area. Medium sized commercial plots which measured between 70 and 40 square metres comprised 163 plots in eleven mohallas and constituted 22.70 per cent. Only 96 commercial plots in eight mohallas were large sized (more than 70 square metres) and formed 13.37 per cent of all the commercial plots in Civil Area.
Jalandhar Cantonment (Civil Area)
Average Size of Residential Plots
(1939)

Sadar Bazaar

British Infantry Bazaar

Royal Artillery Bazaar

Kumhar Mandi

Plot size (in square metres)

Source: Computed from data in General Land Register, 1939

Map 4.6
Jalandhar Cantonment (Civil Area)
Intensity of Residential Plots (1939)

Sadar Bazaar

No. of plots
65
45
Average: 57

Source: Computed from data in General Land Register, 1939
Map 4.7
Jalandhar Cantonment (Civil Area)
Average Size of Commercial Plots (1939)

Sadar Bazaar

Plot size (in square metres)

- Large
- Medium
- Small
- Nil

Average: 56

Source: Computed from data in General Land Register, 1939
Map 4.8
Jalandhar Cantonment (Civil Area)
Intensity of Commercial Plots (1939)

Sadar Bazaar

<table>
<thead>
<tr>
<th>Mohalla</th>
<th>Road/Street/Lane</th>
<th>No. of plots</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>32</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Nil</td>
</tr>
</tbody>
</table>

Average: 24

Source: Computed from data in General Land Register, 1939
Map 4.9
Jalandhar Cantonment (Civil Area)
Intensity of Residential-cum-Commercial Plots (1939)

Sadar Bazaar

No. of plots

4 Average: 4

Royal Artillery Bazaar

Kumhar Mandi

Source: Computed from data in General Land Register, 1939
Map 4.10
The spatial pattern of distribution of average size of commercial plots in 1939 showed large sized commercial plots in mohallas along northern and eastern periphery, concentration of medium sized plots in the central and northern mohallas and interspersed with small sized plots (Map 4.8). Further, individual mohallas recorded varying intensities of commercial plots (Map 4.9). The distribution of commercial plots according to different sizes was inversely related to their intensity, with large average size commercial plots characterised by fewer numbers in individual mohallas. This is attributed to the relative importance of various commercial segments, as well as the scale and nature of commercial activity carried out from the premises. Thus, mohalla provision stores operated from small sized plots and were more numerous in comparison to those associated with retail trade along the old commercial arteries of Phagwara Road and Patel Road. In fact, mohallas characterised by predominance of commercial use were distinctly associated with medium sized commercial plots of high to moderate intensity (Maps 4.8 and 4.9).

A.3 Residential-cum-Commercial Landuse

The number of plots used for residential-cum-commercial purposes was quite low in 1939, i.e. 57 out of 2953 plots, which formed 1.93 per cent of all the plots under various uses in the Civil Area. The dual use of plots was recorded in only sixteen out of thirty six mohallas of the Civil Area, viz. Mohalla 1, 6, 10, 12, 13, 14, 17, 18, 21, 22, 23, 24, 26, 27, BI Bazaar and RA Bazaar. The number of plots used for this purpose numbered between 11 and 1 plot in these mohallas located in central parts along Patel Road, Cross Road 5, Phagwara Road and Hardayal Road (Map 4.10). This was associated with its ribbon development in buildings fronting streets, with their ground floors used for commercial purposes and the upper floors and / or, the backside used for residential purpose.

A.4 Religious Structures

The Civil Area was characterised by 3.93 per cent (16723 square metres or 0.016723 square kilometres) of the total area under all uses devoted to religious structures in 1939. Like the case of residential and commercial uses, plots over which the religious structures were built were sanctioned for this purpose. As many as 55 plots forming 1.86 per cent of all the plots were used for religious purposes. Religious landuse in the Civil Area was spatially quite pervasive as twenty mohallas out of thirty six recorded a
total of thirty religious structures in 1939 (Map 4.5). These included eighteen Hindu temples, ten mosques, one gurudwara and one Jain temple (Table 4.9).

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Religious Structures</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shri Shiv Mahakali Mandir</td>
<td>M 6</td>
<td>Old grant site. Constructed by Bengali families who shifted to Jalandhar Cantonment in 1890s.</td>
</tr>
<tr>
<td>2</td>
<td>Bara Mandir</td>
<td>M 10</td>
<td>Old grant site. Believed to be the oldest Hindu temple of the Civil Area. It was built on land donated by Hargobind and Ram Het.</td>
</tr>
<tr>
<td>3</td>
<td>Hanuman Mandir</td>
<td>M 11</td>
<td>Old grant site. Built in the memory of Lala Ram Dass and Hari Ram Saraf by Mohan Lal Saraf &amp; Sons and Maharaja Agrasen Adarsh Sabha through donations from bania families.</td>
</tr>
<tr>
<td>4</td>
<td>Shri Sita Ram Mandir</td>
<td>M 12</td>
<td>Old grant site.</td>
</tr>
<tr>
<td>5</td>
<td>Mosque</td>
<td>M 12</td>
<td>Old grant site owned by Anjuman-i-Auqaf-i-Mussalman.</td>
</tr>
<tr>
<td>6</td>
<td>Shri Digamber Jain Mandir</td>
<td>M 14</td>
<td>Old grant site owned by Jain community.</td>
</tr>
<tr>
<td>8</td>
<td>Mosque</td>
<td>M 17</td>
<td>Old grant site owned by Anjuman-i-Auqaf-i-Mussalman.</td>
</tr>
<tr>
<td>9</td>
<td>Mosque</td>
<td>M 18</td>
<td>Old grant site owned by Anjuman-i-Auqaf-i-Mussalman.</td>
</tr>
<tr>
<td>10</td>
<td>Bajrang Bhawan Mandir</td>
<td>M 19</td>
<td>Old grant site. Built on donated land which was earlier used as a wrestling ground or 'akhara' and had a hanuman idol in its precincts.</td>
</tr>
<tr>
<td>12</td>
<td>Arya Samaj Mandir</td>
<td>M 19</td>
<td>Old grant site.</td>
</tr>
<tr>
<td>13</td>
<td>Gurudwara Guru Singh Sabha</td>
<td>M 19</td>
<td>Old grant site. The oldest gurudwara in the Civil Area built on donated land.</td>
</tr>
<tr>
<td>14</td>
<td>Balmiki Mandir</td>
<td>M 20</td>
<td>Old grant site. Constructed by the sweeper's community of Mohalla 20 in 1925.</td>
</tr>
<tr>
<td>15</td>
<td>Laxmi Narain Mandir</td>
<td>M 22</td>
<td>Old grant site. An old private temple built by Pt. Laxmi Narayan and Pt. Suraj Bhan. A triveni tree comprising peepal, banyan and neem trees is located outside the building.</td>
</tr>
<tr>
<td>16</td>
<td>Mosque</td>
<td>M 26</td>
<td>Old grant site owned by Anjuman-i-Auqaf-i-Mussalman.</td>
</tr>
<tr>
<td>17</td>
<td>Temple</td>
<td>M 26</td>
<td>Old grant site.</td>
</tr>
<tr>
<td>18</td>
<td>Shri Sanatan Dharam Shiv Mandir</td>
<td>M 27</td>
<td>Old grant site. Built by Pt. Tuhi Ram in 1926.</td>
</tr>
<tr>
<td>19</td>
<td>Tuhi Mandir</td>
<td>M 27</td>
<td>Old grant site. Built by Pt. Tuhi Ram.</td>
</tr>
<tr>
<td>20</td>
<td>Mosque</td>
<td>M 29</td>
<td>Old grant site owned by Ali Bux s/o Kamal Din.</td>
</tr>
<tr>
<td>21</td>
<td>Mosque</td>
<td>M 30</td>
<td>Old grant site owned by Mohammadan community.</td>
</tr>
<tr>
<td>22</td>
<td>Kali Mata Mandir</td>
<td>M 31</td>
<td>Old grant site.</td>
</tr>
<tr>
<td>23</td>
<td>Mosque</td>
<td>M 32</td>
<td>Old grant site owned by Mohammadan community.</td>
</tr>
<tr>
<td>24</td>
<td>Idgah</td>
<td>OSM</td>
<td>Old grant site owned by Anjuman-i-Auqaf-i-Mussalman.</td>
</tr>
<tr>
<td>25</td>
<td>Sri Satsangh Sabha</td>
<td>OSM</td>
<td>Built in 1939 on leased land which formed a part a vacant building site.</td>
</tr>
<tr>
<td>26</td>
<td>Balmiki Mandir</td>
<td>OSM</td>
<td>Old grant site. Constructed by the sweeper’s community of Mohalla 30.</td>
</tr>
<tr>
<td>27</td>
<td>Mosque</td>
<td>BIB</td>
<td>Old grant site owned by Anjuman-i-Auqaf-i-Mussalman.</td>
</tr>
<tr>
<td>28</td>
<td>Phoolagiri Maharaj Mandir</td>
<td>BIB</td>
<td>Old grant site. A temple having the Samadhi of Phooli Giri Maharaj a disciple of Baba Parshad Giri of Shri Panch Das Nam Juna Akhara of Hardwar.</td>
</tr>
<tr>
<td>29</td>
<td>Mosque</td>
<td>RAB</td>
<td>Old grant site owned by Mohammadan community.</td>
</tr>
<tr>
<td>30</td>
<td>Mata Mandir</td>
<td>RAB</td>
<td>Old grant site.</td>
</tr>
</tbody>
</table>

Note: Civil Area comprises Sadar Bazaar which includes Mohalla (M) 1 to 32 and OSM: Outside Mohalla, BIB: British Infantry Bazaar, RAB: Royal Artillery Bazaar, KM: Kumhar Mandi
Refer Map 4.5 for the distribution of religious structures in the Civil Area.

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All these structures except Stri Satsangh Sabha in Outside Mohalla were built on old grant plots but the exact years of construction of these religious structures are not known. However, their status as old grant plots attests to their relative antiquity in being sanctioned prior to 1889, after which the old grant policy was abandoned in favour of lease hold terms. Religious structures were concentrated in the central parts of Sadar Bazaar. Most of the religious structures were located along mohalla streets and lanes, implying their local importance rather than as nodal centres serving a large area. This is particularly true of the Hindu temples which are more numerous as compared to other religious structures.

Although the ownership of several temples stands in the name of Hindu community, however, these were built by the Bania and Brahmin families of the Civil Area. On the other hand, all the mosques were owned by the community or its organizations like the Anjuman-i-Auqaf-i-Mussalman. Interestingly, the mosques were built in ahata type of housing. Field enquires suggest that the mosques were supported through a system of religious endowments in the form of rents derived from houses and shops owned by the group which operated from the compound of the mosque. Similarly, the gurudwara is held in the name of Sikh community and supported through Guru Singh Sabha.

A.5 Educational Institution

Eight plots covering an area of 3375 square metres or 0.003375 square kilometres were used as educational institutions in 1939. These accounted for only 0.79 per cent of the total area under all uses in the Civil Area. Five educational institutions (two run by Cantonment Board and three privately owned) were identified as being operational in the Civil Area in 1939 (Map 4.5). Among these, the Cantonment Board Senior Secondary School for Boys established in 1921 in Outside Mohalla is the oldest. Another school known as N.C. Model Senior Secondary School was established in 1923 in a dharamshala owned by Lala Nanak Chand in Mohalla 19. In the early 1930s three schools were set up, viz. S.D. Tulsi Senior Secondary School for Girls in Mohalla 10, Cantonment Board Elementary School in Mohalla 20 and Guru Nanak Kanya Mahavidyalaya in Mohalla 19. These were established in 1932, 1933 and 1934 respectively. Guru Nanak Kanya Mahavidyalaya at first functioned from within the precincts of Gurudwara Guru Singh Sabha and at a later date a separate building adjoining the gurudwara was constructed. These schools were established in central
mohallas of Sadar Bazaar on account of its easy accessibility to both the northern and southern parts of the Civil Area (Map 4.5).

A.6 Recreation

Land for recreation purposes occupied 15207 square metres (0.015207 square kilometres) of the total area in 1939. It formed 3.58 per cent of the total area under all uses within the Civil Area in 1939 and comprised only two pockets, viz. a playground and a ladies park, both located in Outside Mohalla (Map 4.5). An intensively built up area within individual mohallas contributed to such a low proportion of area under recreation. The fact that these two pockets were on lease further suggests the unavailability of vacant plots which could be developed for recreational purposes.

A.7 Vacant Land

The area under vacant land covered 89521 square metres (0.089521 square kilometres) which accounted for 21.06 per cent of the total area under all uses within the Civil Area. This comprised the second highest proportion of area amongst the ten landuses identified in 1939. Most of the vacant area was recorded in Kumhar Mandi, Outside Mohalla, RA Bazaar and BI Bazaar (Map 4.5) in which it comprised 89.07 per cent, 59.07 per cent, 45.58 per cent and 34.80 per cent of their respective total areas. The predominance of vacant land in one of the oldest occupancy areas within the Civil Area, i.e. Kumhar Mandi was related to the primary occupation of its residents, i.e. pottery making, which required large space for making and storing of earthenware. In comparison, the late occupancy of Outside Mohalla particularly after Independence contributed to a high proportion of vacant area.

A.8 Administrative

The area under administrative use comprised 2800 square metres (0.002800 square kilometres) or less than 0.66 per cent of the total area in 1939. It included the Police Station in Mohalla 19, a police post in RA Bazaar and a post office in Mohalla 22 (Map 4.5). The Police Station set up in 1846 was amongst the earliest administrative establishments in the Civil Area. There has been no change in the administrative use except for the closure of police post in RA Bazaar after Independence.

A.9 Others

Landuses which individually comprised only a few plots were clubbed under ‘others’. These included cantonment cattle pound, an abandoned octroi post, hackney carriage
stand and wells. These covered an area of nearly nine thousand square metres (0.009 square kilometres) which formed 2.11 per cent of the total area in 1939.

