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The Archaeological Landscape of the Right Bank of the River Indus and the Khirthar Piedmont: A Synthesis from Larkana and Kambar–Shahdad Kot Districts, Sindh, Pakistan

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ABSTRACT

This paper presents a focused synthesis of archaeological evidence recovered from two ecologically distinct but interlinked zones of western Sindh, Pakistan: the right (western) bank of the River Indus in Larkana District, and the Khirthar hilly piedmont straddling the Sindh–Balochistan border in Kambar–Shahdad Kot District. Drawing on an intensive field survey that documented 32 previously unrecorded or re-examined sites, the study restricts its scope to the right-bank palaeo-channel, plains and lake-catchment sites and to the piedmont settlements of the Khirthar foothills, deliberately excluding sites of the eastern (left) bank. The right-bank plains preserve a dense cluster of mounded settlements including Aavey-Jo-Daro, Ilyas Muhammad, Nathar-Jo-Daro, Chotiyaro-Jo-Daro, Pir Nandal Shah, Dhamrah-Jo-Daro, Halepotan-Jo-Daro, Thikrian-Waro-Daro, Fateh Bilawal, Jhukar-Jo-Daro, Chanaran-Jo-Muqam, Janan Chan, Nang Daro, Karonhar-Jo-Daro, Dandheray-Jo-Daro and Khando-Jo-Muqam that together attest an occupation sequence from the Mature/Late Indus period through a distinctive local Black Ware and Red Ware ceramic horizon of the second millennium BCE. In the submerged margins of Hamal Lake, the Bahawal Shah, Badam-Jo-Daro, Punro, Soan Taro and Whareh-Jo-Daro clusters furnish some of the earliest evidence in the region for Chaff-Tempered Neolithic pottery alongside a dense concentration of post-Indus Black Ware and Red Ware. In the Khirthar piedmont, the sites of Toopi, Mugli, Koteri and Karo Koteri yield a stratified admixture of Hakra, Nal, Amrian, Kot Dijian, Quetta/Faiz Muhammad Grey Ware and Mature Indus material, marking this corridor as a formative contact zone between the Balochistan highlands and the Indus lowlands. The paper re-examines these findings against the broader chronological framework of the Regionalization and Localization Eras and situates them within current (2025–2026) archaeological scholarship on the Indus Valley Civilization, including newly revised radiocarbon chronologies for Mohenjodaro and ongoing geomorphological reconstruction of the Indus's palaeo-courses west of the river. The results argue that the right-bank/piedmont corridor functioned as a persistent cultural threshold linking Balochi and Sindhi traditions from the Neolithic to the threshold of the second urbanisation, and that its systematic under-representation in earlier regional surveys has left a recoverable, and now partly recovered, gap in the settlement history of Sindh.



1. Introduction

The cultural profile of Sindh spans the full arc of human history in South Asia, from Palaeolithic assemblages recorded in the Rohri Hills, the Thar Desert and the coastal tract near Karachi, through the Mesolithic, the long-elusive Neolithic — recently confirmed on both banks of the Indus (Chandio, 2018) — the Chalcolithic and Bronze Age Indus Civilization, and into the historic periods. Western Sindh, the tract lying along the right (western) bank of the Indus and rising into the Khirthar range toward Balochistan, has long been recognised as archaeologically significant, yet it received markedly less systematic attention than the eastern bank and the Rohri Hills corridor. Early notices by Frere (1853) and subsequent explorations by Banerji (1922–23), Majumdar (1934) and Lambrick (1927–1946) identified isolated sites, and later survey work by the Sindh Archaeological Project (Flam, 1981) revisited a handful of these, but substantial gaps remained in the chronological sequence, particularly for the phases immediately preceding and following the Mature Indus period.

The present paper narrows its focus, by design, to two ecological–cultural zones that were surveyed intensively in doctoral field research conducted between 2014 and 2018: (1) the right bank of the River Indus in Larkana District, comprising the alluvial plains, palaeo-channels and the Hamal Lake catchment; and (2) the Khirthar hilly piedmont of Kambar–Shahdad Kot District, the transitional foothill zone where seasonal rivulets (nai) draining the Khirthar range meet the plains. Sites on the left (eastern) bank of the Indus, including the Khairpur and Rohri Hills clusters, fall outside the scope of this paper and are referenced only where necessary for comparison.

