
Vadnagar: A Story of Human Innovation and Resilience for More Than Two Millennia

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Abstract: This article gives a general account of the town's origins, growth, and resilience after giving readers an insight into the variety of cultural materials unearthed during the excavation at Vadnagar in previous sections. One of the significant outcomes of excavation is the revelation of 'Continuity of human occupation over two millennia'. Such uninterrupted cultural continuity unveiled a unique aspect of the town: an uninterrupted extensive human habitation and cross-cultural evolution that sustained itself and continues for a long period. Such a long period of human habitation is exceptional in the Indian scenario with very few sites claiming similar uninterrupted continuity. With the beginning of rampart around settlement, the first defence structure of Period II which subsequently transformed into the brick-built fortification wall raised over it (in Period III), major changes took place within the township which indicates an era of development and growth of the town. These resulted into large scale socio-economic-religious transformation, as it is evident from the appearance of Buddhism and Jainism co-existing with Brahmanical faith and later on Islam in the region. Gujarat being well connected with sea-borne trade of West Asia, East Africa and even the Far East as well as land route via Sindh and Punjab to the Silk route since ancient times, Vadnagar as a land port town or 'sthalapattanam' must have played a crucial role in being a prominent landmark on the major trade routes running across Gujarat connecting Rajputana, Malwa, Saurashtra and Deccan.

Keywords: Structural Remains, Cultural Periods, Town Planning, Fortification Wall, Water Harvesting System, Cosmopolitan Society, Vadnagar

Introduction

The historic site of Vadnagar (Ambekar 2019, 2022; Ambekar et al. 2019) can be categorised into seven developmental phases or historical periods. The overall layout of the present, densely populated town within the fortified area seems to follow the pattern of Period VI. Thus, the morphology of the contemporary town draws heavily from past influences. The Darbargadh area is prominently located, and the main streets from all four directions lead to it. These main streets intersect with lanes. These narrow lanes connect all the important places, including temples and bazaars of the town. In terms of the structures excavated, a number of rectangular brick structures were encountered

from the horizon of Period II through Period V. These rectangular structures generally have a series of two to three rooms in juxtaposed order. Sometimes traces of *otlo* have also been noticed. The *otlo* is a traditional regional architectural feature of the residences with an extending plinth running parallel to the side of the house facing the road. This has continued, and it correlates to the present-day tradition of *otlo*. It has also been noted that the structures of the succeeding phase have drains terminating into the street. These are some of the noticeable features of Vadnagar's town planning. To better understand the nuances of Vadnagar's multifaceted development across time, the significance of the site and its findings are explained in accordance with related cultural periods.

Period I (Pre-Rampart Phase: Pre 2nd Century BCE)

The excavations at Locality C, B and Ambaghat have revealed a number of objects that could be termed as constituting a cultural assemblage and are datable to the pre-rampart period (Period I – pre 2nd century BCE). This cultural assemblage comprises ceramic ware, beads and shell artefacts besides brickbats and fragments of a tile roof. The finding of brickbats and a tile roof suggests that the structure was predominantly made of brick and tile. During this initial period, the inhabitants covered almost the area or footprint which was confined within the fortified town later. Excavation carried out beyond the fortification limits did not yield any remains belonging to the earliest period.

This period points towards human occupation and inhabitation of the site. Houses made of burnt bricks at the site, indicating a more settled way of life. The planning of settlements must have been of a simple type and the evidence of burnt bricks suggests that its use was perhaps well-known at the time. Alongside burnt bricks, other houses of mud and mud bricks and even wattle and daub must have also been built. Evidence of broken roof tiles suggests the presence of roofing materials other than thatch. All these together, indicate the settlement was of modest and simple nature.

For a settlement occupying such a large area, the Sharmishtha Lake on the northern side must have been its main source of water and fishing, alongside animal husbandry. Such a geomorphological setting can be a crucial factor for selecting a site for settlement such that there is access to available natural resources for subsistence.