B. CHANGES IN LANDUSE (1939-2007)

B.1 Change in Residential Landuse (1939-2007)

Residential use continued to be top ranking and spatially extensive among all the landuses in the Civil Area in 2007 (Map 4.11) despite a decline in the proportion of residential units by 11.32 per cent points (from 69.56 per cent in 1939 to 58.24 per cent in 2007). However, the Civil Area recorded an increase in the number of buildings used for residential purpose by only 52 units during the same period. This is also reflected in only 59 sanctions accorded since 1939 for building of residential units within the Civil Area. Consequently, the average intensity of residential buildings in the Civil Area recorded an insignificant increase to 59 buildings per mohalla in 2007 in comparison to 57 in 1939. Also, the spatial pattern of intensity of residential buildings did not register vast changes in 2007 (Map 4.12).

An increase in the number of residential buildings by small margins was primarily related to restriction on an increase in the sanctioned built up area and subdivision of plots. Nearly 70 per cent of residential buildings were, therefore, two and more than two storeys high. As a result, increased levels of crowding within a house as well as within a mohalla and higher densities of population were concomitant features. Further, nearly all the residential buildings (91.50 per cent) within the Civil Area were self occupied which is indicative of low incidence of migration in the Civil Area.

Spatial pattern of change in proportion of residential units (1939-2007)

Residential use recorded the most pervasive decline in the proportion of buildings with twenty nine mohallas recording negative percentile change (Map 4.13). This signifies a shift from an entirely residential use to commercial and residential-cum-commercial use in response to land market values which determine landuses in urban areas.

a) POSITIVE CHANGE: An increase in the proportion of buildings under residential use ranging between 25.64 and 1.11 per cent points was recorded in seven mohallas, viz. Kumhar Mandi, Mohalla 27, 11, BI Bazaar, RA Bazaar, Mohalla 7 and Outside Mohalla (Map 4.13). The positive change on account of an absolute increase in the number of buildings used for residential purpose was attributed to a shift in use from commercial to residential use. The quantum of shift was significant in the two
regimental bazaars, i.e. BI Bazaar and RA Bazaar which recorded an increase of 52 and 22 residential units as a result of decline in the number of shops by 30 and 19 respectively. Outside Mohalla recorded the lowest positive percentile change (1.11 per cent points) but the highest absolute increase (71), which was due to the construction of Class IV employees’ colony also known as Safaiwala Colony, and unauthorised occupation of erstwhile vacant land.

b) NEGATIVE CHANGE: A decline in the proportion of residential units ranging between -62.98 and -2.35 per cent points was recorded in twenty nine mohallas of Sadar Bazaar. This decline was spatially pervasive since all the mohallas between Hardayal Road and Moolraj Road and those along Ganga Road in eastern part recorded a decline. However, high negative (more than -17.00 per cent points) to moderate negative (between -17.00 and -10.00 per cent points) percentile change was recorded in northern and central mohallas, and low negative percentile change (less than -10.00 per cent points) characterised mohallas in southern and western parts (Map 4.13). This decline was an outcome of the interplay of economic forces which propelled a shift from non-economic residential use to financially more profitable dual use involving residential-cum-commercial use or to entirely commercial use, e.g. a change from residential to commercial use was recorded in Mohalla 5 and to residential-cum-commercial use in Mohalla 29, 17, 23 etc. Further, a relatively higher increase in the number of buildings under other landuses as compared to residential units also led to a decline in their proportion, e.g. Mohalla 32, 8, 14.

B.2 Change in Commercial Landuse (1939-2007)

Commercial use became more widespread within the Civil Area in 2007 as almost all the street front locations were occupied by commercial activity (Map 4.11). While the absolute number of commercial units increased by 117 units, however, their proportion declined by -1.22 per cent points during 1939-2007, i.e. from 24.31 per cent in 1939 to 23.09 per cent in 2007. An increase in the number of commercial buildings was related to a shift from other uses and did not involve actual construction on as many new sites. This is evident from only twelve sanctions given for construction of commercial buildings since 1939. Also, the average intensity of commercial plots recorded minor increase from 24 to 25 plots per mohalla during 1939-2007. The Civil Area recorded three significant changes in commercial landuse, viz. (i) decline in commercial activity in Mohalla 11 due to disappearance of wholesale commercial activity after shifting of
Jalandhar Cantonment (Civil Area)
Intensity of Residential Buildings
(2007)

Sadar Bazaar

No. of buildings

<table>
<thead>
<tr>
<th>Mohalla number</th>
<th>Road/Street/Lane</th>
</tr>
</thead>
<tbody>
<tr>
<td>68</td>
<td>Average: 59</td>
</tr>
<tr>
<td>48</td>
<td></td>
</tr>
</tbody>
</table>

Source: Computed from data in Assessment Register, 2007

Map 4.12
Jalandhar Cantonment (Civil Area)
Change in Proportion of Residential Units (1939-2007)

Sadar Bazaar

Per cent point change
Positive
Negative
Overall change: -11.32

Source: Computed from data in General Land Register, 1939 and Assessment Register, 2007
Map 4.13
its grain market to Fentonganj in Jalandhar City; (ii) emergence of Hardayal Road as the new commercial street, and of Outside Mohalla as the new commercial hub; (iii) decline in predominance of commercial use in Mohalla 14 and 21.

These changes in commercial landuse were spatially manifested in the intensity of commercial buildings. A shift from high intensity of commercial use along the two old commercial arteries, i.e. Phagwara Road and Patel Road to the new commercial artery—Hardayal Road and their emergence as areas of moderate intensity was most perceptible (Map 4.14).

An important feature of commercial activity was a continuation of traditional economic functioning since two thirds of the commercial units were self owned. Further, spatial segregation of economic functions on the basis of functional specialization did not take place within the Civil Area due to an absence of commercial activity which required specific locations.

**Spatial pattern of change in proportion of commercial units (1939-2007)**

a) **POSITIVE CHANGE**: Thirteen mohallas recorded an increase in the proportion of commercial units during 1939-2007, which ranged between 36.46 per cent points and 0.74 per cent points (Map 4.15). Among these, the increase was by more than ten per cent points in only four mohallas, viz. Outside Mohalla (36.46 per cent points), Mohalla 9 (29.28 per cent points), 5 (17.44 per cent points) and 2 (11.37 per cent points) which was related to a high absolute increase in the number of commercial establishments. The most significant increase (182) was recorded in Outside Mohalla associated with conversion of vacant plots into commercial use by the displaced families who were rehabilitated in this mohalla, establishment of a vegetable market and a mini shopping complex by the Cantonment Board.

b) **NEGATIVE CHANGE**: The proportion of commercial units declined between -44.72 per cent points and -0.22 per cent points in twenty mohallas. The decline was an outcome of a shift from commercial to residential and residential-cum-commercial use. The highest decline by -44.72 per cent points in Mohalla 11 was due to a shift of 41 plots from commercial use to residential-cum-commercial (31) and residential units (11). Similarly, RA Bazaar (-12.46 per cent points) and BI Bazaar (-10.06 per cent points) declined in status as regimental bazaars upon the withdrawal of their patron regiments after Independence, and led to a change in the use of several buildings from
only commercial purposes to residential-cum-commercial or only residential use. Only three mohallas, viz. 21 (-8.55 per cent points), 22 (-4.91 per cent points) and 30 (-0.22 per cent points) did not record any change in the number of commercial units and Mohalla 18 (-3.70 per cent points) recorded an increase by 14 commercial units.

B.3 Change in Residential-Cum-Commercial Landuse (1939-2007)

Residential-cum-commercial use emerged as the third most dominant and pervasive use within the Civil Area with 16.45 per cent of all the buildings in 2007. Dual function mostly developed along street fronts in as many as thirty five mohallas in 2007 (Map 4.11). The intensity of residential-cum-commercial buildings varied between 39 buildings in Mohalla 14 and only 3 in Mohalla 19. High intensity of residential-cum-commercial buildings replaced high intensity of commercial use in mohallas along Patel Road as recorded in 1939. Low to moderate intensity of residential-cum-commercial buildings emerged in mohallas in northern, eastern and southern parts of Sadar Bazaar (Map 4.16).

Residential-cum-commercial use recorded the highest increase among all the landuses, both in its number by 538 (from only 57 in 1939 to 595 in 2007) and proportion by 14.32 per cent points. Such an increase was due to partial conversion of residential use into commercial use, which also involved subdivision of plot. Residential-cum-commercial buildings, were therefore, characterised by an overwhelming dominance of two (57.98 per cent) and more than two storied (29.24 per cent) structures. More than a quarter of residential-cum-commercial units (26.05 per cent) comprised joint occupancy, i.e. self and rented, with rented commercial units occupying street front locations on ground floor and residential quarters on the first or second floor.

Spatial pattern of change in proportion of residential-cum-commercial units (1939-2007)

Among the thirty five mohallas which recorded positive change in proportion of residential-cum-commercial units during 1939-2007, Mohalla 11 registered the highest percentile change of 32.63 per cent points whereas BI Bazaar recorded the lowest increase of only 2.38 per cent points. Spatially, the change in proportion of residential-cum-commercial units showed a gradation from high percentile change in central and northern mohallas to moderate and low values in the periphery (Map 4.17). A high percentile change by more than 18.00 per cent points was mostly confined to northern
Jalandhar Cantonment (Civil Area)
Intensity of Commercial Buildings
(2007)

Sadar Bazaar

No. of buildings
38
15
Average: 25
Nil

Data by mohallas
Source: Computed from data in Assessment Register, 2007
Map 4.14
Jalandhar Cantonment (Civil Area)
Change in Proportion of Commercial Units (1939-2007)

Sadar Bazaar

<table>
<thead>
<tr>
<th>Per cent point change</th>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10.00</td>
<td>-13.0</td>
</tr>
<tr>
<td></td>
<td>4.00</td>
<td>-6.0</td>
</tr>
<tr>
<td>Overall change</td>
<td></td>
<td>-1.22</td>
</tr>
</tbody>
</table>

Data by mohallas

Source: Computed from data in General Land Register, 1939 and Assessment Register, 2007

Map 4.15
Jalandhar Cantonment (Civil Area)
Intensity of Residential-cum-Commercial Buildings (2007)

Sadar Bazaar

No. of buildings
- 22
- 12
- Average: 17
- Nil

Data by mohallas
Source: Computed from data in Assessment Register, 2007
Map 4.16
Jalandhar Cantonment (Civil Area)
Change in Proportion of Residential-cum-Commercial Units (1939-2007)

Sadar Bazaar

Per cent point change

- 18.00
- 12.00 Overall change: 14.52
- No change

Data by mohallas

Source: Computed from data in General Land Register, 1939 and Assessment Register, 2007

Map 4.17
and central mohallas of Sadar Bazaar which formed a large cluster of contiguously located mohallas between Cross Roads 1 and 5. This was related to a decline in the proportion of residential use, which signified a shift from single use to dual use with an inclusion of commercial use within the precincts of the building. Such changes were also propelled by increased commercial value of land along Hardayal Road and Patel Road due to the emergence of new commercial segments in post-Independence period.

A moderate change in proportion of residential-cum-commercial units between 18.00 and 10.00 per cent points comprised a small cluster each in central and northern parts, which recorded a shift to residential-cum-commercial use from commercial and residential uses respectively. Low percentile change of less than 10.00 per cent points was associated with mohallas in southern and eastern parts, mostly characterised by an absence of this use in 1939, and a later conversion of a small part of residential building into shops dealing in daily provisions and confectionery items.

B.4 Change in Religious Structures (1939-2009)

As many as 34 religious structures were identified through field work conducted in 2009, which accounted for less than one per cent of all the buildings under different landuses in the Civil Area. These included nineteen old religious structures of the pre-1939 period, nine newly constructed and six converted religious structures of the post-Independence period. The Hindu places of worship were most numerous with 26 temples located in as many as seventeen mohallas. Besides these, four gurudwaras, Jain temple, Radha Soami Satsangh, mosque and an Idgah comprised the religious landscape of the Civil Area (Map 4.11).

Table 4.10 lists fifteen religious structures which include nine newly established and six converted religious structures from the pre-existing mosques (pre-1939 period). These were converted into four temples and two gurudwaras in the post-Independence period. As a result of the out migration of Muslim community in 1947 from the Civil Area, none of their religious structures except the Idgah have survived. The only mosque, located in Mohalla 24, is a converted structure from a shop owed by a Muslim. The relics of erstwhile mosques remain in the form of minarets and Muslim-styled built form, most conspicuous in Rama Mandir in Mohalla 17 which was converted from the main mosque of the Civil Area, and Maiyan Gurudwara in Mohalla 29. On the other hand, the gurudwara in BI Bazaar and Balmiki Mandir in RA Bazaar were rebuilt and bear no resemblance to their past religious identity.
### Table 4.10
Jalandhar Cantonment (Civil Area): Newly Established and Converted Religious Structures (2009)

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Religious Structures</th>
<th>Location</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shiv Mandir</td>
<td>M 12</td>
<td>Converted from a mosque owned by Anjuman-i-Auqaf-i-Mussalman on an old grant site in 1966. It was built by Smt. Santosh Bakshi and family who migrated from Rawalpindi. *</td>
</tr>
<tr>
<td>2</td>
<td>Rama Mandir</td>
<td>M 17</td>
<td>Converted from a mosque owned by Anjuman-i-Auqaf-i-Mussalman on an old grant site in the post-Partition period.</td>
</tr>
<tr>
<td>3</td>
<td>Shani Mandir</td>
<td>M 18</td>
<td>Converted from a shop which was an old grant site. Adjoins a house suggesting partial conversion of building.</td>
</tr>
<tr>
<td>4</td>
<td>Balmiki Mandir</td>
<td>M 24</td>
<td>Converted from a house owned by a Sikh on an old grant site after 1939.</td>
</tr>
<tr>
<td>5</td>
<td>Mosque</td>
<td>M 24</td>
<td>Converted from a shop owned by a Muslim on an old grant site in the post-Partition period.</td>
</tr>
<tr>
<td>6</td>
<td>Maityan Gurudwara</td>
<td>M 29</td>
<td>Converted from a mosque on an old grant site in the post-Partition period.</td>
</tr>
<tr>
<td>7</td>
<td>Balmiki Mandir</td>
<td>M 32</td>
<td>Converted from a mosque owned by the Mohammadan community on an old grant site in the post-Partition period.</td>
</tr>
<tr>
<td>8</td>
<td>Radha Soami Satangh</td>
<td>OSM</td>
<td>Built around 1970s on land leased from an earlier vacant site of a proposed Sarai for Muslim community.</td>
</tr>
<tr>
<td>9</td>
<td>Mazaar</td>
<td>OSM</td>
<td>Built on encroached vacant land.</td>
</tr>
<tr>
<td>10</td>
<td>Gurudwara Shri Shiv Narain Mandir</td>
<td>BIB</td>
<td>Converted from a house owned by a Muslim on an old grant site in the post-Partition period by the Balmiki community.</td>
</tr>
<tr>
<td>11</td>
<td>Kali Mata Mandir</td>
<td>BIB</td>
<td>Adjoins a house which is an old grant site. It constitutes an encroachment of land.</td>
</tr>
<tr>
<td>12</td>
<td>Gurudwara Singh Sabha</td>
<td>BIB</td>
<td>Converted from a mosque owned by Anjuman-i-Auqaf-i-Mussalman on an old grant site in the post-Partition period.</td>
</tr>
<tr>
<td>13</td>
<td>Balmiki Mandir</td>
<td>BIB</td>
<td>Converted from a house owned by a Hindu on an old grant site in the post-Partition period.</td>
</tr>
<tr>
<td>14</td>
<td>Balmiki Mandir</td>
<td>RAB</td>
<td>Converted from a mosque owned by the Mohammadan community on an old grant site in the post-Partition period.</td>
</tr>
<tr>
<td>15</td>
<td>Balmiki Mandir</td>
<td>RAB</td>
<td>Converted from a shop owned by a Hindu on an old grant site in the post-Partition period.</td>
</tr>
</tbody>
</table>

Source: Field Work, 2009

Note: Civil Area comprises Sadar Bazaar which includes Mohalla 1 to 32 and OSM. Outside Mohalla, BIB: British Infantry Bazaar, RAB: Royal Artillery Bazaar, KM: Kumhar Mandi

One temple in Mohalla 26 and one mosque each in Mohalla 18, 26 and 30 as listed in Table 4.9 pertaining to 1939 were later converted to residential use

One temple is located in proximity of Kumhar Mandi but is outside the limits of its defined boundary

Refer Map 4.11 for the distribution of religious structures in the Civil Area.

