

Building Use in Heritage Precinct: Case of Pol in Ahmedabad Walled City

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ABSTRACT

Tangible heritage has its marked presence in hundreds of urban areas in India. Most heritage structures are non-engineered and do not conform to recommendatory IS code based design and NBC guidelines. An important aspect of the Heritage in majority of these urban areas is about the use of the heritage buildings in which people reside/work/visit. Such heritage buildings are frequented by not only people who live there, but also by those who work and live in other parts of the city including those who visit the buildings for various purposes ranging from conducting business to tourism, purchasing, visiting relatives and acquaintances, visiting religious places, participating in festivals, processions and rallies as well in celebrations, for gastronomic purpose or simply passing-by as part of usual through-o-fare across the city's roads. It is imperative to look at the uses to which such buildings are put to due to the fact that many of them are listed as in the case of Ahmedabad walled city. Ahmedabad walled city having micro-neighbourhoods (Pols) comprising of traditional wooden framed buildings that were built over a hundred years ago achieved the remarkable feat with its inscription as a UNESCO World Heritage site in July 2017. To determine the building use in Pols, one of the 57 precinct Pols covering 150 buildings was surveyed in the walled city. The study revealed that almost a quarter of the total surveyed buildings have use that can lead to the buildings in the case study Pol becoming vulnerable.

Key words: *Heritage Buildings and Structures, Spatial, Building use, Vulnerable*

Introduction

India is the 7th largest country in the world as far as land mass is concerned and has the largest population. As per the 2011 Census of India, nearly about one thirds of the country's population live in urban areas.

India with a history spanning several millennia has rich and diverse heritage - both natural and cultural. UNESCO has recognised 1154 natural and cultural heritage sites across more than 160 countries as World Heritage sites through the World Heritage Convention, 1972. Out of these, over forty world heritage sites are in India. India is part of the

'Super-40 club' and out of these world heritage sites, the names of 2 cities, feature in the coveted list. The first is the historic city of Ahmedabad in Gujarat state in India and the other is the pink city of Jaipur in Rajasthan state which have been awarded world heritage status based upon criteria (ii and v) and criteria (ii, iv and vi) respectively out of the 10 criteria laid out by UNESCO. In 2017, the historic city of Ahmedabad received the World Heritage Status being the first city in India to receive the recognition. An important aspect of the Heritage in the historic parts of these two cities and also in the majority of other cities is that the older parts (usually the city core) are the areas that house heritage structures

that are non-engineered, built much before introduction of codes and thus, do not conform to Bureau of Indian Standards (BIS) code based design and National Building Code, both of which are recommendatory in nature. These non-engineered structures are made from local materials such as stone, brick, timber, lime, sand, mud, etc.

In most of the urban areas, heritage and specifically tangible heritage exist more than often in sheer neglect due to a plethora of reasons ranging from lack of consciousness about cultural heritage value, lack of resources to maintain, vacant building, non-occupancy by owner/s, lack of keen interest in maintaining heritage buildings, lack of available technical know-how to conserve/repair traditional buildings, diminishing sense of community spirit and apparent cultural narrative due to loss of cultural identity by newer generations and influx of people in Pol from other Pols as well as from other parts of the country. Moreover, the urban planning tools seldom gave adequate attention to older parts of urban settlements that house most of the heritage buildings and usually have higher densities than the rest of the city. Instead, the tools are applied to rather focus on chasing the continuous and unabated urban growth of urban areas.

People not only live/work in such heritage buildings, but also visit these buildings as visitors (some of the major purposes being social, economic, religious, tourism, leisure including gastronomic purpose alike). The heritage buildings being located in the city core, it is worth noting that such areas where they are located are more than often parts of a city that are also the busiest parts of cities and have the busiest markets from neighbourhood level to city scale retail and wholesale markets selling almost every item needed by common man at significantly lower prices as compared to most of the other parts of the city. Such markets and service sector enterprises become 'the' place to go particularly for the lower- and middle-class residents of the city as well as for the large floating population from nearby villages and towns and even from neighbouring districts. At times the visits for such purposes (i.e. markets and service sector related chores) are combined with visits for social purpose such as visiting relatives and friends living in the older parts of the city. Also, processions and festivals (such as the kite festival celebrated on 14th and 15th of January every year in Ahmedabad, India) attract influx into the city core hundreds of thousands of revellers who

live elsewhere in the city and even outside Ahmedabad. The uses of the buildings in such parts are varied ranging from residential, mixed, commercial, educational, religious, administrative buildings (such as the offices of the urban local body, offices of judiciary) and demand critical review so as to safeguard not only the buildings/structures having heritage value but also for ensuring the safety of the people who live and/or work in them and also those who visit such areas.

