

ACCU Nara  
International Correspondent

Vol.23 2019

# The Twenty-third Regular Report



公益財団法人 ユネスコ・アジア文化センター文化遺産保護協力事務所  
Cultural Heritage Protection Cooperation Office, Asia-Pacific Cultural Centre for UNESCO (ACCU)

## Mongolia ————— 38

Munkhtulga Rinchinkhorol

A Newly Found Ancient Memorial Complex from Mongolia

## New Zealand ————— 41

Matthew Schmidt

Mrs Heron's Cottage – Conservation of 19th Century Goldfields Home

## Philippines ————— 49

Louella Solmerano Revilla

The Devastating Effects of Earthquakes and Other Natural Calamities in the Philippines:  
A Threat to Heritage Structures

## Sri Lanka ————— 53

D.A. Rasika Dissanayaka

Ancient Timber Monuments in Sri Lanka: Types and Problems

## ACCU Nara International Correspondent

The ACCU correspondents periodically send reports on cultural heritage protection activities in which they have been recently involved. This is a collection of nine reports submitted by international correspondents in the Asia-Pacific region.

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## Contents

### Bangladesh ————— 1

Mst. Naheed Sultana

Puthia Group of Monuments of Rajshahi in Bangladesh

### Bhutan ————— 8

Karma Tenzin

Ruins of Tsirangtoed *Dzongs*

### India ————— 11

Nagaraju Kaja

Heritage Conservation of Sanjeevaraya Temple at Ayyangarkulam, Tamilnadu, India

### Kazakhstan ————— 17

Gulnaz Kulmaganbetova

Elite Mounds of Kazakhstan of the First Millennium BC

### Malaysia ————— 23

A Ghafar Bin Ahmad

Community Engagement Programmes in the Conservation of Fort Emma, Fort Hose and Fort Lili, Sarawak, Malaysia



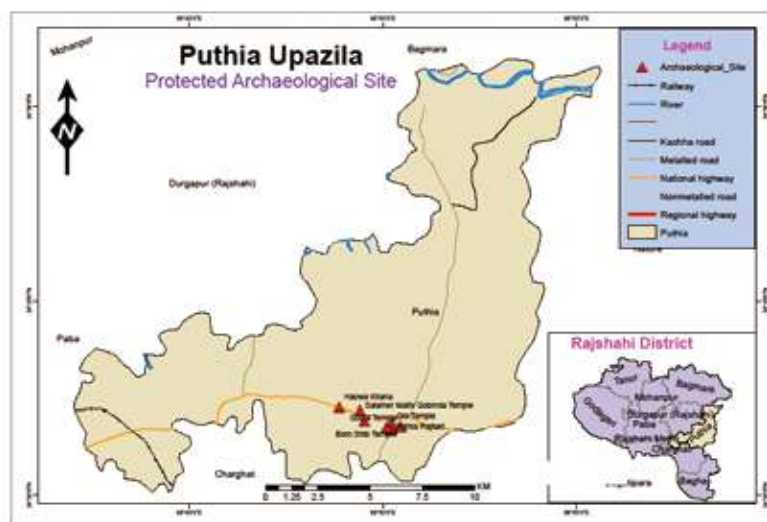
## Puthia Group of Monuments of Rajshahi in Bangladesh

Mst. Naheed Sultana, *Regional Director*

Department of Archaeology, Ministry of Cultural Affairs

**Location:** The Puthia Group of Monuments are situated about 220 km from Dhaka, 1 km south from Dhaka-Rajshahi Highway and about 27 km from Rajshahi district town. Puthia Upazila is a very important place in the Rajshahi district. The ancient monuments are located

very near to Upazila Headquarters and these architectural structures were built by the Zamindars of Lashkarpur Pargana. They are located on the Puthia Rajbari Premises and the place is encircled by a deep and wide moat.



The strong and long lasting Zamindari system was created during the reign of Mughal Emperor Akbar in Rajshahi, Pabna, Bogra, Murshidabad, Nadia, Jasore, Birbhum and Bardawn. At that time, the Mughal Emperor divided into some 'Suba' and addressed its prime ruler, named 'Subedar'. *Shubedar* Laskar Khan of Laskarpur Pargana raised an army against the Mughal Emperor. Mughal Emperor Akbar suppressed the rebellion of Laskar Khan and assigned the settlement of Laskarpur Pargana (administrative area) to the grandson of the orthodox *Brabmin* Shashadhar Pathok as well as to the son of Batsacharja, named Pitambar. Pitambar left his ancestral homeland and established the capital of Laskarpur Pargana at Puthia. Thus began the auspicious beginning of the Puthia Dynasty, which continued from the reign of Emperor Akbar (1556-1605) to the abolition of the Zamindari system in the year 1950, about 394 years. In the long run, the administrative building *Kachari Bari* (revenue collectorate office) Court had to be built to manage the Zamindari. In addition, they constructed many temples and a variety of attractive infrastructure for the extraordinary blessings, and dug ponds for the welfare of the people.

The entire estate of the Zamindari was divided among 16 successors. The successors of the Zamindari built a variety of magnificent architectural structures in a particular area. During the long period of governance, the magnificent palaces, highly ornamented temples and other structures can still be observed today. These archaeological monuments remain for the benefit of researchers, tourists and visitors alike, and show the cultural mindset of the Zamindars and their deep affection for contemporary

social order, religious practices and architectural art. As a result, these architectural evidences are considered to bear living witness to the contemporary history of the Puthia Zamindari.

Two extensive Zamindar houses and 14 remarkable temples were constructed within the four square kilometer site at different times. Detailed descriptions of the architectural structures are given below:

**(1) Puthia Rajbari:** From the Puthia Upazilla (Thana administration) headquarters and from the Dhaka-Rajshahi highway a little to the south, some fascinating high-rise buildings can be seen. Puthia *Rajbari* (Palace) and other structures are surrounded by deep moats on all sides. The palace was built based on a rectangular plan over 4.31 acres of land with his glory. The south-western part of the palace comprises a two-storey building, and other parts of this palace are built based on a single floor plan. There are two large carports at the eastern and western ends with a large gateway which is nearly 5.18 m high. The inscription of the lower part of the palace reads: "THE PALACE CONSTRUCTED IN 1895 A.D. BY RANI HEMANTA KUMARI DEVI IN HONOR OF HER ILLUSTRIOUS MOTHER-IN-LAW LATE MAHARANI SHARAT SUNDARI DEVI. S.M. MUKBUL ALI, ARCHITECT, K. SARKAR. OVERSEER, CALCUTTA."

The construction method and architectural styles clearly reflect the Indo-European style. The lofty pillars, floral decorations, and different colored glass attract people very easily.



Puthia Rajbari

(2) **Bara Govinda Temple:** Bara Govinda Temple is situated in the eastern courtyard of Puthia Rajbari (Palace). Except for the Govinda temple in the centre, the surrounding temples have disappeared from this courtyard. The temple has been established on a 1m high stone platform. Each arm of the temple is 12.25 m long. Inside the temple on the first floor, there is a *Mandapa* (main prayer chamber), which is surrounded by a circumambulatory passage. This passage is also covered by the enclosure walls. On the roof of the first floor of the temple there is a small square chamber in each corner with the *Mandapa* in the centre. The roof of the *Mandapa* and the four chambers are covered by tall *cauchala* with *sakbara* (Bangla traditional hut-shaped roof). It is called the *Pancha Ratbna* temple (Five Jewels temple). There is a special stairway to go up to the second floor. The temple is decorated with wonderful terracotta plaques and ornamental bricks. Among the decorations the various myths, such as the stories of Ramayan and Mahavarata, boat luxury, and the love of Radha-Krishna, are noteworthy. In addition, there are numerous flowers, contemporary flora/fauna and geometrical designs.

(3) **Sota Anbik Temple:** The *Sota* (Small) *Anbik* temple is situated on the southern side of *Puthia Rajbari* (Palace). This is a small sized temple built in the *Do-chala* style, like the hut-shaped houses of Bengal. The temple measures 7.40 m x 5 m and 5.23 m high with a rectangular plan. Facing the temple, there are three semi-circular arches on the eastern wall to enter the temple. The front wall of the temple is decorated with various terracotta plaques of various shapes and sizes. The small terracotta plaques are very special and attractive. The

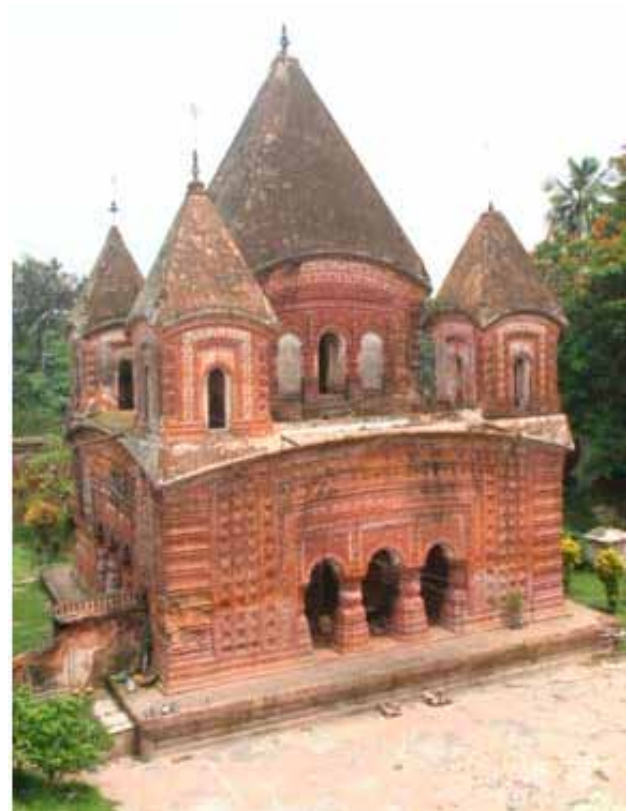


Bara Govinda Mondir 2



Puthia Rajbari 1

terracotta plaques feature various characters depicted from Ramayan and Mahavarata. Among the terracotta plaques, Ram, Lakhman, Devi Durga, Sharasvati, Entellus and Baby Krishna, Radha-Krishna, and the battle of Hanuman forces against the demonic forces of Raban are noteworthy.



Bara Govinda Mondir 1



Bara Govinda Mondir 3



Chhoto Anhik Temple 1

(4) **Sota Shiva Temple:** The *Sota* (Small) *Shiva* temple is located a little south of Puthia Rajbari (Palace) and on the eastern side of Puthia-Arani road. The length of each arm of the square temple is 4.20 m. The temple faces south and it has only one arched doorway. The roof structure of the temple is *Chauchala* with *Sikhara* (Bangla traditional hut-shaped roof). This temple was dedicated to the god Shiva and Shiva was worshipped here.



Sota (Small) Shiva Temple



Bara Anhik Temple 1



Chhoto Anhik Temple 2

(5) **Bara Anhik Temple:** The temple is locally known as the *Bara Anhik Mandir*, meaning large-sized Anhik temple. Evening worship was held in this temple. The temple is located on the western side of the Puthia Rajbari and is built on an 85 cm high brick platform. Built according to a rectangular plan, the length of the temple is 14.60 m x 4.50 m. The temple faces east, and there are two smaller square-sized rooms attached to the main temple. The roof of the rectangular temple in the centre is built like a traditional Bangla (*Do-chala*) hut-shaped house. The roof corners of the temple are folded like a bow. There are three semi-circular arched gateways on the east-facing temple. The roofs of the two square rooms on both sides are built as a Bengal *Chauchala* hut-shaped roof, and these two roofs are connected to the roof of the main temple. The front wall of the temple is highly decorated with numerous terracotta plaques. The terracotta plaques are depicted with many mythological gods and goddesses with flora and fauna. The lower part of the temple is decorated with Mughal soldiers, their weapons, warships, dress up, etc. and the upper part of the temple is full of various legends of Ramayan and Mahavarata, and the enchanting *Brindavan Leela* (love story) of Radha-Krishna.

(6) **Sota (small) Govinda Temple:** *Sota* (small) *Govinda* temple is located very close to the *Bara* (large) *Anhik* temple. It is established on a 1.30 m high square brick platform. The length of each side of this square temple is 7.85 m. The roof of the temple is a tall *chau-chala* with *shikhara*. Every cornice looks somewhat like a bow. The pinnacle of the high roof is connected with a finial and the finial is made of various shapes and sizes of pitchers as decoration. There are three arched doorways in the front wall and another two doorways are connected



Bara Anhik Temple 2



Sota (Small) Govinda Temple

with the *verandah* of the eastern and western walls. This temple is also decorated with numerous terracotta plaques. The terracotta plaques mainly depict different stories from the Ramayan and Mahavarata, about mythological gods and goddesses and the social, religious, economic situation.

**(7) Gopal Temple:** The two-storey temple named *Gopal* temple is located very close to the *Sota Govinda* temple and *Bara Anbik* temple with the same compound. The length of this rectangular temple is 12.80 m and its breadth 7.80 m. On the first floor there are three multiple-cusp arched doorways and a long verandah in front of the temple. There is a staircase on the western side to reach the second floor of the temple. The second floor layout is comparatively smaller. But the construction method is the same as for the first floor.

The construction plan of this temple is different from other temples. Multiple cusp arched doorways and panel decorations can be seen on the front walls of the temple.



Gopal Temple 1

**(8) Dol Mancha:** *Dol Mancha* is situated 500 m South from Dhaka-Rajshahi highway and very close to the Puthia *Rajbari*. *Dol* means swing and *Mancha* means platform or stage. That is, the place of swing. So *Dol Mancha* is mainly dedicated to the love affairs of God Krishna and Radha. It is also known as *Dol Mandir* (temple). *Dol Mancha* is a beautiful large four-storey building. The length of each arm of square shaped temple is 21.54 m and the upper three storeys are progressively smaller. There are porches surrounding the temple on each floor. The temple has two centered multiple-cusp arched doorways with porches, with 78 doors on the first floor, 37 doors on the second floor, 12 doors on the third floor and 4 doors on the fourth floor. There is a staircase to go up to the fourth floor from the first floor on the southern side. It is known from the literature that Raja (Zamindar) Bhuvanendra Narayan Roy built this temple in the early 19th century.



Dol Mancha

**(9) Bara (Large) Shiva Temple:** Among the archaeological sites of Puthia, the *Bara (Large) Shiva* temple is the most outstanding. Maharani Bhubanmayee Devi (whose surname was given by the British government) built this temple at a cost of three lakhs (300,000) in today's



Bara (Large) Shiva Temple

currency. The temple was built on the southern edge of a large pond named *Shib Sagar*. Built according to a square plan, the temple is established on a 4 m high platform, the length of each side being 14.31 m. This south-facing temple has a wide and long staircase rising above the platform. On the northern side of the temple, two sets of stairs go down to a brick ghat. It is thought that both sets of stairs were built for worship by worshippers and devotees. There are four *Rathnas* (jewels) on the four corners of the temple and the central *Rathna* is established in the centre of the temple. For this reason, the temple is known as *Pancha Rathna* Shive temple. The door posts are built of sandstone and feature different types of floral ornamentations. A very large *Shiva Lingam* has been established in the middle of the *Garva Griha* or main prayer chamber of the temple.

**(10) Jagannath Temple or Rath Temple:** The octagonal-shaped *Jagannath* temple is established to the east and is extremely close to *Bara Shiva* temple. *Maha Rani* Bhubanmayee Devi built this temple in 1830. This temple is constructed of very thin brick with lime mortar and there are porches around the temple. Each side of the temple has a semi-circular multiple-cusp arched doorway and the exterior walls have panel decorations. The main prayer chamber is established in the middle. The northern and western sides have two arched doorways. Sandstone door jambs are used in these doorways, which feature flower and leaf ornamentation. The second floor is built with the same design and shape. Each side has a multiple-cusp arched doorway. The pinnacle of the temple is covered by a dome-shaped roof with a finial on the pinnacle.



Jagannath Temple or Rath Temple

**(11) Keshto Khapar Math:** This temple is located 0.5 km east from the Puthia Rajbari in Ram Zibanpur village. This temple is established on a 60 cm high square platform and the length of each side of this platform is 5.35 m. Again, the temple is square and each side of the temple

is 3.60 m in length. On the southern wall of the temple there is an arch-shaped entrance. The central

*Shikhara Rathna Jewel* is established in the centre of the temple and this is somewhat larger than the others. Again, the central *Rathna* (Jewel) is surrounded by the 24 *Rathnas* (Jewels). This construction method has turned the temple into a unique beauty. The temple is rich in panel decorations and there are several beautiful designs and ornamentations on the cornices.



Keshto Khapar Math

**(12) Rath Bagicha/Hawa Khana:** This archaeological site is known as *Hawa Khana* (Resting Place) to the local people. This charming site is located in the middle of a large pond in the village called Tarapur, about 3 km west of Puthia Rajbari. The construction method of the temple is very much consistent with the Gopal Temple. The temple is constructed on an almost square brick platform measuring 17.20 m × 14.75 m. The first floor of the temple has one multiple-cusp arched doorway on the western side and the same type doorways on the other three sides. The measurement of the central *Garva Griha* (main prayer chamber) is 13.72 m × 13.72 m and again, there are three arched doorways in the eastern, northern and southern walls and a staircase going to the second floor from the southern wall. The arrangement of the second floor (4 m × 4 m) is smaller than the first floor. It has a total of five arched doorways with animal decorations.





