THE KATHMANDU VALLEY PRESERVATION TRUST

THE RESTORATION OF THE

BHANDARKHAL GARDEN & WATER ARCHITECTURE
COURT BUILDING
DEGUTALE TEMPLE & NASAL CHOWK
SUNDARI CHOWK PALACE – EAST WING
SOUTH TALEJU TEMPLE

AT PATAN DARBAR PALACE COMPLEX – A UNESCO WORLD HERITAGE SITE

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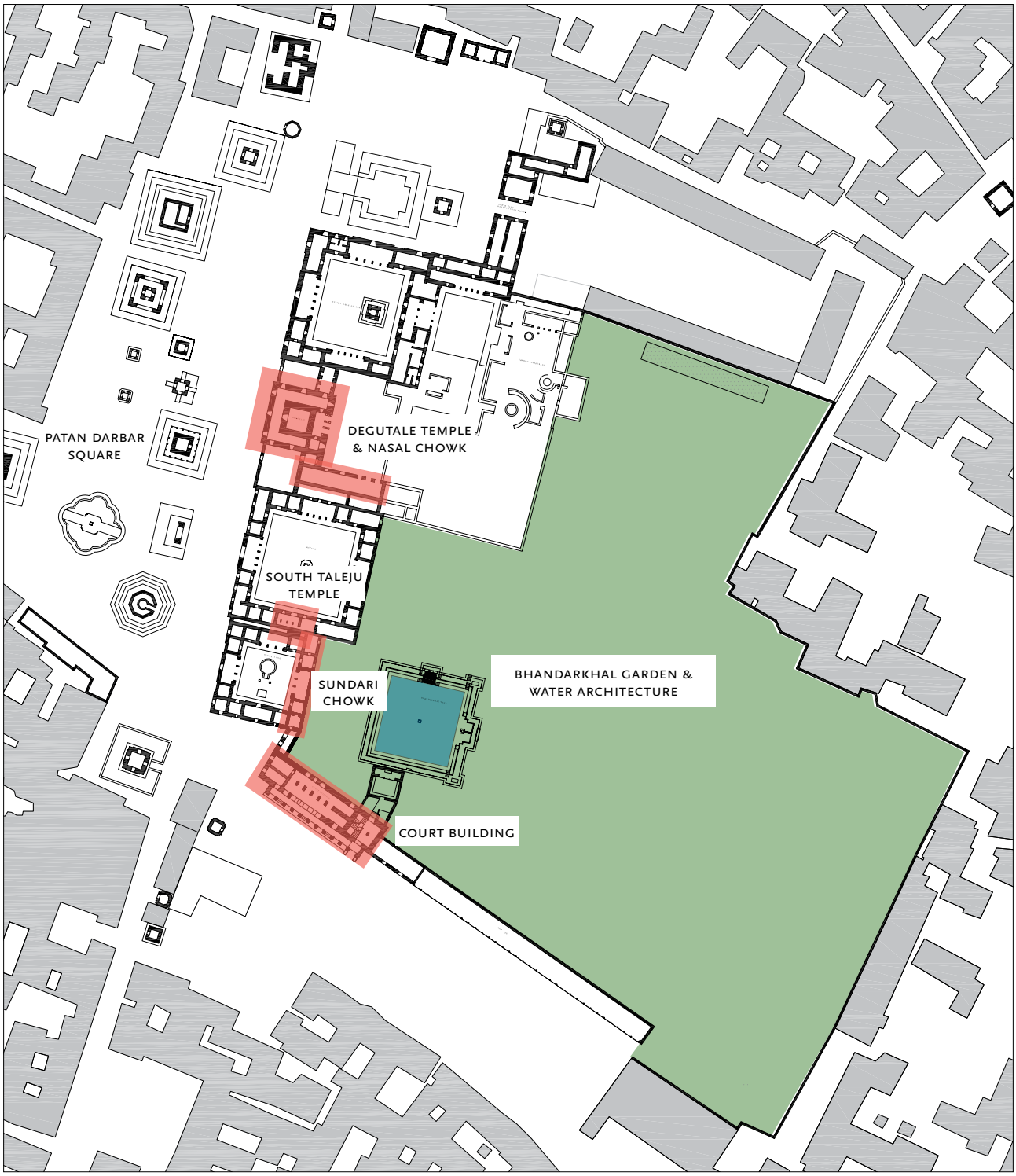


Patan Darbar site plan | 2014
Location of proposed restoration projects

Patan Darbar from the South | 2006
The urban context of Patan Darbar Square and the Bhandarkhal Garden.

INTRODUCTION

THE RESTORATION OF THE PATAN ROYAL PALACE COMPLEX

The Patan Darbar Royal Palace Complex is one of South Asia's most important historic sites: known for its mix of medieval and modern architecture and its seamless integration with the city, the living monuments located within make the site critical to local tourism. The Complex is a magnificent compound whose courtyard buildings, temple towers, open spaces and water architecture constitute the heart of the Patan Darbar UNESCO World Heritage Site.