Another four of the pre-1939 religious structures were converted into residential use, viz. a temple in Mohalla 26, a mosque each in Mohalla 18, 26 and 30. The Arya Samaj Temple in Mohalla 19 was amalgamated within the precincts of the K.L. Arya Girls School. The religious landscape of the Civil Area in post-Independence period also witnessed the spatial assertion of identity by the Scheduled Castes community, primarily the Balmiki community, with the construction of as many as six Balmiki temples over two pre-existing mosques in Mohalla 32 and RA Bazaar, and four residential and commercial structures in Mohalla 24, BI Bazaar and RA Bazaar. Such an expression of religious identity is not unexpected considering the dominant status of this caste among all the castes within the Civil Area.
B.5 Change in Educational Institutions (1939-2009)

Educational institutions comprised an insignificant 0.33 per cent of all the buildings under different landuses within the Civil Area in 2009. These recorded a miniscule increase of only 0.06 per cent points in the proportion of buildings under this use during 1939-2009.

Table 4.11
Jalandhar Cantonment (Civil Area): Educational Institutions (2009)

<table>
<thead>
<tr>
<th>S. No.</th>
<th>School</th>
<th>Location</th>
<th>Type</th>
<th>Year of Establishment</th>
<th>Level</th>
<th>Strength</th>
<th>Medium of Instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>S. D. Tulsi Primary School</td>
<td>15</td>
<td>Co-Ed</td>
<td>NA</td>
<td>Primary</td>
<td>NA</td>
<td>English</td>
</tr>
<tr>
<td>2</td>
<td>N. D. Victor Primary School</td>
<td>19</td>
<td>Co-Ed</td>
<td>NA</td>
<td>Primary</td>
<td>NA</td>
<td>English</td>
</tr>
<tr>
<td>3</td>
<td>C.B. Elementary School</td>
<td>BIB</td>
<td>Co-Ed</td>
<td>1961</td>
<td>Primary</td>
<td>86</td>
<td>Hindi</td>
</tr>
<tr>
<td>4</td>
<td>C.B. Elementary School</td>
<td>RAB</td>
<td>Co-Ed</td>
<td>1961</td>
<td>Primary</td>
<td>143</td>
<td>Hindi</td>
</tr>
<tr>
<td>5</td>
<td>K. L. Arya Girls High School</td>
<td>19</td>
<td>Girls</td>
<td>1965</td>
<td>High</td>
<td>400</td>
<td>Hindi</td>
</tr>
<tr>
<td>6</td>
<td>Mata Parvati Devi Extension Block</td>
<td>OSM</td>
<td>Girls</td>
<td>1993</td>
<td>Primary</td>
<td>133</td>
<td>Hindi</td>
</tr>
<tr>
<td>7</td>
<td>Silver Oak Public School</td>
<td>OSM</td>
<td>Co-Ed</td>
<td>2002</td>
<td>Primary</td>
<td>324</td>
<td>English</td>
</tr>
</tbody>
</table>

Source: Field Work, 2009
Note: Civil Area comprises SB: Sadar Bazaar which includes Mohalla 1 to 32 and OSM: Outside Mohalla, BIB: British Infantry Bazaar, RAB: Royal Artillery Bazaar, KM: Kumhar Mandi
There is no school in Kumhar Mandi
Refer Map 4.11 on the distribution of educational institutions in the Civil Area.

Only twelve buildings were used for as many educational institutions within the Civil Area in 2009. Five among these were established in the pre-1939 period, and seven educational institutions were established after 1939 (Table 4.11). The latter included four Cantonment Board run schools and three privately owned schools. These are located in five different mohallas within the Civil Area for a large spatial coverage of the Civil Area, easy access and maximum outreach at primary education (Map 4.11). Two privately owned primary schools in Mohalla 15 and 19 are an extension of their respective senior secondary schools established in the pre-1939 period, whereas K.L Arya Girls’ High School was set up in the precincts of Arya Samaj Temple in Mohalla 19. More than a thousand students were enrolled in five out of seven schools in 2009.

B.6 Change in Recreation Facilities (1939-2009)

In addition to the two existing parks of the pre-1939 period, another two sites for recreation were identified through field work in 2009. These include a sports complex and a park in Outside Mohalla (Map 4.11). All the four pockets together comprised a miniscule 0.11 per cent of area for all the landuses in 2009, which was 0.04 per cent points higher as compared to their proportion in 1939. The indoor sports complex was
built on a pre-1939 vacant site south of Mohalla 29. The remaining area of this site was converted into children’s park. Owing to pressure of population, increasing vehicular traffic and congestion on streets, the playground in Outside Mohalla is used as a car parking area for those visiting the Sadar Bazaar, whereas the space is utilised by the residents of nearby mohallas to park their vehicles at night.

**B.7 Change in Vacant Land (1939-2009)**

During the last seven decades almost the entire Civil Area has been intensely built up, except for a few vacant sites (23) in different mohallas which accounted for only 0.64 per cent in the total in 2009. This proportion declined by 0.17 per cent points from 0.81 per cent in 1939. Only a few small pockets of vacant land were identified in 2009, with conspicuous pockets in Outside Mohalla (Map 4.11). These vacant sites are proposed to be used for recreational purposes as public parks and playground, vehicle parking lot and small shopping complex.

Among individual mohallas, Outside Mohalla recorded the most significant decline in the proportion of vacant landuse from 18.18 per cent in 1939 to 1.59 per cent in 2009. This was attributed to large scale occupancy of its vacant land in the post-Independence period with the development of residential, commercial and residential-cum-commercial uses. In addition, vacant lands in Outside Mohalla opposite Mohalla 30 and 31 were encroached upon and today constitute a densely built up unauthorised construction area. Similar unauthorised constructions and encroachment of vacant land were also found in BI Bazaar. On the other hand, vacant land in Kumhar Mandi continues to remain unoccupied except for making and storing pottery. Although vacant land indicates land available for future building activity and development, however, it has remained improperly utilised and under encroachment since several decades within the Civil Area.

**B.8 Change in Other Landuse (1939-2009)**

Through field work it was ascertained that only five plots comprised this category, viz. cattle pound and an auto stand in Outside Mohalla, a dilapidated police post in RA Bazaar and two gardens in BI Bazaar. These formed an insignificant 0.14 per cent of all landuses in 2009.
C. CHANGES IN PREDOMINANCE AND PATTERN OF LANDUSE (1939-2007)

A change in proportion of the three main landuse categories, viz. residential, commercial and residential-cum-commercial led to changes in predominant use in individual mohallas and consequently perceptible changes in the pattern of landuse in the Civil Area. The predominant landuses in individual mohallas in 1939 and 2007 is summarised in Table 4.12 and shown in Maps 4.18 and 4.19.

### Table 4.12

<table>
<thead>
<tr>
<th>Predominant Landuse</th>
<th>% Plots under Landuse</th>
<th>Mohallas under Predominant Landuse</th>
<th>Locational Attributes of Change in Predominant Landuses*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>&gt;75 per cent</td>
<td>5, 4, 22, 29, 8, 30, 2, 3, 20, 31, 16, 12, 6, 24, 28, 9, BIB</td>
<td>Shift from a contiguous belt along northern, eastern and southern periphery to parts in eastern and southern</td>
</tr>
<tr>
<td>Residential with Commercial &amp;/or Residential-cum-Commercial</td>
<td>55-75 per cent</td>
<td>RAB, 7, 15, 23, KM, 1, 17, 13, 26</td>
<td>Shift from non contiguous mohallas in north, west and central parts to small clusters in southern and northern parts</td>
</tr>
<tr>
<td>Commercial</td>
<td>&gt;50 per cent</td>
<td>11, 22, 14, 21</td>
<td>Shift to western periphery along Hardayal Road and continuation of the earliest commercial segment along Phagwara Road</td>
</tr>
<tr>
<td>Mixed Landuse</td>
<td>&lt;55 per cent</td>
<td>25, 27, 10, 18</td>
<td>Shift from dispersed pattern to contiguous linear pattern comprising mohallas between Hardayal Road and Moolraj Road</td>
</tr>
<tr>
<td>Others</td>
<td>21-38 per cent</td>
<td>19, OSM</td>
<td>Isolated patch in central part of Sadar Bazaar</td>
</tr>
</tbody>
</table>

### Notes:

- Civil Area comprises Sadar Bazaar which includes Mohalla (M) 1 to 32 and OSM: Outside Mohalla, BIB: British Infantry Bazaar, RAB: Royal Artillery Bazaar, KM: Kumhar Mandi
- * Refer Maps 4.18 and 4.19.

A large section of the Civil Area was predominantly residential in 1939. Nearly half the number of mohallas (17 out of 36) were overwhelming residential (more than 75 per cent) along the northern, eastern and southern periphery (Map 4.18). With a decline in the proportion of residential use to between 55-75 per cent in southern mohallas and below 50 per cent in northern mohallas in 2007, the contiguity of predominantly residential belt around Sadar Bazaar was interspersed with mohallas comprising upto 45 per cent of non-residential uses including commercial and residential-cum-commercial (Map 4.19). Three mohallas (Kumhar Mandi, RA Bazaar and Mohalla 7) became overwhelmingly residential with an increase in its proportion to more than 75 per cent during the same period. Similarly, the predominance of residential use between 55-75 per cent with commercial and or residential-cum-commercial uses declined in seven out of nine mohallas, with the exception of Mohalla 1 and 15.
Further, while commercial use became more widespread in different mohallas of the Civil Area, particularly those along Hardayal Road in western parts, however, its predominance declined in three out of four traditional pockets comprising Mohalla 11, 21 and 14 (Maps 4.18 and 4.19). Only Mohalla 22 continued to be associated with its predominantly commercial character in 2007. The emergence of Outside Mohalla as primarily commercial was a significant change. However, the most discernible and spatially pervasive change involved mixed landuse, i.e. residential use of less than 55 per cent with a concomitant high proportion of residential-cum-commercial and commercial uses. Mixed landuse mohallas were numerically dominant with thirteen mohallas along with those having residential use of more than 75 per cent. This reflected a wide spatial shift from the dominance of single landuse in favour of mixed landuses within individual mohallas which formed a contiguous linear pattern between Hardayal Road in the west and Moolraj Road in central parts (Map 4.19).

The changes in predominance of various landuses in individual mohallas as discussed above resulted in marked changes in the spatial pattern of landuse within the Civil Area during 1939-2007. A comparison of the spatial pattern of landuse in 1939 (Map 4.5) with that of 2007 (Map 4.11) reveals a reduction in the spatial extent of residential use in 2007 in almost the entire Civil Area, except in BI Bazaar, RA Bazaar and Kumhar Mandi. Residential use formed compact zones within the inner parts in most mohallas in 2007 unlike its street front location in several mohallas in 1939. Further, residential-cum-commercial use which comprised an almost nondescript part of the landuse and intermittently dotted a few mohalla street fronts in 1939 formed a contiguous belt around all the mohallas in 2007 (Maps 4.5 and 4.11).

The locational association of commercial landuse with arterial and sub-arterial roads became most noticeable in 2007 with an extension of commercial use forming a continuous north-south ribbon development along Patel Road, east-west stretch along Phagwara Road and its emergence along Hardayal Road. The emergence of commercial use interspersed with residential-cum-commercial use, along with educational institutions and religious structures in Outside Mohalla broke the contiguity of vacant land in western and southern periphery of Sadar Bazaar in 2007 (Maps 4.5 and 4.11).
Jalandhar Cantonment (Civil Area)
Per cent of Buildings under Predominant Landuse (2007)

Sadar Bazaar

Per cent of buildings
- Residential (>75%)
- Residential (55-75%) with commercial and / or residential cum commercial
- Commercial (>50%)
- Mixed landuse with residential <55%
- Others

Data by mohallas

Source: Computed from data in Assessment Register, 2007 and Field Work, 2009

Map 4.19
D. INTENSITY OF PLOTS (1939) AND BUILDINGS (2007)

The area, proportion of plots and buildings under individual landuses not only determined the relative dominance of different uses within mohallas but also created patterns of landuse which characterised the Civil Area in 1939 and 2007 as discussed in preceding pages. However, the actual number of plots and buildings termed as ‘intensity’ and the changes in it shaped the overall character of mohalla over time. These are intricately linked with social processes of inheritance and economic factors of land values, which operate at individual house level and ultimately influence change in uses of buildings in different mohallas. The intensity of plots and buildings as well as the types of changes in plots are described below:

Intensity of plots (1939)

The Civil Area in 1939 was characterised by an average intensity of 82 plots per mohalla, which varied across different mohallas, with the values ranging between 311 plots in BI Bazaar and only 15 plots in Kumhar Mandi. The intensity of plots was above average in seventeen mohallas in the southern, northern and central parts. Three categories of intensity of plots were identified within the Civil Area, viz. high intensity of plots (more than 95 plots), moderate intensity of plots (95-65 plots) and low intensity of plots (less than 65 plots).