Rath Bagicha or Hawa Khana 1



Rath Bagicha or Hawa Khana 2

**(13) Krishnapur Govinda Mandir:** Krishnapur *Govinda Mandir* (temple) is located 1.5 km east of *Tarapur Rath Bagicha (Hawa Khana)* in the village of Krishnapur. Built on a square platform, the length of each side is 4.28 m with the width of every wall being about 0.7 m. The temple has a multiple-cusp arched doorway on the eastern side and one on the southern side. The eastern wall is the front wall and it has an attractive and decorative doorway. The front wall is decorated with panel designs, terracotta plaques and ornamental bricks.

**(14) Krishnapur Shiva Temple:** Krishnapur Shiva temple is located 300 m south from Krishnapur Govinda temple. The front wall of this temple is highly decorated with terracotta plaques, panel decorations, and ornamental bricks of different shapes and sizes. The main gateway is a multiple-cusp arched gateway. Krishnapur Govinda temple and Krishnapur Shiva temple are very similar in terms of architectural features, construction method, shape and size, roof design, ornamentation and so on.



Krishnapur Govinda Mandir



Krishnapur Shiva Temple

**(15) Residence of Maha Rani Hemanta Kumari:** The residence of *Maha Rani Hemanta Kumari* is situated very close to and behind Puthia Rajbari. She (the Queen) constructed this beautiful building as a residence. The east-facing building is constructed on 0.25 acres of land. There is a long porch on the front and back sides. The building has nine rooms both small and large in size. The central hall is encircled by the other rooms. The front portion of this building is shaped somewhat like the letter 'E' and runs north-south.



Residence of Maha Rani Hemanta Kumari

**(16) Ghat of Rani (Queen):** In front of the residence of *Maha Rani Hemanta Kumari* there is a large-sized brick Ghat, which is located on the western side of the Gopal Shagor Dighi (large pond). This Ghat was surrounded by a high boundary wall and only the women of the *Rani Mahal* used it. From the entry point, there is a staircase that descends into the water. From the first step of the staircase, 30 steps have been constructed up to the bottom of the pond. It is known that the upper portion of the boundary wall of the Ghat was covered with iron netting.



Ghat of Rani (Queen)

**Conclusion:** During the 394-year rule of Lashkarpur Zamindari, various Zamindars performed leadership and other duties at different times. Both men and women looked after the zamindari with the utmost ability, and women received the title of *Maba Rani* after being praised by the British government. The Zamindars of Lashkarpur Pargana built several magnificent palaces and temples at different times. The richly ornamented buildings and temples can be traced back to the economic situation and interest of the Zamindars. Now these artistic buildings are the glory of Bangladesh. The architectural monuments are now preserved as part of the archaeological heritage of Bangladesh, and the Department of Archaeology of Bangladesh has been preserving these valuable archaeological sites.

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### Acknowledgements

1. Md. Abusaid Inam Tanvirul, Custodian, Department of Archaeology, Paharpur Archaeological Museum, Badalgachhi, Naogaon.
2. Md. Abul Kalam Azad, Photographer, Rajshahi Regional Office, Department of Archaeology, Bogra.
3. Md. Abdus Salam, Office Assistant cum Computer Operator, Rajshahi Regional Office, Department of Archaeology, Bogra.



## Ruins of Tsirangtoed Dzongs

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### Introduction

The Tsirangtoed dzong ruins in the Tsirang district are situated on top of a hill overlooking Tsirangtoe Central School, about 30 km away from Dambhu town (see fig.1). It is believed that the fortress belonged to a powerful local king (Raja) by the name *Sa-Sung Gyalpo* or *Sa Sungpa*. The ruins remain partially covered in overgrowth.

The ruins area is now fenced and about 45 acres of the surrounding area is considered a heritage forest, named *Pemacholing* Heritage Forest. This heritage forest has a footpath and a walking trail from the ruins to a *Goemba(nye)* located about 30 minutes' walk uphill. The trail enables visitors to eco-tour the woods.



Fig.1 Aerial view of the site. Source: Google Earth

### Historical Background

Fortresses in Bhutan are locally known as *dzongs*. According to the history and the era of the construction, fortresses in Bhutan can be categorized into three phases 1. Pre-Zhabdrung dzongs 2. Zhabdrung era dzongs 3. Post-Zhabdrung dzongs. Most of the principal surviving dzongs that are in use to date are attributed to the great historical and religious ruler Zhabdrung Ngawang Namgyel (1594-1651) and his successors. Zhabdrung Ngawang Namgyel is regarded as the unifier of the country as a nation state.

The ruins of Tsirangtoed dzong is the story of the pre-Zhabdrung era, when all regions and valleys were ruled by local Chieftains. The *Sa-Sungpa* (land protector) seemingly enjoyed the ascendancy with many courtiers, servants and slaves such as *Dzongpons*. *Sa-Sungpa* and his troops were some of the most acclaimed warriors of those days. It is believed that he owned a living divine-bull that became a protective deity of the *dzong* and *Sa-Sungpa*, and it is said that the duty of hundred guards was sufficed by his single bull. Thus, for enemies, he appeared to be powerful

nemesis.

Despite his unequaled power, *Tsirang* functioned as a county under *Wangduephodrang Dzongpon*. The taxes from the region were first said to have been collected at *Tsirangtoed Dzong*, and then forwarded further to the higher power of *Wangduephodrang*.

Some of the locals say that *Sa-Sungpa* was once a powerful army chieftain of *Wangduephodrang Dzongpon*, who was appointed as the *Dzongpon*'s representative to govern the *Tsirang* region. But, during a later period, *Sa-Sungpa* became so powerful that the people of *Tsirang* considered him as their Raja. The *Dzongpon* of *Wangduephodrang* feared the rising power of *Sa-Sungpa* and dispatched troops, probably from *Dagana*, to assassinate him. *Sa-Sungpa* or the then *Dzongpon* of *Tsirang Dzong* depended on his extraordinary bull as a potent protector to face the force from outside including *Dagana* and *Wangduephodrang*. Lore has it that he enjoyed political clout over *Tsirang* for only a very brief period of time. While he was engrossed in a victory celebration inside the



Fig.2 Present situation of the Tsirangtoe Dzong ruins



Fig.3 Mani Dangrim

*dzong*, the outside force ensnared the bull in a deep pit and destroyed him completely. The *Dzongpon* was feeble without his bull. The story of the *Dzong* and *Sa-Sungpa* ended after his enemies burned him alive with the *dzong*. The *chorten* (Mani Dangrim, Fig.3) in the picture is said to be the exact location where the bull was ensnared and destroyed. But some locals are of the opinion that the *Sa-Sungpa* was burned at this site and the *Choeten Dangrim* was constructed to mark the site.

The name '*Tsirang*' is allied with this mythical lore. The *Sa-Sungpa* and his courtiers were considered excellent in keeping records of the taxes collected from the people under his jurisdiction. None of the leaders of other country/districts were able to face up to *Tsirang Dzongpon* at least in terms of calculation. Thus, they gained a reputation of excellence in arithmetic (*tsi-rub*). *Tsi-rang* is a distortion of *tsi-rub*.

The water source for the *dzong* is located some 50 meters below the *dzong*, which the community calls 'Raja Pani' (Fig. 4). The source of the water cannot be determined as it is covered with thicket and fenced using barbed wire. In the olden days, villages from the vicinity collected water from this water source for their daily usage. A small forgotten footpath connects the *dzong* to the water source with a collapsed part of the *choeten* is visible just below the ruin.



Fig.4 Raja Pani source

The Lhakhang (Fig. 5) is said to have been built to store the relics of *Sa-Sung Gyalpo* or *Tsirang Dzongpon* after their miserable defeat in the civil war.

**General Description**

The main complex of the *Tsirangtoe dzong* ruins is rectangular, measuring 20.35 meters at the rear façade and 44.5 meters at the front with a wall thickness of 1.4 meters. The layout (Fig. 6) of the complex is similar to the layout of some of the old traditional farmhouses, with a courtyard in front of the main building flanked by small rooms on either side of the main residence building. However, deducing from the size and scale of the ruins (comparatively bigger and larger than traditional farm houses), and its location (on top of a hill) shows the amount of wealth, power and authority *Sa Sungpa* had over the *Tsirang* region. On the southern side of the main fortress complex,



Fig.5 Tsirangtoe Lhakhang (Dechen Lhendrup Lhakhang)

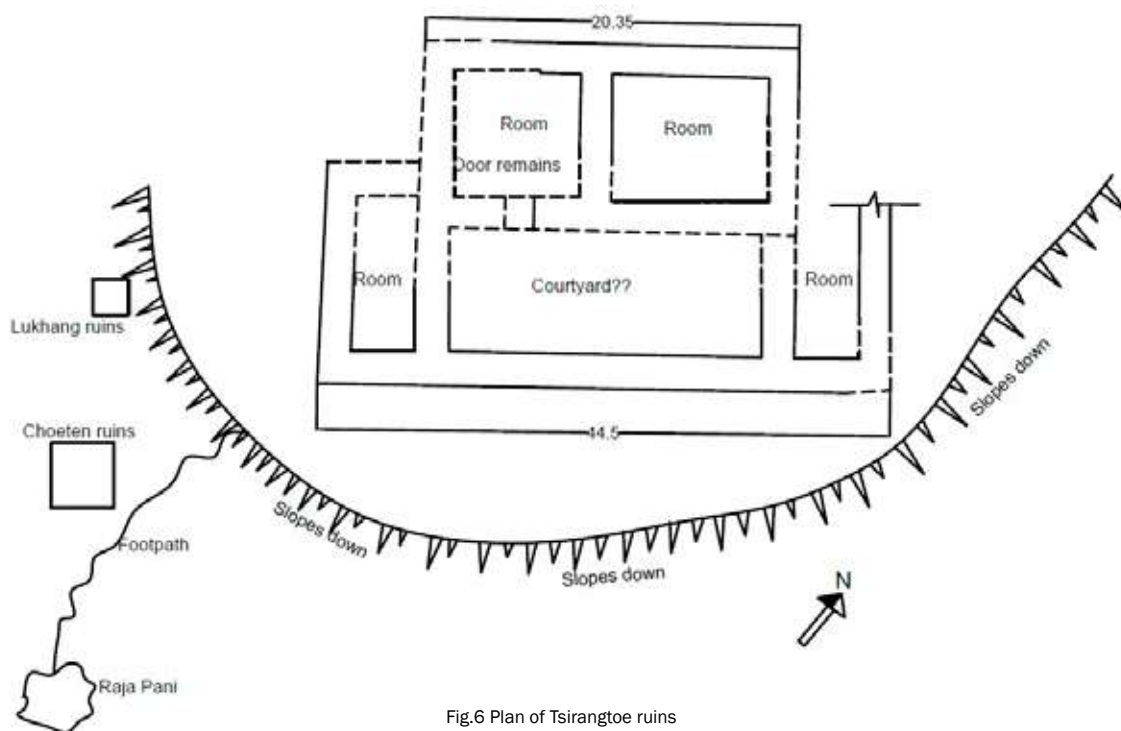


Fig.6 Plan of Tsirangtoe ruins

there are the ruins of *Lukhang* and *Choeten*, and further downhill there is a water source called *Raja Pani* covered inside a blanket of vegetation.

At present, it is very difficult to determine the exact interior layout of the rooms and height of the structure due to debris from the collapsed walls and vegetation overgrowth. However it's very obvious from the remnants of the structure that the ground floor was constructed using stone masonry and the other floors comprised rammed earth. The presence of arrow slits (Fig. 7) in the ground floor stone masonry wall indicate the structure was also built for defense.

Nevertheless, in order to understand the age, detailed layout of rooms and the functions of the building, scientific excavation and analysis is deemed necessary.

By Karma Tenzin, Sr. Architect, Archaeology Section, Division for Conservation of Heritage Sites, Department of Culture, Ministry of Home and Cultural Affairs.

#### Glossary

*Tsirangtoed*= Name of site

*Tsirang*= Name of a district in Bhutan

*Dampbu*= Name of a town in the Tsirang district

*Sa-Sung Gyalpo* or *Sa-Sungpa*= Land Protector



Fig.7 Arrow slits

*Goemba(nye)*= Sacred site

*Dzongpons*= Head who ruled from the dzong

*Wangduephodrang*= Name of a district in Bhutan

*Chorten*= Stupa

*Lukhang*= Stupa for serpent spirits

*Dagana*= Name of a district in Bhutan

*Pemacholing*= Name of a protected heritage forest in Bhutan



## Heritage Conservation of Sanjeevaraya Temple at Ayyangarkulam, Tamilnadu, India

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### Abstract

A village retaining its original character is a notable factor, which is rich in heritage, cultural and also social value. Ayyangarkulam, a small village in Tamilnadu state, India is considered as the land of temples, housing various temples and deities. The existence of these temples brings historical importance to this place. Ayyangarkulam village developed around a temple, which was constructed during the 16th century during the colonization of India. This temple was built during the rule of king Venkat Raya-I, the successor and grandson of the famous king Sri Krishna Deva Raya. Ayyangarkulam was ruled by various kings and marked their presence through architecture. Architecture of a place describes its identity, the ruling king, time period and also reflects their knowledge of the styles and techniques of construction. This article tries to assess the architectural style of the famous 'Sanjeevaraya Temple' located in this village to understand the influences of Vijayanagar Architecture. The research tries to analyse the temple complex in terms of its functional, cultural and architectural characters to assess the influence of Vijayanagar Architecture on this temple. The objective of this article is to understand the architectural character of Sanjeevaraya Temple and see whether it has got the influence of Dravidian Architectural style or the Vijayanagar style of Architecture prevailing in that period.

Key words: Sanjeevaraya Temple, Influence, Vijayanagara Architecture

### 1. Introduction

Location plays a vital role in constructing a massive iconic structure involving wealth, resources of the region based on the geographical pattern, climate, etc. Ayyangarkulam is located at 12°46'59"N and 79°39'28"E in Kanchipuram Taluk, Kanchipuram District of Tamil Nadu State, India. The village is known for its weaving skills which is

known to be started in the 16th century with a settlement of weavers, around the Hanuman temple which was built by Thathachariyar, the royal priest of king Krishna devaraya. Farmers and fishermen are also part of the settlement as the village is adjacent to the Palar river. The evolution of the settlement is based on the temple mostly.

Village deities and temples constructed in the village have gained importance thanks to the prosperity that has come back to those places all across Ayyangarkulam. The Sanjeevarayar temple is one of such temples constructed within the outer a part of Ayyangarkulam. Besides, being jam packed with surprises in terms of fine-skill, distinctive and standard art, swish fusion of Vijayanagara vogue of design, it boasts of continuous veneration. The Ayyangarkulam village displays an astonishing accomplished level of expertise in the brick, stone, clay tile and wood buildings within ancient homes and temples as samples of native design. An enormous temple with only one sanctum enriching the image of hanuman may be a distinctive beaux arts feature of the temple.

### 2. Historical background of the Temple

This temple has been constructed by Sri Koti Kannikadhanam Lakshmi Kumara Thathachariar during the sixteenth century. The history behind this temple is extraordinarily attention-grabbing. Lakshmi Kumara Thathachariar was the raja guru of Venkata Raya I, a Vijayanagara King and also the Chief Minister of the Vijayanagara empire throughout his life. He hailed from the Acharya lineage of Vaishnavite philosophers and had hereditary relations with Nathamunigal, Sri Alavandhar, Sri Ramanuja etc. He was philanthropic in nature and got the title 'Karya Durandharar' by Vijayanagar kings. One night, Sri Thathachariar was traveling to Kanchipuram with the royal gifts sent by the king to lord Varadaraja Perumal. As it became dark, he stopped at a place under a tree where the temple currently stands. when Thathachariar and

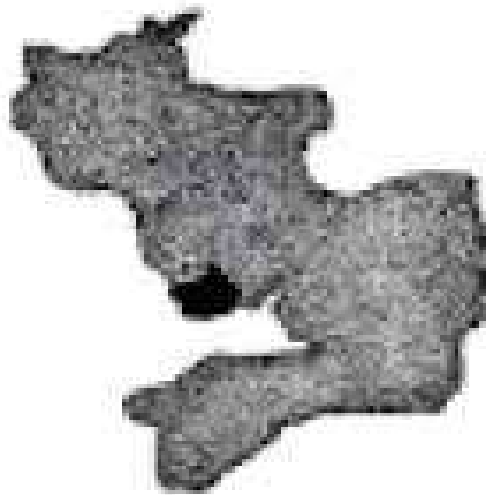


Fig.1a: A map of the Kanchipuram Mandal

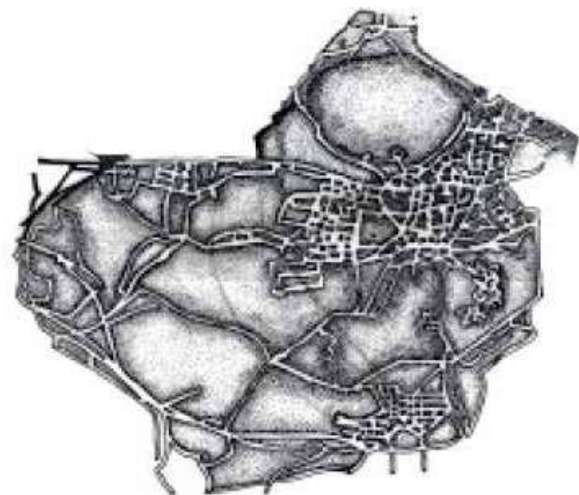


Fig. 1b: A map of the Ayyangarkulam village

his men settled down for an asleep, a group of robbers had come there to rob the wealth. Suddenly, a gaggle of monkeys appeared out of obscurity, and commenced offensive on the robbers. The robbers couldn't bear the attack and ran from the place, some of them fell down unconscious. Thathachariar had seen all the happenings as if he was in a dream. He felt that the lord Hanuman himself was spearheaded the attack. He pledged to construct a temple for the lord Hanuman in that location and built the Sanjeeva Raya Hanuman Temple. Sri Thathachariar additionally designed a colossal pool of virtually one hundred fifty acres that was later referred as "Thatha Samudram". The place has got its name of Ayyangarkulam in a later time from this pool constructed by Thathachariar.

