Chapter 3 -

SITES, METHODS AND MATERIALS, SAMPLING

The researcher studied and recorded material from (a) the sites previously explored by other researchers, (b) by the researcher himself, and (c) from excavated sites. The sites identified for the current study are in Gujarat and Maharashtra. The sites were selected based on the known archaeological record and information about West Asian materials from the site. A different strategy was employed for the exploration around the Gulf of Kachchh within the sites such as Amra, Arikhan, Bhada, Bharana, Hadiyana, Gajana, Kota, Fatepur, Sai Devaliya, Lakhabaval, and Vasai, where previously West Asian material was not reported (which is discussed in detail in 3.2.1.) The aim of the survey around the Gulf of Kachchh, was to ascertain the role of the same region within the overseas exchange (if any). The stress is on this specific region as it is away from the cultural-administrative Maitraka capital at Vallabhipur. To gauge the scope of the Gulf of Kachchh in the early-historic and early medieval trade, the survey (3.2.1.) was undertaken.

The primary aim of the researcher is to identify and record West Asian material from these sites and its impact on the overall cultural milieu of the settlement and that period. This was done primarily by studying the west Asian materials which were recovered from sound archaeological contexts in excavated sites. This would help situating the West Asian materials into their respective spatial and temporal context within the archaeology of western India. This enabled the researcher to further discuss the implications of the West Asian material on the Western Indian front.

The excavated sites give an idea of the cultural matrix within which the West Asian materials and its associations were found (see 3.1. and 3.2.2). Without the associated material, merely reporting the West Asian materials would only isolate the ‘foreign’ materials from the rest of it. This would not help in reconstructing a relationship between the important archaeological features of the said period. Effects, affects, and changes through cultural materials can be comprehended only if the stratigraphy and the

contexts of the archaeological materials, both local and non-local, which includes foreign are fully understood. Finally, the collection of material from both excavated and already explored sites facilitated an understanding of the spatial and temporal distribution of these finds and the presence and/or absence of tangible contact with West Asia. This chapter here thus, summarises the archaeology of sites that are already reported. Its results analysed in the next chapter.

3.1. Sites in Gujarat

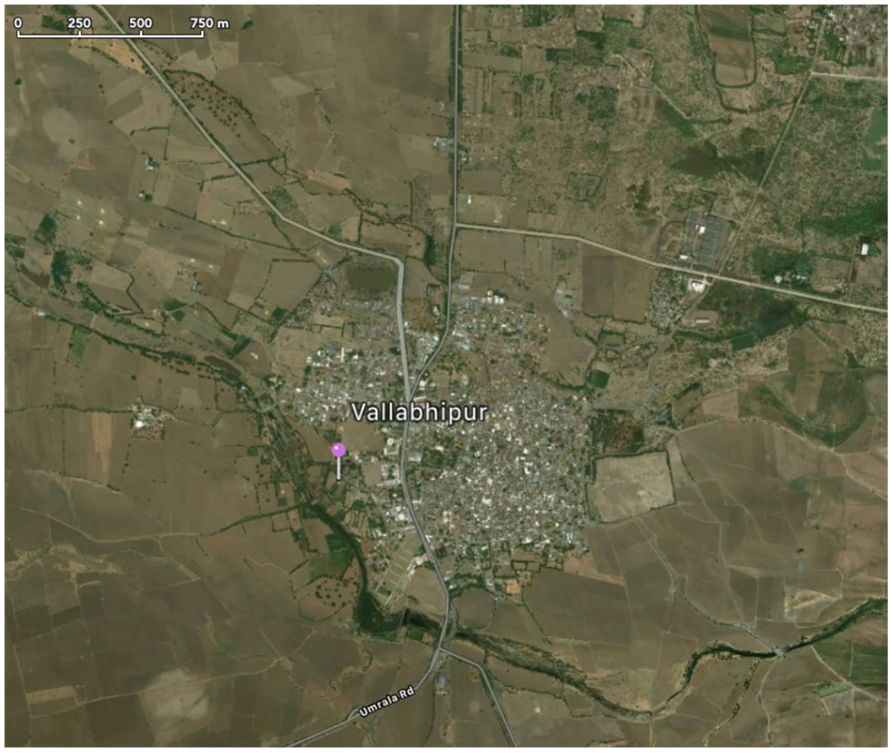
Paliyad (Paliyat Timbo) (N:22°10'0", E: 71°31'0") Bhavnagar District, Gujarat

The site is located 16 km North-West of Botad. The mound is 500x250m in size and yields evidences of Early Historic settlement characterised by Burnished Red Ware, Micaceous Red Ware, Burnished Black Ware which are of Historic Period III ceramics dated to a phase which is post-Red Polished Ware phase i.e., after 500 A.D. (Jairath 1986).

Vallabhipur (N:21°53'20.7", E:71°52’38.8”) Bhavnagar District, Gujarat

Vallabhipur was the imperial capital of the Maitrakas of Saurashtra. The excavations (IAR 1979-80: 24) were conducted by the Department of Archaeology and Ancient History, The Maharaja Sayajirao University of Baroda at a locality called Maya-no-Khado. All the three different excavated trenches; A, B, C, yielded three different phases, namely, Phase I, II and III. Phase I (1st century B.C. /A.D. to fourth century A.D.); ‘pre-structural’ levels yielded Red Polished Ware and ‘Roman’ amphora. Phase II (4^{th} -5^{th} century A.D.), represented by structural activities had walls made of bricks with an average size of 37.5x22.5x5/6cm. It had a flooring made of rammed earth. The floor had evidence of hearths, broken collapsed walls and traces of furnaces on it, which probably meant that the area was used for smithery process of iron. The archaeological assemblage in this level included Amphora, Red Polished Ware, Crude Black-and-Red Ware, Plain and Burnished Red and Black Wares, beads, and bangles. Phase III dated from 5th to 8th century A.D., was marked by floors and structural remains of reused bricks. An important

find from the site was a gold signet ring which is possibly Sasanian (Sonawane 2002). Besides these, rock paintings have been reported from Chamardi hills, near Vallabhipur. This depicts two sailing boats (Sonawane 1997). Further explorations with Mr. Prathapchandran (The Maharaja Sayajirao University of Baroda) and Dr. Anna E. MacCourt from the University of Michigan yielded ceramic samples of indigenous and west Asian origin from different localities. One such locality is a Water Tank Area (21°53'14.9"N 71°52'24.0"E) where a tank was being dug by the locals for rainwater harvesting. A rough stratigraphic collection of material remains could be achieved from here (see Map 3.1, MacCourt 2019: 143). According to the results of Anna MacCourt's survey (2019: 138-146), the site could be as large as 1.7 km (north-south) and 2 km (east-west), whereas the earlier surveys have suggested a dimension of 3 x 0.5 kms (Mehta 1963-64: 245).