1.1. Literature Review

Archaeological interest in western Sindh dates to the mid-nineteenth century, when Frere (1853) published the first descriptive notice of ancient remains in the province. The early twentieth century brought systematic exploration: Banerji's 1922 identification of Mohenjo-daro (Banerji, 1923) redirected international attention to the Indus plains, while Majumdar's 1927–1931 surveys (Majumdar, 1934) and Lambrick's parallel work in the Khirthar and Kohistan tracts (1927–1946) produced the first inventory of sites west of the river, including the type finds at Kohtrash and Rajo Dero later reassessed by Krishna Deva and McCown (1949). Flam's doctoral research (1981) offered the first systematic reconstruction of Sindh's palaeo-hydrology, identifying the Warah, Ghar Branch and Khairpur courses as the principal loci of Indus-period settlement — a framework this paper's right-bank sites are mapped against. Later contributions by Kazi and Mallah (1991) and Shaikh and Veesar (2000–01) added individual site reports (Thariri Ubhan Odho, Bhando Qubo) from the same general tract, while Mughal's (1997) Cholistan research defined the Hakra ceramic horizon subsequently identified, for the first time in western Sindh, in the piedmont assemblages discussed below. On the Balochistan side of the watershed, the Nal cultural complex was defined by Hargreaves's 1924 excavation at Sohr Damb/Nal and substantially revised by the German–Pakistani Mission's later fieldwork (Franke-Vogt, 2003/04), which remains the principal comparative reference for the Nal material recovered in the Khirthar piedmont sites reported here. Kenoyer's (1998) chronological framework — distinguishing a Regionalization Era of formative, multi-directional cultural contact from a subsequent Localization Era following the Mature Indus florescence — provides the interpretive scaffold used throughout this paper.

Two further strands of scholarship bear directly on the present synthesis. First, Shaffer (1993) argued that the Black-and-Red Ware ceramic horizon associated with the Localization Era and the beginnings of the second South Asian urbanisation did not extend west of the Indus; the right-bank evidence assembled here directly tests, and revises, that claim. Second, recent (2025–2026) fieldwork and historical-geographical research at Mohenjo-daro itself — new radiocarbon dating

of the Stupa Mound perimeter wall (Kalhoro, 2026; Archaeology Magazine, 2026) and renewed excavation of the early city wall (Arab News, 2026) — has pushed the site's earliest Kot Dijian-phase occupation back to roughly 3300–2600 BCE, while parallel geomorphological research has clarified how the Khirthar piedmont deposits intermix with, and are easily mistaken for, the Warah palaeo-channel alluvium across the same tract surveyed here (Kalhoro, 2026). These findings situate the right-bank/piedmont evidence within a considerably longer and more continuous regional trajectory than earlier, sparser survey data allowed archaeologists to reconstruct.

1.2 Objectives

The objectives of this synthesis are fourfold: (a) to consolidate the chronological and cultural evidence recovered from the right-bank and piedmont zones only, excluding the left bank; (b) to characterise the distinct ceramic and architectural signatures — Chaff-Tempered Neolithic ware, Hakra, Nal, Kot Dijian, Mature/Late Indus, and the locally defined Black Ware and Red Ware tradition — that mark this corridor; (c) to test, against this evidence, the long-standing assumption that post-Indus Black-and-Red Ware traditions were confined to the eastern side of the Indus; and (d) to situate these findings within current (2025–2026) literature on Indus Valley chronology and Sindh's historical geography.

2. Regional Setting

2.1 The Right Bank of the Indus: Larkana District

Larkana District lies in north-western Sindh, on the western bank of the River Indus, bordered by Shikarpur and Jacobabad to the north, Dadu to the south, the Indus River and Khairpur District to the east, and Kambar–Shahdad Kot District to the west. Historically known by the ancient name Chandika, the area was constituted a district in 1901 and is best known as the location of Mohenjo-daro, the UNESCO World Heritage metropolis of the Mature Indus period, roughly 27 kilometres from Larkana town. Away from Mohenjo-daro itself, the right-bank plains are drained by a network of Indus-derived palaeo-channels — including the Warah and Ghar Branch courses identified by Flam (1981) — on which mounded settlements of the Indus and post-Indus periods are distributed. Today the same tract is irrigated artificially by canals fed from the Sukkur Barrage, but in antiquity seasonal flood water from shifting Indus courses sustained Rabi and Kharif agriculture and, in turn, permanent settlement.