In this paper, a study of two temples which were built on the same time period under the same dynasty with the predecessor and successor rulers.

Case 1: Ayyangarkulam – Sanjeevarayar temple

Case 2: Bala Krishna temple

### 3. Description of the Temple

The main entrance to the temple is opened solely on festival days. Entry is from the pool side, and there's a twenty-four columned *mandapam* on the banks of the pool that result in the temple. This *mandapam* has about eighty-five different kinds of hanumans of assorted forms on the pillars.

#### 3.1 Architectural Character

Vijayanagar temples are enclosed by sturdy enclosures

and characterized by ornate columned *kalyanamandapa* (marriage halls); tall *rayagopurams* (carved monumental towers at the doorway of the temple) engineered of wood, brick, and stucco in the Cholas style; and adorned with large figures of gods and goddesses. This Dravidian vogue became in style throughout the reign of Krishna deva Raya and is seen in South Indian temples made over subsequent two centuries. Vijayanagar temples are far-famed for his or her sliced pillars, that depict charging horses, figures from Hindu mythology, and *yali* (hippogriffs). A number of the larger temples are dedicated to a male immortal, with a separate shrine meant for the worship of his feminine counterpart. Some celebrated temples illustrative the Vijayanagar vogue embrace the Virupaksha Temple at Hampi and therefore the Hazara avatar temple of Deva Raya I

#### 3.2 Plan

The temple consists of *garbhagriha* at the centre, an anti-chamber or Sukhanasi next to them surrounded by *pradakshina pat*, *antarala* or *ardbamantapa* an intermediate place, a *mandapam*, *Mukbamantapa* or *Rangamantapa* gathering hall and also a pillared hall and they all enclosed by high prakara wall with entrance porch.

The temple also houses the priest head and a kitchen also called as *madapalli*. The temple is orientated toward the north east and south west direction such that the central axis corresponds to the pond.

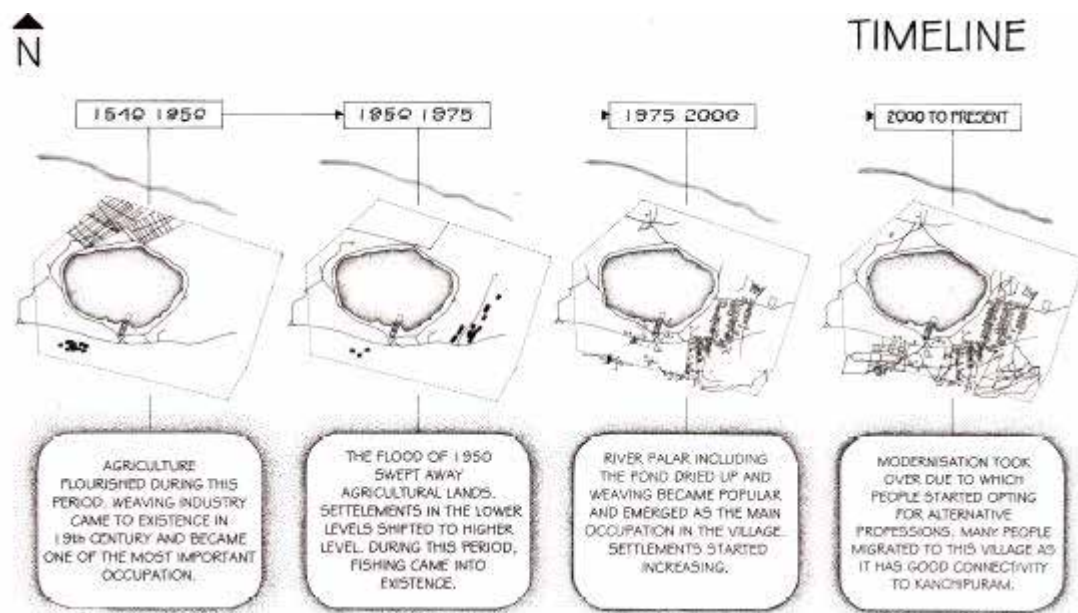


Fig. 2: Timeline of the temple development

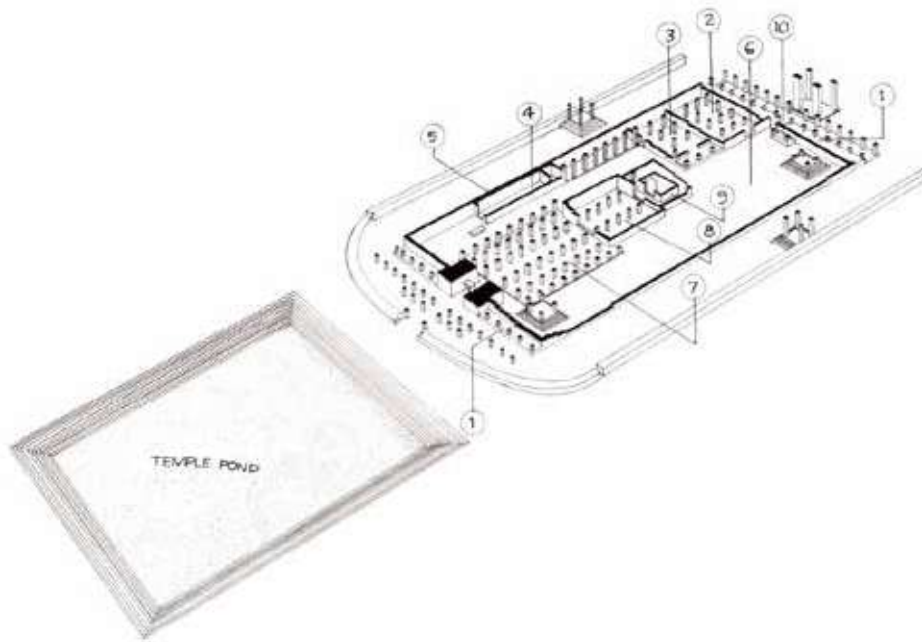
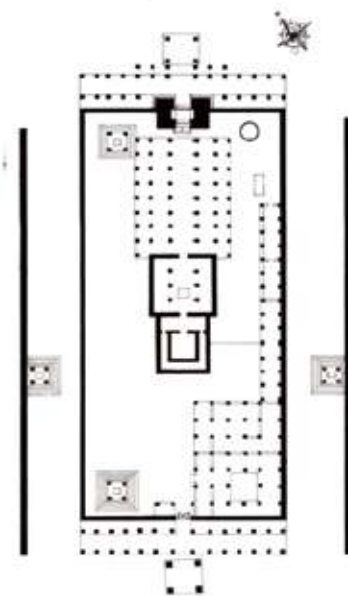


Fig. 3a: An aerial view of the temple



LEGEND

- 1. Garbhagriha
- 2. Sukhanasi
- 3. Antarala
- 4. Pradikshana pat
- 5. Mandapa
- 6. Mukha mantapa
- 7. Parkara
- 8. Madapalli
- 9. Tank

Fig. 3b: Plan of the temple

**3.3 Garbhagriha**

It is located at the centre of the temple and it is dedicated to only one god which resembles the character of the Vijayanagara temple style.

**3.4 Mandapa**

Mandapa near the entrance is used for public gatherings. All the columns in Mandapa are ornated and this place is also called as Kalyana *mandapa* meaning 'marriage hall'. These columns are adorned with motifs of the Gods and Goddess motifs also filled with stucco work.

**3.5 Mukha Mandapa**

In this *mandapa* there are about *twenty-four* columned *mandapam* on the banks of the pool that result in the temple. This *mandapam* has about *eighty-five* different kinds of hanumans of assorted forms on pillars.

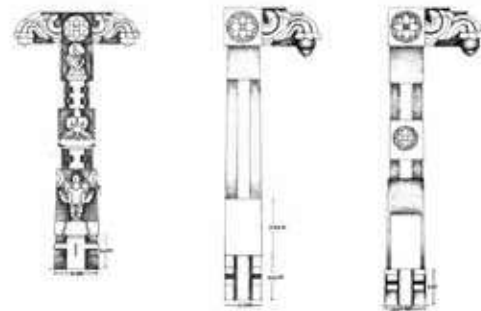


Fig. 4: Details of the pillars

**3.6 Pillars**

Pillars has varied motifs that are highly ornated which carries sculptures of hanuman, *yali* predominately. Columns are detailed with a *yali* pattern and also various human figures which depict the story of the rulers and mythological stories.



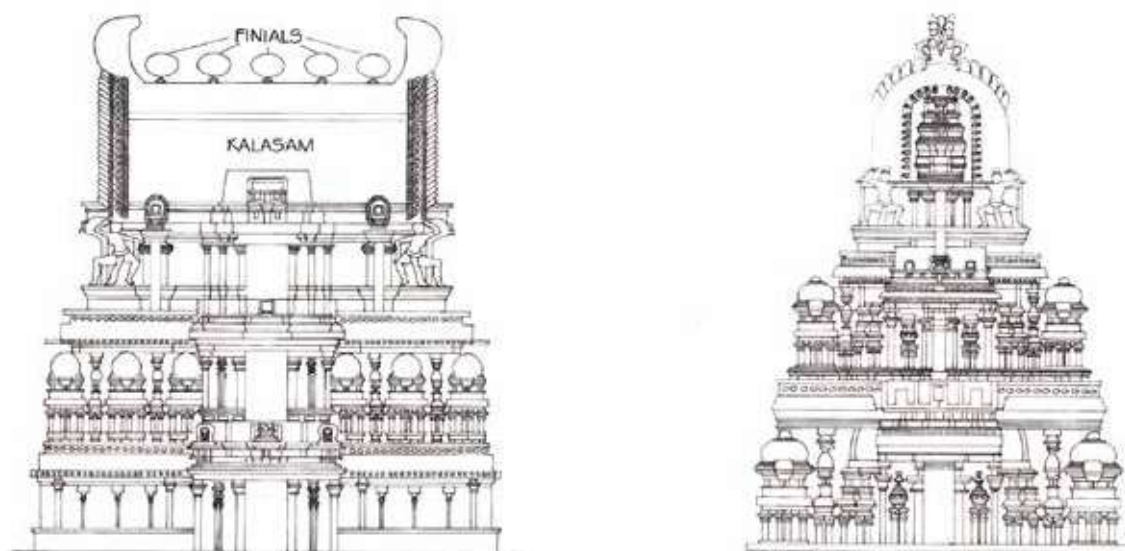


Fig. 5: Details of the Vimana

### 3.7 Vimana

The height of the *vimana* doesn't reflect the Dravidian character which used to be around 100 feet tall, instead resembles Hampi Vijayanagar character. Where they are covered with either vaulted or domical structure.

### 3.8 Stepwell (Natabavi)

Before 600 years ago this step well (*natabavi*) with an arch, which actually resembles as Thulabaram in the Vijayanagar dynasty has been constructed by the Vijayanagara Kingdom. They have an underground well

beneath this arch. This well is surrounded by a big hall in the underground. An arch to the water element is not a Dravidian style which highly resembles Vijayanagara style. It has 16 pillared underground halls, with cloistered verandas. This structure is usually full of water. There is a mechanism (*yentram*) to take out the water when required. Yearly once during Chitra Pournami, Lord Varadaraja Perumal comes from Kanchipuram and enter into this well. It is a famous festival in this village. During that time the villagers drain the water in that well.

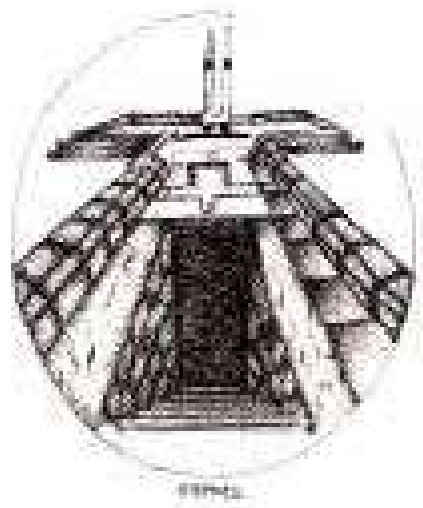


Fig. 6: Step well and Arch Entrance

### 3.9 Kalasha

Kalasha reflects the South Indian architecture where it is placed at the top of the gopuram, which is copper plated. And that also accounts the odd numbers in count.

### 4. Comparing with Bala Krishna temple, Hampi

The Architectural characteristics of Sanjeevaraya Temple have been compared with Balakrishna temple, a prominent temple built by the king Srikrishna Devaraya during 1513 A.D. This temple is situated on the way to Virupaksha temple in Humpi, facing east and is

dedicated to the lord Vishnu in the form of Bala Krishna. The temple consists of *garbhagriha*, an anti-chamber or Sukhanasi, *antarala* or *ardhamantapa*, surrounded by *pradakshina pat*, a *sabha mantapa* or *navaranga*, Mukhamantapa or Rangamantapa, Amman shrine and they all enclosed by high *prakara* wall with entrance. The temple is analysed on various aspects in terms of planning, orientation, architectural detail, spaces and their purpose.

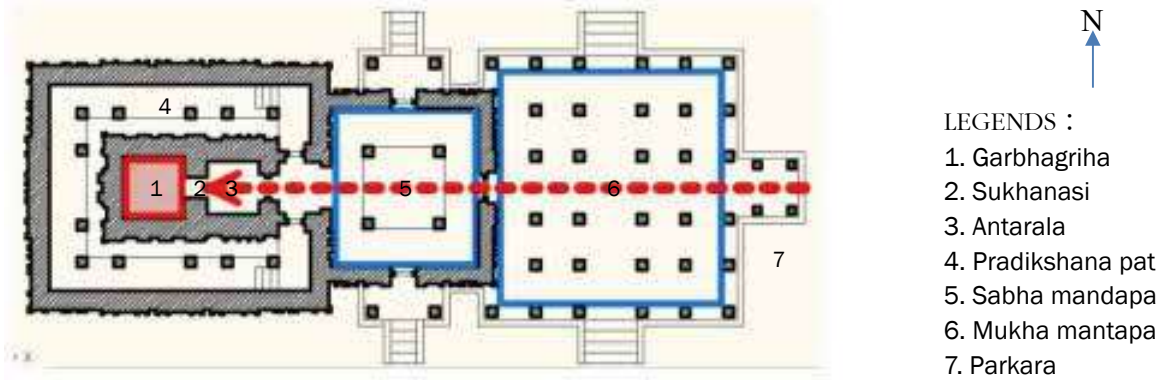


Fig.7: Plan of the Temple complex

#### 4.1 Plan

The temple consists of *garbhagriha* at the centre, an anti-chamber or *Sukhanasi* next to them, *antarala* or *ardhamantapa* an intermediate place, surrounded by *pradaksbina pat*, a *sabha mandapam* or *navaranga*, a square and stands on four centre pillars set on the elevated floor in the centre and six pilasters set against the wall. *Mukhamantapa* or *Rangamantapa*, Amman shrine and they are all enclosed by a high *prakbara* wall with an entrance.

#### 4.2 Garbhagriha

It is located at the centre of the temple and it is dedicated to only one God which is a character of the Vijayanagara temple style.

#### 4.3 Sabha Mandapa

A Sabha *mandapam* or *navaranga*, a square and

stands on four centre pillars set on the elevated floor in the centre and six pilasters set against the wall. These pillars carry the sculptures of Hanuman, *garuda*, *kaligamardhana*, Dasavarathas of Vishnu, Musician, dancers, *yali*, etc., on the lower and upper square blocks. The entrance to this *mandapa* is along the three sides East, North and South. The central ceiling is decorated with motifs such as lion masks, lotus and stick players on the top layer since the ceiling has two rotated squares.

#### 4.4 Mukha Mandapa

The Mukha Mandapa on the north and south stands on two pillars at the entrance at the front with a flight of steps flanked by *Suruli – yali* which are of typical Vijayanagara motifs. The mandapa has 32 pillars which are tall, slender and graceful which also carries motifs of deities.



Fig.8a: Sabha Mandapa



Fig.8b: Mukha Mandapa



Fig. 9a: Sculptor of a deity



Fig. 9b: Yali with motifs



Fig. 9c: View of the Mandaps from exterior



Fig. 10: View of Shikara above the Mandapa entrance

#### 4.5 Pillars

Pillars have varied motifs that are highly ornated carrying sculptures of Hanuman, *yali* predominately.

#### 4.6 Shikara

These styles have short *shikaras* unlike the Dravidian style which is of 30 ft. They have ornamentation of motifs, deities and *yali* and are built by using mud bricks and stones.

### 5. Comparative Analysis & Inference

Based on the comparative analysis, the architectural

characteristics of Sanjeevarayar temple are similar to that of the lord Balakrishna temple in Hampi than the Dravidian style of Architecture.

### 6. Conclusions

The study conducted about various factors of architecture with respect to scale, their ideas, motifs and beliefs which are notable characters. The heritage describes the cultural identity of a place. Conserving a temple of this historical data is important to know the history for the upcoming generations and it also stands as an iconic element of the place. And also preserving such spaces is mandatory which have maximum details and data about our ancestor life style.

