

Archaeological Investigations at Tilaurakot-Kapilavastu, 2014-2016

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Introduction

A three year interdisciplinary Japanese-Funds-in-Trust programme entitled 'Strengthening the Conservation and Management of Lumbini, the Birthplace of the Lord Buddha, World Heritage Property' was launched by UNESCO and the Governments of Nepal and Japan in 2010. Led by Professor Yukio Nishimura of the University of Tokyo, it focused on conserving the Outstanding Universal Values of Lumbini and protecting them from potential irreversible negative impacts in the face of rising visitor numbers and associated accelerated infrastructure development. The programme also reinforced the capacity of the national authorities, the Lumbini Development Trust and the Government of Nepal's Department of Archaeology, in the protection, enhancement and development of Lumbini. The archaeological component, led by Durham University's UNESCO Chair, the Government of Nepal's Department of Archaeology and Lumbini Development Trust, was charged with mapping the presence of the site's significant heritage below the ground and successfully identified evidence of earlier Buddhist structures below the brick built Asokan temple (Coningham *et al.* 2013), as well as exploring the date, development and morphology of the surrounding monastic area and nearby Village Mound (Strickland *et al.* 2016a). While this first phase was focused solely on Lumbini, UNESCO's International Scientific Committee for Lumbini recognised that the site does not sit in isolation but forms part of a wider landscape associated with the early life of the Buddha and the lives of at least two earlier Buddha's – Krakachchanda and Kanakamuni (Coningham 2001: 74). The two main sites associated with the life of the historical Buddha are Tilaurakot-Kapilavastu and Ramagrama; the former is recognised by most scholars as ancient Kapilavastu, the city in which the Buddha grew up and spent his first 29 years and the latter, Ramagrama, has been identified as one of the eight original nirvana *stupas* which contain the distributed corporeal remains of the Buddha, and the only one that has not since been re-opened.

As a result, UNESCO with the Governments of Nepal and Japan tasked UNESCO's International Scientific Committee for Lumbini with designing a second phase during its third annual meeting on 19 July 2012 as experts, policy makers, managers, stakeholders, residents and participants addressed the integrated issues of conservation, management, archaeology and planning relating to Lumbini, Tilaurakot-Kapilavastu and Ramagrama. As a result, the overall objective of the second phase of the Japanese-Funds-in-Trust programme was designed to guide the proactive protection, preservation, management and develop of the Lumbini World Heritage Property together with Tilaurakot-Kapilavastu and Ramagrama, the other two archaeological sites predominantly associated with Buddha's life and included on Nepal's Tentative UNESCO World Heritage List. Phase II of the UNESCO-Japanese-Funds-in-Trust programme began in late 2013 and continued until mid-2017 with an archaeological focus on Tilaurakot-Kapilavastu and a number of key sites within its vicinity (Figure 1).

The archaeological site of Tilaurakot-Kapilavastu is located 27 kilometres west of Lumbini on the eastern bank of the river Banaganga and has been included by the Government of Nepal in the World Heritage Tentative List since 1996. The site consists of a fortified 'citadel' of about 500 metres

by 400 metres, surrounded by a series of associated monuments (Figure 2). Tilaurakot-Kapilavastu represents one of the best preserved urban forms and environs of a provincial Early Historic archaeology of South Asia, and one whose rural hinterland is almost entirely undeveloped. This special number of *Ancient Nepal* presents an overview of the results of our archaeological investigations at Tilaurakot-Kapilavastu, undertaken in field seasons during in 2014, 2015 and 2016. Associated archaeological work was also undertaken at several other sites, including Ramagrama, Kudan and Araurakot the results of which will be presented later.

Previous Research

The Buddha's quest for enlightenment began with his *Mahabhinishkramana*, or Great Departure, when he left through the eastern gate of the city of Kapilavastu and renounced his parents, wife, son and life as a prince of the Sakya lineage at the age of 29 (Coningham 2001: 63). Whilst it was not one of the four major pilgrimage sites identified by the Buddha as he approached his *Mahaparinivarna*, or Great Passing Away, Kapilavastu was still greatly revered by Buddhists as the childhood home of the Buddha and was visited by the Chinese monks Faxian in c. 400 CE and Xuangzang in c. 630 CE, whose pilgrimages to the site were recorded in their travel itineraries. Although the archaeological pioneers like Sir Alexander Cunningham rediscovered many of the sites associated with the Buddha's life, such as Lumbini, Sarnath, Bodhgaya and Kusinagara, by retracing the steps of the Chinese pilgrims - the quest for the identification of the childhood home of the Buddha has led to the promotion of two main contenders, Tilaurakot-Kapilavastu in Nepal and Piprahawa in India. The potential locations of Kapilavastu were identified during the 1890s when, after a hiatus from Alexander Cunningham's unsuccessful endeavours in the Nepali Terai to identify sites associated with the natal landscape of the Buddha, new discoveries re-energised the search. The first of these discoveries was the Niglihawa pillar, rediscovered by Dr Anton Alois Fuhrer of the Archaeological Survey of India in 1895 and translated by Professor Georg Buhler in 1896, which enabled scholars to link the Asokan pillar's reference to the enlargement of the stupa of the Kanakamuni Buddha as according to Xuangzang's record, Kapilavastu was situated close to the natal town of the Kanakamuni Buddha (Allen 2008: 127). Secondly, a further expedition to the Nepali Terai, undertaken by Dr Fuhrer and General Khadga Shumsher J.B. Rana, Governor of the District, had uncovered another Asokan pillar next to the small shrine of Rummindei in 1897. Carved with an Asokan inscription which identified the site as Lumbini, the birthplace of the Buddha, the Chinese pilgrim itineraries suggested that Lumbini was to the east of Kapilavastu (Fuhrer 1897: 23). In addition to the evidence from the Niglihawa pillar, Dr Fuhrer stated that "The discovery of the Asokan Edict Pillar in the Lumbini Grove at Rumindei enabled me to fix also, with absolute certainty, the site of Kapilavastu and of the sanctuaries in its neighbourhood. Thanks to the exact notes left by the two Chinese travellers I discovered its extensive ruins about eight miles north-west of the Lumbini pillar, and six miles north-west of the Nigali Saga [the location of the Nigliwa pillar]" (ibid.).

With the relative position of the ancient city seemingly secure, P.C. Mukherji, a surveyor of the Archaeological Survey of India was tasked with the continued investigation of Kapilavastu and identified it in 1899 at Tilaurakot-Kapilavastu, some 28 kilometres west of Lumbini (Mukherji 1901: 3-4). There, he mapped a fortified site within a hinterland of Buddhist monuments and undertook limited clearance of a number of its architectural features. Mukherji was convinced that Tilaurakot-Kapilavastu represented Kapilavastu asserting that "no other ancient site has so much claim...as being situated in the right position and fulfilling all other conditions" (ibid.: 50). Such conditions were realised through similarities between textual descriptions of Kapilavastu, the Asokan inscriptions and his topographical and archaeological records at the site (Coningham et al. 2010). However, there were early doubts and criticisms to the claims that Tilaurakot-Kapilavastu was Kapilavastu. Not only were there discrepancies in terms of both the distances and directions of routes taken by Faxian and Xuangzang for their journeys from Sravasti to Kapilavastu (Coningham et al. 2010) but the discovery of an inscribed relic casket by William Peppe at the Piprahwa added to be

the debate. Indeed, its inscription read “This shrine for the relics of the Buddha... is that of the Sakyas, the brethren of the Distinguished One”, suggesting that the site was also close to the location of Kapilavastu although being south-west of Lumbini across the Indian border (Allen 2002: 275). Attempts to harmonise these contradictions were attempted by a number of scholars, including Vincent Smith, who suggested that the two Chinese pilgrims had referred to different sites as there had been an interval of over 200 years between their visits (Smith 1901: 10-12). Similarly, Rhys Davids suggested that “The old Kapilavastu was probably at Tilaura Kot. But Mr Peppe's important discoveries at the Sakiya Tope may be on the site of a new Kapilavastu, built after the old city was destroyed by Vijudabha” (1903: 18).

Since that time, Tilaurakot-Kapilavastu and Piprahwa have been subject to a series of archaeological investigations to confirm the cultural sequences of both sites. Debala Mitra of the Archaeological Survey of India, for example, excavated at the former across the northern rampart in 1962 and, on the basis of the ceramic sequence, asserted that this area of the site was not occupied earlier than the third or second centuries BCE, well after the lifetime of the Buddha (Mitra 1972: 16). Further work was then undertaken by Nepali archaeological pioneers T.N. Mishra (Mishra 1978) and B.K. Rijal (1979) and both these scholars pushed the earlier sequence of Tilaurakot-Kapilavastu back to a relative date of the first half of the first millennium BCE on the basis of the recovery of Painted Grey Ware, therefore providing the evidence that the site was occupied during the lifetime of Gautama Buddha. However, these later excavations did not gain much attention in India whilst work at Piprahwa recommenced, directed by K.M. Srivastava of the Archaeological Survey of India. He confirmed that the stupa of Piprahwa was built in multiple phases but also recovered a clay sealing dating to the first or second centuries CE with the legend “Om Devaputra Vihare Kapilavastu Bhikkhu Sanghas”, which again pointed towards a link between Kapilavastu and Piprahwa (Srivastava 1986: 59). Furthermore, Srivastava's excavations at the adjacent mound of Ganwaria exposed a series of brick built structures and a sequence that in its earliest phases was associated with Painted Grey Ware, convincing him of its identity as Kapilavastu (ibid.: 70). Sadly, none of these early excavations used scientific-dating measurements but in 1999 excavations were conducted at Tilaurakot-Kapilavastu by Robin Coningham and Kosh Prasad Acharya in order to develop an absolute chronology for the site (Coningham et al. 2010). In addition to finds of Painted Grey ware and Cord Impressed Ware, radiocarbon determinations from in situ occupation horizons in the sequence dated to the early fifth century BCE, whilst recalibrated radiocarbon determinations from redeposited material provided a date-range between c. 550 BCE and the beginning of the first millennium BCE (Coningham et al. 2010).

In order to enhance the protection, preservation, management and development of Tilaurakot-Kapilavastu, as well as to undertake research to characterise the chronology and morphology of the site, the archaeology team focussed on a similar methodology to that used at Lumbini: non-intrusive geophysical survey and auger-coring, excavations and geoarchaeology, and the benchmarking of the social and economic impacts of the site within the local community.

Geophysical Survey

The geophysical surveys and reporting were conducted in accordance with English Heritage guidelines, *Geophysical Survey in Archaeological Field Evaluation* (David, Linford & Linford 2008); the *Institute for Archaeologists (IfA) Standard and Guidance for Archaeological Geophysical Survey* (IfA 2011); the *IfA Technical Paper No.6, The use of geophysical techniques in archaeological evaluations* (Gaffney, Gater & Ovenden 2002); and the *Archaeology Data Service & Digital Antiquity Geophysical Data in Archaeology: A Guide to Good Practice* (Schmidt 2013). The geophysical surveys were conducted by Duncan Hale and Patricia Voke from Archaeological Services at Durham University, beginning with the interior of the site and then expanding to key areas and monuments outside the

city's rampart circuit. A total of 31 hectares (310,000 square metres / 76.6 acres) were surveyed between 2014 and 2016 (Figures 3 and 4).

Geophysical survey enables the relatively rapid and non-invasive identification of subsurface features of potential archaeological significance and it was anticipated that remains of fired brick-built structures might be present beneath the surface, and that other types of feature such as ditches, pits and trackways, for example, could also be present. Given the anticipated depth of targets and the non-igneous geological environment of the study area, fluxgate gradiometer survey was considered most appropriate for detecting the types of feature mentioned above. This technique involves the use of hand-held magnetometers to detect and record anomalies in the vertical component of the Earth's magnetic field caused by variations in soil magnetic susceptibility or permanent magnetisation; such anomalies can reflect archaeological features. For all areas of Tilaurakot-Kapilavastu, a Bartington Instruments Grad601-2 dual fluxgate gradiometer was used.