Table 4.13
Jalandhar Cantonment (Civil Area): Intensity of Plots (1939)

<table>
<thead>
<tr>
<th>Intensity of Plots</th>
<th>Mohallas</th>
<th>General Attributes*</th>
</tr>
</thead>
<tbody>
<tr>
<td>High (&gt;95)</td>
<td>BIB, RAB, 22, 26, 27, 23, 30, 21, 17</td>
<td>Individual mohallas recorded between 311 and 100 plots. Early developed mohallas in central and southern parts were associated with high residential and commercial intensities.</td>
</tr>
<tr>
<td>Moderate (95-65)</td>
<td>11, 10, 31, 14, 28, 29, 32, 13, 24, 18, 25, 15, 5, 16, 9</td>
<td>Individual mohallas recorded between 93 and 63 plots. These formed linear pattern along northwest, central and eastern periphery, and were characterised by high to moderate commercial intensity in central mohallas.</td>
</tr>
<tr>
<td>Low (&lt;65)</td>
<td>7, 20, 8, 12, 4, OSM, 3, 6, 19, 1, 2, KM</td>
<td>Individual mohallas recorded between 59 and 15 plots. Large cluster in north and isolated patches in west and central parts associated with low residential and commercial intensities.</td>
</tr>
</tbody>
</table>

Source: Figures calculated from General Land Register 1939

Note: Civil Area comprises Sadar Bazaar which includes Mohalla (M) 1 to 32 and OSM: Outside Mohalla, BIB: British Infantry Bazaar, RAB: Royal Artillery Bazaar, KM: Kumhar Mandi

* Refer Map 4.20 for spatial patterns of intensity of plots in 1939

Average intensity of residential plots was 57; High (>65); Moderate (65-45); Low (<45)
Average intensity of commercial plots was 24; High (>32); Moderate (32-10); Low (<10)
Average intensity of residential-cum-commercial plots was 4; Above Average and Below Average.

Maximum number of the mohallas within the Civil Area (15 out of 36) recorded moderate intensity of plots, followed by 12 mohallas in low intensity and 9 mohallas in...
high intensity of plots (Table 4.13). The spatial pattern of intensity of plots in 1939 as depicted in Map 4.20 revealed a conspicuous cluster of high intensity plots, extending from central to southern parts along the main artery, i.e. Phagwara Road and Patel Road, and a small pocket of two contiguously located mohallas in north. A high intensity of plots was related to residential and commercial developments (retail trade and wholesale grain trade) in earliest occupancy areas within Sadar Bazaar and characterised by small to medium sized plots. The moderate intensity of plots formed two clusters on either side of the high intensity category mohallas; viz. an ‘L’ shaped north-central cluster along Patel Road and Cross Road 3 and another along the east of Ganga Road in southern parts. These corresponded with residential and intermittent mixed landuses. A low intensity of plots characterised relatively late occupancy, dominantly residential mohallas with large sized plots in northern periphery along the flanks of Cross Road 1. The predominantly residential mohallas in eastern and western periphery of Sadar Bazaar and Kumhar Mandi also recorded low intensity of plots.

**Intensity of buildings (2007)**

In 2007, the average intensity of buildings in the Civil Area increased to 100 buildings per mohalla with half the number of mohallas (18 out of 36) recording above average intensity of buildings. BI Bazaar and Kumhar Mandi recorded the highest and lowest building intensity of 338 and 13 buildings respectively.

<table>
<thead>
<tr>
<th>Intensity of Plots</th>
<th>Mohallas</th>
<th>General Attributes*</th>
</tr>
</thead>
<tbody>
<tr>
<td>High (&gt;110)</td>
<td>BHR, RB, OSM, 22, 21, 30, 9, 26, 32, 18, 14, 24, 27</td>
<td>Individual mohallas recorded between 338 and 112 buildings. Associated with high residential-cum-commercial and commercial intensities due to subdivision, subletting. High residential intensities in southern mohallas due to rebuilding and unauthorised constructions in Muslim evacuee properties</td>
</tr>
<tr>
<td>Moderate (110-85)</td>
<td>23, 28, 17, 10, 31, 13, 11, 16, 5, 15, 25</td>
<td>Individual mohallas recorded between 107 and 86 buildings and formed cluster in central and eastern periphery, isolated patches in south. Low to medium residential intensity but high to moderate commercial and residential-cum-commercial intensities characterised central mohallas</td>
</tr>
<tr>
<td>Low (&lt;85)</td>
<td>29, 8, 7, 12, 4, 6, 20, 2, 3, 1, 19, KM</td>
<td>Individual mohallas recorded between 76 and 13 buildings. Large cluster in north and isolated patches in central and southern parts associated with low residential and commercial intensities due to low number of subdivisions</td>
</tr>
</tbody>
</table>

Source: Figures calculated from Assessment Registers, 2007 and Field Work 2009

Note: Civil Area comprises Sadar Bazaar which includes Mohalla (M) 1 to 32 and OSM: Outside Mohalla, BIB: British Infantry Bazaar, RAB: Royal Artillery Bazaar, KM: Kumhar Mandi

* Refer Map 4.21 for spatial patterns of intensity of buildings in 2007

Average intensity of commercial plots was 25; High (>38); Moderate (38-15); Low (<15)

Average intensity of residential-cum-commercial plots was 17; High (>22); Moderate (22-12); Low (<12).
Jalandhar Cantonment (Civil Area)
Intensity of Plots (1939)

Sadar Bazaar

Data by mohallas
Source: Computed from data in General Land Register, 1939
Map 4.20
Jalandhar Cantonment (Civil Area)
Intensity of Buildings (2007)

Sadar Bazaar

Royal Artillery Bazaar

Kumhar Mandi

No. of buildings

110 Average: 100

85

Maps by mohallas
Source: Computed from data in Assessment Register, 2007
Map 4.21
Three categories of intensity of plots were identified within the Civil Area in 2007 (Table 4.14), viz. high intensity of buildings (more than 110 buildings); moderate intensity of buildings (between 110 and 85 buildings); and low intensity of buildings (less than 85 buildings). The spatial pattern of intensity of buildings in 2007 (Map 4.21) to an extent reflected the 1939 pattern (Map 4.20) since a majority of mohallas (25 out of 36 mohallas) continued to remain associated with their 1939 class category. The distribution of intensity of buildings in 2007 showed high intensity of buildings in central and southern parts of Sadar Bazaar along Patel Road, western periphery, BI Bazaar and RA Bazaar. These generally corresponded with high intensity of commercial and residential-cum-commercial buildings in central parts and residential buildings in southern parts which resulted from economic dynamics of change in landuse and changes in plots related to subdivision and subletting. Dispersed clusters of moderate intensity of plots in northern, western and eastern parts of Sadar Bazaar, and low intensity of buildings concentrated in northern mohallas of Sadar Bazaar besides Kumhar Mandi were mainly associated with residential use. Comparatively low number of changes in plots resulted in the intensity of plots remaining low.

Kumhar Mandi presented a unique case since its low building intensity was related to its social insularity with successive generations of the first families belonging to the kumhar caste residing and continuing with the traditional occupation of pottery making. The requirement of large vacant area for preparation and storage of earthen wares restricted large scale construction activity within the settlement, thereby, leading to low intensity of buildings both in 1939 and 2007.

Change in intensity (1939-2007): A majority of the mohallas (26 out of 33) of Sadar Bazaar as well as BI Bazaar and RA Bazaar recorded an increase in the building intensity, which ranged between 270 in Outside Mohalla and only 1 in Mohalla 23. However, individual mohallas did not record significant increase in building intensity to cause a perceptible spatial shift from lower to higher category, except in Outside Mohalla, Mohalla 9, 18, 24, 32 and 14 with an increase in intensity by 270, 52, 38, 34, 29 and 25 respectively. The most significant increase in intensity in Outside Mohalla was related to large scale building activity over its vast vacant land in the post-Independence period. On the other hand, Mohalla 19, 3, 29, 20, 1, 26, 27 and Kumhar Mandi recorded marginal decline in building intensity ranging between -20 and -1.
The changes in intensity of buildings are related to important socio-economic process involving succession and inheritance of property. These have been elaborated below:

E. TYPES OF CHANGES IN PLOTS (1939 and 2007)

In the absence of an areal expansion of the Civil Area, a change in the intensity of buildings within different mohallas was an outcome of the socio-economic dynamics operating at the family level through successive generations. The changes in plots reflected the process of inheritance and/or change in ownership, and were identified to be of four types: (i) subdivision, (ii) consolidation, (iii) subdivision and consolidation, and (iv) new plots. Subdivision refers to the division of a plot into two or more parts. Conversely, consolidation refers to the merger or amalgamation of two or more plots to make one property. Subdivision and consolidation refers to both the processes (division and merger) having taken place for a property irrespective of the sequence (whether subdivision followed by consolidation or vice-versa).

The physical manifestation of these changes is the emergence of either smaller sized plots upon subdivision of property or large sized plots upon consolidation or merger of two or more plots. These processes operate at the lowest social set up, i.e. the family, and generally result in the breakdown of joint family system upon subdivision. In contrast, the merger of two or more plots does not necessarily imply a reverse situation.

Table 4.15
Jalandhar Cantonment (Civil Area): Types of Change and Landuse of Plots (1939 and 2007)

<table>
<thead>
<tr>
<th>Types of Change</th>
<th>Plots with Change</th>
<th>No. of Changes</th>
<th>No. of Changes with respect to the Types of Landuse</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Residential</td>
</tr>
<tr>
<td>Subdivision</td>
<td>486</td>
<td>1294</td>
<td>756 (68.11)</td>
</tr>
<tr>
<td>Subdivision and Consolidation</td>
<td>377</td>
<td>397 (20.32)</td>
<td>207 (18.64)</td>
</tr>
<tr>
<td>Consolidation</td>
<td>583</td>
<td>238 (12.18)</td>
<td>156 (12.25)</td>
</tr>
<tr>
<td>New Plots*</td>
<td></td>
<td>25 (1.28)</td>
<td>11 (1.00)</td>
</tr>
<tr>
<td>Civil Area Total**</td>
<td>1446</td>
<td>1954</td>
<td>1110 (56.81)</td>
</tr>
</tbody>
</table>

Note: Civil Area comprises SB: Sadar Bazaar which includes Mohalla 1 to 32 and OSM: Outside Mohalla, BIB: British Infantry Bazaar, RAB: Royal Artillery Bazaar, KM: Kumhar Mandi
* includes educational, religious and vacant plots
** This forms 48.96 per cent of the total number of plots (2953) in Civil Area
Figures in square parentheses in column are in per cent of type of change to total no. of changes (1954) in the Civil Area
Figures in curly parentheses in column are in per cent of type of change in a landuse category to total no. of change in an individual landuse category
Figures in common parentheses in row are in per cent of total no. of changes in a landuse category to total no. of changes for the Civil Area.

During 1939-2007, nearly fifty per cent of the total plots of Civil Area (1446 plots out of a total of 2953 plots in 1939) underwent different types of changes. A total of 1954
changes involving four types of change were noted for the Civil Area. From Table 4.15 it may be pointed out that: (i) subdivision formed the most significant of the four types of changes. As many as 1294 subdivisions of plots were recorded which comprised two thirds of all the changes in the Civil Area; (ii) subdivision and consolidation numbered 397 and was the second prominent change with 20.32 per cent of the total number of changes; (iii) consolidation of plots numbered 238 and constituted 12.18 per cent of all changes. It involved the highest number of plots (583) among all the types of change; (iv) new plots numbered 25 and formed an insignificant 1.28 per cent of all the changes. This type of change was restricted to BI Bazaar, in which a part of vacant land was encroached upon during 1940-1951; (v) subdivision was the most pervasive change among the three main landuse categories constituting more than fifty per cent of the changes in each of them; (vi) residential use comprised the highest share (56.81 per cent) of all the changes, followed by commercial (24.77 per cent) and residential-cum-commercial (17.09 per cent).

Spatial pattern of changes in plots (1939 and 2007)

The Civil Area was characterised by an average of 54 changes in plots, with nineteen mohallas recording above average changes. The number of changes in plots ranged between 135 in BI Bazaar and 9 in Mohalla 19. Kumhar Mandi did not record even a single change. On the basis of number of changes in plots in 2007, the Civil Area has been divided into three categories (Map 4.22):

(i) Areas with high number of changes in plots (more than 65 changes)
(ii) Areas with moderate number of changes in plots (between 65 and 45 changes)
(iii) Areas with low number of changes in plots (less than 45 changes)

(i) Areas with high number of changes in plots (more than 65 changes): Eleven mohallas recorded more than 65 changes in plots, viz. BI Bazaar (135), Mohalla 9 (96), Outside Mohalla (91), 24 (80), 22 (78), 32 (77), 21 (74), 14 (72), 18 (72), 26 (67) and 23 (65). This category formed a distinct axial pattern along two main commercial arteries of the Civil Area, viz. Phagwara Road and Patel Road comprising contiguously located mohallas in central parts of Sadar Bazaar (Map 4.22). Outside Mohalla and Mohalla 9 located along Hardayal Road in west, Mohalla 32 in south and BI Bazaar formed isolated pockets. A high number of changes in plots were mostly associated with high number of subdivision of plots (more than 45 each), as well as subdivision
and consolidation. These resulted in high building intensities (more than 110 buildings), and therefore, increased levels of crowding in these mohallas.