Map 3.1: Vallabhipur and Water Tank Area is marked with a drop point. (Courtesy: Apple Maps)

Nagara (N:22°41', E:72°38') Khambhat Taluka, Kheda District, Gujarat

The site is in Kheda District and has revealed four cultural periods. The site was excavated by the Department of Archaeology and Ancient History, The Maharaja Sayajirao University of Baroda (Mehta and Shah 1968) and was divided into four cultural periods namely, Period I (700-300 B.C.), which was represented by Black-and-Red Ware, Plain Red Ware, Burnished Red Ware, and an earthen embankment. Period II (300 B.C.-100 A.D.) was marked by advent of Northern Black Polished Ware, Punch marked coins, terracotta figurines, terracotta seals and potsherds bearing Brahmi script, several objects of iron and shell, ivory. Period III (1st - 9th century A.D.) was distinguished by the occurrence of Red Polished Ware, Roman Amphora, Burnished Black Ware, Micaceous Red Ware, Crude Black-and-Red Ware and glass beads, structural remains comprised of mud floorings, brick buildings and numerous channel hearths, Period IV being Medieval represented by Glazed Wares. (Mehta and Shah 1968).

Kanmer (N: 23° 25 ’4.6”, E:70° 51 ’49.7”) Rapar Taluka of Kachchh District, Gujarat

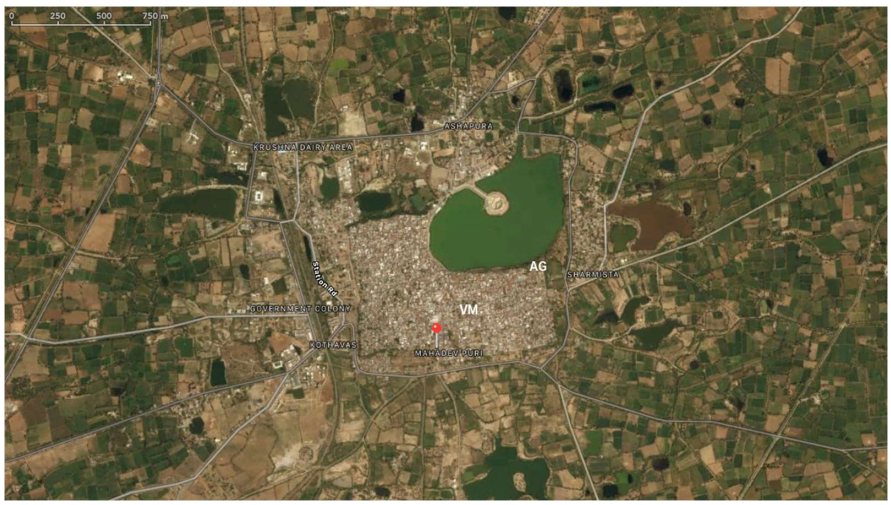
Kanmer located in Rapar Taluka, is a site with multiple cultural phases. The earliest phase of occupation at Kanmer is datable to the Harappan Period (Chalcolithic). This is followed by a break and the habitation appears again in the early Historic phase (Kanmer IV) and after a brief abandonment the Medieval Period material appears at Kanmer (Kanmer V) (Kharakwal *et al.* 2008, Kharakwal *et al.* 2012). The early historic material culture from Kanmer (IV) phase is characterised by the presence of structural remains of houses and floors, terracotta sealing with Brahmi scripts on it (Kharakwal *et al.* 2012: 23; 37-39). The antiquities recovered from this phase are terracotta beads, decorated shell bangles, stone beads, bone dices, glass beads, iron objects, and copper coins (Endo *et al.* 2012: 696-703, 730-737) The ceramic assemblage of the early Historic levels at the site is characterised by the dominance of Red wares (cooking vessels, bowls, jars being one of the dominant forms), along with Rangmahal type ceramics, and also Red Polished Ware (Uesugi and Meena 2012: 232-233), Torpedo Jars (Kharakwal *et al.* 2012: 23; 37, Balvally 2013) and a set of glazed wares (Balvally 2013: 57; Krishnan and Balvally 2015: 243-244).

Vadnagar (N:72° 38′ 21.9", E:23° 46′ 56.1") Mehsana District, Gujarat

Vadnagar is a large ancient urban centre which existed in north Gujarat. The site was initially excavated by the Department of Archaeology and Ancient History, the Maharaja Sayajirao University of Baroda (Subbarao and Mehta 1955). The site was known by many ancient names such as Nagara, Anartapura, Camatkarapura, Anandapura, and Vrddhanagar (Subbarao and Mehta 1955: 19). It was visited by the Chinese traveller, Hieun Tsung, who also called it Anandapura (Cunningham 1963). The excavations were done to understand the pre-Solanki period archaeology and to form a ceramic sequence. The excavation revealed three Periods (I, II, and III), I being pre Red polished Ware, and II lots of Red Polished Ware, and Period III of the Medieval period dated between 7th to 11th centuries A.D. (Subbarao and Mehta 1955). The excavations by the Directorate of Archaeology & Museums, Government of Gujarat, led to the discovery of a monastic complex and most importantly brought out a long chronology from the Mauryan times to the modern period at the site (Rawat 2011). The large monastery and stupa complex was found at Ghaskol Darwaza area, which was dated between 1st to the 7th centuries A.D. (see Map 3.3, Rawat 2011: 212). At the Durgamata Area, 230 m east of Ghaskol, two deep trenches revealed the presence of a 10.7m rampart, built in phases, representing different phases of construction; one upon another. The earliest levels of this are dated to 4th to 3rd c. B.C. (Rawat 2011: 213-214). The site is currently being excavated by the Archaeological Survey of India (Excavation Branch V- Vadodara) (see Map 3.2).

Taranga Hills (N:23°, 58' and N: 23°, 59' N; E: 72°, 48' and E: 72°, 45') Mehsana District, Gujarat

Taranga Hills located twenty kilometres northeast of Vadnagar (named after the Buddhist Tara found at the site) are part of the Aravalli Hill Range with large boulders, peaks, valleys. Rawat (2011: 231-240) conducted extensive investigations around these hills and noticed many archaeological features including a fort, water related structures (dam and tanks), structures (in brick and stone), rock shelters and sculptures (Buddhist in stone and terracotta). This place became an important Jain pilgrimage centre after the 12th century A.D. Taranga had two stages of fort construction; dated between 3rd and 2nd century B.C. and 1st century A.D. and also the other archaeological residential evidences namely natural rock shelters with walls, floors and potsherds suggesting a timeline from 3rd century B.C. to 11th century A.D for this 'Buddhist sanctuary' (Rawat 2011: 240).



Map 3.2: Site of Vadnagar with the large tank (Sarmishta Lake) and the southern part of the site where the State Directorate excavated is marked with a drop point. VM = Valmiya no Mahad and AG = Amba Ghat localities excavated by the Archaeological Survey of India [1]

Map 3.3: Three localities excavated by the Directorate of Archaeology & Museums, Government of Gujarat, namely Ghaskol Gate with the Monastery plan visible (Red), Durgamata Temple (Turquoise), and Primary School No. 3 - PSN3 (Green) [2]

[1] Base Map Courtesy: Apple Maps
[2] Base Map Courtesy: Apple Maps

More recently the Archaeological Survey of India, Vadodara Excavation Branch - V have taken up extensive excavations at Taranga Hills. The investigations under the directorship of Dr. Abhijit Ambekar at Gurjarasan or Bhimpur village at the foot of the hill behind Taran Dharan Mata temple has yielded an assembly/ prayer hall housing votive stupas, a stupa on the peak of Dhagolia hill, 22 platforms, 50 rock shelters which might have been used as dwellings, brick structures resembling viharas and about 54 votive stupas, along with pottery dated between 7th to 14th century A.D. (Abhijit Ambekar Personal Communication, Shastri 2019). The excavations at Taranga, have also yielded Torpedo Jars (Abhjit Ambekar Personal Communication). Taranga probably also acted as a 'pit-stop' for traders, and/or the populace who stayed in Taranga might be consumers of wine.