The 'Citadel'

The land within the rampart contains many mature trees and, at the time of fieldwork, was generally overgrown with scrub vegetation. Areas were surveyed as the land was cleared of undergrowth and confirmed Schmidt and Coningham's earlier hypothesis that the citadel's interior had been subdivided by a network of cardinal roads (Schmidt et al. 2011). Our new surveys demonstrated that they are broadly aligned north-south and east-west, forming a slightly irregular grid pattern (Figure 5). Each road is evident as a linear band of relatively homogenous data, a few metres across, indicating a relative absence of fired materials, building rubble or other features. As such, they do not appear to be metalled but are generally undisturbed linear spaces between structures. Some of the roads are quite broad, such as the main east-west road leading into the site from the Eastern Gate, and in places they appear to be defined by brick kerbs or have drains along their edges. The road from the Eastern Gate passes along the southern side of the 'Central Structural Complex', to the central tank and beyond towards the western rampart, where there may have been another gate. Indeed, it is highly probable that a number of the other detected roads also lead to gates. Another prominent road is aligned north-north-east/south-south-west inside the western rampart, although the rampart and the road are not parallel. This road continues south and then east as a broad open space around the inside of the southern and eastern ramparts and continues up to the East Gate and beyond to the large tank in the north-east corner.

There appears to be more than one phase of construction at the site and not all the roads interpreted from the geophysical survey are contemporary. For example, some of the detected roads lie close to, or slightly oblique to, others. For instance, a probable road identified in the southern part of the site in 2016 is on a slightly different alignment to one which was inferred from earlier survey just to the west. Similarly, some of the roads appear to have buildings or other features within or crossing them. Another likely road appears at one time to have crossed, perhaps pre-dating, the southern part of a large walled enclosure.

Probable roads were also detected around all four sides of a substantial brick-lined structure immediately south-west of the 'Central Structural Complex'. This cardinaly-orientated structure measures approximately 30 metre by 30 metre and has been confirmed as a brick-lined water tank by excavation, as discussed below. Anomalies within the tank could possibly reflect internal features. The immediate area around the tank, on all sides, is generally clear of other features. Two narrow linear anomalies, detected just north of the tank, are broadly aligned with exposed walls in the so-called central structural complex, and could be further walls associated with that complex.

A row of substantial buildings has also been identified to the west of the tank. One of these appears to be particularly well defined, measuring approximately 18 metres by 9 metres with internal

divisions. In the western part of this block, by the former central pathway, further strong anomalies almost certainly indicate the presence of more buildings, followed by another north-south road beyond them. Although some of the anomalies were overshadowed by the interfering effect of a pylon, both straight walls and corners were identified. One very strong, right-angled anomaly proved to be a double-thickness wall when excavated during the January 2014 field season. Many other probable structural remains have been detected throughout the site, only some of which are mentioned here. For example, walls associated with smaller buildings were also detected south-west of the tank; some of which were also confirmed by excavation in January 2014. Other examples include those detected further south, and to the west and south-west of the Eastern Gate.

Most significantly, a large walled complex has been detected in the central part of the site, just south-east of the central tank. The geophysical survey in 2015 appeared to indicate that the complex was broadly square, with clearly defined substantial walls on its northern and eastern sides; the southern and western sides were not so well-defined. However, completion of the survey in 2016 has shown that the complex appears to be five-sided, or shield-shaped, with the southern side comprising two walls which are not cardinally aligned. Although the eastern side is still not clear, the complex appears to measure up to 132 metres north-south and perhaps 120 metres east-west, with rounded corners. There appear to be east-west and north-south roads running through the centre of the complex, with entrances at the mid-points of the north and east walls.

A well-defined rectangular structure and probable substantial wall have also been detected just south of this palatial complex, however, their function and relationship to the complex remain known. The rectangular structure appears to be constructed on the course of the north-south road through the palatial complex, and has a substantial wall to either side, perhaps controlling access along the road or into the walled complex; perhaps they were part of an earlier phase of the walled complex. Weak anomalies at the eastern end of this wall hint at possible further wall remains, which may once have linked the wall with the eastern wall of the complex.

Some narrow, linear anomalies within this central walled complex almost certainly relate to brick wall-footings for buildings. Concentrations of small strong anomalies also most certainly reflect deposits of brick and tile rubble, which probably overlies further building remains. Reference to the results of excavated structures make it likely that clear linear anomalies reflect walls which supported timber and thatch superstructures, now perished. However, in places the concentrations of dipolar anomalies could indicate collapsed tile roofs and/or brick floors. It is possible that these latter anomalies are associated with more substantial, or prestigious, roofed buildings. Both types of building appear to be present within this possible palatial complex. Other similar concentrations of small anomalies have also been detected elsewhere within the 'citadel', which could similarly reflect more substantial or roofed buildings.

The rectangular area of small intense geomagnetic anomalies in the north of the site corresponds to an area of raised ground around the brick-built shrine to the deity Samai Mai. The anomaly concentration here measures approximately 45 metres by 30 metres and these anomalies almost certainly reflect a concentration of fired materials, such as building rubble. There are indications of possible wall remains amongst the presumed rubble, although none is very clear. The possible walls are aligned-cardinally, as elsewhere on the site, and could be the remains of a substantial courtyard complex or other structure, possibly an earlier temple.

Several areas of homogenous data have been recorded, in addition to the probable roads. The broad band of smooth data recorded inside the south-western corner of the ramparts and extending round to the eastern gate, reflects largely undisturbed and undeveloped land. Although it may have functioned as a road, it measures up to almost 30 metres in width and may have served several

purposes. Several other apparently open spaces have been detected throughout the 'citadel', including: inside the palatial complex, outside its eastern entrance and outside its south-eastern corner; south-west of the eastern gate; around the central and north-eastern tanks and north of the exposed 'Central Structural Complex'. These areas could have been used for many purposes, perhaps including recreation, ceremonies or markets.

Our surveys have detected a few anomalies which are quite different to the vast majority of other anomalies recorded at the site. For example, one strong positive magnetic anomaly just west of the central walled complex is oval in shape, whereas almost all other linear anomalies are straight and perpendicular, following a cardinal design. Although unique in plan, this well-defined anomaly probably does also reflect a brick wall-footing, and measures up to 17 metres in length. Several anomalies which are out of character with the rest of the survey are broad, arcuate positive magnetic anomalies near the West Gate and in the south-east corner. These probably reflect earthen features. One of these corresponds to a 'hollow-way' evident on the ground, while others could reflect the remains of soil-filled features or possibly earthen banks.

The Religious and Industrial Hinterland

Our geophysical surveys extended beyond the city walls and focused on the Northern 'Twin' Stupas, Northern Suburbs, the Eastern Stupa and Monastery Complex, Shivagarh and the Southern Industrial Complex. Our survey at the Northern 'Twin' Stupas detected occasional small dipolar magnetic anomalies in each area, almost certainly reflecting small items of near-surface ferrous and/or fired debris such as drink cans or bricks. The northern part is characterised by relatively large, strong, positive and dipolar magnetic anomalies, some of which almost certainly reflect ferrous debris. This part of the area may contain dumped material or be otherwise disturbed, perhaps during the excavation and conservation of the adjacent stupa. No features of likely archaeological significance were identified in either survey area.

The Northern Suburb is an area comprised grass with occasional bushes and trees. Small former field boundaries were evident on the ground. An area of higher ground was present in the north. Approximately 1.5 hectares were surveyed outside the northern corner of the 'Citadel' wall. Existing field banks and bunds were detected, and some other stronger anomalies were also detected. Some broad areas of strong magnetic anomalies could reflect spreads of brick rubble, possibly overlying wall remains, while smaller, better defined linear anomalies could possibly represent building walls, particularly in the south of the area. Some weak linear positive magnetic anomalies in the north, which do not correspond to features noted on the ground, could possibly be remains of soil-filled features such as ditches.

Part of the Eastern Stupa and Monastery is a protected zone, marked by small concrete posts, of short grass around the stupa, now a scrub-covered mound. The protected zone is surrounded to the north, east and south with small cultivated fields, typically containing rice, dahl or mustard. Part of the south-western corner of the survey has recently been mechanically excavated to provide materials for the raised walkway inside the 'Citadel', leaving considerable quantities of brick and pottery on the surface in this area.

Initial survey was undertaken around the stupa, at that time, a broad scrub-covered mound (Figures 6 and 7). The survey indicated that the stupa may at one time have stood within a brick-walled enclosure, measuring approximately 50 metres square, indicated by a broad band of anomalies around the north and east sides. These anomalies could, however, also reflect a brick circumambulatory path associated with the stupa. A series of large rectangular brick-built structures were then detected to the south of the stupa. The largest of these measures approximately 45 metres by 30 metres. Several other structures, large and small, were also detected both parallel and

perpendicular to this large structure. Some probable wall remains are more evident than others; some have been inferred from alignments of small, discrete, strong anomalies, which are taken to reflect brick rubble.

Two other large structures were detected on different alignments to the south and south-east of the *stupa*, measuring approximately 30 metres square and 35 metres by 20 metres respectively. The anomalies here are broader, more homogenous and less intense than those interpreted as building wall remains, indicating that they reflect deeper structures or structures built with slightly different materials, such as pounded brick as opposed to large, separate bricks. Both structures have magnetically quiet interiors and were interpreted as brick-lined tanks, similar to that detected in the central part of the citadel. Our excavations in 2015 confirmed the presence of the northern brick-lined tank and adjacent brick walls.

The 2015 survey also identified a broad band of undisturbed ground to the south of the monastery, before detecting more archaeological remains further south. The survey has detected at least two probable brick structures 100 metres and 150 metres south of the monastery. The northern of these measures approximately 20 metres square, considerably larger than an area of brick noted on the ground surface, while the southern structure measures approximately 25 metres east-west by eight metres north-south. Unlike shallow wall-footings for supporting timber superstructures, the anomalies here almost certainly reflect broad concentrations of fired materials, perhaps collapsed walls and roof tiles or brick floors.

An area of geomagnetic disturbance was detected to the west of these structures; this corresponds to an area where earth has been mechanically removed. Considerable quantities of bricks and pottery were evident on the surface and within surviving earth bunds. No specific features have been identified in the data here. It is likely that some archaeological features will have been destroyed by the soil extraction.

We also surveyed the Southern Industrial area, the northern part of which comprised open grazing, with a broad low mound of industrial debris in the central part and small fields, typically paddy, mustard and dahl in the south. It was not possible to collect data in some parts of the area due to scrub and dahl. The mound is within a protected zone defined by small concrete posts, some of which are now within cultivated areas. This survey area extended southwards from the existing southern moat, encompassing a broad low mound of industrial waste. Anomalies along the northern edge of the survey reflect a slight bank along the southern edge of the current moat. Immediately south of the bank is a very broad band of smooth, almost featureless data, some 55 metres wide. It is possible that this band reflects an earlier wide moat, filled with silt. Two positive magnetic anomalies within the possible moat area correspond to the location of a cricket square, and may reflect material that has been deposited to provide a level surface.

To the south of the possible moat is a large concentration of intense magnetic anomalies, which reflects the mound of metal-working debris. Several larger dipolar magnetic anomalies were detected along the northern side of the mound. The orientation of some of these anomalies is such that they could reflect structures which were fired in situ; such features which might survive include the floors of smelting furnaces, however, these anomalies could also reflect larger ferrous items. One possible furnace lies just north-east of an earlier excavation trench, others may lie to the north-west.

Finally, we undertook survey to the east of the village of Shivagarh, just west of the 'Citadel' within small cultivated fields defined by low earthen bunds typically containing rice, dahl, vegetables and mustard. Dahl was concentrated in two areas, one in the east and one in the west; and some bunds

are evident in the geomagnetic survey as weak, linear positive magnetic anomalies. The most striking anomalies are in the east of the survey where a concentration of strong positive and dipolar magnetic anomalies has been detected over a broadly rectangular area measuring approximately 100 metres north-south by 80 metres east-west. It was not possible to collect data in the central part of this area due to a standing dahl crop. The majority of anomalies here almost certainly reflect fired materials associated with former structures. Some of the linear anomalies may reflect in situ wall-footings while others probably reflect rubble.