This category was characterised by economically dynamic mohallas which emerged as areas of mixed landuse in 2007 as compared to their predominantly residential landuse in 1939 due to high number of changes in plots. Economic forces not only propelled maximum utilization of available land, but also promoted apportioning or subletting for commercial use, which was a common occurrence in mohallas located along commercial arteries. These mohallas, therefore, recorded a higher number of changes in commercial plots as compared to residential plots, e.g. Mohalla 9 and Outside Mohalla recorded 49 changes each in commercial plots as compared to 36 and 21 changes in their residential plots respectively. On the other hand, the low and lower middle class residential areas such as BI Bazaar, Mohalla 32, 23 and 24 etc. recorded higher number of changes in their residential plots. Besides lateral subdivisions, floor allocation was also a commonly adopted method of subdivision in these areas due to their small sized plots, and was reflected in the predominance of two and more than two storey houses. An interesting aspect of subdivision in residential areas was the maintenance of some elements of a dwelling unit such as courtyards, stairs, passages, lobby etc. as joint property to help maintain integrity of the building.

(ii) Areas with moderate number of changes in plots (between 65 and 45 changes):
Thirteen mohallas recorded moderate number of change in plots, namely Mohalla 13 (63), 5 (62), 28 (62), RA Bazaar (60), Mohalla 25 (58), 31 (58), 16 (57), 10 (56), 17 (54), 30 (54), 27 (52), 8 (50) and 15 (47). These formed a number of small clusters in Sadar Bazaar, most distinctly along Cross Road 6 in southern part and Hardayal Road in western part (Map 4.22). The southern parts were characterised by a high number of changes in residential plots, whereas changes in the western parts were associated with residential as well as commercial plots.

Subdivision was the dominant change, which numbered between 45 and 30 in individual mohallas, except Mohalla 5, in which subdivision and consolidation was dominant (32). Subdivision and consolidation was also prominent in Mohalla 16, 17, 31 and RA Bazaar. The dynamics of population increase favoured initial consolidation of small to medium sized plots in these mohallas and subsequent subdivision. This type of change was mostly recorded in small, single room residential plots within ahatas, particularly the Muslim evacuee properties.²⁶
Jalandhar Cantonment (Civil Area)
Number of Changes in Plots (2007)

Sadar Bazaar

Metres
Mohalla number
Road/Street/Lane

No. of changes
65 Average: 54
45
Nil

British Infantry Bazaar

Royal Artillery Bazaar

Kumhar Mandi

Source: Computed from data in General Land Register, 1939 and Assessment Register, 2007
Map 4.22
(iii) Areas with low number of changes in plots (less than 45 changes): Eleven mohallas recorded low number of changes in plots, viz. Mohalla 7 (41), 11 (39), 12 (37), 6 (33), 2 (31), 4 (31), 20 (27), 3 (26), 29 (23), 1 (17) and 19 (9). These formed a large cluster of contiguously located mohallas in northern parts of Sadar Bazaar along Cross Road 1 and 2 (Map 4.22). Three mohallas outside this cluster included two along Ganga Road and one in the southern part. Among these, Mohalla 2 recorded a high number of subdivision and consolidation (30) in individual houses of ahata located within it, and Mohalla 29 recorded a high number of consolidations (11). In general, the low number of changes in plots was attributed to a large average size of residential plots (measuring above 100 square yards) in the high and upper middle class residential areas in northern mohallas and predominance of joint families.

As in the case of municipal towns and cities in India, the process of inheritance in cantonment towns also resulted in successive reconstitution of the property by way of three types of changes in plots. Although nearly half the total number of plots were involved in different types of changes, yet such changes contributed modestly (663) to the building stock under all types of landuses in the Civil Area during 1939-2007. This was related to a static horizontal extent of the Civil Area, restrictions on (a) subdivision of a site, (b) increase in the sanctioned built up area, and (c) change of purpose. A strict adherence to these norms was not noted in the Civil Area; but, the scale of such changes is expected to be relatively low if compared to adjoining municipal towns.

SECTION III: EXISTING MORPHOLOGY (2007 AND 2009)

Sources of Data

This section is primarily based on field work conducted during 2009, which involved personal interviews with residents, observation, and documentation of specific attributes for analysing two elements of existing morphology, viz. the street pattern and building form. The only secondary source of data comprised unpublished Assessment Registers for 2007, which were consulted for noting the Annual Rental Value (ARV) assessed by the Cantonment Board for individual houses. The ARV for different mohallas was calculated for determining the types of residential areas (2007).

Methodology

A. Street Pattern: The 1939 street pattern was digitised from the General Land Register Plan of the Civil Area which formed the base over which the existing
street pattern was overlaid. The updating process involved traverses through individual mohallas and marking the changes. The different aspects of street pattern such as material of construction, approximate length and width of streets, surface material of construction and landuse along the flanks were also noted down. Four types of streets within the Civil Area were identified on the basis of above mentioned characteristics, viz. arterial roads, sub-arterial roads, mohalla streets and mohalla lanes (galies) and depicted through two maps pertaining to 1939 and 2009.

B. Building Form: This was studied in terms of the ground plan of traditional and modern houses in order to bring out constructional changes in attributes of built form. The houses were randomly selected on the basis of their traditional built form of their exterior; one pertained to only residential use and the second to residential-cum-commercial use. The former constitutes the most pervasive use of a building within the Civil Area, and the latter not only reflects the structural adjustment within the same building to make it bi-functional, i.e. residential and commercial, but also how economic forces shape the use of a building.

C. Types of Residential Area: From the data on annual rental value of each building in the Civil Area, four slabs of average ARV were constructed, viz. (i) more than rupees 1950 per annum, (ii) between rupees 1950-1300 per annum, (iii) between rupees 1300-650 per annum, and (iv) less than rupees 650 per annum. Four types of residential areas within the Civil Area were identified on the basis of varying proportion of average ARV slabs and intensity of residential building, viz. high, upper middle, lower middle and low and depicted through a map at mohalla level.

Data Limitations

In the absence of previously recorded data on annual rental value of houses located in the Civil Area, a comparison between the present and past pattern of residential status of mohallas and a possible shift could not be undertaken.

The morphology of an urban settlement is a reflection of its historical lineage and is intricately linked to the functions it performs. In addition, the administrative set up by which the town or city is governed also shape its form and location of functions. Broadly, the morphological and functional distinctions of the civil area of cantonment
towns are: (i) it is a planned and planted entity as compared to the naturally evolved bazaar areas of indigenous towns; (ii) it usually has a non-expanding physical extent; (iii) it is the residential-cum-commercial area with multifarious functional units such as houses, shops, religious structures etc. whose location was determined through grants for specific uses, and therefore, contrary to a natural progression of similar functions getting located or growing together; (iv) the buildings conformed to traditional styles prevalent in the areas of origin of civilians as compared to bungalow house type within the military area of a cantonment.

Given the relatively long period of settlement of the Civil Area in Jalandhar Cantonment, changes in the planned layout and elements of its built form were a natural corollary of socio-economic processes of growth, but occurred within the larger framework of rules governing cantonment towns. The following discussion describes the existing morphology of the Civil Area.

A. Street Pattern (1939 and 2009)

Streets provide the basic framework around which space is differentiated according to a variety of uses. The efficient movement of men and material is directly related to the type of streets. Hence, this determines the intensity of various uses and in turn the relative importance of not only the street and the use itself, but also, the areas which these enclose and connect. The Civil Area of Jalandhar Cantonment is laid out on the grid-iron pattern (Map 4.23), which is one of the oldest and extensively used patterns of arranging streets, especially planned urban settlements across the world. The grid-iron pattern was essentially used for an orderly organization of space differentiated along functional lines and for the ease of movement. It was also an attempt by the colonial rulers to limit their sense of insecurity of the natives by adopting a layout pattern of straight streets that lend themselves to control from without in contrast to a tortuous street pattern of the old town which facilitated defence by individuals.

This type of street pattern was widely used by the British for layout of cantonment towns and their civil areas where topographic control was not a limiting factor, such as in the plains (Firozpur, Ambala, Lucknow, Barrackpur). In comparison, civil areas of cantonment towns located in the hills (Kasauli, Sabathu, Dagshai, Jutogh) conformed to the natural course of topography and were usually located at relatively lower elevations than the military area.
Types of Streets

Three out of the four pockets of the Civil Area were laid on grid-iron pattern (Map 4.23). *Kumhar Mandi* was an exception and presented an interesting case due to its amorphous pattern of internal layout without a pre-defined and metalled street segment of any type in 1939 (Map 4.23). A *kutcha* tract cut across the central part of the settlement and formed a conspicuous segment, whereas the residual space between building blocks constituted passages of the street system in this pocket of the Civil Area. The open spaces around most of the houses served as working and storing space for earthen wares, which was the primary occupation of the residents of *Kumhar Mandi*.

Table 4.16
Jalandhar Cantonment (Civil Area): Types of Streets (1939)

<table>
<thead>
<tr>
<th>Type of Streets</th>
<th>No. of Street Segments</th>
<th>Length of Streets (in Kilometres)</th>
<th>Material of Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arterial Roads</td>
<td>4</td>
<td>1.7</td>
<td>Bitumen</td>
</tr>
<tr>
<td>Sub-Arterial Roads</td>
<td>16</td>
<td>5.6</td>
<td>Bitumen</td>
</tr>
<tr>
<td>Mohalla Streets</td>
<td>70</td>
<td>4.8</td>
<td>Largely Cemented</td>
</tr>
<tr>
<td>Mohalla Lanes</td>
<td>94</td>
<td>3.2</td>
<td>Bricks, Stones and Cement</td>
</tr>
<tr>
<td>Civil Area Total</td>
<td>184</td>
<td>15.3</td>
<td></td>
</tr>
</tbody>
</table>

Source: General Land Register 1939

Note: Out of the total number of streets, 14 streets measuring 1.5 Km in length were *kutcha*. The remaining 170 *pucca* streets measuring 13.5 Km were maintained by the Cantonment Board.

On the basis of connectivity (whether for circulation or access), physical form (width of road, street length, surface material of construction) and function along the flanks, four types of streets within the Civil Area have been identified (Table 4.16). The Civil Area was traversed by 184 street segments of different types in 1939 with a total street length of 15.3 kilometres.

Table 4.17
Jalandhar Cantonment (Civil Area): Types of Streets (2009)

<table>
<thead>
<tr>
<th>Type of Streets</th>
<th>No. of Street Segments</th>
<th>Length of Streets (in Kilometres)</th>
<th>Material of Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arterial Roads</td>
<td>4</td>
<td>1.7</td>
<td>Bitumen</td>
</tr>
<tr>
<td>Sub-Arterial Roads</td>
<td>16</td>
<td>5.7</td>
<td>Bitumen</td>
</tr>
<tr>
<td>Mohalla Streets</td>
<td>93</td>
<td>6.7</td>
<td>Largely Cemented</td>
</tr>
<tr>
<td>Mohalla Lanes</td>
<td>215</td>
<td>6.9</td>
<td>Bricks, Stones and Cement</td>
</tr>
<tr>
<td>Civil Area Total</td>
<td>328</td>
<td>21.0</td>
<td></td>
</tr>
</tbody>
</table>

Source: Updated through field work, 2009
The maximum number of street segments comprised of the mohalla lanes which accounted for more than half (94) the total number of street segments in the Civil Area. However, sub-arterial roads with fewer numbers of street segments (16) covered the longest street length of 5.6 kilometres (Table 4.16).

The present street network within the Civil Area is an extension of the streets built during the British period. In 2009, it comprised of 328 street segments of different types, which covered a total length of 21 kilometres (Table 4.17). The total street length increased by nearly 6 kilometres as the number of street segments nearly doubled to 328 during 1939-2009. This change was largely contributed by an overwhelming increase in the number of mohalla lanes, viz. from 94 in 1939 to 215 in 2009. Also, during this intervening period all the 14 kutcha street segments in the Civil Area were made pucca by the Cantonment Board and the residents living around these street segments. Interestingly, the number of streets and their total length in the Civil Area increases with a decrease in the street order, with the lowest ranked mohalla lanes not only being very high in number but also covering extensive lengths (Table 4.17). The attributes of different types of streets in the Civil Area are discussed below.

A.1 Arterial Roads

This term signifies the through role of the street in the context of the larger network of streets. Arterial roads connect different pockets of the Civil Area with the military area of the Cantonment and therefore, function as circulation segments. There are four main arteries located in the Civil Area (Map 4.23). Of these, two are in Sadar Bazaar, viz. Phagwara Road in central and Hardayal Road in the western part and one each in BI Bazaar (unnamed) and RA Bazaar, viz. Azad Road. Their numbers and length has not undergone any change since 1939. Of the four arterial roads, only Phagwara Road is oriented in east-west while the three others run in a north-south direction. As many as twenty four mohallas (from Mohalla 1 to 24) lie to the north of Phagwara Road and eight to its south (Mohalla 25 to 32) and in the case of Hardayal Road all the thirty two mohallas lie to its east and only Outside Mohalla lies to its west (Map 4.23). Those in BI Bazaar and RA Bazaar pass through the middle of their respective bazaars.

All the four roads are of variable length, with Hardayal Road being the longest. Together they cover a total length of 1.7 kilometres and are around 5 to 6 metres wide. They are metalled roads made of bitumen, with six to eight feet wide cemented side
berm lined with covered drains. Side berms are used as extensions of shops for displaying various commodities in parts where commercial activity along the arterial roads is very intensive. The space is also utilised for parking mostly two wheelers.

Of the four arterial roads, Phagwara Road comprised the most important street segment during the pre-Independence period. This is related to its commercial significance and locational importance in forming a link between the Civil and Military areas, and between the Cantonment and its outlying areas, particularly the towns of Phagwara and Phillaur since the establishment of Jalandhar Cantonment in 1846. In comparison, Hardayal Road emerged as an important artery in the post-Independence period, when Outside Mohalla located on its left flank was developed. The Sadar Bazaar mohallas along these two arterial roads are intensely built up, with commercial and residential-cum-commercial uses being the most significant. The traffic moving on these consists of both pedestrian and vehicular comprising light, medium and heavy vehicles.

The arterial roads of BI Bazaar and RA Bazaar are relatively less important as compared to the other two due to their establishment as regimental bazaaars which were functionally attached to individual regiments during the pre-Independence period. These bazaaars declined in importance upon the withdrawal of their patron group, i.e. British regiments after Independence, resulting in the conversion of a number of commercial structures to residential use along the flanks of their arterial roads. However, a few provision shops located along the two arterial roads cater to the daily needs of the inhabitants of these pockets.