Period II (Rampart Phase: 2nd Century BCE - 1st Century CE)

The defensive structure built over the pre-rampart habitation has also been constructed in the form of a rampart. This overlay suggests the beginning of an era of changes and development in the settlement pattern. From the level of this new rampart, the structures belonging to Period II have been made from burnt brick. Due to the paucity of space for further excavation at the deep cutting, structural remains have been only partially revealed in trench number A1/33/63. The brick structure is rectangular in plan and oriented along the east-west direction. It includes two rooms built over layer 33 and sealed by layer 31. The fact that there is evidence to show that there is a progression of a similar structural form is suggestive of continuity in house planning up to the early phase of Period III (Figures 1 and 2). Furthermore, it was during this time that the

rampart was further reinforced using brick veneering as has been observed from the cutting of segment 2 (Figure 3).



Figure 1: The deep cutting between the high-raised wall reveals a sequence of structural activities that have followed the plumb-line of their predecessors, spanning from Period III to Period V. The image on the right shows the brick structure of Period II at the lowest level, alongside a new pattern of dwelling structure in the form of a high-raised wall that has emerged deviates slightly from the previous lay-out.

Period III (Kshatrapa Phase: 1st - 4th Century CE)

The continuation of the structural features of the preceding phase of construction is observed in this period. At the same time, the introduction of a new planning pattern for the building of brick structures suggests that this had become a characteristic feature of a new type of construction which became the vogue/norm during the successive periods up to the 11th/12th century CE (Figures 1 and 2). The notion of continuation of a single-unit rectangular house plan is seen from the raising of subsequent structures following the plumb-line of the preceding one. The unit is 12 to 13m high and occupies the same area as the preceding structure, indicating good quality, able masonry, and its uniqueness.

High-raised brick structures are a unique phenomenon that the site has revealed. One such structure has been reported in Trench no. A1/33/63 which rests on layer 30. All such high-raised structures have been observed to be aligned parallel, either to the road or a narrow lane (Figure 2). The extensive use of brick seen in these structures and the formation of the brick fortification wall around the town (except for in the northern segment during the early phase), points towards the emergence of this region as a *nagar* or a thriving urban town (Figure 4).

Another notable aspect is observed in the construction method adopted at the site. From the beginning, burnt brick was incorporated as a building material for structures of

regular shape, ranging from square to rectangular in the plan. The corners of the structures have been made with an interesting method of construction pattern. Bricks are laid perpendicular to each other in the corners of the structure, and alternate brick courses are laid in the direction of the wall. This allows better bonding, integration, and load distribution of the masonry. The building form evolves through the corners and edges. The first row of the masonry is formed in one particular arrangement, starting from outside to inside the corner. The second row is laid out the other way around. All subsequent rows are laid alternately. Such staggered arrangement serves three purposes:

- Integration of adjoining walls
- Staggered mortar line resists crack formation
- Equal load distribution in both directions of the junctions

Period IV (Post Kshatrapa Phase: 5th - 9th /10th century CE)

When compared to structures of the preceding period, the structural remains found belonging to Period IV show the continuation of a similar building pattern. Besides this, the building of newer structures indicates a narrowing down of open space which was being maintained around those of the preceding period (Figures 1 and 2). The structural activities during the late phase of Period III and the early phase of Period IV indicate a greater diversity in economic activities as well which is reflected through the cultural assemblage taking place. The development observed beginning from Period III which attained its peak during the late phase of Period III and early phase of Period IV indicates a surplus economy. Rice as the main form of agricultural produce, expansion of shell crafts, copying of Indo Greek coins and trade activities reflect a positive and significant contribution to the overall growth of the town. It was also by this time that the site had emerged as a significant hinterland port which participated in inland and offshore trade activity. The supply of shell ornaments to neighbouring regions, procurement of raw material from the Gulf of Kuchchh, copying of Indo-Greek coins to be used as a medium of exchange at Bharuch port for maritime trade, presence of Indo Pacific beads from Period II to VII, white banded blue glass beads, Torpedo jar, and knowledge transfer of timber bonding structure etc, strengthen this argument.