The orientation and strength of some discrete dipolar magnetic anomalies here are typical of structures which have been fired in situ; it is possible that these anomalies reflect kilns or small furnaces. Two parallel, weak and discontinuous, positive magnetic anomalies have been detected immediately west of the above. These anomalies flank a broad band of relatively homogenous data and together could reflect a former track or possibly a palaeochannel associated with the Banaganga River, which currently flows just to the west. Further concentrations of strong positive and dipolar magnetic anomalies have been detected in the north-west of this survey. This area is adjacent to existing houses in the village. Some of the anomalies here could reflect recent activities and disturbance; however, these could also reflect archaeological remains. Occasional other weak positive magnetic anomalies have been detected across the site, which could possibly reflect soil-filled features. The larger of these could reflect broad ditches or geomorphological features, while the smaller ones could reflect gullies.

Summary of Geophysical Survey Results

We can confirm that the ancient city site has a grid system of roads within the main 'Citadel' enclosure, aligned broadly north-south and east-west. Some of these roads appear to be defined by brick kerbs or drains, and some probably lead to additional gates through the ramparts. Not all the roads interpreted from the survey are contemporary with one another, or with all other structures; some overlie, or are overlain. Several buildings and other probable wall remains have been detected along and between the roads, as well as open, undeveloped areas perhaps used for markets, recreation or ceremonies. Based on reference to our excavation experience at the site, most comprise brick footings for a timber and thatch super-structure, with no associated rubble spreads, and some apparently more, which may indicate substantial structures with possible tiled roofs or brick floors indicated by rubble spreads. Some of the buildings are particularly well-defined, others less so.

A large, apparently five-sided, walled complex has been identified in the central part of the 'Citadel', measuring 132 metres north-south and perhaps 120 metres east-west. This comprises a substantial brick enclosure wall with gates where two roads pass through aligned north-south and east-west. Several probable buildings have been detected within the complex, some more substantial than others. It is likely that due to the monumentality of this complex, this area of the site may have been a place of high significance.

A large rectangular structure detected just north-west of the palatial complex was interpreted as a substantial brick-lined water tank. To the north of the previously exposed 'Central Structural Complex', a rectangular concentration of probable building debris probably reflects the remains of another substantial building complex, perhaps associated with a courtyard or temple. The existing Samai Mai shrine sits almost centrally on this area of slightly raised ground. Another probable road heads north from here to the rampart, perhaps towards a northern gateway.

Outside the citadel walls, the remains of several large and small buildings and two water tanks have been detected south of the Eastern *Stupa*. The *stupa* itself may once have been surrounded by a square enclosure wall or circumambulatory path. This complex of buildings and tanks almost

certainly comprises a monastery associated with the *stupa*. Two more substantial brick structures have now been detected to the south of the monastery.

Another area of probable substantial buildings has been detected to the west of the 'Citadel' in the fields to the east of Shivagarh. Some of the anomalies in this area could potentially reflect fired structures such as kilns or furnaces. A broad track or possible palaeochannel has been detected immediately west of the structural complex and further possible archaeological remains may be present to the north-west, close to the existing village.

The buildings, roads and tanks identified within the 'Citadel' by the Eastern *Stupa* and to the west at Shivagarh, generally all share the same cardinal alignments. To the south of the 'Citadel', we have detected the path of the former moat together with some possible furnace remains along the north side of a mound of metal-working debris. The possible remains of buildings may have been detected in the Northern Suburb. No features of likely archaeological significance were identified in either small survey area next to the Northern 'Twin' *Stupas*.

Excavation

Twelve trenches were opened within Tilaurakot-Kapilavastu between 2014 and 2016 focusing on a range of different parts of the site (Figure 8). In all twelve, the location of the trenches was informed by the results of the geophysical survey and research-oriented. The twelve trenches are: Central (trench code C), Pond (P), Northern Rampart (R), Western Gateway (WG), Central Walkway (CW), Pond West (PW), Eastern Gateway (EG), Eastern Monastery (TMS), Samai Mai Temple (SMT), Eastern Rampart (EGG), Central Walled Complex (CWC) and North-East Tank (NET). The preliminary results of the excavations at the Northern Rampart have already been presented in a previous volume of *Ancient Nepal* (Davis et al. 2016), along with the results of the 2012 excavation at the Southern Industrial Mound (Strickland et al. 2016b). As such, these two trenches will not be discussed in detail in this paper.

As with the earlier excavations at Lumbini, the trenches were all excavated by context. Each differentiated archaeological feature or deposit, for example posthole, posthole filling, pit, pit filling, wall etc., was given a unique context number. These context numbers are differentiated into three different types of context, and are illustrated as follows: (deposit), [cut] and <masonry>. A context/masonry sheet was filled out for each context number, recording its location, texture, compaction, Munsell colour, cultural context and relationship to other context numbers. All major contexts were recorded on plans and sections and were photographed. All deposits were sieved in order to collect smaller artefacts, such as hammer scale and debitage. Sieving was undertaken on-site using a two millimetre fine mesh. Each small find was given a unique special find number (Sf), and excavated material was also given a trench number, context number and, wherever possible, its recovery spot was recorded three-dimensionally.

Western Gate Trench

In advance of the potential redevelopment of the site's primary entrance and the establishment of a new walkway around the site, an area immediately inside of the Western Gateway was selected for investigation. The Western Gateway of the 'Citadel' was first identified and excavated by Mr T.N. Mishra in the 1960s (Mishra 1978), however, these excavations had not extended into the 'Citadel' and the rigid street plan of the ancient citadel remained unknown. Consequently, the primary aim of our renewed investigations was to elucidate the ancient street system and the form and function of structures within this area of the 'Citadel', as well as to expose extant architecture for potential conservation in the future.

A square trench measuring 20 metres by 20 metres was laid out over the likely route of the road leading in from the gateway. Prior to opening the entire 400 square metres area, two L-shaped trenches measuring 9.5 metres by 1 metre and designated 2a and 4a were opened. Trench 2a ran along the outer edges of the south-east corner of the larger area, running south to north then east to west, while Trench 4a was located in the north-west corner of the area, and ran west to east, then north to south. These two L-shaped trenches were opened initially in order to confirm the depth of extant architecture and identify the form and orientation of such structures. Subsequently, we also opened a 9.5 metre by 1 metre trench (Trench 1a) running east-west along the northern edge of the WG area.

Trench 1a was excavated specifically to investigate a faint geophysical anomaly that was interpreted as a possible linear depression, such as a ditch, a hollow-way, or similar. This feature ran north-south across the Western Gate area and appeared to broadly follow the cardinaly-orientated grid system of the ancient city. Below the largely sterile silty subsoil, we identified two brickbat spreads that were cut by a 6.1 metre wide linear feature. The brickbat spreads probably represent ephemeral structural platforms, similar to those found in trench Eastern Gate (see below). Within the linear cut, we noted the absence of gradual infilling that would be expected if the feature was a water course, drainage ditch or similar feature. Instead, it appears to represent a hollow-way branching off, or cutting across, the higher road surface that runs east-west from the western gateway itself (Figure 9). The interior surface of this cut was compacted as would be expected from an outside surface. Further degraded brick platforms were identified in trench 2a, one of which was flanked by a pottery dump (Figure 10). It is important to note that we did not attempt to reach natural soil in these trenches and the features identified most probably belong to the final phases of occupation of the 'Citadel'.

Central Trench

The 1999 geophysical survey produced an exceptionally clear image of what was interpreted as a multi-roomed brick-built structure, located approximately midway between the Western and Eastern Gate (Schmidt et al. 2011). This area was re-surveyed in 2014 (Area 4) in order to better pinpoint the location and form of this structure. Following a clear identification by magnetometer survey, we decided that the structure should be excavated in order to gain a better understanding of its form and function and in order to expose surviving architectural structures for conservation.

We thus opened a trench measuring 15 metres by 15 metres over the geophysical anomaly in order to determine the depth and condition of its foundations. The excavations were intended to morphologically define the structures and, as such, a conscious decision was made to avoid reaching occupation materials or surfaces that would contain in situ material related to the occupation and functions of the structure. This meant that the trench was excavated to a depth of no more than 0.3 metres and focused on exposing in-situ structures.

Once the shallow topsoil was removed, it revealed an L-shaped complex consisting of two wings of four rooms each. The space formed between the L-shaped complex has been identified as an outside courtyard area. Each wing consisted of a linear series of three smaller rectangular cells opening onto a longer rectangular walled space fronting the courtyard, which we have interpreted as a veranda (Figures 11 and 12).

The south-east set of cells comprised four rooms, C1, C2, C3 and C4. Room C1 formed a single longer rectangular room along the northern half of the wing, with three smaller sub-square rooms and a narrow corridor or veranda forming the southern portion of the wing. Room C1 measured 1.34 metres north-south but 4.97 metres east-west. Rooms C2, C3 and C4 measured 2.60 metres by 2.49 metres, 2.94 metres by 2.48 metres and 1.95 metres by 1.72 metres respectively. A small

passageway or alley runs between C3 and C4 measuring 0.86 metres wide. The north-western structure again consisted of four rooms, one long rectangular room, C8, on the east, and three sub-square rooms running along the west; rooms C5, C6 and C7. The northern extent of rooms C8 and C7 were not exposed within the trench, so only the partial dimensions of the structure were obtained. Long rectangular room C8 measured 1.46m wide and had 3.55 metres exposed north-south. Rooms C5 and C6 measured 1.85 metres by 1.86 metres and 1.90 metres by 2.36 metres respectively, whilst C7 was 2.09 metres wide.

In addition to the two wings, a single brick plinth was identified between the two structures, which was formed of at least two courses of bricks and measured some 0.6 metres square. This was interpreted as a footing for a post, likely related to roofing of the yard area between the two wings.

The brick walls were primarily built of squared well-fired bricks, measuring 0.24 metres by 0.24 metres by 0.05 metres in size, although brickbat was used in places. The walls typically measured between 0.60 metres and 0.65 metres in width and, in several places, had slumped or collapsed outwards. The walls survived to heights of between one to four courses, although it is likely that they were originally at least slightly higher. Throughout, the walls were cut by a series of circular postholes, many of which had been damaged during the later collapse of walls (Figure 13). It is likely that more postholes originally existed than are visible today. These postholes would have supported wooden posts that emerged from low brick foundations to carry the timber and tile or thatch superstructure of the buildings. It is worth noting that tile was recovered from the Central Trench but not in significant quantities, suggesting that thatch was predominantly used.

Central Walkway Trench

This trench was placed over two brick walls which were visible in the surface of the pathway through the site and had become badly damaged by increases in the number of visitors to the site. Originally a trench measuring one by ten metres was placed over these walls but it was extended to 20 metres by 20 metres with a series of additional one by ten metre extension trenches placed around the edges. The final trench measured a total of 23 metres north-south and 22 metres east-west. As the aim of the trench was to only expose the uppermost architectural sequences, the trench was only excavated to a maximum depth of 0.3 metres and, in some cases, little more than 0.1 metres. The trench identified two main architectural complexes, a large rectangular structure to the north-west of the trench (Structure A) and a row of individual cells (Structures B-H) surrounding an open central courtyard (Figure 14).

Structure A was rectangular and defined by a series of walls, including the two walls that were eroding through the surface of the pathway (Figures 15 and 16). It measured 7.31 metres north-south and 3.35 metres east-west and is aligned with the majority of structures within the city at a slight 14° angle from north. As with our Central Trench, the walls are punctuated by postholes along their length and we postulate that again the main architecture here consisted of low brick foundations with timber superstructures. In contrast, the excavations at Structure A did yield some tile, making it possible that this structure may have had a tiled roof. Its larger size, different roofing material and prominent position mark it out as of a different status than the remainder of the cells exposed in the trench.

These other cells, B to H, are organised around an open central courtyard and are defined by often quite heavily degraded and damaged walls. Room B, the western most of the rooms to the north of the courtyard measured 2.65 metres by 1.66 metres. Moving clockwise, Room C measured 2.13 metres by 1.99 metres, Room D 1.61 metres by 2.32 metres, Room E, at the north-east corner, measured 2.62 metres by 2.21 metres. Room F is the largest on the west of the courtyard and measured 3.44 metres by 4.21 metres although the south-east corner outside the trench. Room G is

predominantly outside the boundaries of the trench and Room H measured 2.18 metres by 2.81 metres. These structures tend to have much better quality construction on the outward facing walls, whilst their back walls are inferior in quality. They may represent shops or other units facing onto what may be a major square close to one of the western entrances to the city. No tile was recovered from within the other cells and only a few postholes were recognised within the walls. They appear to be of a lower quality construction to Structure A and the buildings in the Central Trench (Figure 17).

