

## LIST OF FIGURES

Figure No.		Page No.
Figure I.1	Jammu (in rectangle) and the surrounding Neolithic and Indus sites mentioned in the text	2
Figure I.2	Routes from Jammu to Kashmir via Banihal and Rajouri-Poonch	8
Figure I.3	Important routes going via Jammu in the late 18 <sup>th</sup> century CE.	9
Figure I.4	Routes of the Uttarapatha	11
Figure II.1	Location of Jammu district and its Tehsils	18
Figure II.2	Field documentation form used for the sites visited by the researcher	19
Figure III.1	General map – Jammu Kashmir and Ladakh and the adjoining territories	30
Figure III.2	Physiography of the Jammu district	33
Figure III.3	Sirowal and Kandi areas in the Jammu district	35
Figure III.4	District Jammu with its adjoining areas and river bodies	37
Figure III.5	Graph of the mean maximum and the minimum temperature of Jammu district	39
Figure III.6	Ombrothermic diagram of Jammu district	41
Figure III.7	District map of Jammu with different soil types	42
Figure III.8	Land use pattern of the study area	43
Figure IV.1	Percentage distribution of sites in different periods	54
Figure IV.2	Map with period wise distribution of sites in the research area	55

Figure IV.3	Map with distribution of Period I sites in the research area	57
Figure IV.4	Site of Manda in the vicinity of Akhnoor fort and the river Chenab	58
Figure IV.5	Section drawing of Neolithic site at Malpur	61
Figure IV.6	Map with distribution of Period II sites in the research area	64
Figure IV.7	Section drawing of Guru Baba ka Tibba	65
Figure IV.8	Site of Ambaran in the vicinity of the river Chenab	66
Figure IV.9	Ambaran- Section drawing	67
Figure IV.10	Ambaran- Exposed spoked wheel Stupa	68
Figure IV.11 A-B	Tibba Name Shah- Section drawings of trenches from Season 3	70
Figure IV.12	General view of the mound at Biyan Tibba	72
Figure IV.13	Satellite image of Biyan Tibba	73
Figure IV.14	Scraped section at Biyan Tibba	74
Figure IV.15	Satellite image of Satowali mound	77
Figure IV.16	Scraped section at Satowali	77
Figure IV.17	Depleted mound of Kot Garhi owing to soil procurement for bricks	80
Figure IV.18	River Tawi eroding section at the site of Kalali	85
Figure IV.19	Map with distribution of Period III sites in the research area	89
Figure IV.20	General view of the mound of Abdal	91
Figure IV.21	Site of Bakore eroded by the river Chenab	93
Figure IV.22	Map with distribution of Period IV sites in the research area	103

Figure IV.23	Jafarchak- Section drawing	105
Figure IV.24	Soil quarried from Shahjamal Tibba	110
Figure IV.25 A	Jindermelu Tibba as seen from a distance	111
Figure IV.25 B	Rectangular patterns on the periphery of the Jindermelu Tibba	111
Figure IV.26	The site of Sakrampur on the bank of the river Chenab.	115
Figure V.1 A	Neolithic stone celt from Malpur	120
Figure V.1 B	Unifacially flaked artefact from the site of Malpur	120
Figure V.2	Explored Harappan sherds from the site of Premachak Tibba and Nadi	121
Figure V.3	Pottery vessels of Period I	122
Figure V.4 A	Grey ware sherds of Period II	124
Figure V.4 B	Incised ware of Period II	124
Figure V.4 C	Corrugated Ware of Period II	124
Figure V.5	Terracotta piece with grain impression (rice) belonging to Period II	124
Figure V.6	Reconstructed bowl of Period II from Satowali	126
Figure V.7	Worked pottery pieces and broken terracotta bead from Period II	126
Figure V.8	Terracotta bangle pieces of Period II	126
Figure V.9	Terracotta pieces with grain impression (rice) belonging to Period II	127
Figure V.10 A	Incised grey ware (Satowali) belonging to Period II	128

Figure V.10 B	Fragment of a terracotta figurine with applique design (Dohana Chak Tibba) belonging to Period II	128
Figure V.11	Pottery vessels of Period II	130
Figure V.11a	Pottery vessels of Period II	131
Figure V.12	Pottery vessels of Period II	133
Figure V.13	Pottery vessels of Period II	136
Figure V.14	Pottery vessels of Period II	138
Figure V.15	Pottery vessels of Period II	140
Figure V.15a	Representative comparative pottery from different sites belonging to Period II	142
Figure V.16 A	Incised ware belonging to Period III	144
Figure V.16 B	Incised decorated pattern belonging to Period III	144
Figure V.16 C	Intact terracotta bead belonging to Period III	144
Figure V.16 D	Pottery with graffiti belonging to Period III	144
Figure V.16 E	Clay lumps with reed impression belonging to Period III	144
Figure V.17	Terracotta piece with grain impression (rice) belonging to Period III	144
Figure V.18 A	Terracotta Wheel (Mana Tibba) belonging to Period III	145
Figure V.18 B	Stamped ware (Kalali) belonging to Period III	145
Figure V.18 C	Stamped design (Ambaran) belonging to Period III	145
Figure V.18 D	Copper Vessel (Satowali) belonging to Period III	145
Figure V.19	Pottery vessels of Period III	146