Considering all of the facts stated above, it is clear that the site has functioned as a seat of economic power and trade where artists, craft persons, agriculturalists and cattle keepers have been commissioned in shell craft, lapidary, black smithery, farming, animal husbandry, water harvesting management and probably for coin minting, spinning & dyeing etc. Furthermore, the numismatic data gathered from the site suggests the existence of a monetised settlement that functioned through two millennia. It also brings to the fore a hitherto ignored, lead coinage belonging to the 4th/5th centuries CE (assigned to Period IV, early phase). The symbols depicted on them belong to the *Shaivite* and *Vaishnavite* faiths which suggest a strong presence of both sects at the site. In addition to these, the discovery of seals belonging to the Buddhist faith indicates the presence of a multi-faith and possibly, a cosmopolitan and heterogeneous society at Vadnagar during this time.

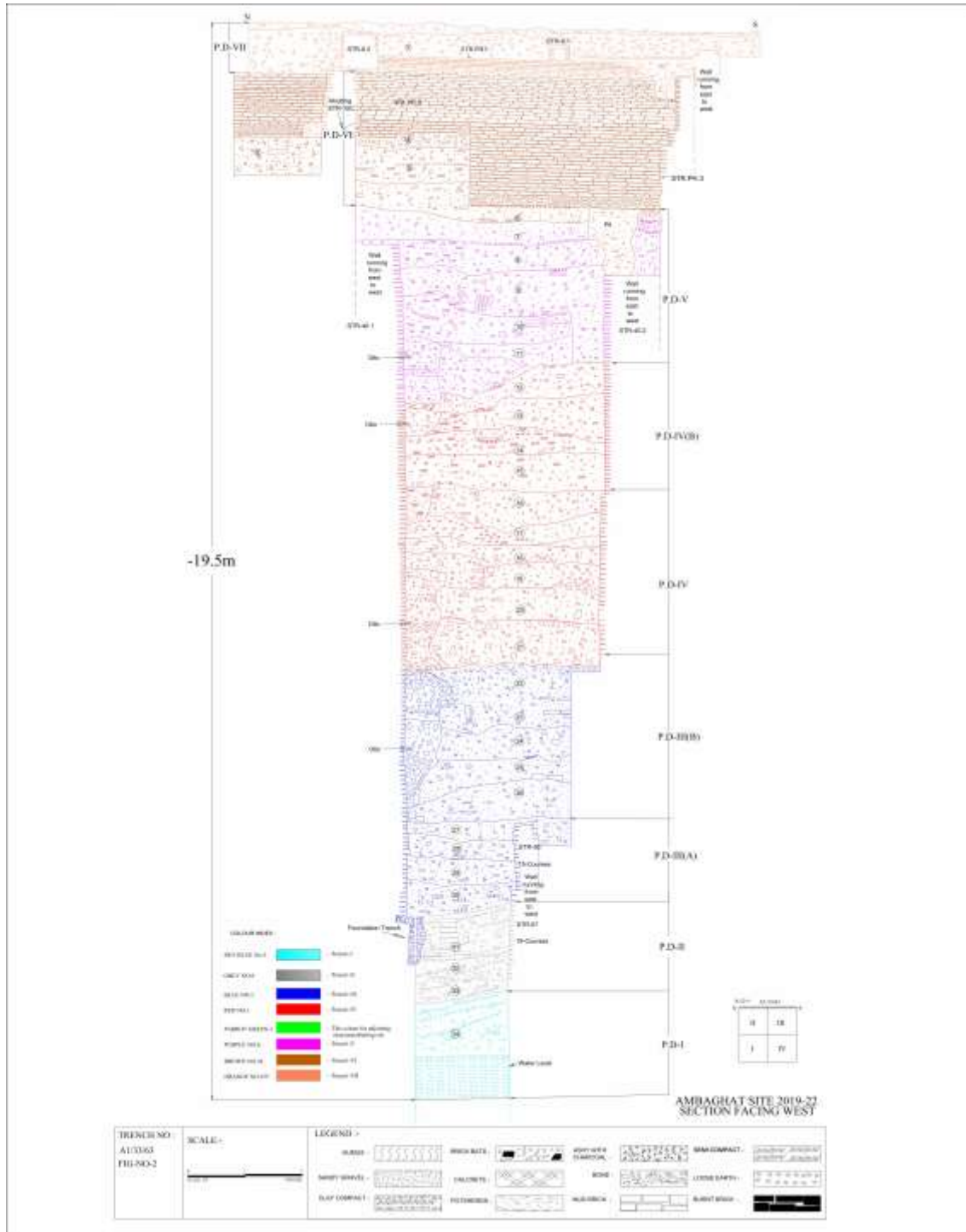


Figure 2: The section drawing depicts the structural dynamics of Period II, which briefly extends into the subsequent phase. During Period III, a distinct arrangement of houses emerged, which exhibited slight variations compared to the preceding layout. The building of newer structures in the following phase indicates a narrowing down of open space that was previously preserved around the structures from the preceding phase (Period III). This pattern persists until Period V, after which a completely distinct pattern of habitation layout emerges.



Figure 3: This section of the fortification wall provides evidence of continuity over two millennia. The first defence measure came in the form of a rampart, which was later reinforced with a brick veneer on top. In Period III, brick fortification walls were added atop the rampart, with subsequent expansions in later periods. Bastions became evident at consistent intervals of roughly 30 to 35 meters. They were constructed on top of each other in the same location by successive builders, with only slight variations in their shape.

Amongst the specialised crafts activity discovered at the site, shell craft was the important craft that prevailed up till the 13th-14th century CE. In the absence of a potter's kiln, the dabbers reported belonging to the late phase of Period IV and subsequent phases indicates the existence of potter's activity outside the fortified town. Presently as well, potter's kilns are located along the outer periphery of the fortification wall, particularly in front of the *Amther mata no gate* (eastern gate). Furthermore, the site has also yielded a large number of oblong hearths from the open area located in between two structures along the outer periphery of houses or close to the fortification wall. One of the brick-lined hearth adjacent to the fortification wall has reported 72.8 kg of iron slag while another group of hearths from *Valmiya no Mahad* (field season 2017-18) recorded glass debitage.