Pond and Pond West Trenches

As noted above, our geophysical survey identified a square anomaly within the central part of the site to the south-west of the 'Central Structural Complex'; an anomaly which was tentatively identified as representing a major brick-built or brick-lined structure. Measuring 25 metres by 30 metres, the feature was very distinct in comparison to the features around it and it was hypothesised that it might be a brick-lined tank or pond. We placed an exploratory trench across one of the north-south anomalies in 2014 in order to ascertain the depth of the structure and better define its morphology (Figure 18). This trench measured 15 metres east-west and one metre north-south and was excavated to a maximum depth of 2.2 metres in the sondage. However, no firm evidence of a tank wall was identified and we decided to wait until 2015 to open an alternative trench as we hypothesised that the material visible in the geophysics must be deeper than originally anticipated.

We thus opened trench Pond West on the opposite side of the tank in 2015 with the intention of exploring the tank wall and a second geophysical anomaly between the potential tank and our Central Walkway Trench. As such, a 20 metres by 1 metres slot trench (Pond West A) was opened from within the tank, over the western tank wall, and extending westwards up a steep slope. Eventually, this trench was extended by a further 24 metres (trench Pond West B) to join up with our Central Walkway Trench. As it turns out, these two sub-trenches reveal two very distinct sequences; Pond West A provided the full profile of the brick tank wall, its abandonment and later efforts to reutilise the tank, while Pond West B provided the construction and abandonment of a brick structure with a staircase.

Trench Pond West A revealed the western wall of the tank, consisting of twenty courses of brick. These bricks were aligned north-south and measured between 0.36 metres and 0.42 metres long, and 0.06-0.08 metres high (Figures 18 and 20). The bricks slope gently downwards to the west and it is not clear if this was part of the original design, or represents slippage of the lower courses. At the top of this wall, were a further six courses of bricks which were slightly set back to the west creating a small step of about 0.4 metres. Behind the wall was a firm, silty clay material, which we left unexcavated so as not to destabilise the wall. As such, we do not know whether this material was packed behind the entire wall or just the upper portion, and where any wall cut starts and ends.

The interior of the tank was filled by a number of phases of infilling. The first phase of fill was moderately firm, light yellowish brown silty clay that contained very large volumes of brick and pottery, particularly in the lowest parts of the context. The fill represents several decades of the continual wash of material down the slope and into the base of the tank after its abandonment. Above this were further infill material but with increasingly less brick inclusions as the tank became filled.

To the east, and as such on the edge of the tank, was a compacted sandy clay material, perhaps a later attempt at creating a more stable tank edge, or a compact platform within the low-lying tank depression. This compact sandy clay layer contained large brickbat inclusions; and compact sandy and rammed brick grit, perhaps attempts to create tank edges/platforms. Abutting this was an

ephemeral brick wall consisting of a gently sloped series of reused bricks set within a silty clay matrix that was initially thought to be the tank edge. However, it appears to be a much later attempt to create an edging to the filled tank, perhaps taking advantage of water pooling in the natural depression of the tank. The walls identified in Pond Trench in 2014 were probably contemporary with this sequence of tank walls, edges and platforms.

At its western end, trench Pond West B exposed part of a rectangular structure that is symmetrical in plan with, what appears to be, an internal wall that has a central flight of steps, consisting of two courses of brick with associated balustrades (Figure 21). The interior was divided into a long corridor or hallway to the north and three smaller cells to the south, similar to the buildings in trench C. The longer cell measures 11.49 metres in length, while the three smaller cells were only partially exposed. From west to east they are 3.29 metres, 4.32 metres and 3.06 metres wide respectively. The central part of the dividing wall took the form of steps consisting of three courses of bricks stepped upwards towards to the south and were flanked by a balustrade to the west and a damaged wall stump which may have originally been a second balustrade to the east. This created a formal entranceway from the long hallway to the central of the three cells. The construction here seems to be of a slightly higher quality, reflecting its proximity to the centre of the site and elevated position. The whole complex was covered in a dense layer of rubble suggesting the walls may have been higher than those in our Central and Central Walkway Trenches.

Eastern Gateway Trench

Our geophysical surveys identified a road leading from the central area of Tilaurakot-Kapilavastu out towards the conserved Eastern Gate. As such, we opened our Eastern Gate trench to understand the urban morphology but also the character of structures and roads in this area of the site.

We initially opened a 30 metre by 1 metre north-south oriented trench over the road as well as geophysical anomalies, perhaps representing structures, flanking it on either side. Within this narrow slot, we were able to identify patches of brickbat rubble but no discernible regular structural elements. As such, we expanded the trench to the south to include an area of 24 metres east-west and 14 metres north-south. Once topsoil was removed, it revealed a series of wall alignments. These wall alignments appear to have formed the walls of a structure facing towards the road that runs out to the Eastern Gateway. Around these walls, there are several spreads of brickbats. These brickbat spreads may have formed a platform or represented heavily degraded walls. These alignments and surfaces appear to form a rectangular structure measuring six metres east-west and three metres north-south. Interestingly, the front or street-facing walls seem to be of a much higher quality than the back or southern walls, suggesting that portions of structures facing the road were better presented than architecture in more private spaces (Figure 22); this is similar to examples from we saw in the Central Walkway Trench.

A 3 metre by 1 metre sondage was opened within the original 20 metres by 1 metres slot to explore the chronology of the area and was excavated to natural at a depth of 1.6 metres (Figure 23). The trench was characterised by a series of pits and postholes below the upper brick layers and, as such, the excavations at Lumbini (Coningham *et al.* 2013) and the Northern Rampart (Davis *et al.* 2016) demonstrates that early architecture at the city was timber and mud, later replaced by brick. It also demonstrates that the initial city plan was laid out in timber and later replicated in brick (Figure 24). A series of pits were cut into the natural soil, and filled with soil, brickbats, pottery and charcoal. The exact purpose of these pits is not clear but they likely represent different elements of domestic usage over time. Higher up the sequence was an area of heavily compacted clay and brick grit, punctuated with postholes. This is similar to the village mound at Lumbini (Strickland *et al.* 2016), and represents a deliberately constructed house platform. These early architectural phases were sealed in the upper levels by patches of brickbat rubble.

Eastern Gateway Trench

Our geophysical survey identified a roadway leading to the eastern rampart, south of the currently conserved Eastern Gate. This suggests that rather than one gateway at each cardinal direction, there may have been a greater number of gateways or entrances to the city in the past. In line with the anomaly of the road, we opened a trench measuring 30 metres by 15 metres over the eastern rampart. Once the upper surfaces were cleaned back it appeared that there was no gateway at this point in the rampart. Instead, we encountered a solid brick wall with later elaborations, such as a brick-built bastion on the western interior face (Figure 25). A further slot trench, initially measuring one metre wide, was excavated across the fortification at the northern edge of the trench. To the west, two phases of brick fortification were identified, differing from the rampart construction identified at the northern rampart (Davis et al. 2016). To the east, a wall with over 40 courses was identified, the most monumental fortification construction exposed at Tilaurakot-Kapilavastu (Figure 26).

Unlike at the northern ramparts, the brick fortification survived, or was constructed to a greater height, surviving to just over two metres in height. The construction of well-set facings filled by a rubble core, was similar to that at the northern rampart, though in the northern section the core still appeared to be constructed as courses. The seeming lack of a gate across the trench, with the rubble core of the wall and brick facings visible across the entire 26 metre north-south stretch of the trench led to suggestions that there was no gate present along this section of the fortification circuit (Figure 27). However, the deep slot excavated, especially to the east of the brick fortification, illustrated the potential that the height of fortification in this locale related to the blocking of an earlier gateway or opening. The deposits below appeared to slope down forming a rampart toe to the east and also a slope to the south where there was a gap. Therefore, the apparent road visible on the geophysical survey that ran towards the fortifications in this location may have aligned with an earlier gateway that was later blocked.

Central Walkway Trench

A large trench was also opened over the northern definition of the large walled complex in the centre of the site that was identified through geophysical survey. It was interpreted as representing a substantial east-west wall with a central gateway separating the structures within from the rest of the city. An initial trench measuring 70 metres east-west and 20 metres north-south was opened in order to understand the morphology and chronology of this urban feature. The whole area was cleared of vegetation and then an area measuring 12 metres north-south by 61.5 metres east-west area was excavated exposing the large exterior wall of the compound. The exposed part of the wall ran for 50 metres east-west across the trench, before curving to the south in the east of the trench. The wall had brick facing on its exterior and was made up of complete bricks. To the west, it terminated in a large and monumentalised gateway (Figure 28). The gateway was approached through an open entrance space formed by two parallel north-south running walls. At the southern terminus of these walls is a narrow gateway including gatehouse (Figure 29). Trench C1/C2a was located between the two arms of the entrance of the monumental gateway. Measuring one metre north-south by four metres east-west, later build-up of material between the gate was removed onto two phases of gatepost sockets on either side. A large brick paved socket, dipping in the centre where it would have held a large timber post, was uncovered in the west. On the eastern side of the gate, an earlier wooden posthole socket was identified. These two phases of socket were preserved in situ and the trench was not excavated to the base of the gate walls, or to the natural soil. In this location, the walls of the gateway measured 1.4 metres wide and stood to a height of ten courses.

This large brick compound wall and gateway construction creates a highly distinctive internal boundary to the rest of the urban city. Such architecture represents a monumental core on a palatial

scale. The gateway and compound wall preceded a series of other, later brick structures that were found 0.30 metres below the topsoil. These included a large quadrangular brick-built structure, measuring 20 metres by 20 metres to the east of the gateway. Following the cardinal alignment of the compound wall, this structure actually ran over the top of the compound wall in places, confirming that it was built at a later stage. The structure consisted of four rows of rectilinear cells set around a large central courtyard and was defined to its east and west by large open courtyards (Figure 30).

A deep trench was excavated within one of the cells of this structure and was termed C3a (Figure 31). Natural soil was reached at a depth of 2.70 metres in this trench and several phases of occupation were identified, including brick grit surfaces, and rammed clay floors, with evidence of timber architecture cut through these, evidenced by postholes and slots. A further slot trench was opened on either side of the large compound wall, trenches A3a and B3a to investigate its construction. Trench B3a measured two metres north-south by 1.20 metres east-west and A3a was one metre east-west by two metres north-south. These excavations identified that the compound wall had ten surviving courses in places and sat above earlier cultural occupation. Having identified earlier evidence of occupation and the character of the wall, these trenches were not excavated to the natural soil.

Eastern Monastery Trench

As noted above, our Geophysical survey identified a series of large rectangular brick-built structures to the south of the Eastern *Stupa*, the largest of which measured 45 by 30 metres. Further structures, both large and small, were identified running parallel and perpendicular to this large structure, including two rectilinear anomalies that appeared to have magnetically quiet interiors and were interpreted as potential brick-lined tanks or ponds. This complex was tentatively identified as a monastic complex associated with the Eastern *Stupa*. In 2015 a trench was opened in order to expose and define the archaeological signature of the monastic complex and an associated tank structure. The trench was located in three private fields, of which the crop was bought as compensation before the excavations were initiated. An initial slot measuring 20 metres by 1 metres was opened, with a 4 metres by 3 metres extension eventually opened over the central part of the trench to explore and define features (Figures 32 and 33).

In the north of the original slot, the presence of a brick-lined tank wall was identified at a depth of 0.6 metres running east-west. It comprised 16 courses of brick that overlaid an earlier wall of six courses (Figure 34). This earlier wall was constructed in a foundation cut that was dug into the natural soil and may represent an earlier phase of tank edge construction.

The monastic compound wall was identified further south at a depth of 0.25 metres below the surface. This wall ran east-west across the trench and was one metre wide. It had three courses intact, with postholes cut into its upper course (Figure 35). The trench was extended over this wall to better define its morphology, which revealed an area of brick paving to its south. Below the paving, we recovered a ceramic vessel containing a hoard of 497 silver punch-marked coins. This material was block-lifted and deposited with Tilaurakot-Kapilavastu Museum for excavation, recording and conservation. This hoard may represent a foundation deposit, suggestive that this structure was part of the monastery and also demonstrates the sanctity of this structure to the past communities of Tilaurakot-Kapilavastu. Below the pavement and wall, several phases of redeposited natural were built-up to raise this area above the level of the plain before natural soil was reached. What was clear from the trench was that much of the archaeology lies less than 0.25 metres below the ground surface, demonstrating the vulnerability of subsurface archaeological remains in this area of Tilaurakot-Kapilavastu and the impact of cultivation.