Figure V.19a	Pottery vessels of Period III	147
Figure V.20	Pottery vessels of Period III	149
Figure V.20a	Pottery vessels of Period III	150
Figure V.21	Pottery vessels of Period III	152
Figure V.22	Pottery vessels of Period III	154
Figure V.22a	Pottery vessels of Period III	155
Figure V.23	Pottery vessels of Period III	157
Figure V.23a	Representative comparative pottery from different sites belonging to Period III	159
Figure V.24 A	Black on red ware belonging to Period IV	161
Figure V.24 B	Rippled band with black horizontal lines with mica dusting belonging to Period IV	161
Figure V.24 C	Pottery with chequered pattern belonging to Period IV	161
Figure V.24 D	Pottery with stamped design belonging to Period IV	161
Figure V.24 E	Sherd with incised design and decorated pattern belonging to Period IV	161
Figure V.25	Terracotta piece A: Front side B: Back side with grain impression (rice) belonging to Period IV	162
Figure V.26	Black on red ware sherds belonging to Period IV	162
Figure V.27 A	Terracotta mould original (on left) and cast on m-seal (right) (Sainth) belonging to Period IV	162
Figure V.27 B	Incised ware (Biyan Tibba) belonging to Period IV	162
Figure V.27 C	Black on red ware with embossed design (Abdal) belonging to Period IV	162

Figure V.28 A	Glazed ware sherds from Satowali	164
Figure V.28 B	Glazed ware sherd from Rangmahal	164
Figure V.29 A	Painted vertical line on the rim (Baba Potho) of Period IV	166
Figure V.29 B	Painted vertical line on the rim (Satowali) of Period IV	166
Figure V.29 C	Painted vertical line on the rim (Sai Khurd Tibba) of Period IV	166
Figure V.29 D	Painted vertical line on the rim (Jamraal) of Period IV	166
Figure V.30 A	Painted wavy lines on the rim (Biyan Tibba) belonging to Period IV	166
Figure V.30 B	Painted wavy lines on the rim (Bathur) of Period IV	166
Figure V.30 C	Painted wavy lines on the rim (Biyan Tibba) of Period IV	166
Figure V.30 D	Painted wavy lines on the rim (Biyan Tibba) of Period IV	166
Figure V.31 A-C	Triangular motifs on the rim (Abduleyan) of Period IV	166
Figure V.32	Pattern with short horizontal lines (Abdal and Biyan Tibba) (from left to right) of Period IV	166
Figure V.33	Sherds with chevron pattern- monochrome and bichrome (Biyan Tibba) of Period IV	167
Figure V.34 A (a)	Non geometric pattern from Sai Khurd Tibba of Period IV	168
Figure V.34 A (b)	Non geometric pattern from Baba Potho of Period IV	168

Figure V.34 A (c)	Non geometric pattern from Kalali of Period IV	168
Figure V.34 A (d)	Non geometric pattern from Sai Khurd Tibba of Period IV	168
Figure V.34 A (e)	Non geometric pattern from Sai Khurd Tibba of Period IV	168
Figure V. 34 B	Non geometric pattern from Satowali of Period IV	168
Figure V.34 C	Non geometric pattern from Kalali of Period IV	168
Figure V.35	Comparative table of motifs on Rangmahal pottery	168
Figure V.36	Comparative table of motifs on Rangmahal pottery	169
Figure V.37	Comparative figure depicting similar motifs on Rangmahal pottery	169
Figure V.38	Pottery vessels of Period IV	170
Figure V.38a	Pottery vessels of Period IV	171
Figure V.39	Pottery vessels of Period IV	173
Figure V.40	Pottery vessels of Period IV	175
Figure V.40a	Pottery vessels of Period IV	176
Figure V.41	Pottery vessels of Period IV	177
Figure V.41a	Pottery vessels of Period IV	178
Figure V.42	Pottery vessels of Period IV	179
Figure V.43	Pottery vessels of Period IV	181
Figure V.44	Pottery vessels of Period IV	182
Figure V.44a	Pottery vessels of Period IV	183
Figure V.45	Pottery vessels of Period IV	184
Figure V.45a	Pottery vessels of Period IV	185