Siyot (N: 23° 46' 26.0 ", E:68° 52' 34.8") District Kachchh, Gujarat

Siyot caves/Kateshwar is a Buddhist site located near Lakhpat in Kachchh. The first excavation at the Cave near the village Siyot was taken up by the Department of Archaeology, Government of Gujarat in the late 1980s. The finds from the season's excavations (IAR 1988 -89: 10) were clay sealings, engraved with Buddha images (different mudras), some with late Brahmi and Devanagri characters, copper rings, Gadhaiya coin, terracotta Nandi with bell and chain, and earthenwares, and according to the stratigraphy, the cave was occupied by the Buddhists, and later by the Shaivas around 12th to 13th century A.D.

Kalini Khandwalla did a survey of the site and found more than 200 plus sherds of Torpedo Jars and also mentions finds of Glazed Ware and Late Roman Amphora which were identified by Roberta (Tomber 2007: 975-983). The researcher had explored the cave and the habitation site around the caves in 2015 and noticed Kshatrapa Period pottery (moulded), and along with that a range of Rangmahal wares.

The Directorate of Archaeology and Museums, Government of Gujarat, under the directorship of Shri Y. S. Rawat, excavated the site in the month of September 2018. The excavations from the trench yielded two different phases of construction at the site, one being the older deposit (containing Kshatrapas moulded wares along with Rangmahal wares) and a 9th-10th century A.D. deposit which shows an expansion of the site and also large-scale construction in stone. (Y. S. Rawat Personal Communication). The excavations yielded Torpedo Jars (15 sherds) from two trenches (A and B) all of which belong to the Pink Ware with White Slip (PWWS) fabric from all the layers mixed with Rangmahal wares, Kshatrapas period pottery and other coarse wares.

Nani Rayan (N: 22° 52' 13.8", E: 69° 21' 20.7") District Kachchh, Gujarat

Nani Rayan has been an extensively explored site located in Kachchh. Previous studies (Bharucha - Irani 1996-97, Bharucha - Irani 2002, Sen 2003) have been restricted to the reports of the surface finds mostly of 'Early historical' in nature such as ceramics (Black On Red Ware, Red Slipped Ware, Burnished Red Ware, Coarse Red Ware, Coarse Burnished Red Ware, 'Amphorae', Coarse Black Ware, Sultanate period Glazed ceramics, Red Polished Ware, and pottery moulds), Shell (bangles, wasters), and other objects in terracotta, stone, metal and bone. Coins such as punch-marked coins, Kshatrapa coins, Gupta coins mainly of Kumaragupta and Skandagupta and coins of Sultan of Gujarat along with a late Byzantine gold coin dated to 7th century A.D. and a gold Umayyad Dinara also dated to 7th century A.D. were found (Vasa 1991), and also Indo-Sasanian ones of the Gadhaiya type (Bharucha-Irani 1996-7: 77; 2002: 69-71). Stone sculptures, such as Ganesha, Lajja Gauri, amorous couple along with Vishnu and other human figurines were also found from the site (Sen 2003: 1051). Late Roman Amphora has been reported from the site along with Torpedo Jars, and 'Turquoise Glazed Ware' (Tomber 2007: 978-979).

Explorations by the researcher in 2015, yielded Rangmahal Ware along with Torpedo Jars and Kshatrapa pottery (Moulded Ware). Earlier researchers (Bharucha-Irani 1996-97) mention these Moulded Wares as 'Stamped Wares'. Sasanian Glazed Ware was also found from the site in the shape of handles and bowls (Balvally *et al.*

2018: 300). Bharucha Irani (1996-97) mentions, 'Turquoise Glazed Ware' and 'Muslim Glazed Ware', none of which were reported from the current explorations more so ever, terminologies such as Muslim Glazed Ware should be done away with.

In 2019, a joint team led by The Maharaja Sayajirao University of Baroda (Mr. Prathapchandran, director) assisted by the researcher and students of the Department of Archaeology Ancient History, collaborated with a British Team (led by Dr. Roberta Tomber) carried out excavations at the site of Nani Rayan (see Map 3.4). The Excavations were preceded by a geo-magnetic survey (courtesy Jack Pink - University of Southampton) with a flux-gate gradiometer (Bartington Grad 601 Single Axis), and areas to excavate were chosen accordingly.

Map 3.4: Site Map of Nani Rayan with NRN 1 representing the centre of the mound, NRN 2 the Northern extent, S denoting the Southern extent and E denoting the Eastern Extent.[3]

The site was divided into two localities, namely NRN 1 and NRN 2.

NRN - 1 (Temple Area), Trench 1 (N: 22° 52' 13.6", E:69° 21' 17.1")

[3] Base Map Courtesy: Apple Maps

The excavations at NRN 1 (5 x 5m) yielded mostly disturbed deposits from the top layers (see Figure 3.1), very ashy habitation deposits with mix of pottery such as Grey Ware, Moulded Wares (Kshatrapa), Rangmahal/Vasai Ware types, Red Polished Ware, Black Slipped Ware, along with non-indigenous wares such as Torpedo Jars, Sasanian Glazed Ware and one sherd of Late Roman Amphora 2. A structure was found from the Trench from the last phase of the occupation. From the earliest level of the trench, there was a Red polished Ware sprinkler found. A cut bangle of the Solanki period was found from the surface at NRN 1.

NRN - 2 (White House), Trench 2 (N:22° 52' 20.5", E:69° 21' 24.8")

The Excavations at NRN 2 (trench dimensions 5x5m, excavated area initially 4 x 4m, later restricted to 2 x 4m on the northern quadrants) yielded a copper working workshop with a few different working levels and furnaces filled with charcoal, vitrified receptacles, and slag. At NRN 2, the furnaces could probably belong to the Gupta-Maitraka phase (as suggested by the associated artefacts such shell bangles, and ceramics such as Torpedo Jars, Sasanian Glazed Ware, Rangmahal/ Vasai Ware types, Red Polished Ware) (see Figure 3.2). Apart from the ceramics, both trenches yielded copper artefacts (coins corroded), iron chisel, shell bangles, shell wasters, cowrie shells, glass (bottle), carnelian bead, and terracotta beads. Both trenches couldn't be fully exposed till the natural soil because of the dearth of time and would be taken up in the following season's work. This trench was recorded using Harris Matrix method and single contexts were recorded separately by the researcher.