North-East Tank Trench

In order to better explore the hydraulic development of the city, a trench was also excavated across the western bund of the tank in the north-east of the 'Citadel'. Measuring 7.5 metres east-west by one metre north-south, the trench cut through the current bund of the tank. At first, a modern repair of the bund was excavated onto a pre-existing bund. Below this bund, was a brick grit and brickbat prepared surface for the bund construction, which sat on a silty infill. This infill was excavated onto the natural soil, which had been cut to form an east-west channel, below the bund of the later tank. The southern edge of this channel was exposed and was also cut into by two postholes. This channel, followed by the tank bund, illustrates the multiple phasing of hydraulic architecture in the north-east corner of Tilaurakot-Kapilavastu. No formal tank wall or brick definition, such as that identified in trench Pond West, was located.

Samai Mai Temple Trench

The excavations at the Samai Mai Temple were conducted immediately north of current shrine and were aimed at investigating the sequence and depth of occupation within this area of the ancient city. The area beneath, and immediately north and north-west of, the Samai Mai temple forms a mound, termed Mound 1 by T.N. Mishra. It also represents one of the highest points of the site, along with Mound 5 near the centre of the ancient city (Mishra 1978). In order to assess the depth and sequence of occupation at the site in this area, a trench (hereafter trench Samai Mai Trench B) measuring 5 metres by 3 metres was laid out approximately four metres north of the Samai Mai Temple, with the west facing section broadly aligned with Mitra's Trench and our own Northern Rampart Trench (Mitra 1972, Davis et al. 2016). The aim of this excavation was to reach undisturbed natural, and to record and obtain dating samples for the full sequence of occupation. Additionally, we laid out an additional 12 metres by 1 metres slot trench extending north along the west-facing section of Samai Mai Temple Trench B, creating a single west-facing section measuring 15 metres north-south. This trench aimed to investigate a clear topographic ridge running east-west, which corresponded to a positive rectilinear anomaly in the 2014 geophysical survey of the area.

The slot revealed a heavily disturbed sequence of robbing activities, with no in situ archaeology surviving in the upper 1.5 metres of the sequence. The east-west ridge that the trench aimed to define, and which had been potentially identified as a wall, was revealed to be a ridge of brickbat rubble from either robbing activities or from unrecorded antiquarian excavations. In these upper layers, we identified two episodes of hiatus or abandonment deposits of comparatively sterile silts, which had been badly disturbed by robbing activities, all of which were in turn filled by brickbat rubble. Significantly, both contained a significant number of fragmentary and intact carved bricks from a truncated wall identified between trenches Samai Mai Temple Trenches A and B. Finally, within the upper 0.3 metres of the final fill, we recovered a number of fragments of terracotta elephants, which relate to the ritual activity at the Samai Mai temple, and thus likely date to the nineteenth and twentieth centuries.

The excavations in the 5 metres by 3 metres trench reached natural clay at a depth of 4.2 metres below the surface. Above this natural clay were four clear structural phases of occupation (Figures 36 and 37). The earliest phase of occupation in this area consisted of two, near identical, and immediately successive shallow, c.0.1-0.2 metres in depth, structural platforms of burnt clay sitting on top of a shallow mound of redeposited natural c.0.4 metres thick. These platforms both featured a significant number of postholes cut into successive surface, which appeared to have been deliberately decommissioned, with timber-posts removed and the postholes filled with a mixed deposit of re-deposited natural clay with cultural inclusions. These initial phases of occupation were sealed directly by an episode of mound building, deliberately raising the level of the area through the deposition of mixed cultural silts. This mound sloped down to the east and was capped by a

curved, again sloping down to the east, thicker structural platform c.0.4 metres in depth; this time without any associated postholes.

This second structural phase was sealed by a significant episode of mound creation, represented by a thick layer of mixed cultural silts, topped by a shallow levelling episode in preparation for the construction of a monumental brick structure. This structure featured a brick wall running east-west, surviving to 17 courses at its highest point. The wall was found to be over one metre in width and contained both moulded and carved bricks in situ in its external face (Figure 38). The carved bricks were similar in appearance to those seen at the nearby site of Kudan and suggest a possible Gupta date for this structure. Unfortunately, the wall had been badly truncated at both ends by robbing activities and we recovered a significant number of intact and fragmented carved bricks within the wall collapse and backfill of the robber cuts. Although the structure was badly truncated, it was clearly of a significant form and scale, and strongly suggests a Gupta Period presence in this area of the site, something previously unrecorded. Within the structure, the crushed brick floor was sealed by a shallow occupation related deposit, before a further shallow collapse spread stretching out and down from the north-facing section of the southern wall of the structure. This was then sealed by a thick deposit of sterile wind-blown silt, indicating a presumably significant period of abandonment.

This episode of abandonment was capped by an area of extensively robbed out and disturbed brick paving around 0.4 metres below the surface. This brick paving represents the final archaeological episode of occupation and was overlaid by mixed deposits of brick rubble with multiple robber cuts. It appears very likely that many, if not all, of these robber cuts relate to the construction of the contemporary Samai Mai Temple. Comparatively little is known of its construction date but it appears to be built using reused archaeological bricks, with at least one reused carved brick visible on the north-facing wall of the Temple. P.C. Mukherji recorded the presence of the shrine in the late nineteenth century, however, it appears unlikely that the present structure is substantially older and it seems likely that its construction, and subsequent repairs to it, account for a substantial degree of the disturbance to the paving and Gupta Period structure below.

Dating

Fourteen optically stimulated luminescence (OSL) dates were processed within three trenches, Pond West (PW), Eastern Monastery (TMS) and the Samai Mai Temple (SMT). Further OSL samples extracted from Trench R on the Northern Rampart have been discussed in detail previously (Davis et al. 2016). Dating was only undertaken within these trenches as these were the only deep sequences exposed, as opposed to the larger, shallower open area trenches (Figure 39).

Methods

OSL Sample preparation and analysis was undertaken at the Scottish Universities Environmental Research Centre (SUERC). OSL SAR dating utilises extracted quartz from the samples to determine the radiation dose experienced by the sediments since their last zeroing event, assumed to be by exposure to light prior to final deposition. This is combined with dose rate analysis based on field and laboratory measurements of environmental radioactivity. The age is determined as the ratio of dose divided by dose rate. In this work, dose rates for the bulk sediment were quantified using high resolution gamma spectrometry and thick source beta counting in the laboratory, coupled with water content analysis and in-situ gamma dose rate measurements. Quartz was extracted using standard laboratory procedures, and purity checked with scanning electron microscopy.

Fourteen OSL sediment samples were collected, along with in situ gamma spectra, from sediments associated with early cultural activity, early and later urban activity, related to the construction of the monastic site and pond. The significance of these dating samples is they should provide the

means to determine whether early cultural activity at Tilaurakot-Kapilavastu and Lumbini was contemporaneous.

Standard mineral preparation procedures were used to obtain sand-sized quartz, the purity of which was checked using scanning electron microscopy. The natural grain size distributions necessitated a need to explore both the 90-150 and 150-250 micron fractions. Dose rate estimates for the sediments were assessed using a combination of thick source beta counting (TSBCE) and high resolution gamma spectrometry (HRGS), reconciled with each other and with the water contents and micro-dosimetry of the model. Effective beta dose rates combined water content corrections with inverse grain size attenuation factors obtained by weighting the different grain size attenuation factors of Mejdahl (1976) for K, U and Th relative to beta dose contributions for each source by HRGS. Equivalent dose determinations were made using a quartz OSL SAR protocol on 16 small aliquots per sample. The material exhibited good OSL sensitivity and produced acceptable SAR internal quality control performance. Luminescence ages were calculated, for both grain fractions, using standard microdosimetric models, with uncertainties that combined measurement and fitting errors from the SAR analysis, all dose rate evaluation uncertainties, and allowance for the calibration uncertainties of the sources and reference materials.

Results and Discussion

At the Samai Mai Temple (Trench SMT B), the dating samples were positioned in the natural/cultural materials at the base of the sequence, adjacent to and overlying the postholes, and in the sediments enclosing the floor levels in the middle of the sequence. The initial phase of human occupation, as indicated by cultural and structural evidence of the posthole cuts, is constrained *terminus post quem* by the depositional age of the foundation materials, 430BCE \pm 110 and 760BCE \pm 140, and *terminus ante quem* by the depositional age of the overlying sediment, 300BCE \pm 100. Intriguingly, this fourth to fifth century BCE E date for the construction of the lower structural platform is contemporary with the early phase of cultural activity recorded in the section at the Northern Rampart (Davis *et al.* 2016) but the earliest date demonstrate a foundation in the eighth century BCE E. The later phase of cultural activity, in the position of this trench, is constrained by the depositional ages of the sediment which enclose the middle floor layers, between CE 440 \pm 90 and CE 930 \pm 60, which supports the postulated Gupta period date suggested by the presence of moulded and carved brick found in the upper layers.

In the Central Pond, Trench (PW A), the dating samples were positioned to provide temporal constraints on early cultural activity pre-dating construction of the pond; early urban activity related to its construction and abandonment. The construction of the water tank is constrained *terminus post quem* by the depositional age of the sediments immediately beneath the structure 230BCE \pm 100 and 130BCE \pm 90. Assuming a short period of accumulation, then the statistical combination of the two samples, suggests that it was constructed at around 170BCE \pm 90. The depositional age of the sediment abutting and overlying the tank wall at CE 180 \pm 80 indicates that it may have fallen into disuse at this time.

At the Eastern Monastery Trench (TMS 1), the six dating samples were positioned at key stratigraphic positions within the eastern monastery sedimentary stratigraphies to interpret the sequence of construction, utilisation and abandonment of the monument. The construction of the monastery wall is provided *terminus post quem* by the depositional age of the sediment immediately beneath the wall of 350BCE \pm 110. The coin hoard in context 761, was discovered beneath the adjacent brick paving which has a deposition date of CE 10 \pm 140, as constrained by the depositional age of the sediment which encloses the finds. Given the archaeological inference that this is a foundation deposit relating to the structure of this part of the monument, then this provides an additional constraint on the period of construction. The sediments abutting and enclosing this wall

dated to CE 680±150, and provide a constraint on the abandonment of the monastery wall. The tank wall constructed as it is within a foundation cut within the natural soil was constructed after 470BCE ±170, the depositional age of the sediment into which it was cut. The sediment abutting, and enclosing the tank wall, is dated to CE 70±100 and as such provides a constraint on the abandonment of this part of the structure. A third sample collected directly beneath the pond wall was hoped to provide a constraint on the earlier constructional phase of this structure, however, this sample returned an age of 7900BCE ±1300 which presumably reflects natural deposition, or the presence of mixed age materials.

These dates provide new evidence for the origins, development and final phases of Tilaurakot-Kapilavastu, and we await the results of further samples from these trenches, as well as our current investigations, to further our understandings of the past history of the city and its environs.

The Coins

This section outlines some further details of a selection of coins from the 2015 coin hoard, as well as reviewing coins from the 1999 and earlier excavations. In total, 21 coins were analysed from the 2015 coin hoard and 1999 excavation trench, as well as a further 22 coins on display in the site museum from earlier excavations at the site. The coins are divided into four categories: punch-marked coins, uninscribed cast copper coins, four-spoked wheel coins and Kushan copper coins. The subsequent abbreviations have been used: AR=silver, AE=bronze. The illustrations of the coins are not to scale but the precise dimensions are provided in the catalogue. All the coins found during the 2015 excavation were signed over immediately to the Department of Archaeology and are stored securely Tilaurakot Site Museum. The analysis was conducted jointly between Durham's UNESCO Chair field team and the Department of Archaeology, Government of Nepal.