Figure V.45b	Representative comparative pottery from different sites belonging to Period IV	187
Figure V.45c	Representative comparative pottery from different sites belonging to Period IV	188
Figure V.46 A- B	Vessel bases with small shallow depression (Satowali)	190
Figure V.47 A	Perforated ware (Biyan Tibba)	191
Figure V.47 B	Sherd with cross and rosary symbol (Satowali)	191
Figure V.47 C	Sherd with incised decoration (Biyan Tibba)	191
Figure V.48 A	Intact dabber from Dohana Chak Tibba	191
Figure V.48 B-C	Broken dabbers from Dohana Chak Tibba	191
Figure V.49 A	Broken animal terracotta figurine (Bansultan)	192
Figure V.49 B	Unidentified terracotta figurine (Ghattala)	192
Figure V.49 C	Unidentified terracotta figurine with incised pattern (Seri Panditan)	192
Figure V.49 D	Broken animal terracotta figurine (Biyan Tibba)	192
Figure V.49 E	Broken terracotta toy (Jinder Melu Tibba)	192
Figure V.49 F	Terracotta pellet (Khojipur Jhak)	192
Figure V.49 G	Broken figurine of a seated animal (cattle?) (Satowali)	192
Figure V.49 H	Broken terracotta piece (Satowali)	192
Figure V.49 I	Unidentified terracotta figurine (Tikri)	192
Figure V.50 A	Broken terracotta bangle (Satowali)	193
Figure V.50 B	Broken terracotta bangle (Mana Tibba)	193
Figure V.50 C	Terracotta bead – lateral, top, and bottom view (Muggoali/Bla Tibba)	193
Figure V.50 D	Terracotta bead (Biyan Tibba)	193
Figure V.50 E	Broken terracotta bead (Dohana Chak Tibba)	193



Figure V.50 F	Carnelian Bead (Muggoali/Bla Tibba)	193
Figure V.51 A	Worked potsherd (Mana Tibba)	194
Figure V.51 B	Worked potsherd (Abduleyan)	194
Figure V.51 C	Worked potsherd (Abdal)	194
Figure V.51 D	Terracotta scrubber/ paddle (Muggoali/Bla Tibba)	194
Figure V.52 A-B	Stone pestles (Guru Baba ka Tibba)	194
Figure V.53	Small terracotta grinder (Satowali) — A: Front view B: Lateral view and C. Back view D: Grain impression (rice) all over the grinder	195
Figure V.54	Terracotta grinder (Ghattala) — A: Front view B: Back view C: Grain impressions (rice) on the back side	196
Figure V.55	Terracotta grinder (Prema Chak Tibba)— A: Front view B: Back view C: Grain impression (rice) on the back side	197
Figure VI.1	3D representation of the elevation (in meters) of the research area	202
Figure VI.2	Distribution of the sites of Period I, II, III and IV based on the elevation in the research area	203
Figure VI.3	Spatial distribution of sites of different periods in the research area	205
Figure VI.4 A	Histogram showing the range of size of sites from all the period in the area	206
Figure VI.4 B	Sites and their size in hectares	207
Figure VI.5	Radar graph showing the size of sites of Period II (area in ha)	208

Figure VI.6	Radar graph showing the size of sites of Period III (area in ha)	209
Figure VI.7	Radar graph showing the size of sites of Period IV (area in ha)	209
Figure VI.8	Location of sites of different periods around the water bodies	214
Figure VI.9	Graph showing usage of hand pumps for drinking purpose in the areas of Akhnoor and R S Pura	215
Figure VI.10	Size and spatial distribution of the sites belonging to Period II	224
Figure VI.11	Distribution of major NBPW sites along <i>Uttarapatha</i>	225
Figure VI.12	Routes from Jammu to Kashmir via Banihal and Rajouri- Poonch	228
Figure VI.13	Size and spatial distribution of the sites belonging to Period III	232
Figure VI.14 A-B	Kalali 2004: A: Narrow channel around the site B: Kalali 2020: Expanded channel	234
Figure VI.15	Shifting of the course of the river Chenab and the river Tawi over 150 years	235
Figure VI.16	Slope in the gradient of the river Chenab A: Gradient in the Google map B: Gradient in the DEM	236
Figure VI.17	Section drawing from Ambaran with evidence of flooding	238
Figure VI.18	Settlements of Period III on the eastern bank of the river Chenab	239

Figure VI.19	Location of sites on the right bank of the river Chenab	239
Figure VI.20 A	Small stupa at Sanghol	242
Figure VI.20 B	Spoked stupa at Ambaran	242
Figure VI.21	Size and spatial distribution of the sites belonging to Period IV	246