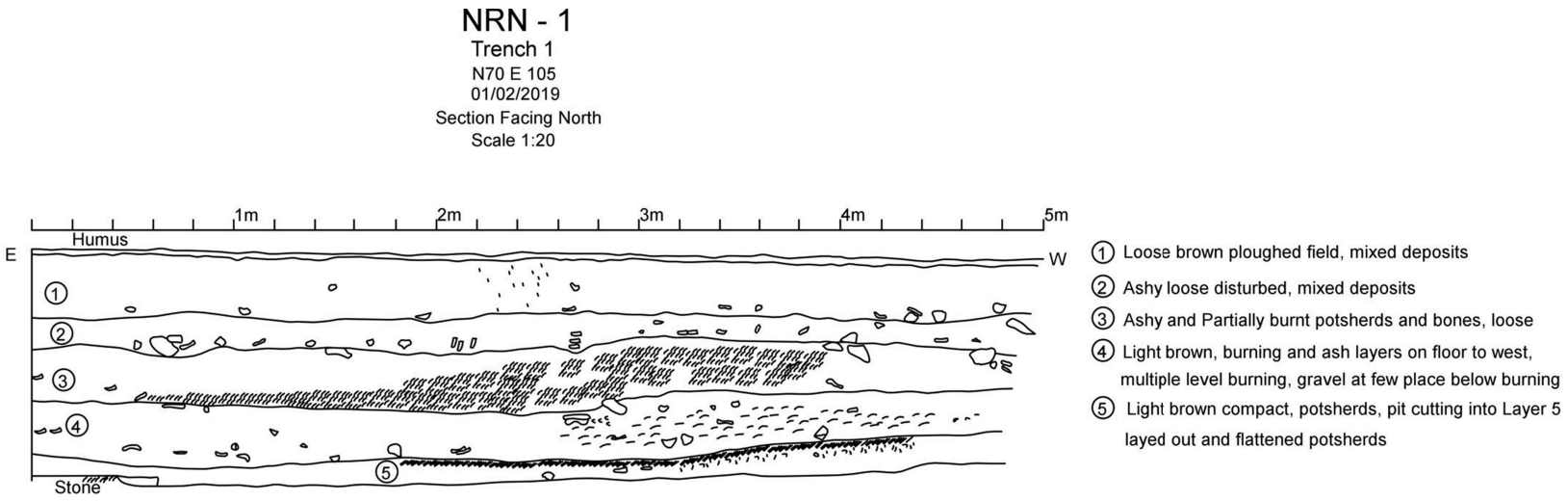


Figure 3.1: NRN 1 Trench 1. Section facing North.

3.2.1. Explorations around the Gulf of Kachchh

In section 3.1, the researcher has demonstrated the different sites involved with exchange with West Asia from the excavated contexts. The area round Gulf of Kachchh, was undertaken for survey, so as to understand the role that the Gulf would have played in the contact and trade with West Asia. Sites such as Nani Rayan on the Kachchh side of the Gulf were known to have trade wares from West Asia such as Torpedo Jars and Sasanian Glazed Wares; as well as sites such as Dwarka and Bet Dwarka which are in Devbhoomi Dwarka District of Gujarat (Tomber 2007). The explorations were initiated in April 2016 in which majority of Jamnagar District and some sites which fell in on the eastern side of the Devbhoomi Dwarka District were selected for surveys. Each site surveyed and its features were systematically recorded with the help of an Exploration/Survey Chart (see Appendix II). The location, geo-coordinates, flora, fauna, features of mound (size, shape, and thickness of deposit), artefacts (nature, types, density), sketches, and photographs were collected using the Exploration/Survey Chart (see Appendix II). Bhan (1986) reported many new sites in his publication which dealt with village-to-village surveys of Jamnagar District (which at the time also included the District of Devbhoomi Dwarka). The researcher explored some of these ‘known ’sites in the above-mentioned region (Table 3.1) for any possible west Asian evidences (see Map 3.5, and 3.6).

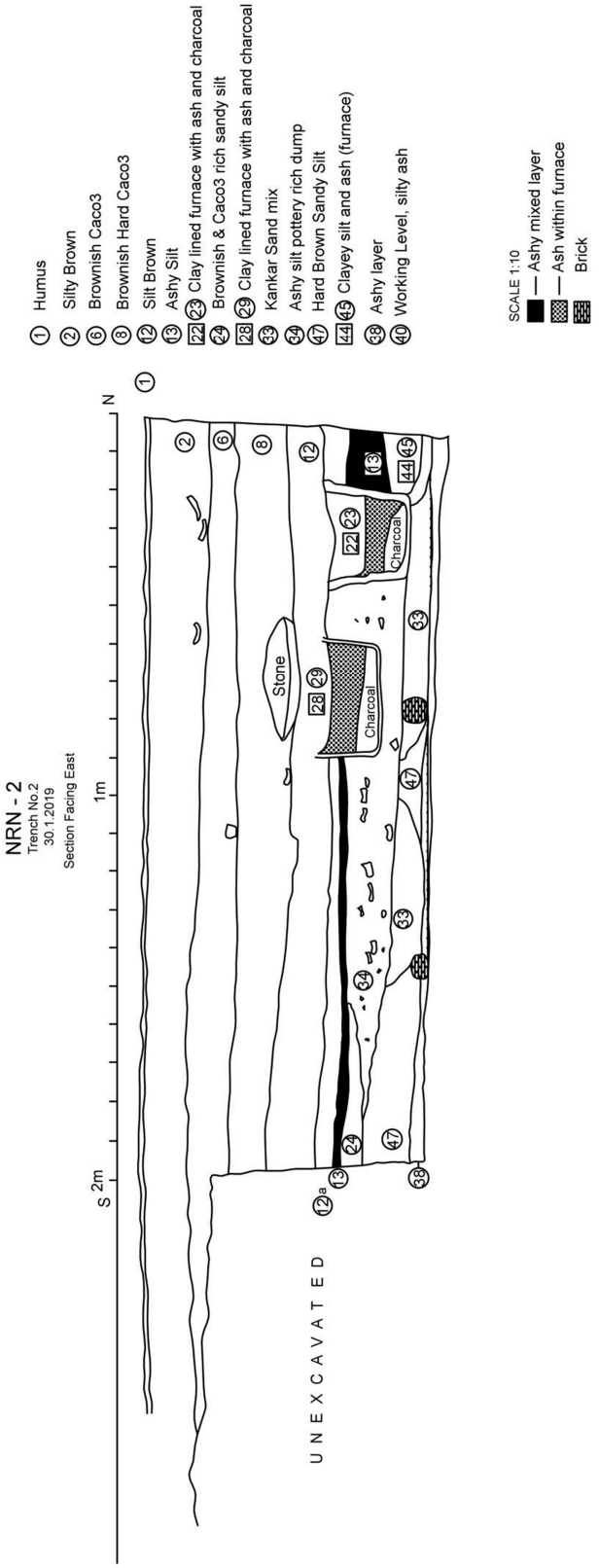


Figure 3.2: Trench 2. Section Facing East. Furnace 22 is the latest, followed by 28, and then 44