2.2 Kambar–Shahdad Kot District: Plains and Lake Catchment

Originally part of Larkana, Kambar–Shahdad Kot was constituted a separate district in 2004. It is bounded by Jhal Magsi and Jafferabad (Balochistan) and Jacobabad to the north, Larkana to the east, Dadu to the south, and Khuzdar to the west, and comprises the talukas of Kambar, Shahdad Kot, Warah, Miro Khan, Nasirabad, Qubo Saeed Khan and Sajawal. Like the rest of Sindh, its climate is hot and arid, with atmospheric temperatures of 35–45°C and average rainfall of only 5–10 inches; agriculture depends almost entirely on the Sukkur Barrage canal network supplemented, in the west, by seasonal Khirthar run-off. The district contains three principal geographic units directly relevant to this paper: the Indus flood plain and adjoining canal-fed plains, where the majority of mounded sites recorded in section 4.1 are located; the lakes catchment, dominated by Hamal Lake (2,965 acres; 25 km long, 10 km wide) and the smaller Drigh, Saroh, Badam, Langh, Atan, Changro, Haso and Kachhri lakes, all of which are fed by fresh water draining from the Khirthar mountains; and the Khirthar hilly piedmont itself, treated separately below.

2.3 The Khirthar Piedmont: Geomorphology and Hydrology

The Khirthar range forms the natural border between Sindh and Balochistan, running approximately 300 kilometres from the Mula River in east-central Balochistan to Cape Monze on the Arabian Sea. Its name, from the local term for “milk-cream,” references the pale limestone that dominates the range. Structurally the Khirthar belongs to the Kirthar fold belt, an outer thrust zone of Tertiary (Paleocene–Oligocene) sedimentary rocks overlain by Quaternary piedmont, flood-plain and stream deposits. The range comprises at least three parallel ridges linked by meseta-like plains and is dissected west–east by numerous seasonal torrents (nai). Along the piedmont, these streams deposit sediment in alluvial fans and inner deltas as they lose gradient transitioning from mountain slope to plain — the most agriculturally productive soils in the district, owing to their periodic influx of silt and seasonal water.

Several of the larger piedmont torrents — the Khenji, Sita and Mazarani Nai among them, alongside smaller streams including the Narani, Mardan, Khargani, Buz, Alkah, Dhandhar, Wahandri, Trapen, Teerani, Tuni, Gerelo, Buri Dilan, Chhanyar, Keharji, Radh, Saghro and Uundhar Nai — feed the Hamal and Drigh lakes, both of which sit within the right-bank catchment. The piedmont zone itself rises toward peaks such as Nighand (2,997 m) and is crossed by numerous foothill ridges (locally termed takri, e.g., Ashiq-Ji-Takri, Dode Pandi-Ji-Takri, Topi Takri, Dinar-Ji-Takri) and historic passes that have functioned, since prehistory, as a corridor of movement between the Balochistan highlands and the Indus lowlands — precisely the corridor along which the Nal, Kot Dijian and Amrian ceramic traditions are found intermixed at the piedmont sites discussed below. As recent geomorphological reconstruction of the Mohenjo-daro hinterland confirms, west of Mehar the alluvial deposits of the Warah palaeo-channel trough are intermixed with, and partly obscured by, Khirthar piedmont-plain deposits along the entire length of the trough extending from Jacobabad to Manchhar Lake (Kalhor, 2026) — underscoring that the right bank and the piedmont were never separate depositional, or cultural, systems.

2.4 Vegetation and Environmental Context

Field observation at the piedmont site of Pir Qhudo, where the survey team was able to bypass the first range of foothills and inspect the adjoining plain, illustrates the environmental setting typical of the wider piedmont zone. The hills there are criss-crossed by a multitude of small seasonal channels formed by rain water and guided by the gentle slopes of the first foothill ridge; these channels are marked by a higher concentration of hygrophilous vegetation sustained by the seasonal input of rainwater, belonging to the Sudano-Sahelian dryland formation and dominated by *Acacia* sp., *Tamarix* sp., *Salvadora* sp., *Calotropis* sp. and *Capparis* sp. Pir Qhudo itself sits along a main channel spanning roughly 400 m, adjacent to an alluvial fan formed where an east–west stream joins the principal north–south channel; while it cannot be established whether this channel was active during the site's occupation, the proximity of arable alluvial land to the settlement is consistent with the agricultural basis inferred for the piedmont sites more generally. This vegetation and drainage pattern recurs at each of the piedmont sites recorded in section 4.4 and offers a practical means of locating further undiscovered sites: dense linear vegetation within an otherwise arid landscape reliably marks an active or relict seasonal channel, and mounded sites in this survey were disproportionately found along such channels near their alluvial-fan termini.

3. Materials and Methods

Fieldwork followed a three-stage protocol. In Stage 1, sites were located and mapped using GPS coordinates referenced to nearby villages, roads or permanent landmarks, with records deposited at the Department of Archaeology, Shah Abdul Latif University, Khairpur. In Stage 2, each site

received a systematic surface survey recording its name, description, archaeological context, apparent period, photographic documentation and accessibility. In Stage 3, surface-collected artefacts were catalogued, classified typologically (principally by ware, rim form, surface treatment and decoration) and compared against published assemblages from Sindh and Balochistan. Survey coverage extended to sites accessible only by boat in the partially submerged margins of Hamal Lake, and to piedmont localities reached on foot through difficult and, at times, insecure terrain in the Khirthar foothills, where the fieldworker required local tribal escort for access. No excavation was undertaken; all cultural attributions below are based on surface ceramic typology and are offered as a basis for future stratigraphic testing.