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- <https://gotirupati.com/balakrishna-temple-hampi/>
- <http://www.iosrjournals.org/iosrjhss/papers/vol.%2022%20Issue7/Version-1/H2207014453.pdf>

Balakrishna Temple	Sanjeevarayar Temple	Inference
<b>I. Planning</b>		
Consist of Garbhagriha, Sukhanasi, Antarala, Pradikshana pat, Sabha <i>mandapa</i> , Mukha <i>mantapa</i> , Parkara	Consist of Garbhagriha, Sukhanasi, Antarala, Pradikshana pat, Sabha <i>mandapa</i> , Mukha <i>mantapa</i> , Parkara, <i>Madapalli and tank</i>	Planning of both temples resembles same spatial character but varies in scale, size and form. The dravidian style has the unique allocation of <i>madapalli</i> and tank in the temple premises.
<b>II. Mandapa</b>		
Pillared halls with motifs of <i>yali</i> , hanuman and deities.	Pillared halls with motifs of <i>yali</i> , hanuman and deities.	Similarity to maximum extent in terms of ornamentation.
<b>III. Pillars</b>		
Ornated sculptured pillars	Ornated sculptured pillars	Similar in outcome.
<b>IV. Shikara / Vimana</b>		
Shorter in height and are built of mud bricks	Dravidian architecture style used to have stone <i>shikaras</i> and they are tall in structure which has been entirely controversy and resembled Vijayanagara style.	Similar in form and shape and construction techniques.

Table. 1: Comparative Analysis



## Elite Mounds of Kazakhstan of the First Millennium BC

**Gulnaz Kulmaganbetova**, *Research Assistant*  
Kazarchaeology LLP

Archaeological research on the territory of Kazakhstan has proved that by the end of the second millennium BC, elite burials of an aristocracy appeared on the steppe. This was due to two main factors. The first is the acquisition of metallurgy by the population and the development of Bronze Age culture. The ancient metallurgists of the Kazakh steppes mastered mining at a high level. Almost all currently known copper ore deposits were developed in the Bronze Age.

The second factor is the transition of the population to a productive economy: nomadic cattle breeding. Nomadic cattle breeding allowed the population to master the steppe spaces and maintain sufficient numbers of livestock.

Each of these factors would require a separate study to discuss in detail. As a result of these effective modes of economy, the ancient population by the beginning of the first millennium BC created the proto-state organizations of the Saks and Savromats. The high level of development during this millennium is primarily reflected in the large number of burial mounds. The landscape of the Kazakh steppe became decorated with majestic mounds of this era. In their quantity and monumentality, they have no equal in all previous or subsequent eras.

The elite mounds of this era reflect the process of state formation among nomads, and the addition of beliefs based on a cult of the ancestors. It should be noted that in ancient nomadic society there were no longer any random nomadic movements. The nomadic paths that existed until the twentieth century were established at that time. No matter what the upheavals, invasions, or arrivals of new tribes, the nomadic routes were stable, as the only possible paths dictated by the natural and climatic conditions of the steppes and mountains. But while dominated by the nomadic lifestyle as an ideal, society in ancient and medieval times was not completely nomadic. The structure of nomadic society in the territory of Kazakhstan had its settlements of miners and metallurgists. Settlements also arose at places where nomads passed the winter, and grew into fortresses and fortified cities.

Trade roads developed along meridional paths of the nomadic lifeway. The movements of nomadic peoples of the first millennium BC also defined the territory of modern Kazakhstan. Boundaries were marked by necropolises located at the edges of these nomadic paths. In this regard, the burial mounds of Western Kazakhstan serve to illustrate: Elite mounds were located on the northern edges of the nomadic paths, while the bulk of ordinary burial grounds were located in the southern parts of those paths.

Over the past decades, we have studied hundreds of elite and ordinary burials of this era. The places where settled areas, metallurgy and crafts developed have been identified, and studies made of the mining of copper and gold. These studies covered two of the regions with the highest concentrations of elite mounds: Almaty and West Kazakhstan. These materials have allowed us to make assumptions and draw a number of conclusions about the formation of a nomadic economy in the steppe population, the degree of settlement, and the development of crafts. Based on these studies, inferences are made about the level of social organization, the formation of state entities and the genesis of religious beliefs.

Archaeological excavations to date have been based on complete excavations of the mounds. This leads to the total disappearance of each monument. In this regard, we began to develop new approaches to preserve the monuments. The burial mounds make up a valuable element of the landscape of our country and it is necessary to preserve authentic elements of these monuments to recreate and utilize them educationally as heritage of the historical past.

In this report, I introduce materials from the excavation of a mound in the elite necropolis of Kyryk-Oba II. In 2018, an expedition from KazArcheology LLP carried out an archaeological excavation of barrow No. 6 of the Kyryk-Oba II necropolis, located in the West Kazakhstan region of the Republic of Kazakhstan, as part of the targeted funding program from the Ministry of Culture and Sports of the Republic of Kazakhstan under the project "Monuments of the Great Steppe: Necropolis of Sarmatian Leaders Kyryk-Oba."

The necropolis, judging from the toponymy, formerly consisted of 40 mounds of which no more than 10 have survived to this day. Some of the mounds were destroyed in Soviet times by the construction of a road, and others were excavated at different points in time. It is significant that the largest barrow of this monument group, surviving at a height of 8 m and a diameter of 70 m, has been preserved.

Barrow No. 6 had a round shape in plan. This mound of considerable size had been mostly leveled during the long-term plowing of the location for crops. In its original form, the mound was apparently much higher and larger in diameter. The surviving portion of the earthen mound was measured at 15 m in diameter and with a height of only 0.7 m. Due to destructive plowing, the upper layer of the mound has been shifted to the southeastern side.

In the process of excavating barrow No. 6, we laid out an excavation grid completely covering the surviving

earthen mound, with an area of 1,023 square meters. We then made a cut 40 cm deep through the center of the mound, oriented along the north-south axis, to assess the stratigraphy in profile. The following strata were revealed on the western wall of the cut: (1) the turf layer at the upper edge of the profile with a thickness of 0.2 m, and (2) the surviving portion of the mound, made of dense clay of light brown color, which extended downward for a thickness of up to 0.8 m. Though largely ruined, the mound was seen to have been entirely made as an earthen mound.

The turf layer of about 20 cm was then stripped off, and cleaning at this level enabled better fixing of the boundaries of the mound. The parameters of the mound increased, with the diameter extending to 33 m, while the surviving height remained the same at 0.7 m.

In the second stage of stripping, it was decided to excavate another 80 cm down to the subsoil, leveling the entire area of the mound to detect the location of the sepulchral facility. At this level a central sepulchral facility was found, rectangular in shape and measuring 2.3 by 3.1 m. The boundary was accurately fixed based on the difference in color between the darker natural soil and the fill of the sepulchral facility, which was the same as the light brown, dense clay of the mound. In the process of cleaning at this level, a square feature of 40 by 40 cm was discerned in the southeast corner of the sepulchral facility. Upon examination this was found to be the top of a stepped entrance into the sepulchral pit, consisting of two steps that measured 40 × 40 × 30 cm, and 40 × 20 × 30 cm. The sepulchral pit was oriented with its long axis running north-south. This was for an underground burial made in the central part of the mound.

The next stage of the work was to excavate the sepulchral pit. This was done by digging out the darker contents of the burial pit, and as we dug deeper, we clearly traced the walls of the sepulchral pit. Within the sepulchral pit we found the remains of ash and fragments of wood flooring. Fragments of human bones were found from a depth of 0.5 m in the southeastern part of the pit. The bone fragments at this depth were most likely raised up to this level by rodents that dug holes to the depth of the skeletons below.

As we excavated the entire area of the sepulchral feature, we discovered a paired burial of a man and a woman. The remains of the man were labeled individual No. 1, and those of the woman, as indicated by the presence of a large number of adornments characteristic of women, were labeled individual No. 2. Both individuals were interred lying on their backs, the bones resting in anatomical order with the head to the south, and their heights were estimated at 1.75 and 1.35 m.

From the southwestern part of the burial, near the woman's skull, a pair of curved bronze earrings were found, made from a plate 0.2 cm thick and 4 cm long. In the area of the cervical vertebrae of individual No. 2 was an ornament referred to as *grivna*. The term *grivna* is applied to a piece of jewelry, a hoop or chain worn as a

necklace. This *grivna* was gilded bronze, circular in form, with a diameter of 30 cm. It was part of a necklace made of beads of different sizes and colors, as well as shells. These included eight long beads, represented by one white and four black items, plus three black fragments, while other beads of different sizes and colors totaled 55 items. Under the woman's left shoulder was a bronze mirror (No. 1) with a handle (mirror diameter 14 cm, with the handle 7 cm long and 2.5 cm wide), and also a piece of bronze jewelry, most likely the detail from a decorative item. The individual's backbone was in a poor state of preservation. A chain of small beads totaling 70 items and some shells was preserved at the right hand. Ceramic vessels were located in the southeast corner of the sepulchral pit, consisting of a large vessel (No. 1) and a smaller one (No. 2) in proximity.

Vessel No. 1 is in the shape of a cauldron, and was archaeologically complete. The vessel is globular, ornamented, and made of black clay. The rim diameter is 18.5 cm, the diameter of the body is 40 cm, and the wall thickness is 0.9 cm. Vessel No. 2 is a spherical pot, ornamented, and made of black clay. The rim diameter is 12.5 cm, the diameter of the body is 15.2 cm, the wall thickness is 0.5 cm, and the height is 7.5 cm. After removing the vessels away from the wall, another bronze mirror (No. 2) with a handle was found (mirror diameter 13.6 cm, with the handle 3.8 cm long and 1.8 cm wide) in a good state of preservation.

The shell of a turtle, a large shell, and a ceramic fragment were found to the west of the vessels. In the center of the sepulchral pit, on the east side near skeleton No. 1, another well preserved mirror (No. 3) was found in the pelvic region. The mirror diameter is 15 cm, and it also had a handle, 4.5 cm long by 2–3 cm wide. Below the mirror was discovered the lower jaw of individual No. 1. A fragment of a stone altar, 9.5 cm long and 9 cm wide, was found in the northern part of the pit. Bones of a sacrificial animal were discovered in the western part of the sepulchral pit. In the eastern side, the bones of an animal and the shell of a turtle located perpendicular to other turtle shell items, discovered earlier, were also found. The bottom of the sepulchral pit was measured at a depth of 1.1 m.

According to a preliminary analysis of the accumulated archaeological data, it can be assumed that after preparing the burial place, the deceased were put on a wooden floor, which was located at the bottom of the sepulchral pit as indicated by the remaining traces of the floor. The fragments of burnt wood and ash found in the sepulchral pit indicate a ritual of purification by fire.

In the course of our study of this mound we researched materials on the early Iron Age archaeology of the Eurasian steppes, along with studying archival materials. Early aerial photographs were obtained, allowing study of the monument in a less destroyed state. Carrying out reconnaissance in the area where the monument was located made it possible to draw conclusions about the function of the Kyrk-Oba I burial mound. It has a height of more than 18 meters and the surviving maximum

diameter is 105 m.

Judging by the paleo-ethnographic data, this mound served as a structure with the function of a *dyng* or a *kara-oba*. In either case, the monument did not simply fulfill the function of a burial structure. Monuments of the *dyng* type were built in honor of iconic personalities, and served as places of worship for the spirits of their ancestors.

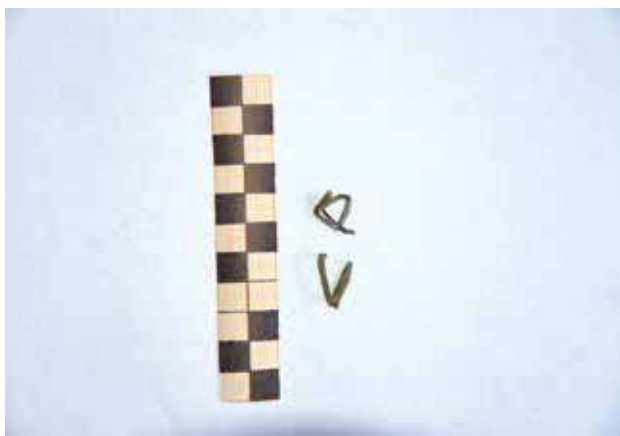
A detailed study of aerial photographs of the twentieth century, before the plowing of the territory, made it possible to identify extensions in the form of elongated, shaft-like structures adjacent to the main burial mounds from the south. Further research is needed to reveal their purpose. The archaeological excavation carried out at barrow No. 6 has yielded considerable materials, among which the finds of greatest value are the three mirrors, the large ceramic vessel, and the bronze products. The Kyryk-Oba burial ground is not only a unique monument of the history and culture of our people, it promises to serve in the future as a bright beacon illustrating the ancient history of the country of the Great Steppe.

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The view of the sepulchral pit after opening. Aerial photo.



Bronze earrings



beads of various sizes and colors



shell Kauri



Bronze Mirror No.1



Bronze ware



Bronze mirror No.2



small pasta beads



Elongated Pasta Beads



The view from the east, the sepulchral pit



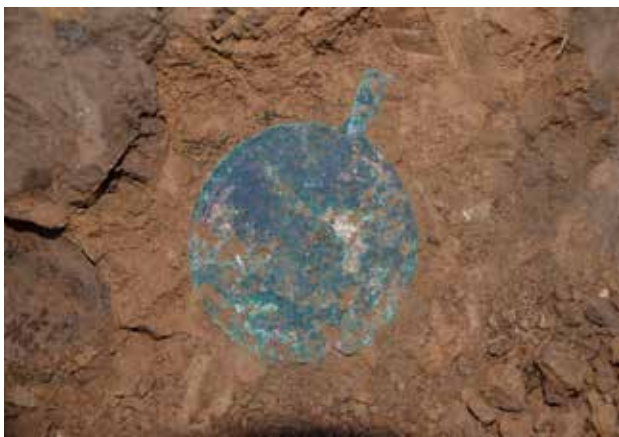
The View of the ancient burial structures.



Archaeological artifacts, shell, pottery fragments, and armors



Bronze mirror No.1 found under the left shoulder



Bronze mirror No.2



Decoration. "Grivna"



Grivna



A Fragment of the stone altar





Ceramic vessel No.2



Mirror



Ceramic vessels No.1 and No.2



## Community Engagement Programmes in the Conservation of Fort Emma, Fort Hose and Fort Lili, Sarawak, Malaysia

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### Introduction

Located on the island of Borneo, the state of Sarawak is the largest state in Malaysia. The state was once ruled by the Brunei Sultanate before the 19<sup>th</sup> century. Thereafter, the state was administered by the Brooke Dynasty (or The White Rajah) from 1841 to 1941, the Japanese Occupation from 1942 to 1945, and it was a British Colony from 1946 to 1963. On 16 September 1963, Sarawak, Sabah (North Borneo), Malaya and Singapore merged to form Malaysia. Incessant social unrest and political disputes between Singapore and Malaysia, however, led to Singapore's withdrawal to become an independent republic on 9 August 1965. Also known as Land of the Hornbills, Sarawak is notable for its vast tangible and intangible cultural heritage, featuring the greatest number of national parks, wildlife sanctuaries, diverse tribes, long houses and colonial forts in Malaysia. Sarawak has more than 15 forts that were built during the Brooke regime over a period of 100 years. Today, under the (then) Antiquities Ordinance 1958 and the Sarawak Cultural Heritage Ordinance 1993, these colonial forts have been gazetted and conserved by the Sarawak Museum Department (*Jabatan Muzium Sarawak*) in lieu of heritage values for future generations. Under the Eleventh Malaysia Plan (2016-2020), the Government of Malaysia, through the Sarawak State Government and related government agencies including Sarawak Museum Department and Sarawak Public Works Department, has allocated an amount of RM25 million (USD5.96 million) to restore five colonial forts in Sarawak including Fort Emma (located in Kanowit), Fort Hose (Marudi), Fort Lili (Betong), Fort Brooke (Julau) and Fort Sylvia (Kapit). Accordingly, under the provisional sum of the project contract, Fort Emma received an allocation of RM45,000 (USD10,732.28), Fort Hose RM35,000 (USD8,347.33) and Fort Lili RM20,000 (USD4,769.90) to conduct community engagement programmes with local people including ritual ceremonies (*miring, doa selamat* and blessings), workshops, dialogues, site visits, public awareness and publicity. Community engagement programmes are a vital component in any heritage building conservation project because they allow the local communities to garner a deeper understanding of the significance of their cultural heritage; to encourage and facilitate community insights, views and feedback about the current project; and to nurture trust and foster relationships among the various stakeholders. This article focuses on the community engagement programmes conducted during the conservation projects of the three colonial forts of Fort Emma, Fort Lili and Fort Hose in Sarawak, Malaysia.

### Historical Background of Fort Emma, Fort Hose and Fort Lili

The original Fort Emma, made of bamboo and with a nipah roof, was first built in 1849 in Kanowit, Sarawak but it was demolished soon after. In 1851, a new fort

known as *Kubu Kanowit* (Fort Kanowit) was constructed on a hill facing the Rajang River. The strategic location of the new fort enabled the Brooke administration to patrol and secure the river and the surrounding area from the hill top. In the aftermath of a massive fire in 1859, the fort was rebuilt in 1860 with two storeys and renamed Fort Emma after James Brooke's elder sister, Emily Brooke. Fort Emma was once used as an administrative centre during the Brooke period; however its function was subsequently changed to the District Office for Kanowit, Native Court, and Kanowit Broad Band Centre and Museum. Notably, nine human skulls that have been in the building for decades remain intact in Fort Emma's interior still today. The fort has been restored several times since then, including a major restoration back in the 1960s and the most recent one in 2018-2020.