Table 3.1: Sites explored by the researcher as a part of the Jamnagar survey

Site	Taluka	District	Co-ordinates for the site	Period (Bhan 1983, 1986)
Lakha Baval	Jamnagar	Jamnagar	N: 22 25' 00.1 " E: 69 59' 41.22"	Early Historic, Early Medieval, Late Medieval. Chalcolithic -Harappan (Rangpur IIB-IIC)
Amra	Jamnagar	Jamnagar	N: 22 25' 07.2" E: 69 56' 08.5"	Early Historic (Red Polished Ware)
Vasai	Jamnagar	Jamnagar	N: 22 25' 54.9 " E: 69 56' 02.1"	Harappan IIC, Early Historic, Early Medieval, Late Medieval.
Gangajala	Jamnagar	Jamnagar	N: 22 25' 40.5" E: 70 13' 59.3"	Early Historic (Red Polished Ware)
Bada	Jamnagar	Jamnagar	N: 22 27' 26.3" E: 70 13' 15.4"	Early Historic (Red Polished Ware)
Hadiyana II (Fulwadi)	Jodiya	Jamnagar	N: 22 36' 59.5" E: 70 15' 48.7"	Early Historic (Red Polished Ware), Early Medieval and Late Medieval. Chalcolithic Harappan (Rangpur IIB?).
Ari Khan I	Lalpur	Jamnagar	N: 22 15' 28.8" E: 70 00' 50.3"	Chalcolithic Harappan (Rangpur IIB IIC)
Ari Khan II	Lalpur	Jamnagar	N: 22 15' 34" E: 70 00' 51.7"	Early Historic (Red Polished Ware)
Gajana	Lalpur	Jamnagar	N: 22 14' 32.3" E: 69 58' 05.1"	Early Historic (Red Polished Ware)
Kota I	Khambhaliya	Devbhoomi Dwarka	N: 22 10' 05.1" E: 69 41' 40.8"	Chalcolithic Harappan (Rangpur IIB)
Kota II	Khambhaliya	Devbhoomi Dwarka	N: 22 10' 09.78" E: 69 41' 40.9"	Early Historic (Red Polished Ware) and Early Medieval
Bharana I	Khambhaliya	Devbhoomi Dwarka	N: 22 25' 57" E: 69 42' 17.2"	Early Historic (Red Polished Ware) and Early Medieval
Fatepur I	Bhanvad	Devbhoomi Dwarka	N: 21 56' 34.4" E: 69 49' 21.2"	Early Historic (Red Polished Ware)
Sai-Devaliya	Bhanvad	Devbhoomi Dwarka	N: 21 58' 33.2" E: 69 47' 29.9"	Early Historic (Red Polished Ware)

Map 3.5: Sites Explored as part of the surveys around the Gulf of Kachchh. The sites in Red yielded West Asian material (discussed in detail in 4.2.2.)

Map 3.6: Sites in Western India yielding West Asian ceramics [4]. Sites from the current survey demarcated in smaller legend.

[4] Adapted from Balvally, R. 2013: Figure 19, p.36. Base Map Courtesy: https://mapmaker.nationalgeographic.org

3.2.2. Recording the material from Excavated sites and Explorations in South Gujarat (*Dakshina Gujarat)* and Maharashtra

Explorations were also conducted in the region of South Gujarat (*Dakshina Gujarat* henceforth) and Maharashtra. The two areas are grouped here as one because in the Early Historic and Early Medieval periods the area of *Dakshina Gujarat* was under considerable influence and at times part of the larger polity which also included the then Maharashtra. Sites with previously reported West Asian materials from excavated contexts, as well as highly potential sites were chosen for the study (see Map 3.6). Each site surveyed and its features were systematically recorded with the help of an Exploration/Survey Chart (see Appendix II). The location, geo-coordinates, flora, fauna, features of mound (size, shape, and thickness of deposit), artefacts (nature, types, density), sketches, and photographs were collected using the Exploration/Survey Chart (see Appendix II). These include:

Kamrej, (N:21°16'55.0", E:72°58'01.0"), District Surat, Gujarat

The site of Kamrej is located on the southern bank of the Tapi river, 15 kilometres upstream from Surat. The site maybe co-related with the ancient Kammoni from the *Periplus Maris Erythrae* and was explored by Sunil Gupta (1993) where he mentions Red Polished Ware and variety of Early Historic pottery on the surface datable to around 1st century A.D. The site was excavated under the directorship of S.P. Gupta. The site is spread on different mounds according to the activities around it such as cliff mound, tower mound, and temple mound with many archaeological indicators such as a jetty, walls, furnaces, kilns, pottery (glazed and unglazed), beads, bangles etc. being found (Gupta *et al.* 2004b: 9-33).

There was also considerable slag from the mound, which has already been reported by previous researchers (Gupta *et al.* 2004b: 9-33) and explorations (Gupta 1993). Apart from these wares, the researcher was able to locate a single sherd of a Torpedo Jar from the Cliff Mound. No glazed wares were found from the survey, but glazed wares were found from the excavations which are claimed to be dating between

9th – 10th century A.D. (Gupta *et al.* 2004b: Plate II C.). One of these sherds has a black paint and blue splash, which may have been done much later in timeframe. This could belong to the pottery of the Gujarat Sultanate period and other sherds need a closer look in terms of Ware classifications. Another interesting ceramic reported from Kamrej is a sherd of Aksumite (East African) pottery (Tomber 2005).

Sanjan (20° 11 ’59.6” N; 72° 48 ’00.2” E), Valsad District, Gujarat

Sanjan is a located on the Varoli river/creek in south Gujarat, close to the Maharashtra Gujarat border. The excavations at Sanjan were carried out to trace the archaeology of early settled areas of the Parsis which according to their quasi-historical *Kisseh-i-Sanjan* (Edulji 1991), a document written around the 17th century A.D. was in Sanjan (Gupta *et al.* 2002; Gupta *et al*. 2004a; Gupta *et al*. 2005). The archaeology of the site spans from the 8th century A.D. to the 13th century A.D. according to the results of excavations which yielded distinct imported wares (Nanji 2011), glass (objects and vessels - Mitra and Dalal 2005), coins (Sasanian, Sultan of Sind, Indo-Sasanian). (Gupta *et al*. 2005: 183-189) which also includes an ancient *Dakhma* - Tower of Silence (Nanji and Dandekar 2005).

The first season of the excavations at Sanjan yielded ring-wells from both the structural phases (Gupta *et al.* 2002: 183-184, fig. 2 192, fig. 3 193) which indicate urbanisation at the site (Gupta *et al.* 2004a). The second season was directed towards Mounds SJN-K (50mx30m) which yielded elaborate structures and platforms, and skeletons buried (North-South orientation) from the last stages of occupation, and at SJN-B (bandar/port mound) which showed an embankment eroded and a well along with a larger amount of ceramics which ranged from Porcelain, Celadon, Glazed Pink Ware (Sgraffiato), Glazed Grey/Stone Ware, Turquoise Glazed, Glazed Buff Ware (Lustre Ware) along with local ceramics such as Mica Washed Red Ware, Slipped Grey Ware, Coarse Grey Ware, Slipped Red Ware, and Coarse Red Ware (Gupta *et al.* 2004: 94-106). The excavators noted a difference in the variety of ceramics found from SJN-K and SJN-B where, more of the local ceramics were seen at SJN-K and more of the imported ceramics were found at SJN-B, and glass iron artefacts were found mostly from the latter which suggest different functions for both locations (Gupta *et al.* 2004a: 105-106).

The third season of excavations (Gupta *et al.* 2005) was directed towards exposing the *Dakhma* (tower of silence) called SJN-D and at the Bandar (SJN-B). The excavations at SJN-D exposed three quarters of the inner side of the structure of the *Dakhma,* which showed three parts; mix of brick bat and soil/clay outer wall with an inner surface of kiln bricks, a wall with a gap facing east followed by a gently inward sloping mud and brick platform (for the bodies to be placed), and thirdly a brick lined dry well (0.9m deep and 5m in diameter) called bhandar (not to be confused with bandar) where the residual bones were dumped (Gupta *et al.* 2005: 55-57, Fig. 5 60). Veena Mushrif-Tripathy, recorded and documented around 140 individuals in about 40 % of the exposed Bhandar, it also yielded large number of glass bangles, toe rings (copper, silver and mixed metals), and beads of glass and a rare gold bead which according to the excavators belong to Parsi women disposed there (Gupta *et al.* 2005: 57-60; Mushrif & Walimbe 2005). Apart from these finds, many stone temple members, and broken sculptures in the Rashtrakuta and Silahara styles mostly around the mound, which might suggest to there being a Brahmanical temple at Sanjan (Gupta *et al.* 2005: 60).

