#### Gaz. Description derived from satellite image available through Google Earth No.

100 Bāmiyān: The fort at Bāmiyān is 2.2 km to the north-west of Shahr-i Gholghola but it has distinct fortifications, suggesting that it is currently in use. It overlooks the valley from the north-west. At its feet is an expanse of uneven ground which may represent a ruin field, although in the east it is covered by alluvial fans disgorging from valleys to the north. 250 m to the south is a cemetery with two modern domed tombs. The intensive occupation and agriculture, and the unclear features (this is a winter image, with no vegetation, and snow in places) make interpretation difficult. Not planned.

- The site of Begram (Figs A11:1–2), 4.7 km north-east of the current airport and military base, is best 122 known as the Kushan capital Kāpīsā, excavated by a French team from 1937–46 (Ghirshman 1946). Although Ghūrid and other Islamic coins were found at the site in the 19th century CE, the trenches and ramparts presumably relate in the main to the earlier periods, so the site was not planned. The main mound (the 'New Royal City') measures 566 x 205 m and is orientated east-west. The mound covers an area of 9.4 ha. In the south it has been cut by tracks, while fields are encroaching from the north. The site was mined during the recent conflicts - during our visit in 2007, we were unable to leave a narrow path and there is little to see in the overgrown trenches (cf. Ghirshman 1946: Pl. I, XXIV). A clear central division is visible between the east and west halves. Trenches and foxholes seem to line the south rampart, indicating the fighting in the area in recent decades. 560 m to the north-north-west is the Burj-i Abdullah (Fig. A11:2), a fortified enclosure on a promontory overlooking a bridge at a bend in the river. It measures 208 x 147 m and covers an area of 3.4 ha. The steep ramparts here appear to be relatively well preserved although they are again incised with trenches and foxholes and the interior of the site is currently being used as a military base, highlighting the enduring strategic significance of the site's location.
- 149 The pre-Islamic and Ghaznawid / Ghūrid site of Bust (or Greater Bust, as Terry Allen terms it 1988: 56) stretches for roughly one-third of the distance along the east bank of the Hilmand towards the palaces of Lashkar-i Bāzār. The French mission primarily focused on the Ghaznawid palaces and the most prominent of the other standing structures. I therefore decided to concentrate our research on the southern 2.5 km of the Bust / Lashkar-i Bāzār conurbation, around the citadel at Bust (Figs A11:3–4; see also Fig. 6:19 for a montage of how the stitched satellite images available through Google Earth described below relate to each other). Many individual buildings are discernible in the high-resolution satellite images available through Google Earth, amongst the cultivation and abandoned fields of this massive urban site. Other sites, not listed in Ball's *Gazetteer*, are visible on the west bank of the Hilmand.



Figure A11.1 Gazetteer Site 122 – Begram (Image GoogleEarth  $\ensuremath{\mathbb{C}}$  2007 Digital Globe).



Figure A11.2 Gazetteer Site 122 – Burj-i Abdullah (Begram). Note the military vehicles parked in the centre of the site (image GoogleEarth © 2011 Digital Globe).



Figure A11.3 Gazetteer Site 149 – Bust citadel (Image GoogleEarth © 2007 Digital Globe).



Figure A11.4 Sketch plan of the Bust citadel derived from satellite images available through Google Earth.