A.2 Sub-Arterial Roads

The sub-arterial roads are circulation segments which connect different parts of the Civil Area with arterial roads and divide one mohalla from the other. These comprised of 16 segments and have been identified in the Sadar Bazaar, BI Bazaar and RA Bazaar. In Sadar Bazaar, these consist of the north-south and the east-west oriented roads, with the former being named and the latter being identified through numbers (Map 4.23). There are three north-south oriented roads, viz. Patel Road, Moolraj Road and Ganga Road. The east-west oriented roads beginning from northern periphery up to southern mohallas include Cross Road 1, Cross Road 2, Cross Road 3, Cross Road 4, Cross Road 5 and Cross Road 6. There are three sub-arterial roads each in BI Bazaar and RA Bazaar which are east-west oriented and are neither numbered, nor named.
The sub-arterial roads covered a total length of 5.7 kilometres in the Civil Area. Their length increased marginally by only 100 metres (from 5.6 kilometres in 1939) due to the westward extension of Cross Road 2 in Sadar Bazaar (Map 4.24). Generally, the sub-arterial roads are around four and half metres wide which allows for vehicular traffic comprising two and four wheelers to ply on them while medium heavy vehicles are usually not permitted. The surface material used for their construction is different in the three pockets of Civil Area. All the sub-arterial roads in Sadar Bazaar are metalled and those in BI Bazaar and RA Bazaar are made of stone and cement. Several segments of the sub-arterial roads were metalled as early as 1905-06 31. The side berm along sub-arterial roads is cemented with a width of 2 to 4 metres. The drains along the side berm are covered and the platform is used as footsteps to enter a shop or residence.

The landuse along sub-arterial roads varies in different parts of the Civil Area, with a predominance of residential use in BI Bazaar, RA Bazaar, along Ganga Road and northern and southern parts of Sadar Bazaar. The central parts of Patel Road and Moolraj Road are associated with a high intensity of commercial and residential-cum-commercial uses, which taper off on either ends where residential use is more extensive.

A distinctive feature of Patel Road is the location of two dharamshalas at its farther northern end, viz. the Bawari Dharamshala in Mohalla 2 built in 1897 and Bari Dharamshala in Mohalla 3 built in 1913-14. This side of the Sadar Bazaar is in proximity of the Dak Bungalow which was a traveller’s lodge for the British military and civil officers on the move.

The sub-arterial roads traverse through varying socio-economic milieus comprising high, middle and low class residential mohallas. The eastern periphery along Ganga Road was the most heterogeneous with upper middle class comprising Mohalla 4, 8, 12; lower middle class comprising Mohalla 16, 24 and 28 and low class residential-Mohalla 20 and 32.

A.3 Mohalla Streets

Streets which connect different parts of a mohalla to the sub-arterial roads and function as access segments are termed as mohalla streets. More often these divide a mohalla along the entire length and breadth into smaller blocks. As many as 93 mohalla street segments were identified covering a total length of 6.7 kilometres in 2009. The extensions of old street segments as well as emergence of new street segments in nine mohallas of the Civil Area, viz. Mohalla 8, 11, 20, 25, 31, 32, Outside Mohalla, BI
Bazaar and Kumhar Mandi (Maps 4.23 and 4.24) led to an increase in the number of *mohalla* streets by 23 segments and their length increased by nearly 2 kilometres during 1939-2009 (Table 4.17). The number of *mohalla* streets in Sadar Bazaar increases southwards in view of a high intensity of plots and the consequent need for access to street front. In most parts of the Civil Area, *mohalla* streets measure about three and half to four metres in width. These are used for parking vehicles due to an absence of provision for parking within the house, especially the old constructions. *Mohalla* streets are largely cemented but bricks and stone are the other surface materials. They are lined by open drains in most parts of the Civil Area. The houses open directly on the *mohalla* streets since their outer walls define the separation from *mohalla* streets. Cemented raised platforms known as ‘tharra’ cover the drains in many parts and are used as a veranda outside the house, usually for sitting, keeping potted plants, coolers etc. Since the *mohalla* streets divide a *mohalla* internally into various blocks, the landuse along them is predominantly residential, but, commercial use in corner plots located at the intersection of *mohalla* street with sub-arterial roads has been noted.

### A.4 Mohalla Lanes (Galies)

*Mohalla* lanes, also known as *galies*, are the lowest order streets which intersect with the *mohalla* streets, internally connect one part of the *mohalla* with the other and provide access at the immediate level of a house. These, therefore, pass through residential parts of the Civil Area and are characterised by an overwhelming dominance of this landuse along the flanks. The *mohalla* lanes are either cemented or made of bricks, are quite narrow with a width ranging between one and half to two metres and terminate as *cul-de-sacs*. Therefore, they are most suited for and used by pedestrians, while the residents use *mohalla* streets adjoining the houses for parking and plying of vehicles. *Mohalla* lanes are lined with open drains which are covered intermittently with cemented platforms that are used for a variety of purposes. Platforms are more contiguously built up in the high and upper middle class residential areas where *mohalla* lanes are slightly wider. In comparison, platforms are small and mostly absent in the low class residential areas where the lanes are congested and narrow.

There were 94 *mohalla* lanes throughout the Civil Area which covered a length of 3.2 kilometres in 1939. These more than doubled in numbers to 215 segments and covered a length of 6.9 kilometres in 2009 (Table 4.17). This was an outcome of an emergence of new segments of *mohalla* lanes in a large number of *mohallas*, including almost all
Jalandhar Cantonment (Civil Area)
Street Pattern (2009)

Sadar Bazaar

Data by mohallas
Source: Field Work, 2009
Map 4.24
The northern mohallas, viz. 1, 2, 3, 4, 5, 6, 8, 10, 11, 12; central mohallas, viz. 16, 18, 20, 21, 22, 24 and southern mohallas, viz. 25, 26, 28, 30, 31, 32. Outside Mohalla of Sadar Bazaar as well as BI Bazaar, RA Bazaar and Kumhar Mandi (Map 4.24).

Several mohallas in the Civil Area are associated with an organic evolution of their mohalla lanes in the overall planned layout of Sadar Bazaar, viz. Mohalla 1, 2, 3, 4, 5 in northern parts and Mohalla 31 in southern parts. In 1939, mohalla lanes were not marked among these (Map 4.23). The northern mohallas are characterised by several ahata or courtyard type houses in which the building block wall is “punctuated by gates that marked out the desired direction of movement in them” and whose residential quarters are accessible through a single entrance / exit, which usually opens on the sub-arterial roads. In earlier times, these entrance / exit points featured iron and wooden gates for restricted access and providing privacy but have given way to arched entrances for convenience of ingress and egress of vehicles. Since residential quarters were built at different points of time within the ample vacant space available in the ahata compound, the lanes in ahatas are expected to have evolved with passage of time. The lanes in such types of house are privately maintained by the residents inhabiting residential quarters and provide access to individual houses within the compound.

The emergence of mohalla streets and lanes in Mohalla 31 is largely related to its comparatively late infilling, which is evident from several sanctions accorded for building residential structures during the second phase of building activity (1925-1947). Information gathered through interviews revealed that Gujar Muslims formed an important social group in Mohalla 31 and was a dominant community in the adjoining Mohalla 32. In the absence of direct data, it is conjectured that during the early periods of occupancy of Sadar Bazaar, vacant areas around the present day mohalla street of Mohalla 31 formed a common courtyard referred to as vehra for a group of houses of the Gujar Muslims and was used for the purpose of tethering animals as well as dairy for distribution of milk. This resulted in an absence of a pre-defined internal street pattern in this mohalla (Map 4.23). However, an increasing occupancy of this mohalla, in the post-Independence period led to the tract around plots gradually transforming into passages for movement and developed into mohalla lanes (Map 4.24).

Within the Sadar Bazaar, the number of mohalla lanes as well as their length increases southwards. This is related to a large scale infilling and rehabilitation of displaced population after Partition in the erstwhile Muslim dominated mohallas in southern part.
of Sadar Bazaar as well as parts of BI Bazaar and RA Bazaar. This is particularly striking in the case of Mohalla 31, 32 and Outside Mohalla (Map 4.24). In addition, unauthorised encroachment up on vacant land also led to an emergence of circulation paths around houses and unutilised space which evolved into mohalla lanes. Extremely pronounced intensity of built up area has resulted in many of these mohalla lanes acquiring physical dimensions which make these passages more like channels, wide enough to allow only one side movement at a time. In addition, the ever increasing need for space has transformed these into covered lanes as a result of lateral extensions of hanging veranda (chhajja) of adjoining houses. All these mohallas therefore, reflect a street pattern which evolved with changing needs for movement. However, new lanes conform to the basic form of existing street pattern comprising regularly arranged and straight street segments rather than amorphous ones.

B. Buildings and their Generalised Ground Plan (2009)

The settlement of native population, particularly from Rajasthan and Uttar Pradesh in the Civil Area of Jalandhar Cantonment is expected to have resulted in spatial transference of cultural attributes including traditional building form 34. However, a complete transference of cultural norms within the Civil Area is improbable since any construction or changes to be carried out had to conform within specific guidelines and approved by the Cantonment Committee for assessing safety and sanitary conditions within the house and mohalla. Thus, ornamental doors and windows, hanging platforms with latticed windows, chaubara (room on the terrace facing street, often with intricately carved windows or jharokha) could be built only if these were deemed suitable for construction by the Cantonment Committee.

Similar examples of control over construction included restriction on pucca walls in front of houses until 1906; chappar (thatched) roofs were approved till 1910, after which only iron sheet sunshades, flat roofs and tiled roofs were sanctioned between 1911-20; hanging veranda supported on iron and wooden uprights were permitted instead of arches in 1920 35; private toilets on the ground floor were allowed as early as 1909 on certain conditions, but were not allowed on the upper floors until 1925 36.

The question, therefore, is whether the Civil Area presents a case of correspondence with the elements of traditional built form. This is addressed through an analysis of the ground plan of traditional buildings within the Civil Area, since ‘the house is a symbol
of regionalism. It represents the cultural heritage of the past and the survival of tradition. The ground plan of a house is influenced by a variety of socio-economic and cultural factors, viz. traditional belief, rituals and caste system. In the present context generalised ground plan of traditional buildings has been studied and caste wise differences have only been pointed where needed.

B.1 Ground Plan of Traditional Residential House

Throughout the Civil Area, buildings are aligned in a linear fashion along the four types of street segments and their boundary on the outside is lined by open drains. Only in the case of main arteries and sub-arterial roads, side berms separate the building wall from the main road. In the case of mohalla streets and mohalla lanes, the buildings open directly onto the street / lane. Usually two or three steps over drain give access to the main door and an entry point into the building (Fig. 4.3a).

The house under consideration is situated in a corner along the mohalla street. It is bounded by houses on two sides, and opens on its front side into a compound surrounded by several houses. The house opens directly into the compound and its threshold is characterised by elevated platforms on its either side known as chabutra which is used as a sitting and resting place by both the residents as well as outsiders. The entrance to the house through the main door is marked by a covered passage known as the deori or poli which provides access to the main area of the house through a second door (Fig. 4.3a). Double doors ensured privacy to the resident family by restricting direct entry into the courtyard. The maintenance of privacy finds several expressions in the house; viz. (i) a large room adjoining the deori known as baithak meant to receive / entertain outsiders, especially male guests, which opened directly onto the mohalla street; (ii) all the rooms open into the courtyard or veranda, except for a window in the room adjoining mohalla street. However, it is at least six to six and half feet high from the ground to deny easy visual access into the house (Fig. 4.3a).

The basic element in the traditional house design is the inner open courtyard which acted as a microclimate regulator of temperature, air circulation and sunshine for the house. It is characterised by an inward oriented spatial layout with an assemblage of functional elements ordered around it, viz. kitchen (rasoi), store room (kothri or kothara), living rooms, bathroom and toilet (Fig. 4.3a).
Room Deori

Steps over Drain

Open space of the compound around which houses are built

Generalised Ground Plan of a Traditional Residential House

Generalised Ground Plan of a Traditional Residential-cum-Commercial House

Fig. 4.3

Source: Field Work, 2009
In keeping with the notions of cleanliness, the bathroom is separate from the toilet and located at a distance from the kitchen. The courtyard is referred to as *chaunk* in the Civil Area, which is derived from its association with a slightly elevated platform in one of its corners used for cooking. The joint family living necessitated a number of living rooms, which are located behind a covered veranda or the *dalaan* slightly elevated from the courtyard (Fig. 4.3a). One of the most important features of the traditional house type is its space allocation adaptive to future requirements. An additional room was constructed by a slight modification in the veranda, brought about by simply erecting one wall which divides it from the rest of the veranda.

Typically, in the case of high castes and upper class residential areas, the courtyard is aligned with rooms along its three or sometimes all the four sides. On the other hand, courtyards in the low caste houses are usually built upon one side. The difference between the two also lies in the extent of the courtyard, size and number of rooms. In addition, the courtyard along with the veranda is variably used by different caste and professional groups in the Civil Area such as *darzis*, *dhobis* and *kumhars* for performing their respective occupational work. Further, with changing norms of construction involving maximum possible built up area, the open courtyard has given way to covered courtyard to create additional space for storage or parking vehicles.

The plan of the first floor is similar to that of the ground floor, with two rooms constructed on top of those on the ground floor located behind the *dalaan*. Hanging covered balconies on either side of the main entrance provide not only shade to the *chabutra* (paved platform) built on the street front but also adds to the visual appeal of the house through its ornately done up wood work. Such additional structures reflect the socio-economic status of the owners.