For the purposes of this paper, the 32 sites recorded in the parent survey were re-sorted into four analytical groups strictly on the basis of geographic zone: (i) right-bank plains and palaeo-channel sites in Larkana District; (ii) right-bank plains sites in Kambar–Shahdad Kot District; (iii) Hamal Lake catchment sites; and (iv) Khirthar hilly piedmont sites. Sites reported elsewhere in the parent thesis as belonging to the left bank of the Indus are excluded entirely from this synthesis.

4. Results: Sites of the Right Bank and the Khirthar Piedmont

Representative sites from each of the four analytical zones are summarised in Tables 1–4 below.

4.1 Right-Bank Plains and Palaeo-Channel Sites, Larkana District

The Larkana right-bank plains preserve a chain of mounded settlements strung along the Warah and related palaeo-channels. Their surface assemblages are dominated by a locally distinctive Black Ware and Red Ware ceramic tradition — fired separately, unlike the inverted-firing Black-and-Red Ware of northern and central India — alongside Grey Ware and, at several sites, residual Mature Indus material.

Site	Coordinates (approx.)	Setting	Principal cultural material
Aavey-Jo-Daro	27°25'57"N, 68°14'32"E	Mound, ~7 m, right bank of Indus	Plain, painted and perforated pottery; figurine leg
Ilyas Muhammad	27°26'21"N, 68°14'41"E	Right bank of Indus; three Kalhora-period tombs	Plain and painted pottery; fine and coarse Black & Red Ware; Kalhora bricks
Muzawarn-Jo-Daro	27°26'20"N, 68°14'40"E	Right bank of Indus	Red- and black-polished bowls, cups and dishes; incised and cordoned rims
Nathar-Jo-Daro	27°30'54"N, 67°03'17"E	Mound, ~30 acres, 8 m high, near Indus highway	Black & Red Ware in quantity; toy cart-wheel; terracotta cone; Grey Ware
Chotiyaro-Jo-Daro	27°33'17"N, 68°05'42"E	Mound, ~16 m, right bank of Indus, Larkana–Nasirabad road	Shell bangles; Black & Red Ware; plain pottery
Pir Nandal Shah	27°37'15"N, 68°07'59"E	Mound, ~10 m, on ancient Garh Wah channel	Black & Red Ware (Rajasthan/Gujarat affinity); Grey Ware

Site	Coordinates (approx.)	Setting	Principal cultural material
Dhamrah-Jo-Daro	27°39'17"N, 68°14'50"E	Mound, ~5 m, right bank of Indus	Black & Red Ware bowls; graffiti-marked and grooved rims
Halepotan-Jo-Daro	27°38'58"N, 68°14'02"E	Mound, ~7 m, Larkana–Shikarpur road	Black- and red-polished ware; Grey Ware; shell bangle
Thikrian-Waro-Daro	27°39'11"N, 68°13'43"E	Mound, ~4 m	Plain, painted, incised and burnished Grey Ware; Black & Red Ware
Fateh Bilawal	27°31'26"N, 68°03'32"E	Mound, ~6 m, Larkana–Nasirabad road, right bank	Plain and stamped pottery; black-painted red ware; large burnt bricks
Jhukar-Jo-Daro	27°34'00"N, 67°07'00"E	Twin mounds (A/B) on a palaeo-channel, Mound B ~15 m	Type-site of the Jhukar (Late Indus) phase; re-examined in this survey

4.2 Right-Bank Plains Sites, Kambar–Shahdad Kot District

A further set of mounded sites lies on the plains of Kambar–Shahdad Kot District proper, west of the Larkana boundary but still on the Indus's right (western) side, distributed along minor channels between the Khirthar foothills and the main river. Several preserve evidence of localised craft production — most notably shell-bangle manufacture at Chanaran-Jo-Muqam — and mudbrick or baked-clay architecture at Karonhar-Jo-Daro and Dandheray-Jo-Daro.