The glass found from Sanjan (Mitra and Dalal 2005) adds to a unique corpus of material rarely studied within early medieval archaeology of western India. The corpus from Sanjan includes beads, bangles, and a variety of vessels and bottle fragments with distinct bases (from small, rounded ridge or ledge, to one square base and one with a polygonal multifaceted base) with colours ranging from deep blue to green. The authors also defined different glass artefacts; facetted bottle, rectangular bottle, round bottle, tubular necked globular flask, flat topped finial, globular finial, footed plate etc. which come from layers 2, 3, and 4 of the 2002 excavation season and are comparable to glass from Mesopotamia, Persian Gulf and Iran dating to the 9th to 10th centuries A.D. (Mitra and Dalal 2005: 64-68, Plate VIII).

Chaul, (N:18°33'16.8", E:72°56’26.3”) Raigad District, Maharashtra

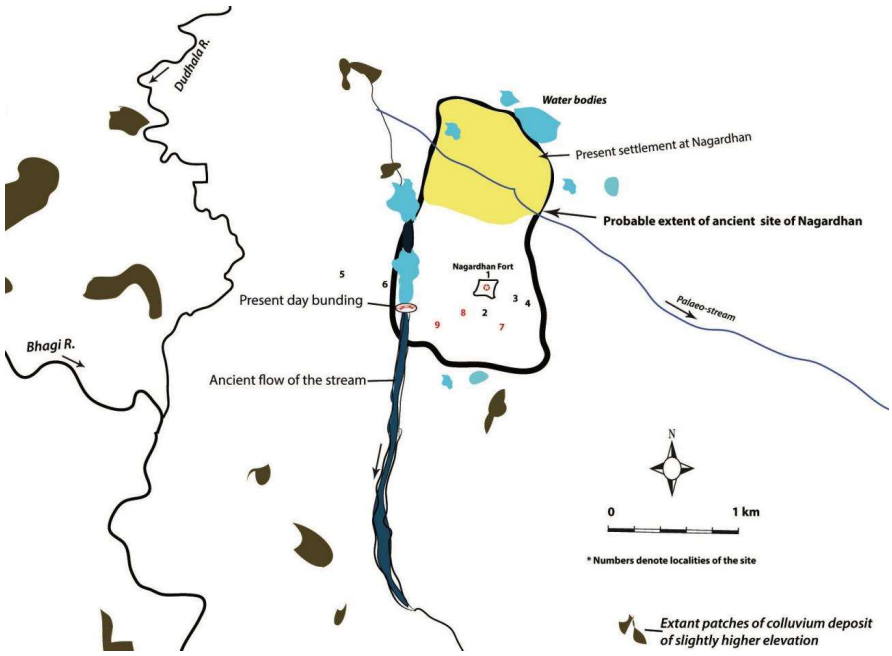
The site of Chaul (ancient *Semylla* - Schoff 1912: 200) is located on the Arabian sea coast 60 kms south of Mumbai in Raigad District in the state of Maharashtra. Kenny (1992: 1-

13) suggests that in the 'early medieval period' merchants from the Gulf countries namely Baghdad, Basra, Siraf and Oman were settled in around the surrounding regions of Chaul. There is also mention of exporting rice and cloth (Warmington 1928).

The excavations at the site have yielded a long chronology from the early Satavahanas till the Portuguese, and British capture of the area (Gogte 2003). The earliest ceramics are represented by amphora sherds and are part of the Indo-Roman exchange between the two regions (Gogte 2003: 70). The stratigraphic sequence at Chaul shows Pre-Satavahana (Mauryan) in the earliest layer just above the natural sand. This is followed by the Satavahana layer and followed by a sterile layer 3. Layer 2 is representative of the Early Medieval and then Layer 1 is Late Medieval in nature (Gogte 2003: Fig. 3: 69).

Nagardhan (N:21° 21′ , E:79° 19″) Ramtek Taluka, Nagpur District, Maharashtra

The site has been excavated by a joint team from the Department of Archaeology (Nagpur Division, Maharashtra) and Deccan College, Pune since 2015 (see Map 3.7, Sontakke *et al.* 2016) Early studies from Nagardhan were mostly related to epigraphic as well as few reports of Vakataka structures (Hiralal 1916; Mirashi 1957). Explorations carried out by C. Gupta (IAR 1981-82: 49-50) of the Department of Ancient Indian History, Culture and Archaeology, Nagpur University and found stone images of Ganapati, Lajja-Gauri, datable to the Vakataka period at Hamlapuri and Nandapuri near Nagardhan. Animal figurine, fragments of a soapstone bowl, stone pestle, hopscotch, spindle-whorl, and sherds of incurved bowl, carinated handi and miniature pots with mica dusting belonging to the early historical period were collected by R.C. Agarwal and Amarendra Nath (IAR 1981-82: 96). Lacey (2014) surveyed the site and suggested that archaeological remains are spread over a larger area than previously thought. She and Bhaisare (2012) also studied the site and talked about its single occupational phase, which has been negated by the excavations at Nagardhan (Sontakke *et al.* 2016: 44). The site has been divided into six periods; Period I: Early Iron Age, Period II: Mauryan and Pre-Satavahana, Period III: Satavahana-Kshatrapa, Period IV: Vakataka, Period V: Early Medieval, and Period VI: Medieval. Torpedo jars are found from the excavations and were reported from the early medieval period (Sontakke *et al.* 2016: 49) and is the most inland torpedo jar found from South Asia.



Map 3.7: Site Map of the Localities of the Excavations at Nagardhan (Courtesy: Virag Sontakke)

3.2.3. Recording the Sasanian and Early Islamic Wares from Susiana

The prospective region around Susa was selected for understanding the Sasanian-Early-Islamic assemblage of south-western Iran (see Map 3.8). The aim of the research was to comprehend the typology of the West Asian wares from this region and to sample the some of the Wares such as Torpedo Jars for further thin-section studies. The researcher would compare the petro-fabric groups of the ceramics from the Susa region with that of the ceramics found from western India.

The area between Susa and Ahwaz in Iran is called ‘Ahu Dasht’, which means ‘the Plain of Gazelles’. The surrounding larger settlements in the Sasanian period were Susa, Ewan-i-Karkheh, and Dez. Susa was trampled upon by Shapur II when he put down a christian revolt in the city. The city though was immediately rebuilt. On the other hand,