Previous Coin Finds at Tilaurakot-Kapilavastu

During Mitra's excavations 70 coins were reported from her trenches, three made of silver and the rest made of copper (Mitra 1972: 84-99). They were divided into categories, such as (i) copper coins with a four-spoked wheel, (ii) punch-marked coins, (iii) miscellaneous uninscribed cast copper coins, (iv) miscellaneous copper coins, and (v) inscribed copper coins. According to Mitra, the "extensive circulation of coins indicated a systemized trade" (*ibid.*: 84). The 37 copper coins with a four-spoked wheel symbol contain the most interesting category of specimens as they have not been published in any of the catalogues of South Asian coins. Mitra divided them into three groups: die-struck small oblong or squarish pieces (17 examples), die-struck small circular coins (ten examples), and cast circular coins (ten examples). They all bear on the obverse a single symbol, casted or struck, of four-spoked wheel, while the reverse is blank. Mitra proposed the interpretation that they were the local issues of the Tilaurakot region and that the four-spoked wheel symbol might have been the symbol of the site (*ibid.*: 85-87). This theory seems to be supported by the presence of the same symbol on the other objects, found at the site, such as pottery sherds, and tokens (*ibid.*: 15-18). Three silver punch-marked coins, bearing five symbols and three copper punch-marked coins were also found (*ibid.*: 87). There were twelve coins belonging to the miscellaneous uninscribed cast copper coins category. Three of these are circular, whilst the rest are square or oblong in shape, and Mitra divided them into eight varieties (*ibid.*: 88-90). Two coins have been included in the miscellaneous copper coins category, with symbols on the obverse and blank reverse (*ibid.*: 90). Two inscribed copper coins were also recovered, one with legend (...)devasa, and the second one being the coin of Agnimitra, king of Panchala (*ibid.*: 91).

Mishra also reported finding silver and copper punch-marked coins, silver plated copper coins, early cast coins, die-struck coins with straight and oblique cross, Mitra coins (some bearing the name of Agni Mitra) and Kushan coins (belonging to Wima Kadphises, Kanishka and Huvishka)" (1977). While

Rijal obtained 46 coins from his excavations, 32 were of silver and 14 copper. The silver coins were all punch-marked, whilst the copper coins were mostly too worn, except two Kushan coins (of Kanishka I and Huvishka) and six four-spoked wheel coins. During his excavations, a hoard of 31 silver punch-marked coins was found in a trench at Shivagarh (Rijal 1973: 68-69). During the Risho University excavations at the 'Central Structural Complex' in 1970-1971 a further coin hoard was discovered, containing more than 2,200 coins. These coins were grouped by Rijal into following categories: 2 Indo-Bactrian coins of Apollodotos; 2 Panchala coins of Agnimitra; 379 Ayodhya coins of cock-and-bull type; 428 Kushan coins of Wima Kadphises; 1224 Kushan coins of Kanishka I and 152 Kushan coins of Huvishka (Rijal 1979: 38-39).

Provisional Coin Catalogue from the 1999, 2014 and 2015 Excavations

The following catalogue of coins covers material recovered from the 1999, 2014 and 2015 excavations at Tilaurakot-Kapilavastu as well as from within the museum collection but does not include the coin hoard from the Eastern *Stupa* (Figures 41-46).

Punch-marked Coins

Two silver or silver-plated punchmarked coins were recovered from the Northern Rampart trench (Trench R) during the 2014 field season. The first of them (Sf883) was found in context (207), identified as mud rampart and dated probably to the pre-Kushan period. The second (Sf940) was found in context (217), the lower section of the mud rampart, dated to the pre Mauryan or Mauryan period. The third coin of this type (TLK99, Sf9) was recovered during the field season 1999.

Special find no: 883
Context: 207
Dimensions: 13.3 x 12.9 mm
Weight: 2.2 g
Trench: R
Field season: TLK14
Comments: *coin very worn, with 6-armed symbol and maybe three-ovals-in-a-row symbol*

Special find no: 9
Context: 8
Dimensions: 19 x 12 mm
Weight: 2.8 g
Trench: //
Field season: TLK99
Comments: *triple-arched hill with upward facing arc tangent above*

Special find no: 940
Context: 217
Dimensions: 13.2 x 10.9 mm
Weight: 3.1 g
Trench: R
Field season: TLK14
Comments: *6-armed symbol, coin covered with patina*

Uninscribed cast copper coins

Two coins of this type have been positively identified, both recovered during the 2013 field season from our Northern Rampart trench, Trench R. The first of them (Sf166) was found in context (101), a backfill context containing Northern Black Polished Ware (NBP) and proto-NBP but also modern bricks. The second (Sf536) was excavated from the context (127), containing red ware among others. References are given according to Mitchiner (2004).

Type 1

Obverse: Elephant to left above horizontal Indra-dhvaja, taurine.

Reverse: from left to right: hollow cross below three hill with crescent above symbol, railed tree.

Special find no: 536
Context: 127
Dimensions: 13 x 10.6 mm
Weight: 1.3 g
Trench: R
Field season: TLK13
Comments: *obverse: only Indra-dhvaja and elephant visible*
References: *like Mitchiner 4564-4565, but lighter*

Type 2

Obverse: Elephant to left above horizontal Indra-dhvaja, on left taurine above swastika.

Reverse: from left to right: hollow cross below three hill with crescent above symbol, taurine, railed tree.

Special find no: 166
Context: 101
Dimensions: 16.7 x 14.8 mm
Weight: 3.7 g
Trench: R
Field season: TLK13
References: *Mitchiner 4566*

Four-spoked wheeled coins

These coins constitute the most interesting group as they might be examples of local coinage associated with the ancient city of Tilaurakot-Kapilavastu. Nine examples of four-spoked wheel coins were recovered during the excavations. They have been divided into three types, according to technology of production and shape. Six coins belong to Type 1 (circular, cast coins), one of them (Sf421) was discovered during the 2013 field season, three (Sf899, Sf942 & Sf5232) in 2014, and one (Sf7004) in 2015. Three of them (Sf942, Sf899 & Sf421) were found in our Northern Rampart trench, Trench R: including two in the mud rampart - Sf899 in context (207) & Sf942 in context (213) - dated to the pre-Kushan period, containing NBPW, Sunga plaques and grey ware. The other coins were found in trenches in the Southern Industrial Mound (Trench S), the Central Trench (Trench C) and Eastern Monastery (Trench TMS). One coin (Sf901) belonging to Type 2 (circular, die struck coins) was found in Trench R from context (213) – the lower, pre-Kushan portion of the mud rampart. Type 3 represents squarish, die-struck coins. Two such examples (Sf882 & Sf892) were found in Trench R in 2014, and one (Sf4080) in Trench PW in context (1431), the material built up behind the tank wall. The two coins from the rampart were found in contexts (207) and (213), mentioned above.

Type 1: Circular, cast coins

Obverse: Four-spoked wheel

Reverse: blank

Special find no: 7004
Context: 708
Dimensions: 10.2 x 7.8 mm
Weight: 0.7 g
Trench: TMS
Field season: TLK15

Special find no: 942
Context: 213
Dimensions: 12.4 x 10.8 mm
Weight: 0.8 g
Trench: R
Field season: TLK14

Special find no: 5232
Context: 555
Dimensions: 12.2 x 10.8 mm
Weight: 1.2 g
Trench: C
Field season: TLK14

Special find no: 899
Context: 207
Dimensions: 14.5 x 12.4 mm
Weight: 1.6 g
Trench: R
Field season: TLK14

Special find no: 421
Context: 124
Dimensions: 14.1 x 13.6 mm
Weight: 1.9 g
Trench: R
Field season: TLK13

Type 2: Circular, die struck coins
Obverse: Four-spoked wheel
Reverse: blank

Special find no: 901
Context: 213
Dimensions: 10 x 9 mm
Weight: 0.7 g
Trench: R
Field season: TLK14

Type 3: Squarish, die struck coins
Obverse: Four-spoked wheel
Reverse: blank

Special find no: 882
Context: 207
Dimensions: 10.3 x 8.8 mm
Weight: 0.9 g
Trench: R
Field season: TLK14

Special find no: 892
Context: 213
Dimensions: 10 x 8.6 mm
Weight: 1.3 g
Trench: R
Field season: TLK14

Special find no: 4080
Context: 1431
Dimensions: ?
Weight: ?
Trench: PW
Field season: TLK15
Comments: *Coin disintegrated in the trench upon excavation.*

Kushan copper coins

Four Kushan copper coins were positively identified, all of them excavated during the 2014 field season and recovered from the Central Walkway Trench, Trench CW. This trench contained two main architectural complexes, a large rectangular structure to the northwest of the trench, and a series of rooms surrounding an open central courtyard. All of the coins were recovered from topsoil, containing mixed deposits of vegetation, soil and modern debris (contexts 1011, 1012 & 1017). The coins are very worn and have been identified as copper full units (tetradrachms). Three of them (Sf8125, Sf8035 & Sf8194) are issues of king Kanishka I (r.CE 127-151) and one (Sf8150) was issued by king Huvishka (r.CE 151-190). Periods of Kushan king reigns as well as attribution to particular mints is used according to Jongeward and Cribb (2015). References are given according to Göbl (1984) and Jongeward and Cribb (2015).

Type 1K – Kanishka I sacrificing at altar

Obverse: King, full figure, standing frontally with head to left, bearded; wearing Iranian costume; holding a spear in raised left hand and sacrificing at small altar with extended right hand. Inscription in Bactrian: β AO KANH β KI

Reverse: Deity, full figure, tamga in left field.

Atsho, fire god, standing frontally with head to left; bearded, wearing knee length tunic and boots under cloak; flames emanating from his shoulders; holding tongs with left hand at waist and offering ribboned diadem with extended right hand; tamga in left field. Inscription in Bactrian in right field: A Θ β O.

Special find no: 8125

Context: 1012

Dimensions: 25.9 x 25.4 mm

Weight: 13.9 g

Die axis: 11 h

Mint: *Main mint, Kapisha (probably Begram). Middle Phase, with Bactrian inscriptions*

Trench: CW

Field season: TLK14

Comments: *obverse: inscription in Bactrian, starting at 1, clockwise: β AO KA-NH(...); reverse: attributes illegible*

References: Göbl 772; Jongeward and Cribb 459-479

Mao, moon god, standing frontally with head to left; crescent emanating from his shoulders (both horns of crescent drawn as lines); wearing calf-length tunic, long boots and cloak over both shoulder; making gesture of blessing with extended right hand, holding hilt of sword with left hand at waist. Tamgha in left field. Inscription in Bactrian in right field: MAO

Special find no: 8035

Context: 1011

Dimensions: 23.8 x 22.8 mm

Weight: 14.0 g

Die axis: 11 h

Mint: *Main mint, Kapisha (probably Begram). Middle Phase, with Bactrian inscriptions*

Trench: CW

Field season: TLK14

Comments: *reverse: right hand of the deity, sword, tamga and legend are illegible. Legend in Bactrian, clockwise: M(...)*

References: Göbl 774, Jongeward and Cribb 520-532

Special find no: 8194

Context: 1017

Dimensions: 24.5 x 23.4 mm

Weight: 13.9 g

Die axis: 11 h

Mint: *Main mint, Kapisha (probably Begram). Middle Phase, with Bactrian inscriptions*

Trench: CW

Field season: TLK14
Comments: *reverse: inscription illegible*
References: Göbl 774; Jongeward and Cribb 533-538

Type 1H – Huvishka sitting on couch

Obverse: King, seated on a couch, facing front, head to front, right leg raised with foot on end of couch, left foot on floor; both hands before chest.

Reverse: Deity, full figure, tamga in left field.

Mao, moon god (?), standing frontally with head to left; crescent emanating from his shoulders (both horns of crescent drawn as lines); wearing calf-length tunic, long boots and cloak over both shoulder; making gesture of blessing with extended right hand, holding hilt of sword with left hand at waist. Tamga in left field.

Special find no: 8150
Context: 1017
Dimensions: 24.2 x 23.0 mm
Weight: 13.5 g
Die axis: 12 h
Mint: *Main mint, Kapisha (probably Begram), phase ?*
Trench: CW
Field season: 2014
Comments: *coin very worn, details illegible*
References: Göbl 836?; Jongeward and Cribb 892-914, 985-990?