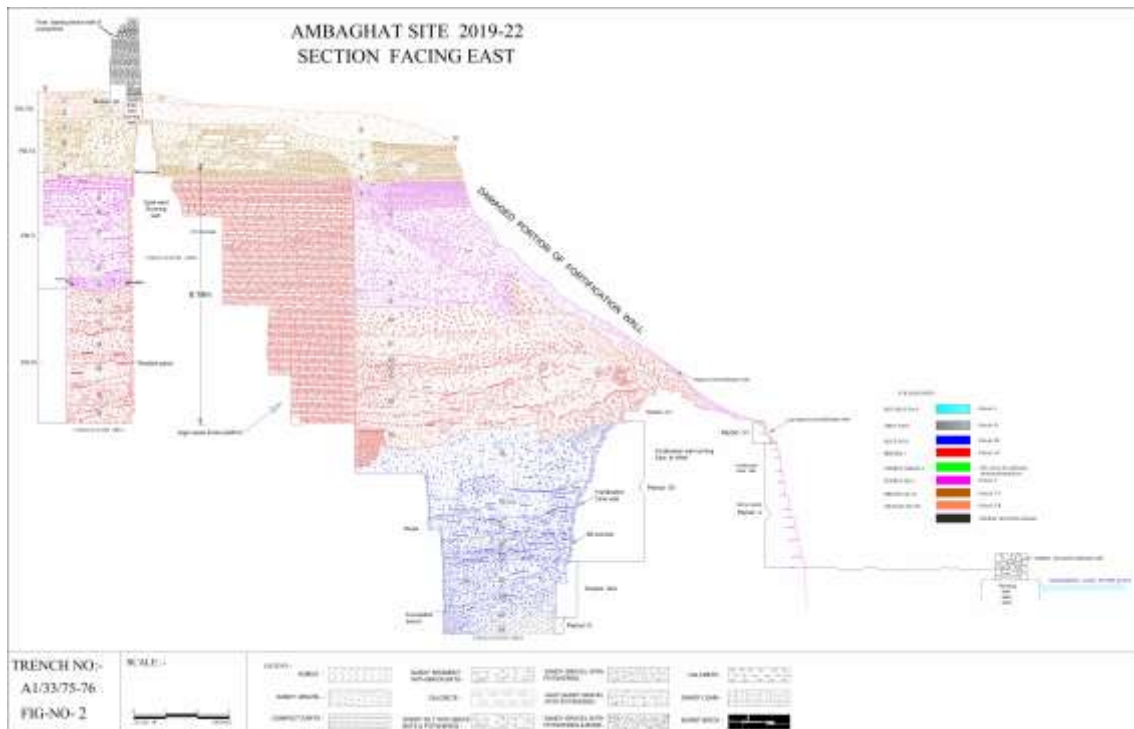


Figure 4: The section drawing illustrates an important feature that the entire town remained open towards Sharmistha lake until around the 2nd or 3rd century CE. Sharmistha lake served as a natural protective boundary for the town during that time. Subsequently, the entire stretch of the fortification wall underwent major repairs during the following cultural periods.

Period V (Solanki Phase: 10th - 13th Century CE)

There are two major structural findings that have been noticed during this time. One is the high-raised structure whose making at the site commenced during Period III and continued up to the early phase of Period V, and has been discontinued in the remainder of the period. The other is the rebuilding of the fortification wall (Figure 5). For its renovation, apart from bricks, stone blocks were also introduced and are visible on the northern segment of the fortification wall (Figure 2). In the collapsed structures, the

deformations and destruction of the buildings, the tilted and rotated wall fragments along the hanging abutting wall, possible due to seismic events have been observed in trench nos. A1/33/85, 63, 65, 62 and 42 (Figure 6). A layer identified at Locality C has been filled with debris. The street and the lane continued from preceding phases got discontinued and replaced with new lay-out of house planning. This along with the renovation of the fort wall suggests major changes in town planning and construction activity.



Figure 5: Discontinuation of high raised brick structures due to seismic event



Figure 6: Collapsed structures, the deformations and destruction of the buildings, the tilted and rotated wall fragments along the hanging abutting wall, due to seismic events.

Another noteworthy feature observed at the site, in terms of town planning from the beginning to the present time, irrespective of structural phases is the alignment of the structural remains. It is observed that these structural remains are tilted from 10 to 20 degrees West from the North. When analysed keeping in mind the wind direction during

the Indian summer monsoon, such an inclination would be helpful to the structure to sustain the wind thrust pressure.

Period VI (Sultanate-Mughal Phase: 14th -17th Century CE)

The cutting done in trench no A1/33/42 and A1/33/63 provides evidence of changes in town-planning during Period VI. It is based on this planning pattern that the present township has still prevailed. Structures that have been built flanking the roads maintain an open space 4.17 m wide (Figure 7). Roads of a similar dimension have continued till present. Fallen structural remains belonging to a preceding cultural period and having an orientation facing northeast and southwest, indicate shifts in the entire town planning from the beginning of Period VI or late phase of Period V.

Period VII (Gaekwad Phase: 18th-19th Century CE)

The excavation has exposed the plan of long and narrow houses having multiple divisions and belonging to Period VII. The walls however, have followed the plumb line of the earlier structures. No separate foundation was made for these houses. Instead, walls have been raised over the wall of the preceding structure as foundation. However, it has been observed that there is a difference in the masonry when comparing the two structures. The structures built parallel to the fortification wall maintain a 9m wide open space in the northern segment.