This paper, while taking up the case study of the walled city of Ahmedabad attempts to explore the uses to which buildings and structures including those having heritage value (i.e. they have been graded and listed based upon their heritage value) per-se are put to in the contemporary times. The heritage listing of buildings by way of assigning heritage grades¹ (i.e. II/A, II/B, III) has been done by heritage and conservation experts on behalf of the urban local body, the Ahmedabad Municipal Corporation (AMC).

Study Area

The study area is located in Ahmedabad City and is part of the historic city of Ahmedabad. Ahmedabad city is located in the western part of India in Gujarat state and is the seventh most populous city in the country as per the 2011 Census of India. It has a rich history of over 610 years. The city has historically been a prominent trade and commerce centre. The major economic activities include textile printing, pharmaceutical manufacturing, etc. The city's local body was established in 1850 prior to which it was a Municipal Borough. The civic body runs schools, hospitals, civic centres, fire services and provides other essential and basic infrastructure facilities as well as amenities. The city has a population of 5.57 million as per the data from the 2011 Census of India figures. Also as per the same Census, the city population grew at a decadal growth rate of 22.36% during the period 2001-2011 and 58.46% during the period 1991-2001, one reason for which is the over two fold (from 190 sq.kms to 466 sq.kms.) expansion of the geographic jurisdiction of the area governed by the urban local body, The Ahmedabad Municipal Corporation (AMC). Again, in 2021 the boundaries of AMC were further expanded to include areas from the eastern part of Ahmedabad. As of 2011, the average population density within the AMC limits and across the 57 wards was 11,953 persons per square Km. The population density in the historic

city of Ahmedabad (which as of 2011 covered 6 of the city's 57 city wards) was on an average more than 5 times higher than the average city level aggregated density. Although the city population has been rising temporally, the overall population in the walled city has in fact declined over the past few decades. For example, in 2001 the population was 3.72 lakhs where as the population declined marginally to 3.67 lakhs. Thus during this decade (2001-2011), there was a negative decadal growth rate of 1.26% in 6 wards which were part of the walled city of Ahmedabad although the corresponding aggregate figures for the city's 57 wards was 22.36%. In 2015, the number of wards declined from 57 to 48. Earlier 6 wards (Khadia, Jamalpur, Kalupur, Dariyapur, Shahpur and Raikhad) were located in the walled city of Ahmedabad and in the year 2015 these wards have been merged amongst each other as well as with areas from other wards (such as Danilimda, etc.) from the city and located outside the walled city of Ahmedabad, this has brought down the number of wards to 4 (i.e. Khadia (ward no.28), Jamalpur (ward no.29), Dariyapur (ward no.21) and Shahpur (ward no.17)). The areas now covered under these 4 wards include both areas within the walled city and also the adjoining areas outside the walled city limits.

The historic city has about 600 Pols and smaller sized areas comprising of houses and structures either located within Pols or outside them and known locally as *askhadki's*, *khacho*, *Sheri*, *Dahelo*, etc. Pols are micro-neighbourhood with narrow streets flanked by traditional houses arranged in a row or group with specific entry point/s. By and large, in earlier times people of the same community and religion stayed in the same Pol.

There are over 65,000 structures which form the fabric of the historic city out of which, close to 3 per cent have been listed based upon their heritage value. In early 2000's a list was prepared of about 12,500 structures that were worthy of conservation with the help of international experts. Another listing was done about a decade later by experts from academic institution on behalf of the AMC. The heritage structures have a load bearing timber frame with brick in lime mortar masonry infill walls with bracing elements in horizontal, vertical and even diagonal (in case of some buildings) directions. The brackets, beams, posts and floor elements are also made of timber. The diaphragm is interjected with cutouts for an open to sky courtyard (*chowk*). In

many buildings, the front façade is entirely wooden with embellishments. Thus, the traditional architecture of Pol houses is predominantly timber-based and exceptional. A rough ball park estimate would bring the timber proportion by volume (in traditional wooden framed listed buildings) on an average to nearly 40%. Timber is a highly combustible material as it has a high cellulose content.