Gaz. No.	Description derived from satellite image available through Google Earth
	Bust Citadel (Figs A11:3–4): the fortifications of the fortress, citadel and lower walled town, and the monumental arch stand out dramatically in the satellite images of the Bust Citadel, available through Google Earth despite the different exposures of the stitched images. The remnants of a major earlier (Parthian?) wall, which is sketched on Schlumberger's Planche 2, are evident to the west of the lower walled town. An array of 'résidences', courtyard buildings, walled enclosures (gardens?), canals and other less identifiable structures are visible in the satellite images available rheouth Google Earth, particularly within the lower walled town at the foot of the citadel, and to the north of the ancient canal, but few internal structural details can be discerned. The numerous light-coloured sandy patches in the lower walled town and 'Parthian' town to the west may indicate the pooling of water in formerly open spaces. Bust SW (Fig. A11:5): this strip of images covers a 770 m (north-south) area along the bank of the Hilmand, to the west of the citadel. The principal structure is Résidence XI, which measures 93 x 72 m and is orientated north-south. Its west wall is relatively well preserved, particularly the south part, where towers are extant. The 7 m long gap in the west wall may indicate an entrance, leading to the citadel XI was many endicate an entrance, leading to the citadel XI was many endicate the XI was many endicate integrating the detail (1998) is the south part, where towers are extant entrance are readily recognisable. The large rectangular white patch in the centre (41 X 23 m) may reflect (literally) sliting, cultivation is currently not very prevaled to this part of the site, but extensive, relatively recent field systems are evident in several areas. In the south, the outline of ramparts are visible (they are light coloured, probably indicating a lack of vegetation growing on the packed earth), but again, these are poory preserved. Allen (1988: S3) argues that these date to the Parthian period
	not, the long thin nature of the room(s) suggests a storage function. 280 m north-north-west of Résidence IX is the faint outline of a very large building, just to the south-east of Résidence VIII. This appears to be a double-walled enclosure, covering 14 ha. It measures 119 x 117 m; the double line of walls / ramparts are 6 m apart. Various enigmatic outlines are visible within and related to the enclosure – those in the west may be an old quay. Some of the internal lines may be old field systems – canals and agriculture have truncated the east part of the enclosure. Little can be said about Résidence VIII – it is surrounded by canals (the ones to the north may be a moat) and little standing architecture is visible.



Figure A11.5 Bust SW – Schlumberger's Résidence XI, north of the putative walled Parthian city (Image GoogleEarth © 2008 Digital Globe).



Figure A11.6 Bust NW – Schlumberger's Résidences IX and X, situated between the Hilmand and encroaching cultivation (Image GoogleEarth © 2008 DigitalGlobe © 2008 Europa Technologies).

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Appendix 11: Descriptions of Ghūrid sites analysed in high-resolution satellite images available through Google Earth



Figure A11.7 Bust WCentral – ASAGE sites NP1, NP3 and NP4 (Shāhzāda Sarbaz mausoleum - see Fig. 6:19 Image GoogleEarth © 2008 DigitalGlobe).



Figure A11.8 Bust WCentral – ASAGE site NP2 (Image GoogleEarth © 2008 Digital Globe).