The Kathmandu Valley Preservation Trust has currently completed 75% of its ambitious scheme to restore the Patan Royal Palace Complex. This ten-year program of works, encompassing in total eleven buildings and monuments, will catalyze both local preservation efforts and optimize the impact of international tourism. The Trust is now seeking donor support to help complete this ambitious project.

The Trust is thrilled to report to its donors that this past year was marked by many achievements, including the successful restoration of:

- the **Bhandarkhal Tank**
- the **Tusha Hiti stone step-well**
- the central **Mulchowk Palace**
- the **North Taleju Temple**.
- the North-, West-, and South wings of **Sundari Chowk Palace**

The **South Taleju Temple** is under repair with 50% of funding in place. The new Architecture Galleries in Mulchowk Palace opened in April 2014.

View from the top of Taleju Temple towards the East | 2014
The roof of Mulchowk Palace can be seen in the foreground. On the left is a row of 16-17th century stone water spouts waiting for professional display. On the right is the recently restored Bhandarkhal Tank, holding water for the first time in over 60 years. The shed building houses a carpentry workshop for the ongoing restoration of Sundari Chowk Palace.

View of the Patan Royal Palace towards the West | 2013

PROJECT COMPONENT 1

THE RESTORATION OF BHANDARKHAL GARDEN & WATER ARCHITECTURE

PROJECT GOALS

- Landscape design and planning
- Permanently opening Bhandarkhal Garden to the public
- Provision of a green oasis and open public space for Patan's inner city residents
- Adaption of the garden for recreational use by providing paths, benches and small pavilions
- Improvement of infrastructure such as public restrooms, lighting, and security
- Planting of indigenous trees and shrubs
- Creation of a teaching garden featuring traditional medicinal plants
- Preservation of historic water architecture
- Hydrological restoration including groundwater recharge and rainwater harvesting
- Design and installation of water recirculation and purification system
- Development of environmental education programming for children
- Sustainable management of the garden including provision of early morning and evening access
- Restoration of three small historic shrines and 16th century terracotta tile paving
- Improved display of archaeological fragments such as water spouts and stone sculptures throughout the garden
- Provision of space for cultural events and performances

PROJECT SUMMARY

The 3 acre (26 ropanies | 13,200 sqm) garden to the east of Patan Darbar has significant potential as a landscape resource for the city of Patan. It is also known as the Archaeological Garden because it has been used for the past 50 years to store stone fragments. Part of the Patan Darbar Palace Complex, the garden has never been opened to the public, except for the small area developed as part of the Patan Museum Café. As a protected heritage site, the garden is uniquely positioned to address the desperate need for public green space in the city.

Traditional Newar cities had very little green space. Houses were built in clusters, with the settlement surrounded by fields. Over time the urban settlement pattern has changed, requiring new thinking about how to incorporate green space in the city. Till now restoration and conservation efforts have focused on individual buildings; the Archaeological Garden represents a unique opportunity to extend this work to the urban natural landscape.

BUDGET

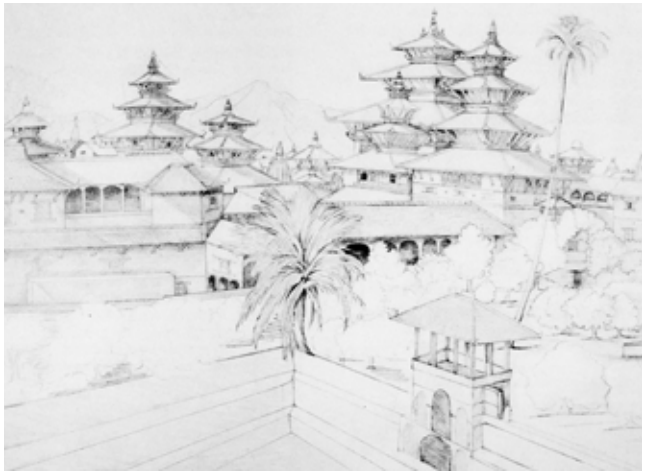
Landscape design and planning	$ 180,000
Hydrological restoration and rainwater harvesting	$ 80,000
* Restoration of shrines & infrastructure development	$ 60,000
* Sound and Light show	$ 60,000

EXISTING CONDITIONS

Little is known about the former use of the garden. Archaeological excavations have unearthed numerous brick foundations, including that of a dwelling dating from 1414. The only historical images of the garden are two drawings dating from the mid-19th century, both of which depict ruinous landscape with overgrown vegetation and a few crumbling buildings that have since been lost.

In the 1950s, pomelo, Japanese cedar, and camphor trees were planted in a somewhat formal arrangement with brick-paved paths, a square pavilion was built in the center and a grove of indigenous Nepalese hog plum (*lapsi*) was planted behind the current Patan Museum.