Located facing the Baram River in Marudi, Sarawak, Fort Hose was built in 1889 during the Brooke administration. Once completed in 1901, the fort was named after Charles Hose, who was then the British Resident of the Fourth Division in Sarawak. The fort was built with local hardwood called *belian* or Borneo's ironwood (*Eusideroxylon zwageri*). *Belian* is the heaviest, hardest and most valuable timber of Sarawak. During its heyday, Fort Hose was the administration office and the Resident's house. Since then, the fort was used successively by various authorities including the District Council, Welfare Department, Immigration Department, Land and Survey Department, Information Department and Sarawak Museum Department. During the Japanese occupation of Sarawak in World War II, the fort was used by the Japanese as a *Kempeitai* or military police corps' headquarters. On 24 August 1994, Fort Hose caught fire and was razed to the ground. In 1995, the local communities contributed *belian* poles for the reconstruction of the fort. It was rebuilt according to its original dimensions and design and was officially opened by the former Sarawak Deputy Chief Minister Datuk Patinggi Tan Sri Dr. Alfred Jabu Anak Numpang.

Fort Lili was built by Charles Brooke in 1858, facing a river called Layar River. Over the years the river had dried up due to channel diversions for shipping and water transportation. Today, Fort Lili sits between the Betong Jamek Mosque (*Masjid Jamek Betong*) and Betong District Council (*Majlis Daerah Betong*) at Jalan Datuk Patinggi Udin in Betong, Sarawak. The fort was originally known as Fort Betong but was later changed to Fort Lili, after Charles Brooke's wife, Margaret Alice Lili de Windt. In 1858, the fort found itself under attack by the local Ibans led by Rentap and his follower Aji Apai Limpa from Nanga Padeh, who was fighting against the Brooke administration. The attack was defeated by the Fort Lili administrator, James Brooke Cruickshank, and his supporter, Panglima Bakir from Saribas. After the

Brooke era, Fort Lili was converted into a police station and administrative office for the Registration Department. The fort was left abandoned for several years before conservation works commenced in 2019.

### The Fort Design

Architecturally, Fort Emma, Fort Hose and Fort Lili are almost similar in their design and structure. Common design features include a rectangular-shaped building two or three storeys high, high ceilings, a pitched roof and *belian* roof shingles. These purpose-built forts have many windows or openings in the walls for surveillance and the targeting of enemies along the river. *Belian* is widely used in the construction of these forts, mainly for columns, walls, floors, roof trusses, staircases and doors. The ground level of the forts was normally used for storage of ammunition or a place of residence; whilst the upper levels were used for control or defence purposes and as the Resident's administrative office. Another common design feature is the timber lattice found at the upper levels that allows for cross ventilation and natural lighting inside the fort. All forts were painted in white and black.

### Conservation of the Forts

The conservation works for Fort Emma, Fort Hose and Fort Lili began in 2018-2019 with an expected completion date in July 2020. Specifically, conservation of Fort Emma began on 28 May 2018 at a contract cost of RM2,983,192.00 (USD71,1476.38) with a scheduled work completion date of 22 December 2019. Fort Hose began its conservation works on 1 January 2019 at a contract cost of RM2,165,639.80 (USD516,494.26) for a target work

completion date of 1 April 2020. Fort Lili commenced its conservation works on 2 January 2019 at a contract cost of RM3,388,888.00 (USD808,232.84) and completion is aimed for 1 July 2020. During the conservation works period, on-site project meetings and technical meetings have been conducted regularly, chaired by the Manager of the Sarawak Public Works Department Regional Office. Before conservation works began, a dilapidation survey was carried out on the forts by local consultant architects appointed by the Sarawak Public Works Department. The consultant architects were Arkitek Dchuo for Fort Emma, Arkiskape Sdn. Bhd. for Fort Hose and Arkitek Nurina Matnor for Fort Lili. The dilapidation survey is very important to determine and diagnose any building defects at the forts and to identify their probable causes using non-destructive equipment. All building defects at the forts were examined thoroughly and recorded diligently through various media such as digital photography and measured drawings. Such detailed documentation not only presents critical baseline information about current building conditions but also provides a strong basis and justification to assess the most appropriate and effective methods of conservation. Such information is also very useful to guide consultant quantity surveyors in estimating the total cost of the conservation projects. The dilapidation survey reports revealed that the three forts had suffered various degrees of building defects. Each building defect was indicated clearly on the respective building plans and elevation drawings in the dilapidation survey reports with recommendations on proposed building conservation remedies and treatments. Table 1.0 summarises the types of building defects present at the three forts.

Table 1: Types of Building Defects at Fort Emma, Fort Hose and Fort Lili (surveyed in 2017-2018)

Fort Emma, Kanowit	Fort Hose, Marudi	Fort Lili, Betong
1. Concrete floor (damaged)	1. Roof (damaged/leakage)	1. Harmful growth
2. Paint (peeled/faded)	2. Wall panels (deformed/faded)	2. Fungi growth
3. Window (damaged/broken)	3. Drainage and apron (fungi growth/damaged)	3. Bat infestation
4. Harmful growth	4. External staircase (harmful growth/ damaged)	4. Toilet (stain)
5. Timber floorboards (rotten)	5. Doors (faded)	5. Ironmongeries (corroded)
6. Wall panel (damaged)	6. Windows (faded)	6. Fractured/breakage
7. Door frame (slanted)	7. Structures (damaged/faded)	7. Cement floor (damaged)
8. Staircase (faded/dirty)	8. Floors (peeled/faded)	8. Floor board (damaged)
9. Tiles (damaged/broken)	9. Ground slab (damaged)	9. Tiles (damaged/missing)
10. Crocodile shed (missing roof/messy)	10. Non-heritage addition	10. Paint (peeled/faded)
12. Mermaid statue (damaged/faded)	11. External display items (weathered)	11. Electrical wiring (damaged)
13. Soil (erosion)		12. Door (damaged/missing)
14. Roof (damaged/missing)		13. Window (damaged/missing)
15. Electrical wiring (damaged)		14. Timber panel (missing/damaged)
		15. Ceiling panel (missing/damaged)
		16. Roof (damaged/missing)
		17. Sanitary (damaged/missing)
		18. Staircase (damaged/missing)

#### i. Conservation of Fort Emma (Kanowit)

The conservation of Fort Emma was based on historical records and evidences of the original design. The construction cost includes conservation of the *belian* structures such as columns, floor bearers and planks. The external *belian* wall panels were restored and any

damaged panels were replaced with similar timber species and strength group. The *belian* wall panels were rearranged in such a manner to minimise the gaps and reduce rain seepage. Any small gaps were sealed up using timber putty. The first floor bearers and boards were also restored. Any badly damaged planks were

replaced with similar timber species, strength group and sizes. The floor planks were rearranged carefully to minimise the gaps as in the original layout. Likewise, any remaining gaps were sealed up with putty. The original columns, all of different sizes and shapes (square, round and multi-faceted) were actually donated by various longhouses and local communities during the early construction days. The original *belian* columns were still in good condition. Any badly damaged columns were replaced with *belian* timber of similar sizes and shapes. A major change involved the ground floor concrete slabs and stumps. The existing concrete stumps that support the ground floor *belian* columns were severely damaged and had to be removed. The foundations of the concrete stumps had to be re-constructed for structural integrity and afterwards new *belian* columns were extended to the new foundations for overall structural stability. The old concrete slabs were also removed. There was no structural support but only mass concrete of varying thicknesses. New concrete slabs with steel reinforcements on the ground floor were constructed to provide a stable and flat surface, after which *belian* floor boards 20 mm thick on 50 mm×50 mm *belian* battens at 600 mm centre to centre were laid. The roof structures were generally intact with some of the rafters and battens being restored. The roofing materials were changed to the original 6 mm-thick *belian* shingles. For rain proofing and insulation, additional layers of coated metal sheeting, double sided aluminium insulation, rockwool insulation and waterproof plywood were added to the roof system. A new toilet for public use was constructed outside the fort with *belian* roof shingles and *belian* external panels to harmonise with the main building. The existing crocodile shed and its roof structures were relocated 2 meters away to allow for the construction of a new toilet. The crocodile shed roofing was changed to new *belian* shingles. As the new roof has no gutters or downpipes, a rain catchment system comprising a 1.8-meter-wide drain covered with removable concrete slabs and pebbles was provided around the fort to capture rainwater from the roof. This would reduce any rainwater seepage into the soil. For disabled access, a gently sloped ramp was built next to the fort to allow for wheelchair and elderly access. The front external staircase was widened to cater for more visitors to the fort. Low metal fencing was provided for the fort boundary perimeter.

### ii. Conservation of Fort Hose (Marudi)

The existing Fort Hose is a replication of the original building which was burnt down in 1994. A major component of the conservation work was the *belian* shingle roof. Underlay waterproofing material, metal flashing and roof ridge capping were added during the reconstruction of the entire building in 1997. However, the existing roof suffered from wear and tear due to leakage. All *belian* shingles were replaced with new 6 mm-thick *belian* shingles. The new roof was upgraded with a new waterproofing system including a plywood ceiling underneath, new roof ridge cappings and valley gutters. The *belian* lattices can be found on the upper floor of Fort Hose surrounding the entire main building. All the lattice battens were generally in good condition, and were sanded and refurbished with a new layer of paint

on the external side and a shellac finishing coat on the internal side. The *belian* wall panels on the external side of the building were all shrinking and there were already some visible gaps. These wall panels were rearranged in order to close up the gaps in between wall panels. Every *belian* wall panel piece was sanded and refurbished with a new layer of paint on the external side and shellac on the internal side. The existing *belian* structures including columns, beams, floor joists, roof rafters and battens were generally in good condition. However, a *belian* column was found to be sinking and required immediate repair due to risks related to structural loading and column stability. The existing *belian* floorings on the upper level were in good condition. The flooring surface was sanded and refurbished with a new finishing shellac coating. The existing *belian* doors were taken down for refurbishment and later reinstalled to their original position with existing ironmongery. The existing *belian* sliding windows were sanded and refurbished with the addition of mosquito netting on all sliding windows on the upper floor. Another *belian* external staircase at the fort entrance also required extensive repair work due to severe deterioration. The entire staircase was taken down with proper documentation, particularly to indicate its original position. This staircase was reconstructed with salvaged materials with new *belian* handrails replacing the missing ones. Originally, the *belian* shingle roof had no gutters and downpipes. During the conservation works, a concealed perimeter drain was proposed with multiple rainwater catchment sumps surrounding the fort. Several non-heritage related items were added to the building over the years including toilet and shower compartment on ground level, office partition on the upper floor and decorative lights on the perimeter of the roof eaves. All non-heritage items were removed accordingly in order to reinstate the original design of the fort.

### iii. Conservation of Fort Lili (Betong)

Before the conservation works of Fort Lili commenced, extensive research was conducted by project consultants to highlight the significance of the Fort in terms of its historical, architectural and cultural values. The fort had been re-measured to get its exact dimensions and scale. For decades, Fort Lili had been converted into many new uses and functions including State Government administration building, stockyard for goods, court house and police station. Such changes in building use had altered and modified much of the interior space of the fort, particularly the building elements including windows, staircases, doors, partition walls and floors. The fort had been left abandoned for a good many years before it was restored. Thus, some of the building elements, materials and structures were in a dilapidated stage. During the conservation works, the fort underwent major refurbishment and restoration including dismantlement of the building structures, salvage of building materials, storage, conservation treatment, and reconstruction. The old *belian* roof shingles were removed, treated and salvaged. To protect the roof in lieu of the missing *belian* shingles, plastic canvas sheets were laid over the affected areas to prevent leakage. New *belian* shingles were fixed onto the roof to replace the missing and broken ones. To overcome the severe rainforest climate

of Sarawak and the problem of roof leakage, a double-layered roofing system was introduced to Fort Lili. The roofing system allows the installation of proper insulation while maintaining the visibility of the underside of the *belian* shingles. The salvaged old *belian* shingles were then fixed underneath the roof while the new ones were placed as a double layer above the roof. The new *belian* shingles were then coated for weather protection. All timber structures of the fort were upgraded to *belian* timber. Due to structural instability including sagging of the ground floor level, the entire fort was dismantled, salvaged, treated and reconstructed at the same location. The existing old timber jetty outside the fort, which was used for river transportation, was restored to its original form. The reconstruction of Fort Lili was based on sound conservation guidelines and approved work method statements. Thus, all building elements were re-measured, documented and recorded based on a special coding system before dismantling and salvaging. Apart from conservation works, several new works were carried out at the fort including new toilet facilities, upgrading the existing guard house, stone-pebble apron around the fort, a walkway path on the grounds and a gateway at the new main entrance to the site. To recreate the closest setting to what it was like in the fort's glory days, a shallow depression around the jetty was constructed to signify the old river that used to flow in front of the fort.

### Community Engagement Programmes

The Sarawak Museum Department and Sarawak Public Works Department had jointly organised a series of community engagement programmes during the conservation of Fort Emma, Fort Hose and Fort Lili in 2018-2019. The programmes were aimed at encouraging local communities, local leaders, District Officers, government officials, consultants, students and the general public to appreciate heritage buildings and to celebrate unique local traditions and ethnic cultures. The community engagement programmes of the forts are discussed in regard to three aspects as follows:

#### i. Ritual ceremony

A ritual ceremony was conducted at all forts during the early stage of conservation projects. The ceremony was led by local leaders according to their own cultural traditions and religious beliefs. For Fort Emma, the ritual ceremony was held on 7 August 2018. The ritual ceremony, known to the local Iban community as *miring*, was performed by the Iban leader Lance Corporal (Retired) Sigai Endawan to appease the gods and spirits as well as to ask for divine blessings. During the *miring*, the nine human skulls (*antu pala*) previously kept inside Fort Emma were temporarily relocated inside a hut newly built within the fort compound to allow the conservation works to resume. Two pigs and a rooster were slaughtered and their blood was offered as a sacrifice to the gods and spirits, along with rice, eggs and other offerings. About 150 people attended the *miring* from 9 am to 1 pm. Among those present were Machan assemblyman YB Allan Siden Gramong, Kanowit police chief DSP Daniel Benjamin, Kanowit District Officer Kathreen Eddi Saga, Sarawak Museum Department senior curator Dayang Morzanah Awang Haddy, Sarawak

Museum Department project officer Bong Ah Khan, Sarawak Public Works Department central regional officers Ade Fairuz Marzuki and Steve Mellory Petrus, Penghulu Ugap Seribu, Penghulu Barnabas Angkis, and Penghulu Ugak Sigai, as well as project consultants, members of local communities, government officials and local council officers.

A blessing ceremony took place at Fort Hose on 22 February 2019 from 9 am until 1 pm. The blessing ceremony was performed in accordance with the Christian faith, by virtue of Marudi being inhabited by predominantly Orang Ulu Christians. A choir from the local Borneo Evangelical Mission Church also performed during the blessing ceremony. The ceremony was well attended by more than 80 people including Sarawak Assistant Minister of Local Government Datu Dr. Penguang Manggil, who also thanked the Sarawak Museum Department for being in the forefront of the conservation of Fort Hose, an icon of the Baram District. Other attendees during the blessing ceremony included Baram Member of Parliament YB Tuan Anyi Ngau, Mulu assemblyman YB Datuk Gerawat Gala, Telang Usan assemblyman YB Dennis Ngau, Temenggong Elizabeth Deng, Penghulu Herbet Lawai, Sarawak Museum Department officers Dora Jok and Lilianna Ubong Petrus, Sarawak Public Works Department Northern Region officers Ir. Wang Say Kwang and Fam Chin Ying, Pemanca Jamel Sabil, Pemanca Wong Kong Ching, Pemanca Randie Anak Bundan, project consultants, members of local communities, government officials and local council officers.

There were two ritual ceremonies conducted for Fort Lili. The first ceremony was a Muslim *doa selamat* held at the nearby Betong Jamek Mosque on 17 April 2019 led by a local religious leader, Tuan Imam Hj. Hanapi Yalin after the *Maghrib* prayer in the evening. The second ceremony was the *miring* held on 18 April 2019 from 9 am until 1 pm, which involved the slaughter of one pig as part of the local Iban ritual traditions as an offering to the gods and spirits along with rice, eggs and other offerings. More than 200 people attended the *miring* including Sarawak Deputy Chief Minister Datuk Amar Douglas Uggah Embas, Sarawak Minister of Tourism, Arts, Culture, Youth and Sports Datuk Abdul Karim Rahman Hamzah, Datuk Patinggi Tan Sri Dr. Alfred Jabu Anak Numpang, Tan Sri Dato Sri Empiang Jabu, Layar assemblyman YB Gerald Rental Jabu, Sarawak Museum Department officers Dayang Morzanah Awang Haddy, Norraha Abdul Rahim and Awang Abdullah Awang Morshidi; Friday Anak Lugoh, Temenggong Richard Mulok Anak Entring, Pemanca Norman Ngumbang Anak Sandin, Penghulu Uyo Anak Sunang, Penghulu Stanley Ejau Anak Erin, Sarawak Public Works Department Southern Region officer Chong Min Chiew, mosque committee members, project consultants, members of local communities, government officials and local council officers.