## Gaz. Description derived from satellite image available through Google Earth No.

149 Bust WCentral (Figs A11:7-8): this 1600 m long strip partly overlaps with Bust NW (to the west) and Bust Central (to the east). In the south, Résidence XI is visible (see Bust SW). The central section of this strip is heavily cultivated; green irrigated fields and light brown, recently harvested fields, with haystacks are visible. The cultivation hems in several of the structures marked on Planche 2. Most of these, however, are not numbered, and so were presumably not planned during the French mission. To the north of an east-west ancient canal is the first of these structures (ASAGE NP1), with ephemeral wall lines to the west of it between the fields. ASAGE NP1 measures 43 x 41 m and is orientated east-north-east to west-south-west. The north-west and south-west quarters are best preserved, although the perimeter wall is incomplete. The central area was presumably a courtyard and is currently white / silty. A corner tower is visible in the north-west, where there is a 10 x 9 m 'room' / store or possible animal pen. The other walls and enclosed spaces are more intricate, suggesting domestic structures rather than merely enclosed space. It is comparable to Résidence V. 125 m to the north-west of ASAGE NP1 is (unplanned?) Résidence XII. It measures 35 x 10 m, the north part being best preserved. Again, here the large enclosed area (10 x 9 m) indicates a courtyard building, with smaller rooms to the south. To the north-west, a curious grey blotch may mark Trench (?) F1 – possible trench edges are visible and if this was a significantly sunken area it might explain why it is not covered in stubble. Other ephemeral wall lines can be seen to the north, but none are particularly coherent until ASAGE NP2 is reached, 350 m north-north-west of Résidence XII. This structure measures 56 x 50 m and is orientated north-west to south-east. It appears to be 'caravanserai' comparable to Résidence II – a large, central (white, silted) courtyard surrounded by rooms / cells built against the partly preserved external wall. The west rooms appear to have been narrower than the others; a gap in the middle of the wall here may indicate collapse rather than an entrance, due to the direction of the prevailing winds. 105 m to the north-west is a more linear structure, although the limited preservation makes it difficult to be certain of its dimensions. Three rooms, however, are visible, measuring ca 12 x 6 m and aligned north-west to south-east. Smaller, similarly orientated rooms to the north look like later additions. 85 m to the north-north-west are the remains of a 'rampart enclosure', measuring ca 33 m square. Its south and west ramparts are better preserved than the north and east. A further 100 m to the north-north-east is a better preserved squarish enclosure (ASAGE NP3), which has been distorted by the satellite image available through Google Earth, if the outline in Planche 2 is correct. It appears to consist of a double perimeter wall (or rooms against the inner face of the perimeter wall), but this time with the traces of a squarish courtyard area which is defined by walls and white silting. This suggests that the internal walls between the perimeter and the courtyard walls are no longer evident on the surface - the building may be comparable to Résidence V or VI. It measures 58 m square, the courtyard 24 x 20 m. In the north-west corner is a square standing structure / tower, with the possible remnant of another discernible in the north-east corner. The standing tower measures 5 m square. An entrance may be visible in the middle of the south wall (or possible in the middle of the east wall). 130 m to the north-east is a domed structure, the Shāhzāda Sarbaz mausoleum (ASAGE NP 4), surrounded by a wall and possible graveyard. The dome is built on a hexagonal base and measures 11 m in diam. (the hexagon is 20 x 18 m, orientated north-north-west to south-south-east). Bust Central (Fig. A11:9): about one-third of this strip is covered by Bust WCentral to the west. In the north, the course of an old canal can still be seen, running north-east to south-west past a large 'caravanserai' ASAGE NP5. This site is comparable to, but not as well preserved as, ASAGE NP1. In the west, sections of the outer wall are still upstanding; ephemeral traces of internal divisions are visible along the north wall and in the centre of the east wall (a possible gateway) and in the south-west. The site measures 37 m east-west by 34 m north-south. An inner wall is visible in the west, 5 m from the outer, delineating the usual central courtyard with a white silty area. The site measures 1,314 m<sup>2</sup> in area and is slightly off north-south in alignment. 250 m to the south-south-east are ephemeral wall lines in the fields which cover the north half of this strip, with other crop marks 525 m south of ASAGE NP5. This faint site appears to be rectangular, orientated north-west to south-east and about 33 x 21 m in size. Where the cultivation ends, many more sites / the outlines of possible structures are visible, although a significant number of these may be relatively recent animal pens. The structures which appear older stretch north from near ASAGE NP1 and may be aligned along a street. At the north end are two poorly preserved 'caravanserais', the west one partly cut by tracks. The larger site measures roughly 51 x 44 m. 44 m to the north-east of ASAGE NP1 is a small rectangular structure, orientated east-west. It measures 14 x 8 m and covers an area of 99 m<sup>2</sup>. Its walls are virtually intact. Immediately to the north is a less well-preserved rectangular structure, orientated north-south. Virtually none of its walls are still standing, but a double row of walls running north-south is clearly

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visible. The site measures 2319 m $^2$  in area, 56 x 39 m. The double row of walls are 7–8 m apart. Faint internal divisions are visible in the north.