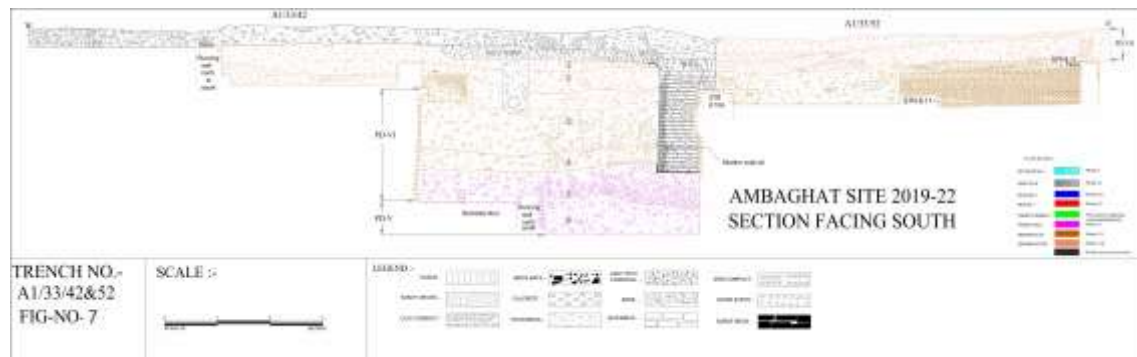


Figure 7: Illustrates the contemporary houses situated on both sides of a 4.17-meter-wide cement road. This contemporary layout design has maintained the previous town planning of a comparable configuration.

Streets and Lanes

The present township within the fortification has main streets running along the east-west and north-south directions, connecting each other at points originating from six gates. The lanes join these main roads from all directions and lead towards the gate. The overall laying of roads and lanes indicates an arterial pattern.

The cutting in the trench nos. A1/33/63 and 62 have revealed the making of the lane between the beginning of Period IV and the late phase of Period V. Another feature is that the lane intersects the street at a right-angle, forming a T-like junction with buildings planned on both sides of the 3.4 wide street and the 90-100cm wide lane.

Another interesting feature observed along the high-raised walls which were built on top of the preceding structures following the same plumb-line, are the different kinds of deposits abutting the wall which bifurcate the vertically from the horizontal layers suggesting some sort of a platform-like arrangement. It is speculated that this was made abutting the walls along the roadside. It is also similar to the sitting space called *otlo* found in present-day houses at Vadnagar which are also raised platforms alongside the road. These spaces are used for sitting and daily conversations. The similarity in such a tradition can be ascertained by observing the resemblances in the structures at site, stretching back from the ancient times to the present day in the area.

House-drains have been observed to be terminating at the road during periods VI and VII. Drains observed within the house have been covered either using a paved floor, or at the wall, terminating into a soak jar and other drains during Period VII. Furthermore, while the streets have been observed to be covered with some kind of paved brick treatment at various instances, the lanes indicate no such special surface-cover treatment.

Summary and Conclusion

The excavation of three consecutive field seasons (2019-22) revealed human habitation from the mid-8th century BCE till date. These findings uncovered a unique aspect of the town: an uninterrupted extensive human habitation and cross-cultural evolution that sustained itself and continues till date. Such a long period of human habitation is exceptional in the Indian scenario with very few sites claiming similar uninterrupted continuity.

A. S. Altekar (1925,14) in “A History of Important Ancient Towns and Cities in Gujarat and Kathiawad” published in the Indian Antiquary in 1924 has rightly identified ancient references of Anandapura with Vadnagar, and has appropriately attested the changing name of the city as Chamatkarapura, Anartapura, Anandapura, Vrdhanagara and later Vadnagar. Altekar says that Anandapura means “city of joy” and it was the name of this city up to the 12th century CE. This accurately corresponds with the excavated findings of defence structures and structural remains of able masonry as well as rich and diverse cultural assemblage yielded from the site. Highly skilled craftsmanship is seen from the array of cultural material remains, especially shell, which shows their aesthetic sense and superior skill. All in all, what emerges is a picture of a thriving composite township of historical times.