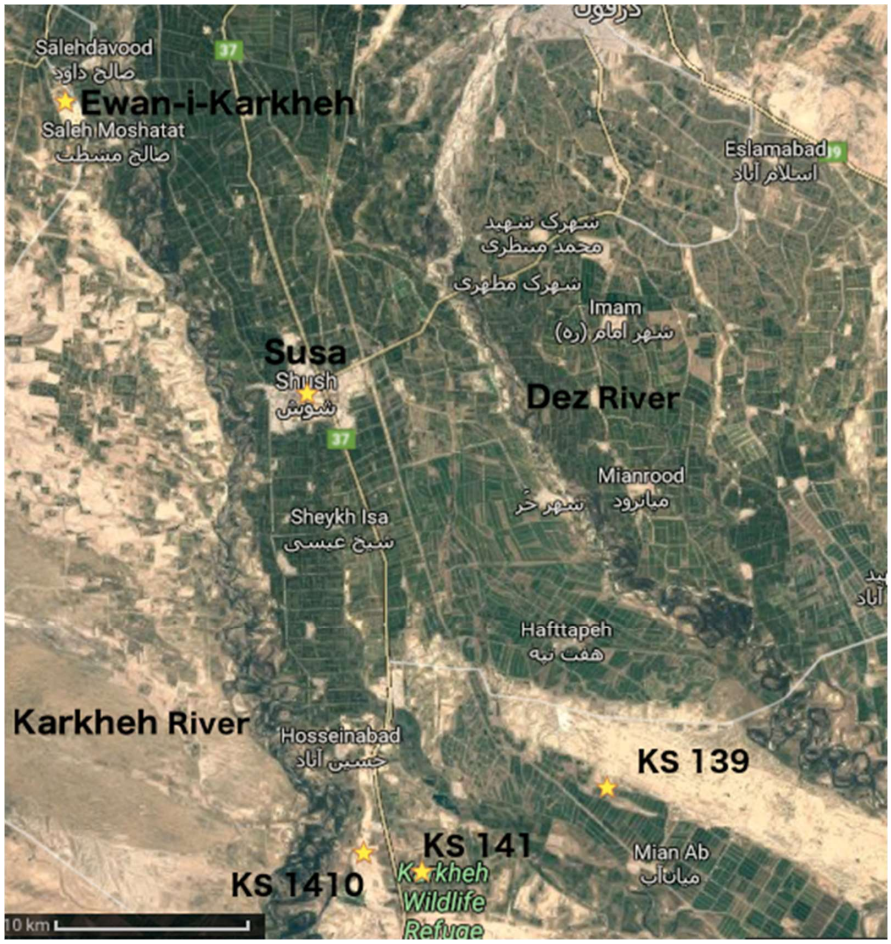
the city of Iwan-e-Karkheh came up under Shapur II after his sacking of Susa which was excavated in the later 1940s - early 50s by Roman Ghirshman (1950).

The Khuzestan survey was taken up by Robert McCormick Adams in Ahu Dasht region, Khuzestan, Iran (sites namely the 140 series). Robert Marshal Schacht also added sites to this list (sites namely the 1400 series). Torpedo Jar and Pithos Jar samples were taken for thin-sections studies. These were sampled from the sites KS 139, KS 141, KS 1410, and KS 141 South, all sandwiched between the Kharkheh, Shaur, and Dez rivers respectively (see Map 3.9). According to Henry Wright (Personal Communication), 'all these sites are on the alluvium of the Karkheh River, but there is little evidence that these torpedo jars were made on small villages. Also on the Karkheh alluvium are the ancient regional center of Susa (ancient *Shushim*) and the Sasanian centre of Iwan-I Karkheh. where Sasanian pottery was perhaps made. Jundeshapur, the other major Sasanian centre is, on Dez River alluvium.

Map 3.8: The area of Khuzestan highlighted within the Political territory of Iran (adapted from Google Maps)

Apart from these, the researcher visited and recorded the ceramics from National Museum of Iran, Pottery Research Department based in Tehran. A pottery readings chart was prepared which recorded the provenance (trench, layer, date, depth, quadrant and feature), form (diagnostic – rim, base, handle, or non-diagnostic - body), dimensions (thickness – maximum and minimum, length, breadth, and radius if diagnostic), internal

surface (surface treatment, coating), , core (Colour determined using Munsell Soil Colour Chart, feel, texture -fine, coarse, and medium), external surface (surface treatment, coating), shapes (if diagnostic) and its total number. The aim of the researcher was to primarily understand and record the local fabric of the ceramics that was being produced by the Sasanian and the Early Islamic potters in the area of Khuzestan in order to compare with the finds from South Asia.



Map 3.9: Sites near the Karkheh River (adapted from Google Maps)

3.2.4. Methods of Data Procurement

Data for the thesis was collected from surveys (Section 3.2.4.1) which mostly includes ceramics. Macroscopic studies of the finds (Section 3.2.4.2.) and Thin-Section analysis of the representative samples (Section 3.2.4.3.) was undertaken.

3.2.4.1. Surveys

The surveys were mostly non-intrusive in nature, and included visiting, recording, taking a GPS co-ordinate for the site, and collecting the archaeological material from the site such as ceramics and other artefacts (bangles, beads etc.). Contiguous transect survey was used depending on the surface conditions and vegetation of the site, where field walking was aided by the GPS, in either a north-south or east-west direction to cover the majority of the site. For bigger sites such as Vallabhipur and Nani Rayan, which have lot of encroachment, the areas or localities were recorded in isolation. Exploration/Survey Chart was used for recording the features of the site and localities (see Appendix II).

3.2.4.2. Macroscopic Classification

Majority of West Asian contact indicators in terms of tangible remains are ceramics. The ceramic assemblages were classified into two major groups: namely Glazed wares and non-glazed wares depending on their surface treatment. Glazing is a common phenomenon of Sasanian and Early Islamic pottery in particular and West Asian pottery in general. Further, within these broad groups the ceramic types were identified by using attributes, such as, surface treatment (internal-external), texture, decorations, shapes and its colour equivalents as given in the Munsell Soil Color Chart (1994). The colour of the cores was also determined using the above method.

3.2.4.3. Thin-section Analysis of Pottery

Representative samples were chosen for thin-section analysis. The thin-section analysis helps in determining the mineralogy of the non-plastic inclusions in the ceramic section so that one can work towards determining its provenance, paste recipe, forming techniques and the overall manufacturing methods. The ceramics to be thin-sectioned were cut manually with a saw into a piece of a rough dimension of 2cm length and 1cm breadth. These were then impregnated with 'lakeside 70 or 70-c cement'. One face of the core of the sample was ground and polished on a rotating cast iron wheel and then on a glass plate using successively finer grades of carborundum powder lubricated with water. The specimen was carefully cleaned and transferred to another plate with the next finer grade of abrasive. The ground and polished flat surface was cleaned well, dried and

cemented to a glass microscope-slide carefully avoiding entrapment of air bubbles using Canada balsam as the mounting material. Canada balsam is preferred because its refractive index is close to that of the glass and therefore does not hinder the viewing process. After cooling, the specimen was ground and polished on the other side till it became transparent, that is scientifically speaking to a thickness ranging between 20 microns and 30 microns. The upper surface of the thin-section was gently washed, dried followed by putting a cover slip with the help of Canada balsam. Acetone and distilled water were used to remove some of the unnecessary adhesive. The thin-sections were prepared in the thin-section preparation laboratory at the Department of Geology, Faculty of Science, The Maharaja Sayajirao University of Baroda.

The thin-sections were studied under a Polarising microscope (Leitz Laborlux 12 Pol D). The optical properties of the detritals were studied under the Plain Polarised Light (PPL) and crossed Polarised Light (XPL) for understanding their mineralogy by comparing its optical properties with the same as given by Philips and Griffin (1981). Similarly, the textural analysis was done using the textural parameters, such as, grain-size, grain shape, frequency, and grain size distribution character. The parameters given by Bullock *et al.* (1985: 21) are used to separate out grain-size fractions. Based on the properties of detritals; mineral phases, rocks, and non-mineral phases were identified. A Canon Powershot S 50, 3 mega-pixel digital camera was used to obtain the photo-micrographs.