140 m to the south of this site are the remnants of another major canal. The cluster of 'pens' in this area makes sense if the canal collects again rainfall or kārīz / well holes in the area are still operational. Two faint, rectilinear crop marks are visible in this area, but little other detail. A suspiciously regular circular feature is visible, surrounded by lighter (silty?) deposits – it may relate to an ancient pond. Just to the north of the citadel walls are a couple of mounds topped by what appear to be graves. Bust ECentral (Fig. A11:10): the nomad camp in the south-east of this image provides a useful explanation of some of the nearby sub-circular features that are visible in this strip. As in Bust Central, their concentration along ancient canal lines and lines of karez spoil heaps / wells is also indicative of their probable function as recent animal pens. Some of the darker patches around the light silty areas probably represent vegetation which would have grown longer in these damper areas and provided fodder. Elsewhere, however, intense small dark spots may indicate ancient industrial refuse / slag heaps. In general, the archaeological remains in this area are not well preserved. Little is visible in the north where harvested fields dominate and the plethora of 'dried up lagoons / ponding' features in the centre make the identification of building outlines difficult. If

this interpretation is correct, however, and this was a perennially damp / marshy area, occupation in this part of the site may have been limited anyway.

In the south, a couple of rectilinear outlines are noticeable close to the citadel walls, but little can be said about these, and several other possible structures to the north. Only when we reach the vicinity of Résidence XIII are building outlines clearer, but even here, few have the upstanding architecture of Résidence XIII and only rough outlines can be delineated. Given these limitations, measurements of these structures were not taken.

Bust E (Fig. A11:10): the principal feature of this eastern-most strip of stitched images available through Google Eargle is Schlumberger's Building XIII, the standing architecture of which is clearly visible. Other smaller, less well-defined clusters of ruins are visible around BXIII (see Schlumberger 1978 Planche 2), as well as the old canal and more ephemeral channels. Modern cultivation, including in the midst of BXIII has complicated the picture, although some of the channels appear more clearly in Google Earth than in Planche 2. Other modern / complicating features of note are the nomad camps and probable modern animal pens (possibly re-using older structures) and a possible brick kiln (a black circle with a plume of smoke rising from it) as well as the usual haystacks. In the north, a large domed structure, the Siyāh Čar icehouse, is visible; it does not appear on Schlumberger's Planche 2.

- 311 Dūst Muhammad is a small mound in the middle of dense agriculture. The uncultivated area around the site measures 68 m (east-west) by 61 m (north-south; 0.3 ha), although the fields have probably encroached on the lower slopes of the site. Roughly in the centre of the site is a rectilinear 'fort' measuring 27 x 19 m and orientated north-west to south-east. It appears to be more elevated in the west, possibly reflecting towers flanking an entrance, or the natural topography here. A single structure, orientated north-north-west to south-east, stands within the fort. It measures 8 x 5 m and appears to have an entrance in the north-west and a possible well outside its east wall. No other features are clearly discernible.
- 521 Kamtudi Wakil Khān is a low mound, 0.4 ha in area, surrounded (and being encroached?) by agriculture. Little is visible on the surface other than a central circular feature (a well?) and white rectilinear lines, presumably indicating buried wall lines. The mound measures 83 x 63 m and is orientated north-east to south-west. The clearest of these features measures 5 x 3 m. The north side of the mound has some vegetation on it.
- 685 The Ghaznawid and Ghūrid remains at Lashkar-i Bāzār (Soldiers' Bazar) stretch for over 1.7 km, primarily along the east bank of the Hilmand (Fig. A11:11), and are intrinsically linked with the site of Bust, a further 4 km to the south. As mentioned above, a French expedition worked at both sites from 1949–53 and recorded numerous standing structures as well as excavating remains. Many of the extant structures visible in the stitched levels letter image can be identified on the French plan (Schlumberger 1978 Planche 2) from the Northern Palace C1 in the north to Structure III in the south.

A considerable amount of duplication would result from planning and describing these sites as they survive in the satellite images, given the extensive French work at the site. The ravages of time, conflict and agricultural expansion probably account for any small discrepancies between the French plans and the extant (visible) remains. The combined ruins of Bust / Lashkar-i Bāzār (to the north of the citadel at Bust) cover an estimated 930 ha.