Further, in his monograph states that during the Maitraka dynasty, the city of Vadnagar was known by both names Anartapura (mentioned in the copper plate grant of Dharasena IV, dated approximately 645 CE) and Anandapura (mentioned in the copper plate grant of Kharagraha II dated to 658 CE). The former name continued because of the city's location within the province Anarta, and the latter name was given because the city enjoyed a high status as a centre for learning, as attested later by the Kumarpal *Prashasti*, and was a joyous city full of life.

It shows, the town of Vadnagar was known as Anandapura during the 7th/8th century CE, as seen in the Maitraka copper plate land grants. Excavated evidence from this time suggests that the city was thriving, and it was known that the Nagar Brahmins, a famous and distinguished Brahmin class, hailed from this prestigious town. Under the Solanki rule during the 10th-12th century CE, the city reached its peak in terms of art, lifestyle, and trade, as evidenced by excavated artefacts. The Kumarpal *Prashasti*, dated approximately to 1152 CE at the Arjan Bari gate, provides a detailed description of the city and its environment. The *Prashasti* explains that the land was named Anandapura because even after the loss of Dharma in other regions, this land remained standing due to the great sacrifices of the sages and Brahmins who lived in it. The streets were described as resplendent with the glittering jewels worn by the ladies walking around the city. The *Prashasti* gives an elaborate account of fountains, agricultural lands, and a beautiful white rampart, and describes the inner and outer environs as wondrous in their beauty.

On the basis of chronometric dating as well as the artefacts unearthed, the chronology of seven cultural periods was formulated. Starting from Period I to VII, we see successive progression of quality and quantity of craftsmanship in shell, glass, stone, terracotta and ivory objects etc. Monetization and trade also expanded. Agriculture along with animal husbandry constantly helped to sustain the people of Vadnagar. The artefacts and structures excavated reveal the presence of a multi-faith, possibly a cosmopolitan heterogeneous society at Vadnagar that records the coexistence of different cultural elements like Buddhist monasteries (1st century CE), temples, reading of Jain text *Kalpāsutra* in public (6th century CE) and Indo-Islamic architecture (14th-17th century CE). This shows that this settlement was a melting pot of different socio-religious and cultural milieu, reflecting the spirit of Indian ethos in every time period.

In a nutshell, based on the structural remains and artefacts unearthed at the site, it can be postulated that since the beginning brick houses besides structures of perishable material have existed. From Period II onward, they built new houses maintaining the plumb line of their preceding structure. The (earthen) rampart defence system built in the 2nd century BCE was reinforced in successive periods with brick and then stone. The fort wall that we see today is standing on the ancient (earthen) rampart. This means that the area covering the fort wall was as big in the early periods as it is today and this kind of continued occupation indicates strategic and meticulous planning, and it is a testament to human adaptation and development over the centuries. This kind of futuristic vision and planning is a marvellous feature of human survival. The structural remains exposed at the site from Period II to V and Period VI to VII shows two major different kinds of developments in the town planning pattern. In Period II, a rampart was introduced, which transformed into a brick fortification wall during subsequent periods, indicating continuous growth of the site, parallel to the formation of an organised and structured society.

One of the reasons for this continued sustenance and growth at the site is the knowledge of the water harvesting system. The requirement for building a complex water

harvesting system of artificial lakes with interconnected canals stems from the fact that ancient Vadnagar (similar to other cities) also faced the vagaries of nature. The phases of aridity led the people to first build artificial lakes along with interconnected canals, then step-wells, and finally wells inside or on edges of the lakes. Such a unique invention and its innovative construction and planning were known to the people of Vadnagar since Harappan times as noticed at Dholavira and later on Sudarshan lake. They used this inherent knowledge as a response to the adverse climatic and geographical situation prevalent in various time-periods to allow sustenance of life and cultural continuity. These are some of the key features that make the history of Vadnagar unique and ascertain its value in our understanding of India's past over centuries.

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