**B.2 Ground Plan of Residential-cum-Commercial House**

Broadly, the ground plan of a residential-cum-commercial house is similar to that of a residential house. However, due to an additional function being performed by the same building a few structural adjustments were incorporated. The alterations and additions in the ground plan also suggest that this house is of a later date. For the purpose of discussion, the house can be divided into its two constituent units, i.e. (a) the residential structure and (b) the shop.
B.2.a Residential Structure

The house is situated in a corner at the junction of mohalla street with the sub-arterial road. It is bounded by a house on one side and an open area of a compound comprising several houses on its back side. It opens on three sides, viz. on the sub-arterial road, mohalla street and into the compound. However, the main entrance to the house is from the mohalla street side with two to three steps over the drain directly leading to the inner courtyard through a door. The multiple access points in the residential-cum-commercial house contrast with the single point entry in the traditional house described above, and is also distinguished by an absence of a deori, baithak and an inner veranda in the residential part of the house (Fig. 4.3b). The principle of privacy in this house is maintained by two ways, (i) limiting direct access into the courtyard from the commercial segment side by location of interlinked rooms, of which one is connected to the kitchen; (ii) limiting access from the compound side by three covered interconnected lobbies, with only the largest opening into the courtyard. Further, the house lacks windows due to its location along two public thoroughfares. The air circulation is taken care of by several ventilators constructed closer to the roof as well as the placement of doors in an alignment which facilitates cross ventilation (Fig. 4.3b).

The other functional elements, viz. living rooms, kitchen, and bathroom as described above for the traditional house are distinctly marked around the courtyard. Only two rooms open directly into the courtyard (Fig. 4.3b). However, the location of store room (kothri), toilet and staircase between the two small lobbies is suggestive of optimum utilization of small space. A distinct feature of this house is the presence of a cowshed within the house (Fig. 4.3b). Its location behind the kitchen separates it from the main functional area, i.e. courtyard, with access provided by the largest of the three lobbies. The farther of the two small lobbies is used as an entry and exit passage for the cow.

B.2.b Shop

The location of shop on the side of house adjoining the sub-arterial road conforms to the need for direct access for conducting commercial activity. Since the shop is a spice mill, the operation of grinding spices and selling are carried out from adjoining interlinked rooms (Fig. 4.3b). A separate space for conducting business transactions is set aside in the room, which also functions as a storage area of the shop as well as the house. Both these rooms open into a tile roofed veranda, which runs along the entire
length of the property’s sub-arterial street front, and is used as a waiting area by the customers who visit the shop, and as a sitting area by the family members. The commercial segment does not have direct access to the residential part of the property, which is routed through the room connected with kitchen, the cow shed or a room opening on the veranda. Therefore, privacy is secured but in a way quite different from that in an only residential house.

B.3 Ground Plan of a Modern Residential House

The newly constructed (rebuilt) house which is located at the intersection of mohalla street with mohalla lane has several points of departure from the traditional house (Fig. 4.3a and 4.4). The modern house is constructed up to two stories, a rather futuristic concept of constructing adequate built up space in the beginning unlike the progressive additions to an existing structure according to needs in a traditional house. Such a house plan is designed out of two considerations: (i) individual portions for facilitating smooth subdivision, (ii) income accruing from renting of individual portions. The second condition is not implicit in the plan under consideration since the stairs leading to the upper floors are routed from inside the main house rather than from outside.

Figure 4.4 indicates a formal and a rigid layout of its internal elements. The concept of privacy, personal and social space within the house has undergone a redefinition. Compared to privacy from outsiders as accorded by the ‘baithak’ and ‘deori’, the modern house having a ‘drawing room’ meant for receiving guests opens onto the chabutra allowing entry and a door opposite though not directly aligned provides access into the house proper. This reflects changing social mores wherein interaction among both the genders and with outsiders is less regulated by spatial elements. Further, rooms in a modern house are functionally specific, as a bed room, store room, study room etc. which is in contrast to their multi purpose function in a traditional house. The notion of cleanliness still persists even though slightly diluted, by combining bathrooms and lavatories built next to bedrooms but not attached to them.

The inner open courtyard has lost its pre-eminence as an inner environment regulator due to mechanical means of cooling through fans, coolers and air conditioners. Thus, the earlier concept of inner courtyard and veranda has given way to a covered outer veranda which provides parking space for car and two-wheelers.
Generalised Ground Plan of a Modern Residential House

(a) Ground Floor
- Stairs
- Kitchen
- Store Room
- Room
- Bath Room
- Drawing Room
- Covered Veranda
- Mohalla Street
- Chabutra
- Mohalla Lane
- House

(b) First Floor
- Stairs
- Room
- Room
- Room
- Bath Room
- Balcony
- Balcony

(c) Second Floor
- Stairs
- Mumty
- Terrace

Source: Field Work, 2009

Fig. 4.4
Contrary to the courtyard forming the social space around which daily activities of the household were carried out, the modern concept is the ‘open kitchen’. By doing away with doors to a kitchen and as it (kitchen) directly opens into the lobby, the modern house plan has created a spacious functional space within the constraints of available area. This area serves as the dining room, replicating somewhat the functionality of the traditional ‘chaunk’. One significant aspect in the modern kitchen is its location overlooking the entry points of the house (in Fig. 4.4 note the presence of a window overlooking covered veranda and the entrance door). This offers visual check on visitors entering into and exiting from the house.

The plan of the first floor follows that of the ground floor, with hall-room above the drawing room and covered veranda. A balcony runs along two sides of the construction on first floor, overlooking the mohalla street and the lane. The second floor built up space consists of mutny or barsati, i.e. a room adjoining the terrace mostly used as a store-room for keeping sundry items.

It was also noted that ornate designs of doors, windows and hanging balconies have given way to more utilitarian designs of doors, windows etc. that reflect nothing of the cultural heritage of the area or those of its inhabitants except for what is in vogue. Thus, characteristics of domestic urban space in the Civil Area have undergone transformation with changing times and evolving needs of a family. These changes although are likely to be pervasive, but the scale of change would be variable depending upon the economic capacity of the residents to carry out such changes. Further, such changes along with other attributes like land values lend distinct character to residential parts of the Civil Area. The types of residential area are discussed below:

C. Types of Residential Area (2007)
Socio-cultural and economic attributes of population as well as structural condition of buildings reflect the type of residential areas within Indian cities to a large extent. In addition, rental value of buildings determines the relative economic status of that mohalla within the city. Broadly, most localities represent features which are indicative of its type of residential area, which are largely categorised as high, upper middle, lower middle and low class. However, none of these types is impermeable and static. Juxtaposition of some buildings within a mohalla reflecting attributes of other class as well as shift of one mohalla to a higher or lower class over a period of time is not an uncommon feature.

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The Annual Rental Value (ARV) and intensity of buildings in individual mohallas were used to identify types of residential areas within the Civil Area. The ARV was determined by economic factors such as market value of land, change in use from only residential to commercial or residential-cum-commercial; physical factors such as the type of construction (old or new construction), size of plot, structural changes in building including partial renovation or rebuilding, vertical extension of building etc. The Civil Area was characterised by an average ARV of Rupees 1685 per annum. The ARV in individual mohallas varied considerably from Rupees 4495 in Mohalla 25 to Rupees 140 per annum in Kumhar Mandi. Broadly, high average ARV (more than Rupees 1950 per annum) were recorded in mohallas located along northern, western and north-eastern periphery, moderately high average ARV (between Rupees 1950 and 1300 per annum) in central mohallas, and moderately low average ARV (between Rupees 1300 and 650 per annum) in southern mohallas (Map 4.25). All the mohallas recorded varying proportions of ARV slabs constructed for the present analysis, e.g. all the residential buildings of Kumhar Mandi and more than 80 per cent in Mohalla 31, 32, Outside Mohalla, RA Bazaar etc. recorded low ARV of less than rupees 650 per annum, whereas not a single building in Mohalla 2 recorded low ARV. Similarly, nearly half the total buildings in Mohalla 14 but less than five per cent in Mohalla 31 recorded moderately low average ARV etc.

Table 4.18
Jalandhar Cantonment (Civil Area): Types of Residential Areas (2007)

<table>
<thead>
<tr>
<th>Residential Type</th>
<th>Characteristic Features of Mohalla in a Residential Type</th>
<th>No. of Mohallas</th>
<th>Name of Mohallas</th>
<th>% Residential Buildings in Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>More than 1950 (&gt; 20 %)</td>
<td>Low</td>
<td>1, 2, 3, 6, 8, 10, 17, 18 &amp; 25</td>
<td>12.82</td>
</tr>
<tr>
<td>Upper Middle</td>
<td>Between 1950 - 1300 (&gt; 7 %)</td>
<td>Medium</td>
<td>4, 7, 12, 13, 15, 19 &amp; 29</td>
<td>6.32</td>
</tr>
<tr>
<td>Lower Middle</td>
<td>Between 1300 - 650 (&gt; 22 %)</td>
<td>Medium to High</td>
<td>5, 9, 11, 14, 16, 21, 22, 23, 24, 26, 27 &amp; 28</td>
<td>18.47</td>
</tr>
<tr>
<td>Low</td>
<td>Less than 650 (&lt; 63 %)</td>
<td>High</td>
<td>20, 30, 31, 32, OSM, BIB, RAB &amp; KM</td>
<td>62.39</td>
</tr>
</tbody>
</table>

Source: Figures calculated from Assessment Register 2007
Note: Civil Area comprises SB: Sadar Bazaar which includes Mohalla 1 to 32 and OSM: Outside Mohalla, BIB: British Infantry Bazaar, RAB: Royal Artillery Bazaar, KM: Kumhar Mandi
*ARV refers to Annual Rental Values which is in rupees per annum. Average ARV of Civil Area is Rupees 1685 per annum. Figures in parentheses are in per cent and represent the cut off for inclusion of a mohalla in a category.
**Building intensity refers to the number of residential buildings in each mohalla, which have been categorised as High (>68), Medium (68-48) and Low (<48). The average residential building intensity is 59 buildings per mohalla in 2007.

Broadly, a majority (62.39 per cent) of all the residential buildings in the Civil Area recorded ARV of less than Rupees 650 per annum (Table 4.18). This was followed by
Jalandhar Cantonment (Civil Area)
Average Annual Rental Value of Residential Area (2007)

Sadar Bazaar

Average annual rental value (in Rs.)
- 1950
- 1300
- 650

Average: Rs.1685

British Infantry Bazaar

Royal Artillery Bazaar

Kumhar Mandi

Source: Computed from data in Assessment Register, 2007

Map 4.25
18.47 per cent in ARV between Rupees 1300-650, 12.82 per cent in ARV of more than Rupees 1950 and only 6.32 per cent in ARV between Rupees 1950-1300. Four types of residential area were identified within the Civil Area on the basis of annual rental values of buildings and intensity of residential buildings in mohallas to present a holistic picture. The four types of residential areas include: high class, upper middle class, lower middle class, and low class residential areas (Map 4.26).

1. High Class Residential Area

Nine mohallas of the Civil Area belonged to high class residential area category, viz. Mohalla 2, 6, 1, 25, 10, 8, 17, 3 and 18. High class residential areas formed a conspicuous axial pattern of contiguously located mohallas in the northern parts of Sadar Bazaar along Cross Road 1 and Patel Road. In addition, two contiguously located mohallas in central parts and isolated pockets along western and eastern periphery (Mohalla 25 and 8 respectively) were also discernible (Map 4.26). These mohallas were associated with mixed landuse including a significant proportion of commercial and residential-cum-commercial use (upto fifty per cent) which contributed towards their high to moderately high average annual rental values (Map 4.25), ranging between rupees 4495 in Mohalla 25 and rupees 1423 in Mohalla 18 as well as high proportion (up to 50 per cent) of their residential buildings with ARV of more than rupees 1950 per annum.

The high class residential areas were characterised by large sized plot (more than 100 square metres), low residential intensity of less than 48 buildings per mohalla and two to three storied buildings. These areas recorded a fairly high concentration of joint families, and were socially heterogeneous, viz. trading castes in northern mohallas, Khatris and Sikhs in central and western parts, and low caste groups especially comprising ahirs (milk men) and dhobis (washer men) in Mohalla 8. Broadly, the association of economic status by virtue of high ARV with that of social status of high class residential mohallas reflects a general consonance of economic status with social status in Indian cities.

2. Upper Middle Class Residential Area

Seven mohallas which constituted the upper middle class include Mohalla 19, 15, 29, 7, 12, 4 and 13. This residential type comprised non-contiguous mohallas located along both the flanks of Ganga Road and two in the western periphery along Hardayal Road (Map 4.26). The upper middle class residential areas were spatially proximal to high
class residential areas, which conforms to a general pattern also observed in other urban areas. These areas recorded high to moderately high average ARV (Map 4.25) with upto one third of residential buildings in individual mohallas recording ARV of rupees 1950-1300 per annum. The upper middle class mohallas were characterised by a predominance of residential use, with medium intensity of residential buildings (between 68 and 48 buildings per mohalla) built up to two stories. Mohalla 19 and Mohalla 13 were the exceptions, as the former comprised residential-cum-religious-cum-educational uses, whereas the latter recorded mixed landuse including commercial and residential-cum-commercial. The upper middle class residential mohallas recorded an almost equal concentration of joint and nuclear families, and their social composition was quite heterogeneous with a concentration of trading castes in Mohalla 7, 13 and 15, Brahmins in Mohalla 12 and 19, backward classes in Mohalla 4 and Khatris in Mohalla 29. In fact, the latter two mohallas were associated with a high concentration of Muslim owned plots in the pre-Independence period, which were resettled by displaced families belonging to various caste groups after the Independence.

3. Lower Middle Class Residential Area

Located between the upper middle class residential area and the low class residential area are the mohallas which comprised the lower middle class residential areas (Map 4.26). They include twelve mohallas, viz. 14, 9, 26, 21, 11, 23, 22, 5, 16, 28, 24 and 27 which recorded nearly half the number of residential buildings with ARV between rupees 1300-650 per annum. Lower middle class residential areas comprised two distinct pockets, viz. a conspicuous cluster of contiguously located mohallas along both the flanks of main arterial road, i.e. Phagwara Road and proximally located mohallas in the northern parts between Cross Roads 1 and 3 (Map 4.26). A predominance of commercial and residential-cum-commercial use in mohallas along the main arterial road contributed to their higher average ARV as compared to those located in the north (Map 4.25). The mohallas in the north were characterised by highly mixed landuse, which resulted in their variable intensity of residential buildings, whereas mohallas with a predominance of commercial use (Mohalla 21 and 22) recorded low intensity of residential buildings. Two storied houses dominated the skyline in all the mohallas.