Landuse Regulation

Landuse is an important determinant for understanding the dynamics of development in an area and also the use needs to be looked into closely particularly in the areas of cities having their landscape engrained with cultural heritage and especially the tangible heritage such as buildings and other structures that symbolise clear cut connections between the past, present the future generations of communities.

The walled city of Ahmedabad with its urban fabric and structures existed even before formal town planning related legislation was introduced and enacted to the city, state or country. The Gujarat Town Planning and Urban Development Act, 1976 is the legislation in Gujarat state for planning, governing and regulating urbanized and urbanizable (peri-urban) land use. Under the provisions of this Act, macro and micro planning instruments such as Development Plan (DP), Town Planning (T.P.) Schemes respectively are prepared for Planning urban growth. In Gujarat state, the Comprehensive General Development Control Legislation (CGDCL), 2017, is a common document for all the cities and is part of the Development Plan preparation. The legislation has a specifies various 'use zones' and 'Core Walled City' is one such 'use zone', which is one of the 47 'use zones'. The Use Zone CW has been exclusively identified for promoting conservation of heritage structures and the urban fabric within the walled city.

According to the CGDCL, 2017, 'use' is 'the principal occupancy in an approved building for which a building or a part of it is used or intended to be used, including contingent subsidiary occupancies'. The document specifies various uses such as Agricultural, Assembly, Business, Commercial, Educational, Hospitality, Industrial, Institutional, Mercantile, Public Utility, Public Institutional, Residential, Religious and Storage and use 'X'. Use 'X' refers to a building or place or part thereof that is used for congregation of people for the cultural, amusement, rec-

reational, social purpose. In the CGDCL 2017, the use 'Storage' refers to 'a building or place or part there of used primarily for storage or shelter of goods and merchandise. Such use includes warehouse, cold storage, freight depot, transit shed, store house, public garage, hangar, grain elevator, and barn.

Precinct Pols and study Pol One of these precinct Pols were selected as a case study Pol.

Use of properties in walled city of Ahmedabad

In the walled city, as per the CGDCL, 2017 the permissible land use is residential, commercial, mixed land use, home stays, entertainment.

It is seen during field survey that in the walled city area at several locations irrespective of the widths of roads/streets/lanes abutting the buildings located within Pols, several buildings have non-residential land use which particularly involves sale, storage and handling of combustible material.

As per secondary data on use of properties, the central zone where the walled city of Ahmedabad is located has the highest (in 2022) number of non residential properties. Within the Central Zone (one of the many Zones of AMC's jurisdiction), on an average, 57.02 % of properties have residential use whereas the remaining have non-residential use. Areas such as Panchkuwa have almost fully commercial (96.15). Areas such as Mandvi in Pol have almost an equal amount of properties (tenements) used for residential and non residential use. Panchkuwa area has the least (3.85%) properties having residential use whereas, the area near Dhal ni Pol (the study area in the present paper) has the highest (79.19%) residential properties.

The buildings in pols in the walled city have mainly been used for residential purposes with some proportion of land in the Pol allocated to other supporting uses such as religious, public purpose such as community well, *chabutaro* (bird feeder), Pol gate at the Pol entrance, etc. Some buildings have retail commercial (such as barber, tailor shop, ironer, etc.) as per day to day needs of the residents. However, over time, many new building uses have emerged which have been looked into in the present study.

Methodology

The methodology for determining the use of structures and building includes a mixed methods approach. Secondary data on precinct Pols, listed heri-

tage buildings, extent of non-residential properties helped in identification of the case study Pol.

Field work was conducted during July 2019 to August 2022 to do the rapid visual screening of buildings in order to determine the use of the building in the case study Pol. The rapid visual screening is a sidewalk survey in order to determine attributes of the built form such as building use, apparent building condition and, number of stories. The present paper discusses the building use and implications of the same. The survey was supplemented by informal discussions with the local community.