Site	Coordinates (approx.)	Setting	Principal cultural material
Chanaran-Jo-Muqam	27°24'00"N, 67°55'15"E	Mound, ~10 m, near Nasirabad	Shell-bangle production debris and finished bangles; black-polished Grey Ware; terracotta ball
Janan Chan	27°26'33"N, 67°49'28"E	Graveyard mound on Nasirabad–Warah road	Black & Red Ware (Indian affinity); shell bangles
Nang Daro	27°22'33"N, 67°40'53"E	Near FP Bund RBOD; flood-damaged (2010)	Black & Red Ware; bangles; terracotta balls
Village Jahan Khan	27°26'54"N, 67°40'44"E	Agricultural land, NE of village	Black & Red Ware; carinated and cordoned rim forms
Karonhar-Jo-Daro	27°30'25"N, 67°41'59"E	Mound, ~12 m, west of Khirthar hills	Kot Dijian & Indus period pottery; carnelian, agate and lapis lazuli beads; burnt-brick wall (2.80 m)
Dandheray-Jo-Daro	27°32'10"N,	15-acre site; oval	Black & Red Ware

Site	Coordinates (approx.)	Setting	Principal cultural material
	67°42'13"E	baked-clay feature (47×43 m)	dishes/bowls; chert blade; polished bone needle; shell bangles
Khando-Jo-Muqam	27°30'50"N, 67°45'54"E	Surface scatter near village Khando	Plain and painted pottery; Black & Red Ware; shell bangles

4.3 Hamal Lake Catchment (Right Bank)

The submerged and semi-submerged margins of Hamal Lake, fed by Khirthar run-off, preserve some of the most chronologically significant material in the study area. The Bahawal Shah cluster documents a purely Chaff-Tempered Neolithic ceramic horizon at Bahawal Shah-2, the earliest cultural signature recorded on the right bank, while the wider lake catchment — Badam-Jo-Daro, Dambi-Jo-Daro-2, Punro, Soan Taro and Whareh-Jo-Daro — furnishes a dense, largely homogeneous concentration of post-Indus Black Ware and Red Ware, several sites also yielding Indus-period terracotta cakes and, at Badam-Jo-Daro, direct evidence of brick-making (a kiln) beneath the water.

Site	Coordinates (approx.)	Setting	Principal cultural material
Bahawal Shah-1	27°24'49"N, 67°39'57"E	Mound submerged in Hamal Lake, ~300 m ²	Black Ware and Red Ware (Indian Black-and-Red Ware affinity)
Bahawal Shah-2	27°24'43"N, 67°39'57"E	Fully submerged, ~1 m beneath water	Chaff-Tempered Neolithic pottery (plain), thick surface concentration
Bahawal Shah-3	27°24'42"N, 67°40'08"E	Submerged, east of Bahawal Shah-2	Relief/stamped pottery and moulds – evidence of local production, paralleled at Bhambhore, Mansurah and Tulamba
Badam-Jo-Daro	27°27'24"N, 67°38'51"E	Submerged, ~15 acres, twin mounds	Black & Red Ware; Indus-period terracotta cakes; cut-brick structure and brick kiln
Dambi-Jo-Daro-2	27°30'20"N, 67°39'22"E	Lake-margin site	Black & Red Ware; pointed and grooved rims (Indian 5th-millennium-BCE affinity)
Punro	27°27'08"N, 67°38'50"E	Submerged, south of Badam-Jo-Daro	Red and Black Ware (Rajasthan/Gujarat affinity); grooved-line sherds
Soan Taro	27°26'12"N, 67°38'26"E	~5 km inside Hamal Lake, mound 5 m above water	Black & Red Ware; decorated rim sherds; modern Rabari pastoral settlement co-located
Whareh-Jo-Daro	27°23'57"N,	Partially submerged,	Coarse and fine Black & Red

Site	Coordinates (approx.)	Setting	Principal cultural material
	67°39'32"E	SW of Bahawal Shah-3, 100×60 m	Ware; everted rim forms

4.4 Khirthar Hilly Piedmont Sites

Along the Khirthar piedmont in Kambar–Shahdad Kot District, four sites recorded in this survey — Toopi, Mugli, Koteri and Karo Koteri — are located directly on or beside seasonal rivulets draining the range toward Hamal Lake. Their surface assemblages combine Hakra-tradition sherds, Quetta wet ware and Faiz Muhammad Grey Ware of Balochi affinity with Nal, Amrian, Kot Dijian and Mature Indus material of Sindhi/Indus affinity — an admixture that marks the piedmont as a zone of sustained cross-cultural contact rather than a peripheral frontier. Koteri and Karo Koteri additionally preserve stone architecture (a stone-walled structure with small corridors at Koteri; a circular stone chamber roughly 8 m in diameter at Karo Koteri), structurally comparable to contemporary Kot Dijian building traditions.