The lower middle class mohallas revealed a less heterogeneous social composition as compared to the other two residential areas. The northern mohallas recorded a concentration of trading castes and joint families, which is related to their proximal
Jalandhar Cantonment (Civil Area)
Types of Residential Area (2007)

Sadar Bazaar

Based on annual rental value and intensity of buildings

- High
- Upper Middle
- Lower Middle
- Low

Data by mohallas

Source: Computed from data in Assessment Register, 2007

Map 4.26
location to two commercial areas, i.e. Mohalla 11 and 14. The Sikhs and Khatris were mostly concentrated in central and southern mohallas along Phagwara Road, which is related to their rehabilitation in erstwhile Muslim dominated mohallas. These were characterised by a high concentration of nuclear families.

4. Low Class Residential Area

A total of eight mohallas constituted the low class residential parts of the Civil Area, which included Mohalla 31, 32, Outside Mohalla, Mohalla 30 and 20 located on eastern and southern periphery of Sadar Bazaar, and Kumhar Mandi, RA Bazaar and BI Bazaar (Map 4.26). These mohallas were characterised by an overwhelming predominance (between 73 and 100 per cent) of their residential buildings with ARV of less than rupees 650 per annum. The mohallas were primarily residential, with two and more than two storied houses built on small sized residential plots, and resultant high residential building intensity as well as very high concentration of population. The relative peripheral location of low class residential areas also reflected their social composition in a predominance of low caste groups (Scheduled Castes and Backward Classes). This is in consonance with the historical pattern of low caste social groups inhabiting peripheral locations and physically inferior sites within towns in India.

Although affordability of houses and their maintenance differed across various social groups, however, economic factors such as market value of an area and the consequent rental value of buildings determined residential patterning within the Civil Area. The socio-spatial patterning of different caste groups residing therein, contributed to the overall prestige of the mohalla.

Summary

This chapter analysed the growth of morphological structure of the Civil Area of Jalandhar Cantonment in terms of types and phases of building activities, changes in landuse and existing morphology. The Civil Area is unlike an evolved town given its planned layout, rigidly defined mohallas co-terminus with maximum permissible area for occupancy, their internal development and successive stages of growth through an infilling regulated by sanctions for different types of building activities and landuses.

A cycle of building activities was identified in this study, which involved seven building activities, viz. sanctions for land for building, building, alteration, addition, addition and alteration, rebuilding and condoning of unauthorised construction. The
early occupancy mohallas witnessed at least one complete cycle of the first six building activities by the beginning of the study period, i.e. 1907. Unauthorised construction was the most dominant building activity within the Civil Area with one third of the total sanctions. Addition and alteration, rebuilding and addition also formed significant proportions of sanctions.

The Civil Area recorded three phases of building activities, namely the pre-municipal phase (1907-1924), the post-municipal-pre-Independence phase (1925-1947) and the post-Independence phase (1948-1998). The first phase was dominated by rebuilding in the early occupied mohallas in central parts as well as in later occupancy mohallas in northern parts and western periphery of Sadar Bazaar. The second phase associated with gaining of municipal status by Jalandhar Cantonment in 1924, was most outstanding with a threefold increase in the number of sanctions accorded and the predominance of addition and alteration related to governmental sanction for construction of upper storeys to buildings within the Civil Area. This was a phase of growth and addition in the building stock of various landuses, particularly associated with old and densely populated central parts of Sadar Bazaar and RA Bazaar. The third phase of building activity recorded the highest number of sanctions (3150) given in any phase, was dominated by unauthorised building activities and spatially associated with later and new occupancy in Muslim evacuee mohallas in western, eastern and southern parts of Sadar Bazaar. The end of third phase marked a waning of extensive building activities within the Civil Area.

Ten landuse categories were identified in the Civil Area, among which residential use was predominant and spatially pervasive, a characteristic similar to other cities in India. Commercial and residential-cum-commercial were the second and third dominant landuse categories respectively. The near complete dominance of landuse by these three uses was related to the Civil Area being the residential and commercial hub of the civil population of Jalandhar Cantonment. The changes in landuse during 1939-2007 overwhelmingly favoured residential-cum-commercial use with a very high absolute increase and positive percentile change in comparison to small absolute increase and negative percentile changes recorded by residential and commercial uses. These changes were related to shifts across uses of buildings, subdivision and apportioning of buildings due to lack of physical expansion in individual mohallas and the Civil Area. Despite the economic profitability involved in a change to entirely commercial use of
buildings, such a shift was limited and untenable in the Civil Area since the provision for housing remains the most basic need in a non-expanding built up area. The residential-cum-commercial use served the purpose of optimum utilization of space and engaging market forces to shape the landuse and land value.

The patterns of landuse within the Civil Area reflect similarities with other cities as the residential use constituted inner parts in individual mohallas, commercial use flanked the arterial and sub-arterial roads commanding better access and land values, and residential-cum-commercial use interspersed the two. The spatial pattern of changes in landuse included: (i) emergence of residential-cum-commercial use along the arterial and sub-arterial roads in the overwhelmingly residential mohallas of northern part of Sadar Bazaar; (ii) shift in predominance of commercial use from its early developed areas along the arterial road, i.e. Phagwara Road and the sub-arterial road, i.e. Patel Road to its extension along the second arterial road, i.e. Hardayal Road in the post-Independence period; (iii) changes in religious landscape upon conversion of pre-Independence mosques to temples and gurudwaras in the Civil Area; (iv) emergence of educational institutions particularly primary schools with the initiative of the Cantonment Board.

During 1939-2007, an increase in the average intensity of plots was found to be related to three main types of changes in plots, namely subdivision, consolidation and subdivision-cum-consolidation. These are natural corollaries of inheritance of property as well as operation of economic forces. Subdivision of plot was the most pervasive change involving residential use. Subdivision and consolidation resulted in change in the use of building, mainly to commercial as well as residential-cum-commercial use.

The most pervading element of existing morphology is the street pattern within which all the other elements interact at varying levels. The layout of the Civil Area is highly formalised with a near perfect pre-determined grid iron pattern of streets. The street system of the Civil Area covered the third highest area (16.64 per cent) among all landuses in 1939. It is distinguished by four types of street segments, viz. arterial roads, sub-arterial roads, mohalla streets and mohalla lanes. The physical attributes and number of arterial and sub-arterial roads remained unaltered during 1939-2009, but are now characterised by intensive landuse and modified to commercial and residential-cum-commercial use, particularly along Hardayal Road and Patel Road in western and central parts of Sadar Bazaar respectively, whereas Phagwara Road continues to be an
important commercial street segment of the Civil Area. The other two types of streets recorded significant increase in their numbers and length covered. **Mohalla** streets increased in number by 23 segments and added 1.9 kilometres to their pre-existing 4.8 kilometres. The lowest order street type, i.e. **mohalla** lanes recorded the highest increase in its number and length (from 94 segments spread over 3.2 kilometres in 1939 to 215 segments covering 6.9 kilometres in 2009). This was related to an increase in the population in Muslim evacuee **mohallas**, particularly in the southern parts of the **Sadar Bazaar** due to rehabilitation of displaced persons. The **mohalla** lanes are mostly in the form of **cul-de-sacs** characteristic of circuitous street patterns in evolved towns. The existing street pattern of the Civil Area reflects continuity of original layout, the differences in physical attributes of lowest street segments i.e. **mohalla** lanes across the socio-economic spectrum of areas traversed by them and an indelible influence of Partition.

The domestic landscape of the Civil Area mirrored socio-cultural norms of functionality, privacy and inter-personal interactions in the spatial organization of a traditional, joint family house. Its functional elements centred around an inner courtyard. An influence of economic forces in shaping the basic layout of a house reflected in a few departures from the traditional single function residential house plan with the non-existence of **baithak, deori** but greater functionality of veranda by its location outside the house proper. The modern residential house reflects changing perceptions of space, from the traditional open courtyard and multi-functional use of rooms to enclosed, covered spaces and the functional division of rooms.

The different types of residential areas within the Civil Area broadly correspond to the traditional spatial pattern also found in cities across India, viz. high class residential areas in the centre, low class on the periphery and the middle class occupying intermediate locations. The social composition of **mohallas** conformed to the high caste groups dominating the former and low castes groups dominating the latter. The economic determinant, i.e. the annual rental value varied across the Civil Area and social groups, however, the proportion of houses with higher annual rental values increased from low to high class residential area. An overwhelming proportion (63 per cent) of houses recorded annual rental value of less than rupees 650 per annum. Eight **mohallas** dominated by low caste groups and having high building intensity belonged
to the low class residential areas. The relative peripheral location of this residential type within the Civil Area is in line with their basic pattern also found in towns in India.

Broadly, the morphological structure of the Civil Area has grown within a static physical extent and guided by the legal purview under which cantonment towns have been governed from time-to-time. This has influenced the elements of morphology at all the levels, from the Civil Area as a whole to the individual *mohallas* and down to the building level.

**References and Notes**


12. *ibid.*


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15. Proceedings of the Cantonment Committee, 29 October 1918, Office of Jalandhar Cantonment Board.

16. An important aspect of the introduction of Cantonments Act of 1924 was the improvement in municipal facilities within the Civil Area, such as the provision of street lighting, piped water supply to houses etc. In fact, these facilities along with others like mechanical transport, telephones and electricity were first made available in the military area in 1911. Proceedings of the Cantonment Board, 16 August 1925, 25 August 1925 and Water Proceedings of the Cantonment Board, 14 November 1934, Jalandhar Cantonment Board. Also see an unpublished write-up on the history of Jalandhar Cantonment written by Lt. Col. A.D.J. Speedie which is placed at the Headquarters 91 Sub-Area, Jalandhar Cantonment.


18. After 1968, the land policy in cantonment towns was revised in 1982 and 1995. In addition to the regulations pertaining to the construction on Old Grant properties, both these policies allowed for conversion of Old Grant and other resumable leasehold properties into freehold by paying conversion fee. As per the 1982 Land Policy, the conversion fee was determined according to the size of the plot in the case of Old Grant and full market value in the case of leasehold. The 1995 Land Policy requires an additional 25 per cent of the estimated conversion cost as the earnest money. See Mittal, J.P. (1998), op cit., pp. 533-555.


21. In some of the evolved towns, streets occupied 15 per cent and 6.9 per cent of the area such as in old Delhi and Rohtak respectively. However, in the case of the planned city of Chandigarh, which is laid on a grid iron pattern, the circulation space forms 23.7 per cent. See Fonseca, R. (1969): “The Walled City of Old Delhi”, in P. Oliver Ed. Shelter and Society, Frederick A. Praeger, New York; Sharma, K.D. (1985), ibid., p. 104; Deodhar, P.M.A. (2000), ibid., p. 266.
22. Functional use of land represents a highly complex spatial pattern produced by interaction between historical, social, cultural, political and economic factors. Residential use has been found to be highly correlated with commercial use since historical times in cities in India with the former occupying either upper floors or the backside of buildings and the latter the street fronts. See Taneja, K.L. (1971), op cit., p. 81; Gupta, N. (2003)：“The Indomitable City”, in Ehlers, E. and T. Krafft Ed. Shahjahanabad / Old Delhi: Tradition and Colonial Change, Manohar Publishers & Distributors, New Delhi, pp. 28-44.


24. The Civil Area of Jalandhar Cantonment has several ahatas, a few of which are named after their owners, viz. Baiju Ka Ahata in Mohalla 16, Natha Singh Ka Ahata in Mohalla 32. Upon migration of Muslim tenants after the Partition, several houses in Baiju Ka Ahata were occupied by Baij Nath’s descendents. From one room houses, these were converted into two to three room houses upon consolidation of adjoining houses. On the other hand, new houses were built in the ahatas in Mohalla 1 and 2.


26. From informal interviews with the residents of the Civil Area conducted during 2008-09 it was found out that a sizeable number of residents of ahatas in erstwhile Muslim dominated mohallas comprised displaced families. Over a period of time, some of the residents bought two adjoining single room residential buildings, which were consolidated to form a single
dwelling unit. Further, these were raised to two storey buildings about twenty years back. Subsequently, upon issues of inheritance, individual buildings were subdivided floor-wise.


30. The roads in Jalandhar Cantonment were named after prominent British civil and military leaders, and were renamed after Independence. In the case of arterial and sub-arterial roads in *Sadar Bazaar*, these were renamed from Clive, Hastings, Wellington and Ripon to Hardayal, Patel, Moolraj and Ganga Roads respectively. Phillaur Road is now known as Phagwara Road which continues to be associated with the town with which it linked Jalandhar Cantonment.

31. A contractor named Mohd. Ibrahim was entrusted with the task of metalling the roads of *Sadar Bazaar* in 1906. *Proceedings of the Cantonment Committee*, 31 March 1906, Office of Jalandhar Cantonment Board.


33. The layout of *Mohalla* 31 conforms to the landscape features of *Gujjar* dominated rural areas in the surrounding region. *Gujjar* houses are characterised by an absence of a central inner courtyard. This is substituted by a common courtyard called *behra* which is L or U shaped courtyard surrounded by houses of the same clan or lineage. This *behra* functions as a multi-family uniclan site. See Sharma, S.A. (1986): *Rural Settlements: A Cultural-Ecological Perspective (A Case Study of Lower Himalaya)*, Inter-India Publications, New Delhi, p. 178.


36. The Cantonment Committee made provisions for group latrine for the residents of the *bazaars* as early as 1868. However, private latrines were sanctioned around 1908-09, on the conditions that only those persons who paid a house rent of more than rupees 1 per month or occupied houses estimated to bring such a rent would be allowed to have a private latrine in their house. It also stipulated that houses for which latrines were sanctioned should be more than 500 square feet and not more than one family shall use a latrine. With the promulgation of building bye laws in 1925, toilets were permitted on the upper storeys provided they were made of impermeable material, not directly above the kitchen and store rooms, had moveable
receptacles and were not connected with the street drain. Proceedings of Cantonment Committee, 10 July 1868, 12 January 1912 and Proceedings of Cantonment Board, 25 August 1925, Office of Jalandhar Cantonment Board.


42. One of the most pervasive residential patterning is the spatial centralization of high rental, high income and high status social groups within cities in India. City-centre location makes the separation of residence from place of work minimal for those who can afford the high land prices. On the other hand, low class residential areas have been associated with physically

43. In the case of Varanasi, the size of the houses and the availability of open spaces in an area have been used to determine its relative status as a high or low class residential area. Generally high density of population corresponds with high density of houses and marks the low class residential areas. Taneja, K.L. (1971), *op. cit.*, p. 75.