The Rapid Visual primary onsite surveys were conducted based upon a Performa prepared to gather data on contemporary use of buildings and structures in the Pol. The Performa contained two parts - one for data collection about use of building and structure which, was based upon visual observation. The second part was to document through photographs and sketches the location of buildings surveyed. Moving around in the Pol and based upon visual observation it is comprehensible to determine the predominant land use of the property i.e. whether the property is used for residential or non-residential use as the front door giving access to the buildings is usually ajar till late evening, a common trait seen in Pol buildings. The informal discussions with community helped in way-finding through the organic urban fabric of the area and also in understanding their living and/or working context and perspectives and information on the building use (i.e. various use categories of residential and non residential use).

Study Pol Within Walled City of Ahmedabad

Khadia ward (ward no. 1 as per the 2011 Census) is the oldest ward in the walled city area. A specific area was selected for the field work undertaken for study. This area within Khadia ward has large pockets of predominantly residential areas and also, this area is adjoining to one of the busiest arterial roads of the city - the Swami Vivekanand Road that connects the modern largely upscale western part of the city to the relatively lesser upscale eastern part of the city. This road encircles the study area from the southern and eastern periphery and, forms the main through-o-fare route to and fro from Ahmedabad's main Railway station (Kalupur) and the Gujarat State Road Transport Corporation's Main Bus Stop (the Geeta Mandir Station). On this road also ply the Bus Rapid Transport System (BRTS) and the Muni-

public and private water sources and well as houses through funding from various sources, celebration of a special week as the festival of the Pol, etc.

Thus these interventions include various aspects of development of the Pol, the results of which are visibly evident. The Pol has regular visitors streaming in for business, social and tourism purpose. There is even a heritage bed and breakfast enterprise. There are a number of graded and listed buildings and structures. As per secondary data on tax levied on properties, the area where the case study Pol is located has 20.81% of properties (referred to as 'tenements') being used for non-residential use. The road widths in the Pols vary from sub metre level to few metres. Also, the ground level has a gentle slope.

Results and Discussion

Use of buildings in Case study Pol

The use of buildings in the case study Pol is varied. Of the total buildings and structures in the Pol, 14% are listed. Almost 11 % of the buildings were locked either fully or partly and about 6 % of the buildings were fully or partly demolished. Nearly 44 % of the buildings have residential use. Another 5 % of the buildings has mixed use. Almost 9 % of the buildings have commercial use and about 12 % of the buildings have storage cum commercial function. Nearly 1 % of the buildings had religious use. Institutional buildings comprised of almost 2 % of the buildings. Less than 1 % of buildings were under construction. The rest of the buildings were used as thorough-o-fare, parking, open space, etc.

As can be seen from the above, 24% of the buildings that have use which involved storage and handling of combustible material and which in turn can impact the heritage structures in the event of a Class A fire breaking out. It was observed during field visits that out of the buildings surveyed, 2 buildings had shops /storage spaces mainly on the ground floor. The shops had combustible material such as cloth stored in it. In case of two graded buildings surrounding them are buildings with non-residential use involving handling combustible material such as cloth.

Implication of contemporary Land use on Heritage Buildings and Surrounding Buildings

Rapid visual screening was done for 150 buildings

in the case study Pols out of which 21 were listed buildings. On an average 24% of buildings in the Pol haven on residential use out of which 21% has commercial or storage cum commercial function.

Of these, most of the buildings have use of building that may make the buildings vulnerable of fire due to sale and storage of combustible materials such as cloth.

Thus, the secondary data validates the field survey results as during the field survey the number of buildings has been enumerated whereas in the secondary data the number of 'tenement' (residential or non-residential units) has been enumerated. The implication of having non-residential use such as storage and sale are:

Implications on Fire Safety of Residents and Listed Heritage Buildings

It is seen during field survey that in the walled city area the roads leading to the Pols at several locations are not even 3 meter wide and have non-residential use i.e. commercial and storage land use is prevalent.

As shown from the study, commercial and storage land use often involves sale, storage and handling of combustible material such as cloth.