Site	Coordinates (approx.)	Setting	Principal cultural material
Toopi	27°35'14"N, 67°52'57"E	Conical hill flank, edge of a Khirthar rivulet	Hakra, Quetta wet ware, Faiz Muhammad Grey Ware, Amrian, Nal, Kot Dijian, Mature Indus
Mugli	27°32'34"N, 67°32'49"E	Right bank of a Khirthar rivulet	Hakra, Buff/Wet Ware and associated Balochi-affiliated assemblage
Koteri	27°22'10"N, 67°24'46"E	East of a rivulet flowing to Hamal Lake	Stone building (~4.5 m) with corridors; Hakra, Nal, Faiz Muhammad Grey Ware, Amrian, Kot Dijian
Karo Koteri	27°21'30"N, 67°30'53"E	South of a rivulet	Circular stone chamber (~8 m dia.); plain handmade appliqué pottery associated with Hakra ware

Taken together, the piedmont assemblage furnishes the first documented evidence of Nal cultural material — previously known chiefly from Balochistan sites such as Sohr Damb/Nal, Miri Qalat and Mehrgarh — recovered from the Sindh side of the Khirthar watershed, extending the known eastward reach of the Nal ceramic tradition.

4.5 Chronological Synthesis

Table 5 draws together the surface-ceramic evidence from all four zones into a single, provisional chronological framework, ordered from earliest to latest attested phase. This framework should be read as a working model derived from surface typology alone; it is offered explicitly as a target for future excavation and radiometric dating rather than as an established sequence.

Cultural phase	Approximate date range	Right-bank / piedmont evidence	Representative sites
Neolithic (Chaff-Tempered)	c. 6th millennium BCE	Plain chaff-tempered pottery, submerged lake margin	Bahawal Shah-2
Hakra	4th millennium BCE	Appliqué and incised wares; pottery bits in body wall	Toopi, Mugli, Kotero, Karo Kotero
Amri / Nal	4th–3rd millennium BCE	Polychrome Nal painted ware; Amrian sherds	Toopi, Mugli, Kotero
Kot Dijian (Early Harappan)	c. 3300–2600 BCE	Short-rim black-banded ware; stone architecture	Toopi, Mugli, Kotero, Karonhar-Jo-Daro
Mature / Late (Jhukar) Indus	c. 2600–1900 BCE	Perforated and painted pottery; terracotta cakes; beads	Aavey-Jo-Daro, Jhukar-Jo-Daro, Karonhar-Jo-Daro, Badam-Jo-Daro
Post-Indus Black Ware & Red Ware (Localization Era)	c. 1500–700 BCE	Separately fired black and red ware; shell-bangle production	Nathar, Chotiyaro, Dhamrah, Halepotan, Chanaran-Jo-Muqam, Hamal Lake cluster
Historic (Kalhora period and later)	18th century CE onward	Tombs, graveyards, burnt brick reuse	Ilyas Muhammad, Chanaran-Jo-Muqam, Khando-Jo-Muqam

5. Discussion

5.1 A Continuous, Previously Undocumented Sequence

The combined right-bank and piedmont evidence supports a chronological sequence spanning from the sixth-millennium-BCE Neolithic (Chaff-Tempered ware at Bahawal Shah-2) through the Hakra, Amrian, Nal and Kot Dijian phases of the fourth and third millennia BCE, into the Mature and Late (Jhukar) Indus periods, and onward into a locally defined Black Ware and Red Ware horizon of the second millennium BCE. This continuity fills a gap left by earlier regional surveys, which had identified Indus-period material at Bhando Qubo and elsewhere but lacked a documented antecedent or successor sequence on the right bank (Shaikh & Veesar, 2000–01; Kazi & Mallah, 1991). The density of sites recorded in the Hamal Lake catchment in particular — eight distinct loci within a single lake system — indicates that this was not a marginal or occasionally visited landscape but a sustained locus of settlement across at least three millennia.

5.2 The Khirthar Piedmont as a Contact Corridor

Geographically, the Khirthar piedmont functioned as a genuine contact corridor rather than a marginal hinterland. The co-occurrence of Nal, Quetta-affiliated Grey Ware and Kot Dijian pottery at Toopi, Mugli, Kotero and Karo Kotero mirrors the pattern noted by earlier Sindh Archaeological Project survey at Kohtrash and Rajo Dero, where Kot Diji-period surfaces were similarly interspersed with Balochistan-affiliated wares (Majumdar, 1934; Krishna Deva & McCown, 1949; Flam, 1981). Read alongside the stone architecture at Kotero and Karo Kotero, this suggests the piedmont hosted permanent or semi-permanent communities mediating exchange between the Balochistan highlands and the Indus alluvium, consistent with Kenoyer's (1998) characterisation of

the pre-urban and Regionalization Era as a period of formative, multi-directional cultural interaction rather than one-way diffusion from a single centre. The presence of carnelian, agate and lapis lazuli beads at the plains site of Karonhar-Jo-Daro, at the immediate western edge of the Khirthar foothills, is consistent with this corridor also functioning as a conduit for long-distance exchange in semi-precious materials during the Kot Dijian and Mature Indus periods.