#### ii. Conservation workshop and site visit

Conservation workshops and site visits were jointly organised by the Sarawak Museum Department and Sarawak Public Works Department during the

conservation of Fort Emma, Fort Hose and Fort Lili. Each workshop was well received and attended by more than 50 local participants including government officers, project consultants, professionals and members of the local communities. The main objective of organising the workshops was to share knowledge and experience in the field of building conservation among the participants, particularly on the conservation of forts. This knowledge sharing session allowed the participants to better understand the significance and development of each fort, and their prospective usage. Each workshop ran for two days including talks and site visits. The talks were presented by various speakers from Sarawak Museum Department, Sarawak Public Works Department, project consultants (architecture, civil and structure engineering, mechanical and electrical and quantity survey), the project conservator and building contractor. Workshop participants also enjoyed guided tours of the forts and the surrounding areas while experiencing the conservation works and techniques demonstrated by the building contractor and project consultants. Several exhibits and displays were set up at the forts for educational purposes. A mock-up of the roof was constructed at all forts to allow participants to understand how the *belian* shingles were fixed onto the roof structures. The conservation workshop of Fort Emma was conducted on 30-31 January 2019 at Kanowit District Council; followed by the conservation workshop of Fort Lili on 2-3 July 2019 at Betong District Council; and Fort Hose on 20-21 August 2019 at Dewan Suarah, Marudi. All workshop participants received a certificate of participation authorised by the Sarawak Museum Department Acting Director Suria Bujang as a token of appreciation for their commitment to the fort conservation works in Sarawak.

### iii. Community dialogue

Community dialogue refers to an interactive and inclusive forum that attracts participants from different sections of local communities. It aims to create an opportunity and platform for the exchange of ideas, information and perspectives, clarifying viewpoints, and developing feasible solutions to issues related to the communities. During the conservation of Fort Emma, a community dialogue was organised on 18 June 2019 from 9 am until 2 pm at the Kanowit District Office. The dialogue session allowed the local communities of Kanowit to communicate and interact face-to-face with the government agencies, local council, District Officer, community leaders and project consultants involved in the Fort Emma conservation project. The local communities of Kanowit took this opportunity to raise their concerns, share personal experiences and express their perspectives during the event. The community dialogue commenced with three talks presented by Sarawak Museum Department project officer Bong Ah Khan on the history and development of Fort Emma; Sarawak Public Works Department Central Regional manager Cassidy Anak Morris on the conservation project of Fort Emma; and Kanowit District Officer Kathreen Eddi Saga on community engagement in the development of Kanowit District. Leaders from the local Malay, Chinese and Iban communities were invited to voice their views and share chronicles about Kanowit and Fort Emma during the

dialogue session. More than 150 participants including university students and lecturers attended the community dialogue. Participants also enjoyed a guided tour of Fort Emma courtesy of the project consultants and building contractor. The community dialogue was considered very successful because it instilled appreciation and awareness among participants of the colourful history of the Kanowit District and the development of Fort Emma. It also emphasised the roles and responsibilities of the local communities in safeguarding and managing invaluable cultural heritage in their hometown. Meanwhile, Fort Hose and Fort Lili are fully geared towards organising their own respective community dialogues before the conservation projects come to an end by April or July 2020.

### Conclusion

The conservation of Fort Emma, Fort Hose and Fort Lili in the state of Sarawak, Malaysia has been a success story of smart coordination and orchestrated efforts by all parties involved in the fort conservation projects including project consultants, building contractors and government agencies. Moreover, the provisional sums earmarked for community engagement programmes in the fort conservation projects have had a substantial impact and have increased awareness and appreciation among local communities in Sarawak towards safeguarding and protecting their intangible and tangible cultural heritage. Community engagement programmes such as ritual ceremonies, workshops, site visits, dialogues and related events have enabled deeper contextual understanding of community perceptions towards sense of place, cultural identity, heritage values and heritage tourism. Furthermore, community engagement programmes have fostered a sense of trust, belonging and strong relationships among the community members and their leaders in undertaking heritage endeavours in the future. Looking ahead, the conservation of Fort Emma, Fort Hose and Fort Lili should bring about continuous positive impacts on the socio-economic development of Kanowit, Marudi and Betong. Forts of significant cultural value should be protected under the laws and upgraded to become heritage museums that promote history, culture, arts and the traditions of the local communities. These heritage museums can become important tourist attractions for local economic regeneration in the respective districts. All efforts and determinations as depicted by both the Sarawak Museum Department and Sarawak Public Works Department (PWD HQ and PWD Regional Offices) in ensuring the success of the conservation projects of Fort Emma, Fort Hose and Fort Lili are most highly praised and applauded. Their solid commitment and dedication serves as a model and example to other government agencies in the country in promoting and conserving cultural heritage for the benefit of future generations.

### Acknowledgements

The author wishes to thank the Sarawak State Government, Sarawak Museum Department (JMS), Sarawak Public Works Department (PWD HQ and PWD Regional Offices), Suria Bujang, Ipoi Datan, Bong Ah Khan, Norraha Abd Rahim, Awang Abdullah Awang

Morshidi, Dora Jok, Lilianna Ubong Petrus, Dayang Morzanah Awang Haddy, Iswandi Junaidi, Mohd Sherman Sauffi, Ar. Dominic Chuo Kong Uh, Arkitek DChuo, Cassidy Anak Morris, Ade Fairuz Marzuki, Steve McIlroy Petrus, Ar. Haris Fadzilah, EDS Konsultant Sdn. Bhd., Perunding Elecmecc Sdn. Bhd., LT Juruukur Bahan Sdn. Bhd., Crest Realty Sdn. Bhd., Wong Fak Heng, Louisa Clara Anak Raymond, Jude Nading Anak Micheal, Aaron Kuek Chai Seng, Arkiskape Sdn. Bhd., United Consultants, Perunding Omega PMC Sdn. Bhd., FCH Quantity Surveyor Sdn. Bhd., Dr. Hazman Hazumi, Zulkifli Hj. Ahmad, Ahmad Adzrin Izuddin Ahmad Ismadi, Bario Development Corporation Sdn. Bhd., Mujan Lah, Victor Wong Siaw Ning, Ir. Wisil Anak Lichok, Ir. Wang Say Kwang, Fam Chin Ying, Chang Kueh Chin, Ir. Nor Aini Rosli, Ar. Nurina Matnor, Arkitek Nurina Matnor, Brendan Baon Wong, Jabez Ho Chen Kwang, TTP Industries Sdn. Bhd., Dato' Sri Henry Sia Pick Siu, Ir. Hj. Zamhuri Drahman, Zadra Consultant, Alphabeta JP, Kontrak Infobena Sdn. Bhd.; and the School of Housing Building and Planning, Universiti Sains Malaysia for making this project and article possible.

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Location of Kanowit, Marudi and Betong, Sarawak, Malaysia.



Exterior view of Fort Emma before conservation.



Temporary roofing was installed to protect Fort Emma during conservation.





Interior view of Fort Emma during conservation.



The ritual ceremony of Fort Emma, known to the local Iban community as *miring*, was performed by an Iban leader to appease the gods and spirits as well as to ask for blessings.



In the *miring* ceremony, nine human skulls or *antu pala* previously kept inside Fort Emma were temporarily relocated inside a hut built within the fort compound to allow for conservation works.



A conservation workshop for Fort Emma was conducted on 30 - 31 January 2019 at the Kanowit District Council.



Workshop participants visiting Fort Emma during conservation.



During the conservation of Fort Emma, a community dialogue was organised on 18 June 2019 at Kanowit District Office to allow local communities to share their perspectives with the government agencies, local council, District Officer, community leaders and project consultants.



Local communities visiting Fort Emma after the community dialogue.



Front view of Fort Hose before conservation.



The back view of Fort Hose during conservation.



A blessing ceremony took place at Fort Hose on 22 February 2019 with a choir performance by the local Borneo Evangelical Mission Church.



The conservation workshop of Fort Hose was held on 20 - 21 August 2019 at Dewan Suarah, Marudi.



Several exhibits and displays were set up inside Fort Hose during the workshop.



Workshop participants visiting Fort Hose during conservation.



Workshop participants visiting Fort Hose while experiencing the conservation works and techniques demonstrated by the building contractor.



Fort Lili before conservation.



Interior view of the dilapidated Fort Lili before conservation.



A *miring* ceremony was conducted at Fort Lili on 18 April 2019, involving the slaughtering of one pig along with rice, eggs and other offerings.



Two ritual ceremonies were conducted for Fort Lili; one of which was the Muslim doa selamat at the nearby Betong Jamek Mosque on the evening of 17 April 2019 after Maghrib prayer.



During the conservation works, Fort Lili underwent major refurbishment and restoration including the dismantling of building structures, salvage of building materials, storage, conservation treatment and reconstruction.



During the conservation of Fort Lili, a double-layered roofing system was introduced to allow the installation of proper insulation while maintaining the visibility of the underside of the *belian* shingles.



Exterior view of Fort Lili during conservation.



The conservation workshop of Fort Lili was conducted on 2-3 July 2019 at Betong District Council.



Workshop participants were briefed by the building contractor on the belian roof mock-up of Fort Lili.





## A Newly Found Ancient Memorial Complex from Mongolia

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On June 8, 2019, G. Burentugs, a specialist in immovable heritage at the National Center of Cultural Heritage of Mongolia, along with R. Munkhtulga, a researcher at the Institute of History and Archaeology, Mongolian Academy of Sciences, and B. Ariyajav, a lecturer at the School of Sciences, National University of Mongolia, carried out the first field documentation at a site called Talyn Khöshöo in Darkhan District, Khentii Province. There is an ancient Turkic memorial complex with a huge stone statue of a human figure at this site. The newly found monument was soon registered on the List of Cultural Immovable Heritage of Mongolia as the Talyn Khöshöo memorial complex.

On June 24, 2019, R. Munkhtulga first reported on the Talyn Khöshöo monument as the most recently discovered ancient Turkic aristocratic memorial complex (Munkhtulga 2019: 24). In August 2019, our field research report was published under the title *Talyn Khöshöo Memorial Complex* (Munkhtulga et al. 2019). The above-mentioned field research on the Talyn Khöshöo complex reached some preliminary conclusions as follows.

- The complex contained a quadrangular enclosure consisting of patterned stone slabs and a stone statue of a human figure, but did not have other structural elements of a typical high-ranking aristocratic complex such as canals, ditches, buildings, and *balbals* (stelae). This characteristic feature shows that the complex can be identified as the III-Б-a variant in the Soviet and Russian archaeologist V.Ye. Voitov's classification. In its structure, it shares the same characteristics as the Dongoin Shiree complex, which was recently found in Tüvshinshiree District, Sükhbaatar Province, and the Zaraagiin Züün Övör complex in Sümber District, Govi-Sümber Province. Its main structure, however, is more similar to the latter.
- The position and size of the *tamgas* (identifying marks) on the sides of the human figure statue, and the evidence from the Turkic Runic inscriptions along with Chinese historical annals, indicate that the Talyn Khöshöo memorial complex can be dated to 735–741 AD, late in the period of the Second Turkic Khaganate. The sociopolitical conditions and geopolitical situation of the same period also support this.
- The human figure statue of the Talyn Khöshöo complex is the second stone statue with an inscription and *tamgas* from the ancient Turkic period in Mongolia. Moreover, with its size measuring 320 × 42 × 40 cm, it becomes the largest stone statue of a human figure in Mongolia.
- Based on the stylistic features of the stone statue, we can only say that the lord of the complex probably was an aristocrat who had a title ranking lower than Tudun (an administrative title).
- It can also be suggested, based on the location and structure of the complex and the shapes of the various *tamgas* on the statue, that the complex might have been dedicated to an aristocrat of the Helu (賀魯), one the Twelve Turkic Tribes of the Second Turkic Khaganate.
- The Talyn Khöshöo complex, which has a large human figure statue with an inscription and various *tamgas*, is undoubtedly a unique historic and cultural relic of the ancient Turkic period.

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Fig. 1: The Talyn Khöshöö memorial complex (from the southwest)



Fig. 2: The Talyn Khöshöö complex (from the northwest)



Figs. 3-5: The stone statue of a human figure at the complex



Fig. 6: Taking a rubbing of the statue



Fig. 7: Taking a rubbing of the statue (detail)



Figs. 8, 9: Tamgas on the front side of the statue



Fig. 10: Taking a rubbing of the tamgas



Fig. 11: Taking a rubbing of the *tamgas* (detail)



Fig. 12: Taking a rubbing of the inscription below the *tamgas*



Fig. 13: Slab fragments of the stone enclosure



Fig. 14: Slab fragments of the enclosure



Fig. 15: Patterned slab fragments



Fig. 16: Patterned slab fragments



## Mrs Heron's Cottage – Conservation of 19th Century Goldfields Home

Matthew Schmidt, Senior Archaeologist Otago/Southland  
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### Introduction



Figure 1. Location of Mrs Heron's Cottage, Lake Roxburgh, Central Otago (Map courtesy of Andrea Farminer).

Mrs Heron's Cottage is an iconic Central Otago goldfields structure located on Lake Roxburgh (Figure 1). This three bay schist stone and corrugated iron cottage has a history associated with 19th and early 20th century gold mining, functioning as a 'store' providing supplies to local miners and possibly as an occasional accommodation house (Figure 2). The cottage is only accessible by the public by way of boat from Lake Roxburgh, and so it is probably due to this isolation, appreciation by regular visitors of its completeness and history, and the guardianship of the cottage by the Miller family and Contact Energy Ltd that the cottage has survived for ca. 150 years. This paper looks at past and recent works to conserve the cottage through a partnership project between Heritage New Zealand and Contact Energy Ltd ("Contact") which is a private company whose hydroelectric operations include the land the cottage lies on. Contact annually budgets for the management of heritage sites along Lake Roxburgh and if it were not for this proactive approach, the conservation works on this cottage could not have been undertaken.

### A Brief History of Gold Mining in the Roxburgh Gorge, and Henry and Harriet Heron & Their Cottage

Mrs Heron's Cottage is located on the shores of Lake Roxburgh but before this lake was formed through damming of the Clutha River Mata-au in 1956, it lay well above the banks of the river in the steep Roxburgh Gorge. The filling of the dam saw the loss of hundreds of



Figure 2. Mrs Heron's Cottage from Lake Roxburgh in 2016 (Photo Jonathan Howard).

archaeological sites mostly related to 19th century gold mining which were unfortunately not recorded before the gorge was filled. In Figures 3 and 4 are shown two views of Mrs Heron's Cottage showing the change in the landscape before and after Lake Roxburgh was formed. The photograph of Figure 3, only recently found, is the oldest known picture of the cottage and is believed to date from between 1930 and 1939 (picture courtesy of the *New Zealand Herald Glass Plate Collection, Auckland Libraries*, Ref. ID 1370-27-2). In this picture can be seen the steep Roxburgh Gorge in the background with the cottage well above the river. The Figure 4 photograph was taken a similar position in May 2019 where Lake Roxburgh can be seen within meters of the cottage.

The story of the Heron's and their cottage lies in the history of gold mining on the Clutha River Mata-au. In 1862, the gold miners Hartley and Reilly discovered payable gold on the banks of the river near Cromwell at the confluence of the Clutha and Kawarau Rivers ca. 52km upriver from Mrs Heron's. The gold was so easy to scoop off the river sands, Hartley and Reilly very quickly obtained a fortune in gold. Soon after they suspected their find had been discovered, they packed up their 1000 oz. of gold and presented to the Chief Gold Receiver back in Dunedin. Not only did they strike it rich, but for announcing their discovery and divulging its location they also received a £2000 reward from the Provincial Government. This saw the start of the 1862 gold rush to what was to be known as the Dunstan Goldfield which includes where Mrs Heron's Cottage is located.

Thousands of gold miners flooded to the Clutha River after hearing of Hartley and Reilly's discovery. Although the area was very isolated, calico tent towns suddenly appeared at Cromwell, Clyde and Alexandra on the banks of the Clutha filled to the brim with miners, hotels, merchants, butchers, blacksmiths etc, any trade that could supply the miners with what they needed. The majority

of miners could only purchase a shovel and gold pan as their key mining equipment but if you had enough money a pick and cradle was also purchased. Branches of banks, a gold warden's office and coach services were established which connected the towns to Dunedin city on the coast where most of the gold was taken.

Large areas where gold was being sought was gorgy and difficult to access but by foot. The Kawarau, Cromwell and Roxburgh Gorges, were very steep and rocky areas but this did not deter the European/Pakeha and Chinese miners which saw thousands of them make their way into them to establish their claims and live. All their food and equipment had to be hiked in. The Roxburgh Gorge in particular was very difficult to access but on the plus side the rocky terrain meant miners could convert the numerous caves into huts and those that had the skills were not lacking in stone to build small stone cottages. A description from the *Otago Witness* newspaper from 1875 recounting the isolation of the miners in the gorge provides a good insight into the hard life of the miners:

*'On the Twelves and Fourteen Mile Beaches it was computed at one time that 700 miners had congregated, and, including the distance five miles farther down to Captain Baldwin's [at Long Valley], the number may be safely stated at 1200. How they all obtained food, and where from, and how they were housed, was to the stranger somewhat of a mystery. Every morsel of... "tucker" required to be packed out to them on horseback, from places miles away, and when the horses could get no farther, it oftentimes became necessary to convey the stores for long distances on men's backs, down precipitous rocky banks, and round rocky precipices, that scarcely presented foothold for a goat... Almost everyone lived in caves in the rocks.'* (*Otago Witness*, Issue 1222, 1st May 1875, Page 11)

Mrs Heron's Cottage was located near the Fourteen Mile Beach gold claim in the Roxburgh Gorge and here in 1864 the *Otago Witness* newspaper estimated that 1600 miners were present here. Henry and Harriet Heron are believed to have constructed the original central bay of the stone cottage around 1863 (see Figure 5, Phase I) convenient to their successful gold mining claim at Fourteen Mile Beach. They mined and lived in the cottage from ca. 1863 until around 1875 when they moved to Roxburgh and purchased and ran the Commercial Hotel. This long period of mining implies a successful operation was being run by the Heron's and it is believed Henry was also in the business of constructing water races and repairing mining equipment. With supplying essentials through using their cottage also as a store, selling fresh produce from their garden and possibly taking in the occasional paying guest, the Heron's appeared to have had good business at Fourteen Mile Beach. It is quite likely during their time at Fourteen Mile that they also built the south bay of the cottage to accommodate their busy lives (see Figure 5, Phase II).