As per the present layout of buildings in the area, due to narrow lanes fire tenders would be unable to reach the buildings abutting narrow lanes in case of any fire event even though the fire and Emergency Services department has bullet bikes equipped with tanks for extinguishing fire but the capacity of the fire extinguishing material may be highly insufficient in case of a major fire breaking out. Certain buildings with use for handling and storage of goods and materials about such narrow lanes.

It is observed that near/or adjoining a building used for handling and storage of goods and materials are located graded and listed heritage buildings made from timber for the structural and decorative elements including the front timber façade with embellishments and brick infill walls. In case of the case study Pol, two graded buildings have non-residential land use involving handling combustible material.

Increase in excessive Fire load

Fire load becomes excessive when the type and volume of material handled and stored is highly combustible due to its high calorific value. According to the residents and initial discussions with the local

authority about the study area in case of fire in buildings with such use, by the time the fire tenders and water tenders (on bikes) reach the spot of the incident, much damage may already be done. As such the results of an estimation of quantity of buildings materials while referring to measured drawings done as a separate exercise earlier (not discussed in the present paper) of the buildings and after conducting site visits for verification, used in the structural and non-structural members excluding the building contents of two buildings showed that in some buildings almost 40% by volume of timber as a building material was used. Timber itself is a highly combustible material and placing and storing combustible material within the building made from a significant proportion of timber can make the building even more vulnerable. Although portable hand held fire fighting equipment such as fire extinguishers highly insufficient even in case of a major fire event, such equipment was conspicuous by its absence in almost all the surveyed buildings.

Implications on Threat to residential character of Pol

The properties were originally designed for residential use - it is evident when we see the light wooden frame structure of the traditional Pol house. Although a mix of uses also helps in retaining the vibrancy of the walled city as people, goods and services move throughout these areas, however, additional stress is impinged on the structure with non-residential use such as storage.

The presence of heritage buildings being surrounded or even themselves having storage, handling and sale of combustible material seems to have become a pattern language in spatial terms in the case study Pol. There is a high probability of repetition of such spatial patterns across the other areas of the walled city of Ahmedabad which can be taken up for study in future.

Conclusion

While the area where the case study Pol is located has the highest number of residential properties (over 79% as per secondary data source), there are other areas such as Panchkuwa where almost all buildings (96%) in the Pols have non-residential use. And in some places, such as Mandvi in Pol, properties in pols are used for residential and non-residen-

tial uses in almost equal proportions.

As can be seen that about 24% of the surveyed buildings have use and about half which have use that can lead to making the listed and heritage graded building vulnerable to fire. This figure slightly varies from the data on percentage of buildings under non-residential use (20.81%), the reasons for this variation could be attributed to the aspect of the location of surveyed building for the present study - mainly the buildings closer to the Pol entrances were surveyed and the entire area including all surrounding *Khadki's*, *Khacho's*, etc. were not surveyed. Generally, due to the requirements of accessibility and facilitation of vehicular movements, the buildings involving sale, storage, handling of goods are closer to areas within Pol that adjoin the main streets. Another reason for the variation in result could be due to sub-divisions within buildings that are not captured by visual observation. The informal discussions with the local community during field work revealed that on an average there are 2 or 3 subdivisions in each building in terms of the number of families residing, number of shops/workshops/service units, number of families doing home based activities, number of storage facilities for commercial purpose.

Building use comprising of handling and storage of combustible material such as cloth with significant quantity of timber can make the buildings more vulnerable to fire. It is observed from the study that in few (2) buildings which are listed with heritage grade themselves house activities involving sale, storage and handling of material that is combustible in nature and in turn, can increase their vulnerable status.

As the buildings were not designed to house and also take the loads of combustible materials and goods through their sale, handling and storage, use of building for such purpose can lead to increase in the vulnerable status of the buildings and in turn also of the residents of the building including those living nearby the building, people who work in/near such buildings and also the tourists, visitors, etc. to the Pol. As the study Pol is located in an area which is predominantly a residential area, such trajectories of deviations in building use and the probability of its impact needs to be looked into so as to safe guard the living environs of the Pol residents and in turn safeguard heritage buildings for cherishing by future generations.

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Conflict of Interest: None

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