5.3 Revising the Geography of Black Ware and Red Ware

The Black Ware and Red Ware tradition documented at right-bank sites such as Nathar-Jo-Daro, Chotiyaro-Jo-Daro, Dhamrah-Jo-Daro, Halepotan-Jo-Daro, Chanaran-Jo-Muqam, Janan Chan, Nang Daro, Village Jahan Khan, Khando-Jo-Muqam and across the entire Hamal Lake catchment (Bahawal Shah-1, Badam-Jo-Daro, Dambi-Jo-Daro-2, Punro, Soan Taro and Whareh-Jo-Daro) revises the long-standing assumption that Black-and-Red Ware traditions of the Localization Era were absent west of the Indus (Shaffer, 1993). Its separate — rather than inverted — firing of black and red surfaces distinguishes it technically from the Gangetic Black-and-Red Ware, suggesting either an independent local development or a distinct transmission pathway; either interpretation strengthens the case that the right bank sustained an active, evolving ceramic tradition through the post-Indus centuries rather than a cultural hiatus. The scale of this distribution — at least fourteen right-bank loci in this synthesis alone — makes it difficult to treat the ware as an isolated or intrusive phenomenon; it appears, instead, to represent a substantial and previously unrecognised regional ceramic tradition in its own right.

5.4 Craft Production and Local Economy

Several sites provide direct evidence of on-site craft production rather than the mere consumption of finished goods. At Chanaran-Jo-Muqam, raw shell alongside finished bangles and a shell fragment bearing visible saw-cut marks indicate that bangle manufacture was carried out locally rather than through the exchange of completed ornaments alone. At Bahawal Shah-3, a concentration of ceramic moulds points to relief-stamped pottery production, with parallels noted by the original surveying scholar at Bhambhore, Mansurah, Misri Shah and Kahu-Jo-Daro in Sindh and at Tulamba in Punjab — evidence of a distribution network extending well beyond the immediate lake catchment. At Badam-Jo-Daro, a brick kiln beneath the lake surface, together with a cut-brick structure, indicates dedicated fired-brick production during the Indus period. Together, this evidence characterises the right-bank/piedmont corridor not merely as a settlement zone but as a locus of specialised craft activity integrated into wider Sindhi and cross-regional exchange networks.

5.5 Consistency with Recent Mohenjo-daro Research

The right-bank sequence proposed here resonates with the broader re-dating of Mohenjo-daro's own occupation history. Recent radiocarbon work at the site's Stupa Mound perimeter wall has pushed the earliest Kot Dijian-phase urban development there back to roughly 3300–2600 BCE (Kalhoro, 2026; Archaeology Magazine, 2026), a range that now sits comfortably alongside the Kot Dijian material recorded at Toopi, Mugli, Kotero and Karonhar-Jo-Daro in this survey. This underscores that the right-bank corridor examined here was embedded in a much longer and more continuous regional trajectory than earlier, sparser survey data allowed archaeologists to reconstruct, and that Mohenjo-daro's hinterland — rather than being an empty or peripheral landscape — supported a dense network of contemporary and successor settlements on the same bank of the river.

5.6 Limitations

This synthesis rests entirely on surface survey; no stratigraphic excavation, radiometric dating or systematic petrographic sourcing has yet been undertaken at any of the sites discussed. Coordinates recorded in the field, and reproduced here, should be treated as approximate locators pending formal geodetic re-survey. Cultural-phase attributions rest on typological comparison with published assemblages from Sindh and Balochistan and are therefore provisional; several sites (e.g., Karonhar-Jo-Daro, Dandheray-Jo-Daro) yield mixed-period surface material whose depositional relationships cannot be resolved without excavation. Finally, because Hamal Lake's water level and shoreline have shifted historically — in part due to the construction of the Right Bank Outfall Drain (RBOD) — several sites reported here as “submerged” or “partially submerged” may be subject to differential preservation and future accessibility that this survey could not fully anticipate.

Appendix: Selected Detailed Site Descriptions

The following expanded descriptions, drawn directly from field notes, illustrate the level of surface detail recorded for representative sites in each of the four analytical zones and support the summary characterisations given in Tables 1–4.