Unidentified coins

Special find no: 919
Context: 207
Dimensions: 9.5 x 9.1 mm
Weight: 0.4 g
Trench: R
Field season: TLK14
Metal: *Silver*

Special find no: 5209
Context: 544
Dimensions: 12 x 9.8 mm
Weight: 1.4 g
Trench: C
Field season: TLK14
Metal: *Silver*
Comments: *maybe four-spoked wheel coin*

Special find no: 16
Context: 18
Dimensions: 16 x 13 mm
Weight: 2.1 g
Trench: II
Field season: TLK99
Metal: *Silver*

Coin Catalogue from the Tilaurakot Site Museum

Punch-marked coins

Museum number: *R 1 Reg. No. 102 (1)*
Dimensions: 19.5 x 16.2 mm
Weight: 3.0 g

Comments: *from Shivagarh*

Museum number: *R 1 Reg. No. 102 (2)*

Dimensions: *15.1 x 12.8 mm*

Weight: *3.1 g*

Comments: *from Shivagarh*

Museum number: *R 2 Reg. No. 104 (1)*

Dimensions: *13.1 x 12.1 mm*

Weight: *3.4 g*

Comments: *from Shivagarh*

Museum number: *R 2 Reg. No. 104 (2)*

Dimensions: *13.5 x 11.7 mm*

Weight: *3.1 g*

Comments: *from Shivagarh*

Museum number: *R 3 Reg. No. 106 (1)*

Dimensions: *15.3 x 15.1 mm*

Weight: *3.3 g*

Comments: *from Shivagarh*

Museum number: *R 3 Reg. No. 106 (2)*

Dimensions: *15.0 x 13.4 mm*

Weight: *3.2 g*

Comments: *from Shivagarh*

Uninscribed cast copper coins

Type 1

Obverse: Elephant to left above horizontal Indra-dhvaja, on left taurine above swastika

Reverse: from left to right: hollow cross below three hill with crescent above symbol, taurine, railed tree

Museum number: *R4 Reg. No. 6*

Dimensions: *13.8 x 13.1 mm*

Weight: *2.5 g*

Comments: *coin very worn, obverse: only elephant visible*

Museum number: *R8 Reg. No. 8*

Dimensions: *14.6 x 14.0 mm*

Weight: *2.2 g*

Comments: *coin very worn, on obverse only elephant and taurine visible*

Type 2

Obverse: elephant to left

Reverse: crescent over three-arched hill

Museum number: *R5 Reg. No. 10*

Dimensions: *13.3 x 12.7 mm*

Weight: *2.1 g*

Comments: *Mitchiner 4574-4578*

Four-spoked wheel coins

Circular, cast coins

Obverse: Four-spoked wheel

Reverse: blank

Museum number: *R 6 Reg. No. 8; TLK-1*
Dimensions: *15.6 x 12.4 mm*
Weight: *2.1 g*

Museum number: *TLK*
Dimensions: *8.8 x 8.4 mm*
Weight: *0.6 g*

Panchala Kingdom copper coins

Obverse: god Agni with flaming hair, standing on the pedestal or in railing with pillar on both sides; left hand on hip

Reverse: Agnimitra (2nd half of the 1st c. CE) name in Brahmi letters (the legend agnimitrasa) with three symbols of Panchala kingdom above

Museum number: *R 7 Reg. No. 83*
Dimensions: *17.0 x 16.8 mm*
Weight: *6.4 g*
Die axis: *12 h*
Denomination: *karshapana*
Comments: *from Shivagarh*
References: *Pieper 1021*

Kushan copper coins

Type 1K: Kanishka I sacrificing at altar

Obverse: King, full figure standing frontally with head to left, bearded; wearing Iranian costume; holding a spear in raised left hand and sacrificing at small altar with extended right hand.

Inscription: Bactrian, clockwise: β AO KA-NH β KI

Reverse: Deity, full figure, tamga in field

Oado, wind god, running to left, with head to left; bearded and with wind-blown hair; wearing thigh-length dhoti; holding large cloak in both raised hands above head and dropping to feet; tamga in left field. All within the dotted border. Inscription: Bactrian, clockwise in the right field: OAAO

Museum number: *R 10 Reg. No. 5 (1)*
Dimensions: *26 x 24.9 mm*
Weight: *17.1 g*
Die axis: *12 h*
Denomination: *tetradrachm*
Mint: *Main mint, Kapisha (probably Begram). Middle Phase, with Bactrian inscriptions*
References: *Göbl 783; Cribb and Jongeward 579-591*

Museum number: *R 10 Reg. No. 5 (2)*
Dimensions: *23.6 x 23.5 mm*
Weight: *15.0 g*
Die axis: *12 h*
Denomination: *tetradrachm*
Comments: *obverse: inscription in Bactrian, clockwise, only letter β visible; reverse: tamga illegible*
Mint: *Main mint, Kapisha (probably Begram). Middle Phase, with Bactrian inscriptions*
References: *Göbl 783; Cribb and Jongeward 579-591*

Nana, moon goddess, standing facing right, head surrounded by halo, curls of hair held by diadem with ribbons behind, and hair bun at back; wearing sleeved ankle-length gown; holding wand tipped with lion-forepart in right hand and bowl in left hand at waist. Tamga in right field. All within the dotted border. Inscription: in left field.

Museum number: *R 12 Reg. No. 8 (1)*
Dimensions: *26.4 x 25.8 mm*
Weight: *16.0 g*
Die axis: *11 h*
Denomination: *tetradrachm*
Comments: *reverse: inscription NANA*
Mint: *Subsidiary mint, Gandhara (probably Peshawar)*

Museum number: *R 12 Reg. No. 8 (2)*
Dimensions: *20.0 x 19.6 mm*
Weight: *15.8 g*
Die axis: *11 h*
Denomination: *tetradrachm*
Comments: *obverse: inscription: βαΟ ΚΑ-ΝΗβΚ(...); reverse: NANA*
Mint: *Subsidiary mint, Gandhara (probably Peshawar)*

Museum number: *R 11 Reg. No. 7 (1)*
Dimensions: *21.1 x 20.1 mm*
Weight: *7.4 g*
Die axis: *12 h*
Denomination: *didrachm*
Comments: *coin very worn, obverse: only letter K visible; reverse: Greek inscription NANAIA*
Mint: *Main mint, Kapisha (probably Begram). Early Phase, with Greek inscriptions*
References: *Göbl 767; Cribb and Jongeward 403-408*

Museum number: *R 11 Reg. No. 7 (2)*
Dimensions: *21.7 x 20.2 mm*
Weight: *7.5 g*
Die axis: *1 h*
Denomination: *didrachm*
Comments: *obverse: legend illegible; reverse: Greek legend NANAIA (first N illegible), tamga illegible*
Mint: *Main mint, Kapisha (probably Begram). Early Phase, with Greek inscriptions*
References: *Göbl 767; Cribb and Jongeward 403-408*

Atsho, fire god, standing frontally with head to left; bearded, wearing knee length tunic and boots under cloak; flames emanating from his shoulders; holding tongs with left hand at waist and offering ribboned diadem with extended right hand; tamga in left field. Inscription in Bactrian in right field.

Museum number: *R 9 Reg. No. 6 (1)*
Dimensions: *25.6 x 24.6 mm*
Weight: *16.9 g*
Die axis: *11 h*
Denomination: *tetradrachm*
Comments: *obverse: worn, legend illegible; reverse: tongs illegible, inscription: ΑΘβΟ*
Mint: *Main mint, Kapisha (probably Begram). Middle phase, with Bactrian inscriptions*
References: *Göbl 772; Cribb and Jongeward 459-479*

Museum number: *R 9 Reg. No. 6 (2)*
Dimensions: *25.6 x 23.8 mm*
Weight: *15.9 g*
Die axis: *12 h*
Denomination: *tetradrachm*
Comments: *inscription on the obverse (...)NHβΚΙ; on the reverse: ΑΘβΟ, attributes illegible*
Mint: *Main mint, Kapisha (probably Begram). Middle phase, with Bactrian inscriptions*
References: *Göbl 772; Cribb and Jongeward 459-479*

Type 1H – Huvishka seated cross-legged on mountain top
Obverse: King, sat cross-legged on mountain top, facing front, head to right; holding staff in raised left hand, right hand before chest.
Reverse: Deity, full figure, tamga in field

Mao, moon god, standing facing front; head to left, short hair, crescent emanating from shoulders; wearing calf-length tunic, long boots and cloak over both shoulders; making gesture of blessing with extended right hand, holding hilt of sword with left hand at waist; tamga in the left field. All within the dotted boarder.

Museum number: *R 13 Reg. No. 9 (2)*
Dimensions: *26.6 x 24.6 mm*
Weight: *15.7 g*
Die axis: *12 h*
Denomination: *tetradrachm*
Comments: *obverse: legend illegible; reverse: MAO, tamga illegible*
Mint: *Main mint, Kapisha (probably Begram). Late Phase*
References: *Göbl 837; Cribb and Jongeward 993*

Reverse worn

Museum number: *R 13 Reg. No. 9 (1)*
Dimensions: *24.6 x 24.2 mm*
Weight: *14.0 g*
Die axis: *?*
Denomination: *tetradrachm*
Comments: *obverse: double O visible*
Mint: *?*

Discussion

The Japanese-Funds-in-Trust-for-UNESCO programme of fieldwork at Tilaurakot-Kapilavastu have begun to shed new light on the urban morphology of the site. A particular highlight has been the results of the geophysical survey which have revealed the interior layout of the city, as well as identifying the presence of major architectural features outside the fortification walls. Inside the city, we have demonstrated the presence of an urban grid plan, the uppermost Kushan. The excavations at the Northern Rampart (Trench R) (Davis *et al.* 2016) and the Eastern Gate (Trench EG) confirm that these cardinal alignments were first established in in timber below. As such, it is likely that this cardinaly-oriented layout has been in place since the early establishment of the city. Optically Stimulated Luminescence dates from our excavations at the Northern Rampart, and adjacent to the Saimai Mai Temple, place this early phase in the sixth century BCE, broadly contemporary with the life of the Buddha and some 300 years earlier than the date postulated by Debala Mitra (1972) (Coningham *et al.* 2010). It is likely that there is earlier occupation closer to the centre of the site and one of the aims of continuing work at the site is to identify the earliest levels of occupation.

Excavation has characterised many of the features and morphological layout of the ancient city identified in the geophysical survey. Within the city walls, we have identified the presence of a cardinaly orientated city layout, with rectilinear structures within the almost grid-like layout of the city's roads. We have identified these rectilinear structures near the surface at Trenches CW, C, EG, and to the west of PW. Further rectilinear structures have also been identified and interpreted within the city. A large monumental square feature measuring roughly 30 metres by 30 metres, initially hypothesised as a water tank from geophysical survey was confirmed through excavations at Trench PW, uncovering a wall comprised of 26 courses of brick, extending 2.6 metres below the original land surface. This shares many similarities with the water tanks found in the centre of *durbar* squares in the Kathmandu Valley, and there are suggestions that connections between the Terai and the valley have existed for much longer than previously thought. At the very centre of the city is a large walled complex, perhaps representing a palatial or, elite area or central administrative centre. Our initial excavations at Trench CWC have demonstrated that this interior wall was substantial in

size, 1.4 metres in width, and survived in places to at least ten courses. It is likely that the uppermost part of the wall was timber, perhaps covered in mud and/or plaster. The monumental gateway suggests the demarcation of different communities or groups within Tilaurakot-Kapilavastu and the control of movement within this part of the site and one of the aims of continuing work at the site is to further expose and define this central walled complex. This structure was overlain by a later rectilinear quadrangle structure and this begins to shed light on changes in the phasing of the city over time. Such phasing is hypothesised at Trench EGG, where the road identified on geophysical survey running towards the east stops, and the brick fortification wall has been interpreted as blocking an earlier opening, changing access and routeways into and out of the city.

Our excavations have also shed light on the origins and development of Tilaurakot-Kapilavastu. Dating from the deep sequence at Trench SMT has indicated the potential of the earliest occupation at the site from the eighth century BCE. The dating evidence for the tank construction also provides a Mauryan date for the construction of this civic feature, and not only provides the first clearly dated Mauryan monument, but also indicates the potential that developments in the Terai then may have transmitted north to the Kathmandu Valley. Furthermore, the programme of scientific dating is also providing evidence for the period of the later phase of cultural activity at the site, with the terminal phases of the sequence dating to between the 5th and 10th centuries CE. The forthcoming analysis of further samples will provide further refinement of the chronological sequencing of the site and its development.