Appendix 11: Descriptions of Ghūrid sites analysed in high-resolution satellite images available through Google Earth



Figure A11.9 Bust Central – ASAGE site NP5 (Image GoogleEarth © 2008 Digital Globe).



Figure A11.10 Bust ECentral (left) and Bust East (right) (Images GoogleEarth  $\ensuremath{\mathbb{C}}$  2008 Digital Globe).



Figure A11.11 Lashkar-i Bāzār (cf. Schlumberger 1978: Planche 3; Image date 21/ 4/2002. GoogleEarth @ 2018 Digital Globe).

Gaz. No.	Description derived from satellite image available through Google Earth
938	Qūri: this is a poor satellite image, which is much paler than normal. Consequently, some of the structures in what appears to be a revisited camp site are difficult to discern. Most of the structures are rectangular and orientated south-west to north-east, with the short side to the south-west, presumably because of the prevailing wind. Several of the larger structures have clear internal divisions / rooms; the smaller, simpler buildings may be for animals. The camp lacks a clear pattern of organisation; it may, therefore, represent multiple visits, possibly over a considerable amount of time. One of the larger buildings measures 10 x 7 m, while one of the 'animal structures' measures 8 x 4 m. The structures are scattered over an area of ca 7 ha, measuring 200 x 180 m, on a promontory between two rivers. The lighter coloured deposits around the structures suggest clearance of rocks from the surface, both to build the structures and to facilitate habitation. 620 m to the north-west is another, less dense cluster of structures covering ca 3 ha, on a slope overlooking a canal. These structures are clearer and so probably more recent. Three of the structures are simple rectangles, although one oval corral is visible, with an opening to the south-south-east. The corral measures 12 x 10 m, while the rectangles measure 12 x 8 m on average. A curious, elaborate C-shaped walled structure in the west, measuring 18 x 6 m, may represent a mosque due to its orientation and possible colonnade on the eastern side. Again the short side generally faces west due to the prevailing wind. To the north is a linear feature (possibly a buildozed bank) marking the south extent of irrigated fields; other, thinner, longer linear features are probably old route-ways. On the opposite side of the canal, 420 m to the south-west, are other structures (not planned due to the proximity of a hamlet and their probable recent date / reuse).
1042	
1081	Shīniya 1: small, isolated circular tower on a ridge overlooking an east-west valley entering the main north-south Alayār valley. The tower measures about 3 m in diam. The only other possible structures nearby are an enigmatic 'satellite' feature 200 m to the east-north-east and neighbouring rectilinear soil marks, although these are too large to be anything other than enclosures (if that). Considering how clear the tower is, and how ephemeral the other features, they are unlikely to be related. Not planned.
149	Shīniya 2: another isolated tower, located on a ridge overlooking two valleys entering the Alayār valley from the south-west. This structure is rectilinear in shape and measures 4 x 3 m. It is orientated north-east to south-west and does not seem to be associated with any other architecture, although a possible circular depression 30 m to the south-west may be related to it. Not planned.

1163 Tepe Buland 1 is a large fortified site on the edge of the irrigated fields on the west bank of the Hilmand. A canal loops around the site on three sides, with desert to the west. A large, presumably military complex has been built on top of the fortress, rendering any attempts to identify ancient

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structures futile. The fortress has steep slopes in the west, but those in the east appear gentler. A possible fortified entrance is located in the south-west, but again this may be recent. The mound measures 245 x 177 m (orientated north-west to south-east) and covers an area of 3.3 ha. Not planned.

Tepe Buland 2: 265 m to the south is an area to the west of the canal that can best be described as lumpy. The undulations and indentations may be indicative of a ruin field; if this is what it is, it has presumably been significantly modified in recent times by locals. The site appears to be slightly raised above the surrounding land (especially in the south-west where a track runs past it). It extends for 260 x 140 m and covers an area of 1.7 ha. No distinct wall lines are visible, so the interpretation of the site is highly speculative – it may merely be the result of digging / dredging the canal. Not planned.