Aavey-Jo-Daro (Larkana plains, right bank)

Located at 27°25'57"N, 68°14'32"E on the right bank of the River Indus, south-east of the Ilyas Muhammad site. The mound rises nearly seven metres above the surrounding plain. The surface material cultural repertoire includes plain, painted and perforated pottery, together with one leg of a terracotta figurine — the only figurine fragment recorded among the Larkana right-bank plains sites in this survey.

Bahawal Shah-2 (Hamal Lake catchment)

Located at 27°24'43"N, 67°39'57"E, immediately south of Bahawal Shah-1 and entirely submerged beneath the lake. The pottery is visible underwater in thick concentration, comprising exclusively plain Chaff-Tempered pottery of Neolithic date — the earliest cultural material recorded anywhere in the right-bank/piedmont survey area. The cultural deposit lies approximately one metre beneath the water surface and extends across a large area; the site's submersion made precise measurement and full artefact recovery impossible during the survey, and it remains the strongest candidate in the catchment for future underwater investigation.

Kotero (Khirthar piedmont)

Located at 27°22'10"N, 67°24'46"E, situated in the Khirthar Mountains east of a rivulet flowing toward Hamal Lake. Surface indications include a stone building measuring approximately 4.5 metres with small associated corridors. The site is culturally rich, with Hakra, Nal, Faiz Muhammad Grey Ware, Amrian and Kot Dijian pottery all represented on the surface — furnishing direct evidence of both eastern (Sindhi) and western (Balochi) cultural traditions at a single locus, and making Kotero the clearest single-site expression of the piedmont's role as a contact corridor.

Karonhar-Jo-Daro (Kambar–Shahdad Kot plains)

Located at 27°30'25"N, 67°41'59"E, north of Karonhar village and west of the Khirthar hills, in the plains proper. The mound stands approximately 12 metres above the surrounding land and is culturally rich, with Kot Dijian and Indus-period material on the surface. Notable finds include

semi-precious beads of carnelian, agate and lapis lazuli, terracotta cakes, terracotta bangles, terracotta beads and shell bangles, together with scattered perforated pottery. Burnt bricks (28×14×6 cm) are scattered across the site surface, and a wall with an east–west orientation, 2.80 metres in visible length, is preserved on the mound's northern side.

6. Future Research Directions

Four priorities follow directly from the results above. First, stratigraphic excavation at a site combining multiple cultural phases in visible superposition — Kotero or Karonhar-Jo-Daro are the strongest candidates given their preserved architecture — would allow the provisional sequence in Table 5 to be independently verified and radiometrically anchored, mirroring the kind of stratigraphic and radiocarbon revision now under way at Mohenjo-daro itself (Kalhor, 2026; Arab News, 2026). Second, systematic underwater survey of the Hamal Lake catchment, ideally combined with bathymetric mapping, would clarify the true extent of the Bahawal Shah, Badam-Jo-Daro, Punro, Soan Taro and Whareh-Jo-Daro cluster, much of which remains only partially accessible by boat. Third, petrographic and residue analysis of the Black Ware and Red Ware assemblage — particularly a direct technical comparison with Gangetic Black-and-Red Ware firing techniques — would test whether the separate-firing technique identified here represents independent local innovation or a distinct transmission pathway from South Asia's second urbanisation. Fourth, systematic survey of the Khirthar passes themselves, rather than only their piedmont termini, would help establish whether the Nal-affiliated material at Toopi, Mugli, Kotero and Karo Kotero reflects seasonal mobility, permanent cross-border settlement, or a mixture of both.

7. Conclusion

Restricting analysis to the right bank of the Indus and the Khirthar piedmont brings into focus a corridor whose archaeological importance has been consistently under-represented relative to the eastern bank and the Rohri Hills. Across four analytical zones — the Larkana plains, the Kambar–Shahdad Kot plains, the Hamal Lake catchment, and the Khirthar piedmont — this synthesis has assembled twenty-seven right-bank and piedmont sites documenting an occupation sequence running from Neolithic Chaff-Tempered communities through Hakra, Nal, Amrian and Kot Dijian formative traditions, Mature/Late Indus settlement, and a distinct post-Indus Black Ware and Red Ware horizon whose geographic extent revises earlier assumptions about the ware's distribution west of the Indus. The Khirthar piedmont sites of Toopi, Mugli, Kotero and Karo Kotero, in particular, document the region's enduring role as a contact zone between Balochistan's Nal-related traditions and Sindh's Amrian and Kot Dijian traditions. Both zones, and the seasonal rivulet systems linking them to Hamal and Drigh lakes, should be treated as a single interconnected landscape in future research design, one whose continuing archaeological potential is reinforced rather than diminished by the parallel, ongoing revision of Mohenjo-daro's own chronology in current scholarship.

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