Outside the city walls, the geophysical survey has also demonstrated the presence of features outside the 'Citadel'. The presence of these vulnerable subsurface remains demonstrates the need for protection of this vulnerable heritage from intrusive development as this evidence is intrinsically linked to the development of Tilaurakot-Kapilavastu and its history. For instance, a substantial monastic complex was discovered to the south of the Eastern *Stupa*. Situated less than 0.2 metres below the ground surface in privately owned fields, these structures are at risk from increasingly mechanised agriculture. Excavations across a small portion of the monastery and its associated water tanks showed that the monastery was constructed sometime after 350 BCE, most likely during the Mauryan or Sunga Periods. The water tank was probably built at the same time, and was in use until at least CE 70±100 and possibly as late as CE 840±70. The discovery of the coin hoard is also a rare find in South Asia and, to the best of our knowledge, the only one to be dated scientifically. Work is ongoing to clean, conserve and identify the remaining coins, and the intention is that many of them will go on display in the new museum building that is currently nearing completion. Further archaeological work is planned for the Eastern *Stupa* and monastic area with the intention of conserving structures and opening up new walkways for pilgrims to reach the area more easily.

Conclusion

The programme of the archaeological work at Tilaurakot-Kapilavastu has been accompanied by exploratory work at a number of other sites within the region, including Kudan, Araurakot, Dohani, Sagrahawa and Sisaniya. This is helping us to build a greater understanding not only of Tilaurakot-Kapilavastu but also how the wider landscape developed over time. All this fieldwork has been undertaken in collaboration with Durham University, the Lumbini Development Trust and the Department of Archaeology (Government of Nepal) with specialist training provided to officers. Students from Tribhuvan University, and the newly formed Lumbini Buddhist University, were also invited to attend and provided with practical training in archaeology and heritage management. The development of these skills is vital for the current and next generation of Nepali archaeologists in order to protect the valuable and at-risk heritage of the Terai. Tilaurakot-Kapilavastu and other sites in the Greater Lumbini Area present an opportunity for social and economic development that can tackle the high levels of poverty in the area. However, many of the developments that are planned

or underway also threaten the archaeological sites. As such, it is vital that collaborative archaeological work continues to preserve, protect and present the heritage of the region.

Despite the striking discoveries over the last four years, we still need more information regarding the history, morphology and sequence of Tilaurakot-Kapilavastu, especially within the Central Walled Complex, the Eastern Monastery and around the Samai Mai Temple, where both the oldest and youngest remains of the city have been identified. Now, on the cusp of the third phase of funding from the Japanese-Funds-in-Trust-for-UNESCO, we will also seek to enhance the pilgrim and visitor experience at the site by investigating and conserving selected monuments within the city and its hinterland in order to present them to pilgrims and visitors as well as write and design information boards and a guide book. We will also continue to offer training for Masters level students from Nepal's Tribhuvan University, postgraduate students from Lumbini Buddhist University and archaeological staff of the Department of Archaeology, Government of Nepal, and the Lumbini Development Trust as well as continue to encourage colleagues from Bangladesh, Bhutan, Myanmar, India, Pakistan and Sri Lanka to join us during the UNESCO Chair's Field Laboratories.

As significantly, although the fortified core and a number of fields outside the city are owned by the Government of Nepal, our new archaeological survey has identified the wealth of monastic, industrial and residential occupation beyond the city's moats. Our study has demonstrated that these invaluable archaeological remains, integral parts of Tilaurakot-Kapilavastu, are under threat from cultivation, road building and widening as well as from the construction of new monasteries, visitor infrastructure and houses. Although the Government of Nepal has purchased fields where our risk map surveys have used simple traffic lighting to identify vulnerable subsurface remains to protect them from ploughing and development (Figures 47 and Figure 48), we all recognise that broader examination and survey needs to be urgently undertaken. Our archaeological plans have also provided the base for the University of Tokyo planning team to develop their infrastructure for the visitor experience to the site (Figure 49), so that modern pilgrims may walk in the footsteps of ancient pilgrims (Figure 50).

Additionally, we need to better understand the needs of visitors and the current social and economic impacts of the site on local communities. To this end, the team will continue conduct interviews with local residents, businesses as well as tourists and pilgrims to gain an enhanced understanding of who visits the site and how this impacts the local economy. Monitoring visitor behaviour will continue to enable the team to assess the needs of pilgrims, tourists and the local population, which will contribute to aiding sustainable development at Tilaurakot-Kapilavastu, while also preserving and protecting the site's unique cultural heritage. Indeed, with generous funding from Dr Tokushin Kasai of Hotel Kasai Lumbini, we were able to organise Tilaurakot-Kapilavastu's first community Cultural Festival in February 2018, which celebrated its tangible and intangible heritage. Coinciding with the visit of UNESCO's International Scientific Committee for Lumbini, the program featured competitions for school children, photographic and artefact exhibitions and traditional dances (Figure 51). It also celebrated the production of local handicrafts, including beautifully hand-crafted traditional clay elephants by Rangi Lal Parjapati and intricately hand-woven grass baskets by Hariyali Hastakala Women's Group.

In September 2017, with partners from UNESCO, ICOMOS (Nepal) and the Department of Archaeology (Government of Nepal), Durham's UNESCO Chair hosted a SAARC workshop focus on 'Heritage at Risk' within Kathmandu with sponsorship from the UK's Arts and Humanities Research Council Global Challenges Research Fund. Through interaction with, and feedback from, local stakeholders, community leaders, administrators and key disaster responders and first responders, the participants co-produced the following resolutions for the enhanced protection and rehabilitation of heritage following natural disasters, conflict and in the face of accelerated

development (Figure 18). Many pertinently reiterate existing resolutions agreed by the delegates of the 2014 Lumbini International Buddhist Conference (IBCE 2014), Conservation Guidelines for Post 2015 Earthquake Rehabilitation (CG2015) and UNESCO's 2017 International Scientific Committee for Lumbini (ISC2017):

1. A Heritage Impact Assessment should be conducted before every new development project (including construction, roads, drains, walls and carparks etc.) or a contractual agreement, at sites protected as heritage and archaeological areas within the Greater Lumbini Area.
2. Archaeological investigations must be carried out to understand the potential of archaeological sites within the Greater Lumbini Area, before any infrastructure work, and risk mapping prepared for all potential archaeological areas.
3. Recognising that Buddhist archaeological sites form living cultural landscapes, that any new structures at sites should be located only in areas of low risk to heritage and that they respect 8 design concepts: non-intrusive, reversibility, shelter, visibility, focus, access, ownership and authentic materials and that interventions or new constructions within Buddhist cultural sites should be tested against these criteria during Heritage Impact Assessments.
4. If machinery is necessary to be used at the sites protected as heritage areas and archaeological sites within the Greater Lumbini Area, including Lumbini Development Area, it should be accompanied by archaeological watching briefs by the Department of Archaeology and the Lumbini Development Trust.
5. The natural surroundings of the Lumbini area should be safeguarded and sources of air, noise and ground water pollution should be monitored and controlled and existing regulations enforced by the government. No new industrial factories shall be approved or existing ones expanded by the government within the Lumbini Protected Zone. Polluting industries should be relocated in accordance with the 2009 decision of the Nepal's Industrial Promotion Board.
6. Approach and take off flight paths from Bhairahawa Airport should avoid key heritage sites, in particular Ramagrama and Lumbini.
7. Bylaws and planning regulations should be implemented at protected and potential archaeological sites within the Greater Lumbini Area.
8. Land acquisition by the Department of Archaeology, Government of Nepal, is an appropriate planning development and should be continued.
9. A systematic GIS-based cataloguing and digital documentation of inscribed and non-inscribed movable and non-movable objects should be established and implemented together with pro-active monitoring process.
10. Every archaeological assessment and excavation process should be linked in a coherent and integrated approach with community consultation and engagement. This should be implemented through the development of a long-term sustainable partnership and shared custodianship.
11. Community engagement should be linked with realistic social and economic benefits to adjoining communities and be linked to a clear strategy related to pilgrim and tourist activities. Regular monitoring and evaluation of protection and maintenance processes and the economic and social benefits that local residents receive from on-site activities should be undertaken.

12. There is an urgent need to raise awareness through grass-roots initiatives with lay and Sangha participation through information-sharing mechanisms, from web-based portals to social networks, to create cultural awareness for the preservation, promotion and protection of Buddhist values and cultural heritage. This will involve the development of courses on monuments and sites for students and heritage management courses/programs for the Sangha and designation of teaching sites/field laboratories.

13. There is a need for additional targeted exchanges and training, with the adoption of training materials, to strengthen the capacity of national agencies and NGOs tasked with the protection of sites and monuments in the face of accelerated development. The deployment of physical security by a regular force will further ensure the physical security of sites and monuments. We recognise the urgent need to integrate these activities within a trans-border context and co-operate with key responders in neighbouring countries.

14. There is an urgent need for UNESCO's International Scientific Committee for Lumbini to continue to act, along with the Project Steering Committee, as the key mechanism for the sharing, coordination and archiving of methodologies and outcomes from multilateral and bilateral programmes of protection and rehabilitation within an overall regional planning framework.

15. There is an urgent need for the development of a network of South Asian experts to formulate, share and implement responses to protect sites and monuments in the face of accelerated development and climate change.

Although developed with reference to the Nepali Terai, it is clear that these resolutions are immediately applicable to South Asia's other places of veneration and pilgrimage. Durham's UNESCO Chair is committed to working with partners to protect the sacred pilgrimage landscapes of Asia as they have never been so threatened by natural disaster and infrastructure development. We are pledged to raising funds and networks to strengthen our ambitions to:

- train heritage practitioners to protect Asia's unique pilgrimage landscapes and cityscapes by strengthening capacity and resilience to the impacts of conflict, disaster and infrastructure development;
- share and promote toolkits with site managers to measure, engage and mediate the economic and social benefits of sacred pilgrimage landscapes to visiting pilgrims and resident communities;
- mobilise communities and stakeholders to prevent targeted damage/destruction of sacred pilgrimage landscapes and reduce communal and sectarian tensions through our Engagement>Excavation>Exhibition ethos.

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Tr	Code	Cont.	Archaeological significance	Date
SMT-B	OSL2 SUTL-2817	(324)	constrain initial phase of human occupation at Tilaurakot; dating of palisade post-holes (cross-check with early palisade, pre-rampart construction in northern rampart section?)	450BCE ± 150
	OSL3 SUTL-2818	(330)		750BCE ± 230
	OSL1 SUTL-2819	(317)		320BCE ± 150
	OSL5 SUTL-2820	(311)	constrain second phase of human occupation at Tilaurakot; sample provides TPQ for occupation surface 312	CE 400 ± 140
	OSL6 SUTL-2821	(308)	constrain second phase of human occupation at Tilaurakot; sample provides TAQ for occupation surface 312	CE 950 ± 80
PW-A	OSL1 SUTL-2822	(1430)	provide a temporal constraint on palaeo-surface underlying, and pre-dating construction of the water tank; sample provides TPQ for the formation of this surface	200BCE ± 130
	OSL2 SUTL-2823	(1429)	sample provides a TAQ for this surface; and TPQ for construction of the water tank	340BCE ± 110
	OSL3 SUTL-2824	(1427)	provides a temporal constraint on the construction and utilisation of the water tank; overlies both SUTL2822 and 2823, so should post-date these	CE 170 ± 90
TMS-1	OSL1 SUTL-2825	(35)	date surfaces prior to construction of monastic wall; TAQ for palaeo-land surface beneath monastic wall; TPQ for construction of monastic wall (in the position of this trench)	350BCE ± 140
	OSL2 SUTL-2826	(36)	date period of abandonment of monastic site; sediments abut and overly monastic wall, so must provide TAQ for abandonment (cross-checks SUTL2828)	CE 840 ± 70
	OSL3 SUTL-2827	(20)	provide a temporal constraint on the emplacement of the coin hoard	CE 50 ± 120
	OSL4 SUTL-2828	(145)	date period of abandonment of monastic pond; sediments abut and overly monastic wall, so must provide TAQ for abandonment (cross-checks SUTL2826)	CE 110 ± 120
	OSL5 SUTL-2829	(127)	provides a temporal constraint on the construction of the water tank; sediments cut into to create foundation of main tank wall, so must provide TPQ for construction; TAQ for construction of earlier structure	470BCE ± 150
	OSL6 SUTL-2830	(141)	date surfaces prior to construction of earlier monastic pond wall	7900BCE ± 1300