Henry ran the Commercial Hotel with Harriet until his death in 1896 (he was the first President of the Roxburgh Cricket Club and became Mayor of Roxburgh in 1885) with Harriet continuing the business until her death in

1913 (Figure 6). It is possible that the Heron's may have sold the cottage before they left Fourteen Mile to Henry's mining claim partner John Nott in 1875 as in a newspaper advertisement of April 1879, Nott is selling a cottage with furniture and its garden with the description possibly matching that of the cottage at the time when the Heron's owned it. Given this, between 1875 and 1901 the history of ownership of the cottage is unclear. It is known that the Miller family bought it in 1901 and the family still has the sale document (Jack Miller *pers comm*). Local history notes that the Murchison brothers used the cottage for mining from 1913 onwards and added the corrugated iron north bay room to the structure around this time or later (Phase III, Figure 5), which does match the age of the materials used for this structure and artefacts recently found around it (see below). For the remaining years the cottage has been used for people hunting and fishing in the area. This continued after the construction of the Roxburgh Dam was completed in 1956 when the land around the cottage was acquired by the Crown for hydroelectric purposes and then for the same purpose by Contact. The survival of the cottage owes much to the guardianship of the structure by the Miller family over the decades since 1901.

#### **Cottage Construction History and Conservation Works Up Until 2019**

Mrs Heron's Cottage was constructed in three Phases (Figure 5). The first construction was the centre bay of the cottage (Phase I) made of schist and which may originally have had a thatched roof. This is believed to have been built around 1863 by Henry and Harriet. The next phase (Phase II) was the building of the schist extension which appears to have been built in the late 19th century but likely before the Heron's had left in 1875 (Figure 5). This is supported by the recent archaeological finds next to this side of the cottage which are contemporary with this time of construction and use (see below). In addition, the 1930-1939 photograph in Figure 3 already shows quite a build-up of material on the south side and back of the cottage implying this bay had been present for many decades. As noted above, the final phase of construction (Phase III) was certainly in the early 20th century with this corrugated iron bay probably built by the Murchison brothers who mined in the gorge at this time.

When Heritage New Zealand and Contact first visited the cottage to check its condition in 2008, the cottage was essentially watertight but clearly required immediate conservation work (Figures 7 to 12). Weeds had infested the structure growing over the roof and along the side and back walls, particularly periwinkle. Trees next to the cottage had very large branches overhanging the structure presenting a branch fall risk, a tree had fallen partially onto the back of the cottage, and small shrubs had grown close around the front walls. The interior of the cottage was relatively clean and dry probably due to it being used by various people over the years but it could be seen the back walls of the cottage were damp from earth falling down behind the back wall causing moisture to be drawn into the stonework. The tongue & groove timber ceilings also were damp and rotten in places due

to the storm water not being able to run away off the roof properly and leaking into the interior. The early 20th century wooden floors, which replaced the original floors, were in quite good condition with holes in places but the Phase III, early 20th century extension wooden floor was quite rotten. Fortunately, small repairs done on the cottage over the years had helped preserve the structure such as those done by the Lake Roxburgh Boating Club in the 1980s and the Miller family (Farminer 2014: 18).

It is interesting to note from Figures 3 & 4 that the corrugated iron roofs on the centre and south bays of the cottage have remained the same from ca. 1930-1939 to today as evidenced by the line of roofing nails being in exact alignment. A photograph from the late 1960s/early 1970s (Figure 13), though, shows that the six pane timber sash windows of the cottage were intact at this time, and a description from the 1980s indicates that more fixtures and fittings were once present, such as a door in the south bay, window shutters, extensive wall paper, and the Shacklock cola range was more or less intact. Given this, the structure itself had survived well considering its age.

The forming of Lake Roxburgh had created an additional problem for the cottage. As noted above, the cottage used to be located well above the Clutha River during the 19th century and up until 1956. The land in front of the home was being eroded away by wave action from the lake which would eventually reach the cottage and cause it to collapse into the lake if not managed (Figure 14).

Between 2008 and 2014, essential conservation works were undertaken by Contact based on advice from Heritage New Zealand to manage immediate risks to the cottage (Figures 15 to 17). Vegetation growing around the cottage was cut and poisoned, and trees with branches overhanging the cottage were cut back. Over the years weeds continued to be sprayed. Contact engineers

designed and built a wave wall to stop the erosion of the bank in front of the cottage which was now only ca. 5m from the front door. This wave wall was built from large schist slabs sourced locally and angled on a low gradient to take the energy out of waves splashing onto the shore. These works were very successful in putting the cottage in a 'holding pattern' while the next stage of conservation was planned (Figure 18).

In 2014, Heritage New Zealand contracted built heritage conservation specialist Andrea Farminer of Origin Consultants to develop a Conservation Management Plan for the cottage. The plan was funded by Contact. The aim of plan was to maintain and manage the cottage as an authentic 'goldfields cottage ruin', rather than set out to repair and replace any fabric that may have degraded. For example, although the timber floors had holes in them and some timbers were in a poor condition, authentic timber would be retained and only the holes patched for visitor safety. In addition, doors would not be re-installed but a barrier constructed to ensure visitors could access the cottage but sheep could not, given the sheep farm land bounded the cottage. Fencing the property to keep out sheep would also detract from the original landscape setting of the cottage. The Conservation Management Plan was completed in 2014 and over the next five years funds were pooled so as the conservation works could be undertaken as one complete project. Planning for the project commenced in 2017 and was undertaken in 2019.

#### The May/June 2019 Conservation Work on Mrs Heron's Cottage

The Farminer (2014) Conservation Management Plan identified key tasks to be completed to achieve the aim of stabilising, repairing, maintaining and managing the cottage in its present state as an uninhabitable ruin. These tasks and hence the works undertaken in May/June 2019 are shown below.

Chimneys	<ul style="list-style-type: none"> <li>• Stabilise chimney tops</li> <li>• Repoint wall voids</li> <li>• Renew the badly burnt and failed lintel in the central bay and repair stonework</li> <li>• Re-bed loose stones to the fireplace in the central bay</li> </ul>
Corrugated iron roof claddings	<ul style="list-style-type: none"> <li>• Clear roofs of all accumulated debris and thoroughly brush down roof slopes</li> <li>• Re-secure wind-damaged roofing sheets</li> <li>• Check and re-secure/renew missing or lifting lead-head nails and roofing screws</li> </ul>
Roof framing and joinery	<ul style="list-style-type: none"> <li>• Replace missing barge and cover boards and cover unprotected wall heads</li> <li>• Replace/re-affix loose fascia in the north bay</li> <li>• Repair roof frames to replace missing or defective elements (further investigation needed)</li> </ul>
Rainwater fittings	<ul style="list-style-type: none"> <li>• Clear out, thoroughly inspect, re-align and re-affix internal gutters in the south and north bays</li> </ul>
Schist walls	<ul style="list-style-type: none"> <li>• Pack out wall voids with earth mortar and repoint walls to a 'flush finish'</li> <li>• Apply limewash externally to finish</li> <li>• Consolidate internal plaster</li> <li>• Monitor movement in east gable to central bay and repair/strengthen as necessary</li> </ul>
Timber & corrugated iron walls	<ul style="list-style-type: none"> <li>• Repair/replace decayed framing to match existing</li> </ul>
Timber and weatherboard clad wall	<ul style="list-style-type: none"> <li>• Maintain/repair weatherboards and check support for gable framing</li> </ul>

Floors	<ul style="list-style-type: none"> <li>• Repair sections of decayed floors</li> <li>• (joists and boards)</li> <li>• Under supervision by an archaeologist, remove debris from floors</li> </ul>
Windows & doors	<ul style="list-style-type: none"> <li>• Maintain existing openings and the remains of former door and window openings</li> </ul>
Vegetation	<ul style="list-style-type: none"> <li>• Cut back and treat vegetation growing up against the walls and over roof areas</li> </ul>
Ground levels	<ul style="list-style-type: none"> <li>• Under supervision by an archaeologist, investigate the banks around the north, south and west sides of the cottage and dig these back where there is evidence that they have collapsed against the cottage walls</li> </ul>
Site	<ul style="list-style-type: none"> <li>• Seek advice from an experienced arborist and maintain or remove (as advised) the Gum trees to the north of the cottage</li> </ul>

Table 1. Conservation tasks undertaken on Mrs Heron's Cottage in May/June 2019.

The heritage professionals who undertook the work included myself, archaeologist Matthew Sole, carpenter Chris Naylor and stone mason Keith Hinds. Daniel Druce, Environment Advisor for Contact, managed the funding for the work and the provision of large on-site equipment. Jack Miller, a sheep farmer whose land bounded the property, helped to excavate the fill which had built up behind the back wall of the cottage. It was his family that purchased the cottage back in 1901 and owned it for many years. In Figures 19 to 34 can be seen the progress of the tasks as they were undertaken and the outcome of the conservation work revealing more of the original look of the cottage at the time of Henry and Harriet Heron. Perhaps the most interesting discoveries from the May/June 2019 work undertaken was the nature and extent of schist stone retaining wall behind the cottage, the rubbish pit on the south side of the south bay extension, and the schist stone paving out the front of the cottage.

Although it was known that there was some retaining wall stonework behind the cottage, the height and extent of the wall was not known. When fill was removed by spade, this structure turned out to be 1m high and 4m long and was built onto and over very large schist boulders. It was certainly built at the time the central bay of the cottage was built (Phase I) (Figures 22 to 25). The line of the wall was interrupted by the chimney of the cottage being built up against the schist retaining wall (Figure 23). The top course of stones was angled back into the hillside so water running down the slope was directed away from the back of the hut to drain out on either side cottage and away. The drain on the south side Phase II south bay of the cottage can be seen on the ground in Figure 3. The upper 50cm of the fill which hid the wall was a mix of 19th and 20th century rubbish from material falling down the slope behind the cottage and down into the void. From this point down to the original ground level, artefacts dating from the late 19th century were found (Figure 28). Of note was a concentric circle of thin iron hoops which indicated the presence of a wooden barrel (Figure 25). Barrels were commonly located on the front or back corners of 19th century cottages on the goldfields to catch fresh rain water (Figure 26).

On the back corner of the south side of the cottage was found a rubbish pit which was contemporary with the Phase II build of the cottage. This pit contained an array of artefacts including a penny ink, remains of a black

gloss tea pot with gold trim (which will be reconstructed) and beer bottles dating from the late 19th century (Figure 29). This supports the proposed age of this extension dating from ca. 1870s to the 1880s.

A surprising find during the clearance of vegetation from in front of the cottage was a beautiful area of flat schist stone paving lying outside of the 19th century bays of the cottage (Figure 27). The paving had been laid with some skill and care and would have ensured a dry area for foot traffic in and out of the cottage. Previous vegetation clearance and the construction of the wave wall did not reveal this feature of the cottage and no previous research on the history of the hut had mentioned this stonework.

### Conclusions

The conservation work on Mrs Heron's Cottage has ensured that this historically significant goldfields cottage will be preserved in the long term for future generations to enjoy (Figures 33 & 34). The works also revealed an unknown history about the cottage and hence has added to the story of the Heron's and their time living at Fourteen Mile Beach in the Roxburgh Gorge. The next phase of the project will see interpretation panels erected at the site. This project is a good illustration of a Government/private company partnership in the management of local heritage.

### Acknowledgements

My thanks to Contact Energy Ltd for providing the funding for this project and in particular Daniel Druce. This cottage would not have survived without the guardianship of the cottage by the Miller family since 1901. Further thanks to Matthew Sole, Chris Naylor, Keith Hinds, Jack Miller, Andrea Farminer and Jonathon Howard.

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Figure 3. Mrs Heron's Cottage sometime between 1930 & 1939 showing the Roxburgh Gorge in the background (Photo courtesy of the New Zealand Herald Glass Plate Collection, Auckland Libraries Ref. ID 1370-27-2).



Figure 4. Mrs Heron's Cottage photographed from a similar angle as in Figure 3 in 2019. Note the change in the landscape from steep gorge prior to 1956 to lake after the completion of the Roxburgh Dam (Photo: Matthew Schmidt).

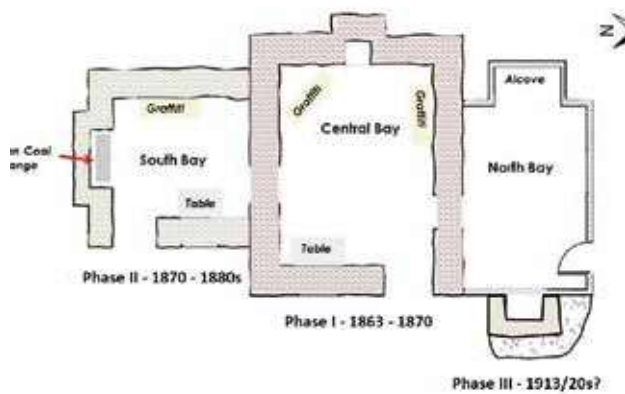


Figure 5. Building Phases of Mrs Heron's Cottage adapted by the author from Andrea Farminer's 2014 plan.

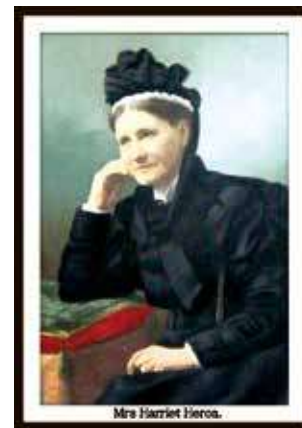


Figure 6. A portrait of Harriet Heron; date & artist unknown (Image: Teviot District Museum 047).



Figure 7. Mrs Heron's Cottage in 2008 (Photo: Daniel Druce).



Figure 8. The cottage completely overgrown along the back with a fallen tree lying on the cottage (Photo: Matthew Schmidt).



Figure 9. The cottage completely overgrown along the front (Photo: Matthew Schmidt).



Figure 10. The cottage interior, Centre Bay, was relatively dry with various debris on the floor (Photo: Matthew Schmidt).





Figure 11. The cottage interior, South Bay shown, was relatively dry with various debris and holes in the floor. South Bay shown (Photo: Matthew Schmidt).



Figure 12. The tongue and groove timber ceilings were in a poor condition but repairable (Photo Matthew Schmidt).

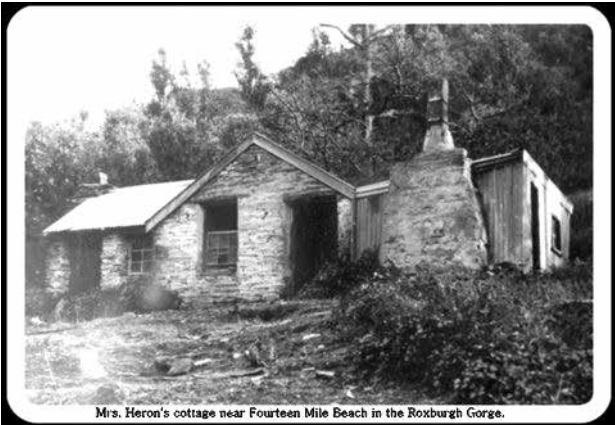


Figure 13. A photograph of Mrs Heron's Cottage taken during the late 1960s early 70s. Note the six pane timber sash windows in place in the central and south bays and the door in the south bay. (Image: Teviot District Museum 159).



Figure 14. The eroding bank in front of the cottage due to wave action from the lake (Photo: Daniel Druce).



Figure 15. The first major vegetation clearance from around the front of the cottage in 2010 (Photo: Daniel Druce).



Figure 16. The first major vegetation clearance from around the back of the cottage in 2010 (Photo: Daniel Druce).



Figure 17. The wave wall to protect the cottage from erosion soon after completion (Photo: Daniel Druce).



Figure 18. The cottage in 2016 showing the successful wave wall being colonised by vegetation creating a habitat for insects and lizards (Photo: Jonathan Howard).



Figure 19. Front of cottage just before the 2019 conservation works (Photo: Matthew Schmidt).



Figure 20. The back of the corrugated iron north bay (20th century) and central stone bay (ca. 1863) just before the 2019 conservation works (Photo: Matthew Schmidt).



Figure 21. The back of the centre and south stone bays just before the 2019 conservation works (Photo: Matthew Schmidt).



Figure 22. The back of the centre and south stone bays after fill removal in May 2019 works. Note the dark areas on the stonework indicating the level the earth fill came up to behind the cottage creating the damp back walls (Photo: Matthew Schmidt).



Figure 23. The back of the central stone bay (ca. 1863) after fill removed in May 2019 (Photo: Matthew Schmidt).



Figure 24. The back of the north bay 20th century room after fill was removed May 2019 (Photo Matthew Schmidt).



Figure 25. Metal hoops from a wooden barrel found on original ground level behind the south bay. It was probably used for collecting fresh rain water (Photo: Matthew Schmidt).