After that, the samples were divided into 'Petro-Fabric' Groups. The term 'Petro-Fabric' is used here to distinguish between macroscopic observations, which are labelled as Fabric, and Petro-Fabric, which is a typical description of a thin-section. Petro-Fabrics is the result of fabric characterisation, which considers descriptive criteria such as non-plastic inclusions' mineralogical composition, matrix (plastic) portions' nature, colour, and degree of birefringence, voids (and their nature), and textural features (shape, sphericity, size, frequency, sorting, orientation, and size distribution character) (Krishnan and Shah 2005: 139). The logic and process of fabric Characterisation and its

Archaeological Implications are described in a detailed chart (Krishnan and Shah 2005: Fig. 8.2, 148).

After, the Petro-Fabrics were defined and elaborated, point counting was done as a semi-quantitative recording of grains that fall under the crosshair as points. Point counting of the representative thin-sections from each petro-fabric group was done with the help of a James Swift Automatic Point Counter with a stepping stage that can be attached on the rotating stage of the microscope. The stepping stage was set to single jump. A total number of 300 points were counted per slide which included the matrix and grains whereas non-mineral phases such as voids and points falling on same non-plastic inclusion were avoided by using the isolatable channel 12. The size of each grain that came under the crosshair was measured by calibrating the micrometer ocular on the eye-piece for each objective. The grain-size data were then analysed by compartmentalising them according to the defined particle size for non-plastic inclusions (Table 3.2). Using the frequency variation and its relative abundance, the grain-size distribution character; unimodal or bimodal or semi-bimodal were determined.

Table 3.2: Particle Sizes as prescribed by Bullock *et al.* (1985: 21)

Size	Range
Clay	less than 2 μm (0.002mm)
Silt	2-50 μm (0.002-0.05mm)
Very Fine Sand	50-100 μm (0.05-0.1mm)
Fine Sand	100-200 μm (0.1-0.2mm)
Medium Sand	200-500 μm (0.2-0.5mm)
Coarse Sand	500-1000 μm (0.5-1mm)
Very Coarse Sand	1000-2000 μm (1-2 mm)

3.2.5. Materials, Sampling Strategy and Samples

The major archaeological materials that reached from West Asia to India, recorded by the researcher was ceramics. The ceramics were initially classified according to the ware

types as elaborated in section 3.2.4.2. Macroscopic Classification and tabulated. Macroscopic variability within the fabric of samples was also noted to understand the possible different types within each ware classes to allow for better representative samples.

The ceramics found from the Indian sub-continent belonging to West Asian origin are of two types: glazed ceramics and un-glazed ceramics. Glazing is an application of semi-vitreous substance to the ceramic as decoration and to make it impervious. Glazed ceramics have been made since the Parthian times in West Asia continuing into the Sasanian, and with certain innovations in the Early Islamic time continuing till the modern times. Turquoise Glazed Ware is a characteristic ceramic manufactured in West Asia with a turquoise blue glaze with a range of shapes from handled jars, handled pots, bowls and dishes. The examples with appliqué decoration are dated to the eight/ninth century (Whitehouse 1979a: 881, Mason and Keall 1991: 52). The other major varieties of Glazed ceramics from West Asia are Sasanian Glazed Ware (Sasanian in time frame), Samarran Wares (Tin Glazed varieties – with splashes, dots, paint, or lustre as decorations essentially Early Islamic), Sgraffiato Wares (Lead Glazed varieties - Hatched, Monochrome, Bichrome, and Champlevé – Early Islamic). The Sasanian Glazed Ware is an independent Ware type which has blue-green monochrome glazes with a yellowish core and inherently degraded glazes after burial. The shapes include, v-shaped bowls, dishes, amphora/jugs with handles. Ceramics from Samarra are those which were made around Basra during the 9th century A.D. when Samarra was the capital of Iraq for a short time. It was previously assumed to belong to the 9th century A.D. phase (Sarre 1925); however, some forms may also belong to the 10th century A.D. (Northedge and Kennet 1994: 23-34, Kennet 2004: 38-39 for discussion on the dating). The types have Tin as the primary opacifying agent and have been classified by the kind of surface decorations; splashes, paintings in cobalt or turquoise, lustre (monochrome, bi-chrome, polychrome). The shapes are restricted to table ware varieties such as everted rim bowls, and dishes which is a direct effect of the Changsha ceramics (Chinese types) reaching West Asia.

Another variety is the Sgraffiato. Hatched Sgraffiato is a distinct type of pottery from the Later Sgraffiatos (described as Style III Sgraffiato - Siraf in Whitehouse 1979a: 58), with hatched incised designs and a rich splashed green and yellow (sometimes

brown) colour scheme (Figure 4.24). The hatched designs are typically floral or pseudo-calligraphic in nature (Kennet 2004: 35), and simple zones between two panels and below the rim are left un-decorated, whereas the closely spaced hatching (c.1mm) that fill the letters or the background to the letters is left un-decorated (Priestman 2013: 584). The sherds have a fine texture and feel (orangish red fabric). Champlevé is another Sgraffiato type which has broad hatchings selectively removed to show the underlying darker core and acts a contrast with the brighter Glaze. Monochrome and Bi-chrome Sgraffiatos have a single colour and double colour glaze varieties.

Torpedo Jars is one of the transport vessels, with other Wares such as Buff Wares, Line Incised Storage Vessels (LISV) being the other major ceramics in which goods were exported to south Asia. Torpedo Jars being handle-less storage vessels with bitumen as inner coating are found across Parthian, Sasanian, and Early Islamic time periods. LISV are extremely thick storage vessels with linear incisions on them and a transport vessel of the Sasanian time phase. Buff Wares and other un-glazed, un-slipped varieties of coarse wares also form a major category of ceramics which are produced in West Asia. Egg-shell Wares which are extremely thin- (below 2mm thickness), highly decorated with incisions in pseudo-calligraphy form the table-wares of the un-glazed category.

One of the purposes of thin-section analysis is to move towards the social and cultural processes involved in the organisational aspect of ceramic craft by looking at its raw material composition and its modification. However, its infrastructural base depends on the collection of raw material, processing of the same, forming of shape and baking them. In terms of selection hierarchy, (i) fabric (clay paster preparation, colour using Munsell Soil Color Chart (1994), temper), (ii) shape (jar, bowl, pot, jug etc.) and then (iii) texture (fine, coarse, and medium) was utilised. In the case of lack of diagnostic sherds, intra-ware variability was considered along with stress on selection criteria (i) and (iii). All these features were recorded with the help of a pottery reading chart as elaborated in 3.2.3. Finally, the samples were selected using the following parameters from within the respective ware types; fabric, shape, texture, and stratigraphic integrity (if applicable).

A hundred and forty samples were sampled for further thin-section analysis. It must be stated that the sample size would look small, as many excavators were not willing to share their samples, as they considered their samples, although small, needed to be kept in their reserve collection without disfiguring it for future generations of researchers. However, some were willing to share and such samples from excavated sites in Western India were selected based on different regions; Kachchh (Kanmer), North Gujarat (Vadnagar), Saurashtra (Vallabhipur), Central Gujarat (Nagara), Coastal Maharashtra (Chaul) and Inland Maharashtra (Nagardhan). Aside from the excavated samples, other samples from the surface context were obtained to correlate with the excavated discoveries. A complete list of samples has been attached in the Appendix 1 - List of Samples.