Figure 26. A miner's dwelling mid-19th century from the Otago Goldfields showing a wooden barrel to store fresh water (Image: Hocken Collections ref Kawarau Gorge 1241 01 002A).



Figure 27. Carpenter Chris Naylor and archaeologist Matt Sole reveal hidden schist stone pavers during May 2019 conservation works on the front of the cottage (Photo Matthew Schmidt).



Figure 28. Author showing one of a number of 19th century bottles found during the May 2019 conservation works. Most artefacts were found in the fill and a small rubbish pit at the back of the cottage (Photo: Matt Sole).



Figure 29. A 19th century 'Penny Ink' found in the rubbish pit at the back corner of the South Bay (Photo Matthew Schmidt).



Figure 30. Centre Bay floor cleaned with only minor repairs required (Photo: Matthew Schmidt)



Figure 31. South Bay room floor repaired and room cleaned (compare to Figure 11) (Photo: Matthew Schmidt).



Figure 32. Stormwater gutting repaired using original and new elements to take water away from the cottage (Photo Matthew Schmidt).



Figure 33. The back of the cottage showing barge boards and capping repaired and replaced, and iron roofing mostly left in place as it was water tight (Photo: Matthew Schmidt).



Figure 34. Stonework, carpentry and excavations around the cottage completed. Note the self-closing doors to stop sheep entering the building. Visitors enjoying the cottage (Photo: Matthew Schmidt).



## The Devastating Effects of Earthquakes and Other Natural Calamities in the Philippines: A Threat to Heritage Structures

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Conservation Laboratory, San Agustin Museum, Intramuros, Manila

On October 15, 2013, a 7.2 magnitude earthquake affected the whole Central Visayas region in the Philippines, particularly Bohol and Cebu. Just weeks later, the super typhoon Haiyan (Yolanda) made landfall in Guiuan on November 8, 2013, in the Philippine province of Eastern Samar. These calamities brought tremendous damage upon the land and its people. Heritage churches in the areas were also devastated and some completely destroyed. The extent of destruction brought by these calamities was unimaginable. The period of recovery, rehabilitation and restoration of the churches lasted from 2014 up to 2017 with the help of religious, private and government institutions or agencies. The caretakers of churches in the Philippines have become more aware of the need to ensure their building's structural stability. Churches other than the ones affected have now undergone assessments, renovations and stabilization with the help of experts.

Even if calamities are natural occurrences, no one can ever determine a warning sign or foresee when an earthquake will surely hit. Just this year, on April 22, 2019, a 6.1 magnitude earthquake struck the island of Luzon. The tremor was slightly felt at the San Agustin Church (UNESCO World Heritage Site) in Intramuros, Manila, when small debris in different locations of the building fell. Immediate inspections were undertaken by the authorities and the national agencies concerned. The building remained intact. One particular side of the church facing the main street is scheduled to be restored. It is meant to be an emergency exit for people when a sudden earthquake occurs. For safety reasons, the church may require another assessment and survey to ensure its stability. Damaged in this earthquake were heritage church structures in Pampanga. The province was placed under a state of calamity. For some time, the Archdiocesan Committee on Church Heritage-Pampanga recommended the temporary closure of all heritage churches in the province.

The list of Pampanga heritage churches that were either severely or partially affected by the April 22, 2019 earthquake included the following: Holy Rosary Parish, Angeles City; Nuestra Sra. de Gracia Parish, Mabalacat City; San Bartolome Apostol Parish, Magalang; San Agustin Parish Church, Lubao; Sta. Lucia Parish Sasman; Immaculada Concepcion Parish, Guagu; Santiago Apostol Parish, Betis; San Jose Labrador Parish Floridablanca; Sta. Catalina de Alexandria Parish, Porac; and Sta. Rita de Cascia Parish, Sta. Rita. Other affected churches were the following: Metropolitan Cathedral of San Fernando; Sta. Catalina Alexandria Parish, Arayat; San Guillermo Parish, Bacolor; San Guillermo Parish, Bacolor; and Sta. Monica Parish, Mexico Pampanga. Other churches in Pampanga that were examined were the following: San Pedro Apostol Parish, Apalit; San Andres Parish, Candaba;

San Nicolas de Tolentino Parish, Macabebe; San Miguel Arkanghel Parish, Masanlot; Sta. Monica Parish, Minalin; San Luis Gonzaga Parish, San Luis; Nuestra Sra. del Pilar Parish, San Simon; and Sto. Tomas Apostol Parish, Sto. Tomas. Several meetings were held by the Archdiocesan Committee on Church Heritage in Pampanga with the participation of stakeholders together with the national agencies to discuss a rehabilitation and restoration plan. Severely affected churches were prioritized. Some of the churches were opened for Mass services after the vicinity and building were declared safe.

A few months later in the Batanes Islands, the local people were alarmed after several earthquakes and aftershocks were felt on July 27, 2019. Affected were school grounds and the Itbayat Church. The first earthquake at 4:16 AM was a magnitude 5.4, and then at 7:37 AM a magnitude 5.9 earthquake generated intense ground shaking, while at 9:24 AM a magnitude 5.8 earthquake occurred. The 19th century Santa Maria de Mayan Parish Church or Itbayat Church, including schools and ancestral homes, were affected. The bell tower of the Itbayat Church fell after the intermittent earthquakes.

Around the country, pre-restoration works applied to damaged churches involve the following processes: scanning of walls using 3D laser scanning technology; clearing of unnecessary debris; retrieval and documentation of usable loose stone blocks, objects and elements; storage and security of retrieved and documented objects; installation of shoring, braces and scaffolding. To conform with safety requirements and prevent further collapse of the structure due to aftershocks and rain, shoring and bracing supports are installed; geological soil and vertical structure assessments, which includes soil boring and ground penetrating radar tests, determine the geological integrity of the area and the soil bearing capacity of the damaged site. All the findings will influence basic conservation decisions, such as whether reconstruction can or cannot take place and what interventions are necessary in order to strengthen the soil foundation. The Detailed Engineering Study assesses the structural condition of the structure, especially its foundation, and helps determine the pre-requisites of restoration such as retrofitting. In the characterization of materials, samples of church walls are collected and tested in a laboratory to determine the properties of the materials, which provides the basis for arriving at the appropriate combination of materials to be applied in restoring the structure. The national agencies also have programs to train local people in conservation and restoration. For every disaster that the country encounters, the recovery becomes surmountable when people plan and work together.

July 27, 2019 Affected Churches	Registry Status/Brief Profile	Report
Santa Catalina de Alexandria Church, Porac, Pampanga	Presumed ICP (Important Cultural Property) Built in 1875. Uppermost part of the belfry, a latter addition made of cement.	Belfry damaged, reducing the structure from four stories to two.
San Agustin Church, Lubao, Pampanga	NHL (1952) (National Historical Landmark); ICP (2013) Present structure built in 1638; damaged during World War II and restored after the war	The belfry's linterna damaged; parts of the cupola fell
Apung Mamacalulu Shrine, Angeles City, Pampanga	Presumed ICP (image). A known pilgrimage site since the Philippine revolution of 1896	Sanctuary table of the Santo Entierro (Apung Mamacalulu) damaged due to debris
Sta. Rita Church, Sta. Rita, Pampanga	Presumed ICP. Present church structure built in 1868.	Belfry sustained cracks
San Nicolas de Tolentino Church, Macabebe, Pampanga	Marked Site (2018). Present church structure was rebuilt in the 1930s atop the ruins of the 1864 edifice (burned by Col. Agapito Bonzon in 1899)	Previously reported with large cracks and falling parts, scheduled to be inspected on 29 April 2019
San Fernando Cathedral, City of San Fernando, Pampanga	Presumed ICP. Present church structure was rebuilt from the ruins of the 1808 structure (burned upon the orders of Gen. Antonio Luna in 1899)	Cracks on the ceiling spotted
Santo Rosario Church, Angeles City (Holy Rosary Church)	Marked Site (2017). Present church structure was built in 1877.	Cracks seen on the walls
Santiago Matamoro Church, Betis, Guagua, Pampanga	NCT (2005). Present structure was built in 1770.	Cracks on the outer walls and Corinthian pillar motifs noticed.
Torre Heliografico, Magalang, Pampanga	Presumed ICP. Present structure originated from the developments in 1878; tower added in 1881.	Cracks reported on the sanctuary.
San Andres Apostol Church, Candaba, Pampanga	Presumed ICP. Present structure originated from developments in 1878; 1881 tower.	Cracks reported on the sanctuary



Cracks on wall at Santa Monica Parish



Wall cracks at the Holy Rosary Church, Angeles Parish



Santa Catalina de de Alexandria Parish, Porac



Cracks and debris -Linterna of the San Agustin



Damage at Hacienda de Dolores, Porac



Damage at Pio Chapel, Porac



Fence cracks at Monasterio de Santa Clara, Betis



Cracks on columns at St. James de Apostle Parish, Betis, Guagua



Cracks at belfry of Santa Rita de Cascia Parish, Sta. Rita



Itbayat Church: The bell tower fell after a series of earthquakes and aftershocks in July 2019

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#### **Acknowledgements:**

Photos, information and documentation from the San Agustin Church and Monastery, Archdiocesan Committee on Church Heritage-Pampanga, Arch. Louie Valerio and Arch. Reynaldo Lita (National Historical Commission of the Philippines), and Ms. Racquel de la Cruz Flores (National Museum of the Philippines).



## Ancient Timber Monuments in Sri Lanka: Types and Problems

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Wooden architecture in Sri Lanka goes back over a period of more than 2,500 years, and accordingly timber is the most popular and frequently encountered building material of the present as well as the past. A tradition of building with wood and mud walls has existed since the early settlers colonized Sri Lanka. While timber was used as logs in the early period, with advances in woodworking tools the logs came to be processed into members of different sizes and shapes as needed.

Traditional timber buildings surviving today are from the 15th–18th centuries. These wooden structures are excellent in their design, construction, and craftsmanship. Over thousands of timber buildings are conserved today, including those built as assembly halls, shrine rooms, and rest halls, etc. These buildings can be seen mostly in and around Kandy, which was a medieval city.

### Types of ancient timber monuments

Four main uses of timber in traditional structures can be identified.

1. Timber used as the base of a building
2. Timber used for the superstructure
3. Timber used for the roof where the superstructure can be any material
4. Others

#### 1. Timber used as the base of a building

Buildings were typically constructed on platforms raised about 30 cm from the ground level. Four logs of timber were placed transversely on four or more stone pillars which could be short or tall, or could be boulders. In such buildings, the superstructure could be timber or wattle and daub.

As examples of the above, temples on pillars (*tampita vibara*) and wayside resting places (*ambalama*) are discussed in the following subsections.

#### Temples on pillars (*tampita vibara*)

This is a very interesting type of wooden construction created by the ancient craftsmen. They are shrine rooms constructed on a grid of timber beams placed atop large boulders or stone pillars, because these stone elements protect the timber members from damage by insects and the damp. The height of the stone pillars varies from building to building. The shrine room was enclosed with mud walls (wattle and daub) and painted with images from Buddhist stories on both the inner and outer surfaces.

The roof was erected on wooden pillars that were fixed to horizontal timber beams, and clay tiles were used to cover roof. While about 250 examples of *tampita vibara* are seen in Sri Lanka, most of them have been conserved by the Department of Archaeology.



Bingiriya Tampita Vihara (the largest *tampita vibara*)

#### Wayside resting places (*ambalama*)

Another interesting wooden structure in ancient Sri Lanka is the *ambalama* (resting place for wayfarers), which is constructed in a manner partly similar to that described above for the *tampita vibara*. These were resting places built by the side of a highway, under a large tree or on a flat rock in a paddy field, for those who traveled by cart or on foot in ancient Sri Lanka, providing travelers a place to sit and sleep, while facilitating their requirements for water and cooking as well.

The *ambalama* is normally square in shape. Four stone boulders are placed on a platform of rubble or flat rock and huge wooden beams are stretched over them. These beams are used to sleep or as benches to sit. The roof is constructed atop timber posts, which are fixed on the beams. Most of the timber parts except the floor beams are decoratively carved, and the roof is covered with clay tiles or thatch depending on the wealth of the villagers who built it. A fine example of such a structure is the *ambalama* at Panavitiya.



Karagahagedara Ambalama

#### 2. Timber used for the superstructure

In this case, two or more rows of timber columns are fixed on a raised platform to hold the roof. The most accessible and commonly known examples are the Audience Hall of the Royal Palace in Kandy, and the Dancing/Drummer's Hall of Embekka Devalaya. These are surviving examples of the general building type called *maduwa*, which often



informs specific building names such as Magulmaduwa (Audience Hall), and Beramaduwa (Drumming Hall). As with the *ambalama* described above, most of the wooden elements are carved and display the creativity of ancient craftsmen.



Embekka Drumming Hall

### 3. Timber used for the roof where the superstructure can be any material

In the above types and in other buildings where the structure is made of masonry, the roof structure is often built of wood and clay tiles are laid on it. Examples are seen in a number of shrine rooms.

### 4. Others

In addition, other elements of these buildings such as doors, windows, railings, columns and so forth may be fashioned of timber and are often carved. Among these carvings, various popular motifs are employed as decorative elements. The only evidence of an ancient timber bridge is situated in the hill country in the village of Bogoda. It is made with three large beams, placed across a stream and supported in the center, spanning two cliffs approximately 30 m apart. Timber pillars fixed to the horizontal beams support the structure of a tiled roof.

### Problems in the conservation of timber monuments

Timber is a material subject to many problems of decay. The above types of structure are threatened by negligence, deterioration, climatic factors, biological attacks and a lack of maintenance. These heritage structures must be preserved in a well-planned manner, with conservation programs being proposed which give priority first to the roof, followed by attention to the superstructure. This is because in a country like Sri Lanka, a decayed building is always endangered by heavy rains, so first of all the monuments must be protected from the rain. In most of the cases, before starting conservation work a temporary protective roof, usually thatched with woven cadjan (dried



Bogoda wooden bridge

coconut palm leaves), is erected over the building to provide shelter for the structure and also allow conservators to work without exposure to the sun and rain.

The common types of damage to old timber members can be categorized as follows.

1. Fungus growth, encouraged by the presence of moisture, moderate temperatures and poor ventilation.
2. Insect attacks, most commonly seen in floor and roof members which are damaged by insects such as termites and beetles. The termites eat the wood and beetles bore holes in the timber members.
3. Damage due to burning.
4. Decay due to water.
5. Damage due to the characteristics of timber, such as the various stresses and strains attending members used over large spans.

Apart from above, as a developing country in the South Asian region, Sri Lanka faces additional difficulties in carrying out conservation work with ancient monuments. There are a number of problems connected specifically with the preservation of timber buildings.

1. Inefficiency in current procedures for purchasing the required timber.
2. Financial problems arising from the high cost of timber as a building material.
3. The scarcity of timber varieties identical to those used in ancient monuments.
4. The scarcity of craftsmen skilled in the conservation of ancient timber structures. There is a lack of training in traditional and modern techniques required for the conservation of wooden structures.
5. The unavailability in the current market of unusual sizes of timber members required for conservation. These items have to be specially ordered and prepared.

### Lack of funds for conservation

The main problem facing efforts to protect these structures is a lack of funds for the conservation and maintenance of the cultural heritage. Although cultural properties contribute very much to the country's economy, such contributions are not directly visible. Accordingly fewer funds are allocated for conservation in comparison to other categories of expenditure in the national budget. A



Mahamankada timber dam

large number of timber buildings listed as cultural properties are in a state of decay, and it is the duty of the Department of Archaeology to protect and preserve them all. But due to insufficient monetary allocations, the Department cannot carry out all of the necessary conservation work.

In this situation, the general public is actually conserving most of the monuments, as the majority of these heritage structures are living monuments related to religion. Sometimes the owners of these buildings intervene to protect the monuments in improper ways with procedures that are detrimental to the character of the original building, carried out by workers inadequately skilled as conservators. As an example, concrete beams have been introduced instead of using timber in one of the wooden structures.

#### **Tropical climate conditions**

Sri Lanka is a tropical country with monsoonal rains as well as floods, and therefore regular maintenance in light of these conditions is necessary.

#### **Influence of large-scale development projects**

As a developing country, the heritage landscape is critically threatened by large-scale development projects. For example, hundreds of ancient wooden buildings exist in the Colombo–Kandy route proposed in a project for the construction of an expressway. Such instances of indiscriminate development are a critical problem in Sri Lanka.

#### **Public awareness**

Public education and awareness in the field of heritage protection are still in the preliminary stage. It is not enough

to cover the need to provide information on the protection of cultural heritage. The efforts of the Department and professionals in conducting awareness programs through publications and other activities are as yet insufficient.

#### **Conclusion**

The Department of Archaeology conserves about 35–40 timber buildings (out of 1,000 wooden heritage structures) annually even under the current financial restrictions. But this is not sufficient to meet the demands of conservation being faced by various types of timber monuments. About 40 Technical Officers holding civil engineering diplomas are engaged in the conservation process under the guidance of the Director General of Archaeology and the Director (Architectural Conservation). But large numbers of wooden monuments are at risk of destruction due to insufficient funding, lack of qualified staff, and lack of awareness. In addition, indiscriminate development, poor management, and insufficient awareness tend to exacerbate the problem. However, the Department of Archaeology of Sri Lanka is making greater efforts to minimize the risk with its current resources as described above.

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Published by  
Cultural Heritage Protection Cooperation Office,  
Asia-Pacific Cultural Centre for UNESCO (ACCU)  
757 Horen-cho, Nara 630-8113 Japan  
Tel : +81-742-20-5001  
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