*** High priority**



c. 1844
Unsigned pencil sketch, attributed to Rajman Singh
Hodgson Collection of the Royal Asiatic Society

1853
Henry Ambrose Oldfield
Inscribed on reverse: "Rajah Sidhi Nur Singh's tank and Summer House, in the Garden at the rear of the Darbar, Patan - constructed AD 1647".
British Library, Oriental and India Office Collection, WD 3309, wash 25.3 x 33.6 cm

1968
For much of the 20th century, the tank remained a picturesque ruin, closed to the public and no longer capable of storing water.

2011
The tank was restored by KVPT in 2011 as part of the Patan Darbar restoration project.

The Department of Archaeology built an oversized conservation laboratory on the southeastern corner in 1975 and began to use the garden as a repository for archaeological objects such as stone spouts and terracotta sculptures discovered throughout the valley. In recent decades the garden has remained in limbo, grown into a substantial green space, but has been overlooked as a resource and remains completely inaccessible to the public.

PROPOSED DEVELOPMENT

The Kathmandu Valley Preservation Trust laid the groundwork for the project when it restored the Bhandarkhal Tank, the focal element of the garden, in 2011 and the Kot Pati rest house which forms the southern border of the garden and houses the new entry gate.

The complete restoration of the garden is a long-term multi-phase project; however, the urgency of providing this valuable space to the public calls for immediate upgrades so that the garden can be opened as soon as possible. The Nepal government has agreed to turn the garden into a public space under the management of the Patan Museum. As a semi-private organization, the Museum has a strong track record of sustainable management through ticket sales and cultural events.

The new management has the financial resources to properly maintain and manage the premises, however, is in need of an initial investment for necessary development of infrastructure. The combination of local private funds, government contributions, and international funds is a proven model of collaboration to make such a worthwhile project happen.

PUBLIC USE

The proposed development of the garden will safeguard the existing green space for multiple uses by future generations, with the provision of minimal interventions designed to enhance the visitor's experience. The addition of paths, paving, and a space for performances will multiply the potential uses of the garden by the public. Essential infrastructural services such as public restrooms, solar-powered lighting, and security will be installed. The openness of much of the garden means it would function as an important refuge in the event of an earthquake.

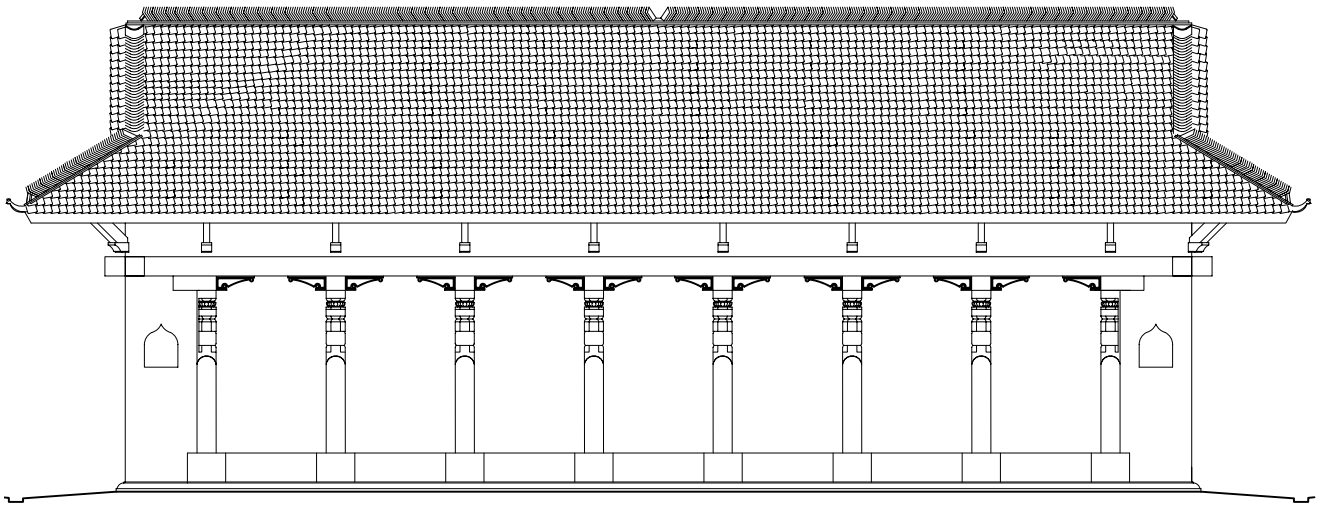
ECOLOGICAL FUNCTION

One of the major aims of the landscape intervention is to supplement the traditional water supply system by providing water storage and recharge systems. In particular, storage of runoff from the high monsoon season would address the shortage of water during the winter months. Any landscape intervention will be designed to optimize the potential to recharge Patan's depleted aquifers. The garden also presents an opportunity to create a small urban forest in the heart of the city to improve urban health and biodiversity.

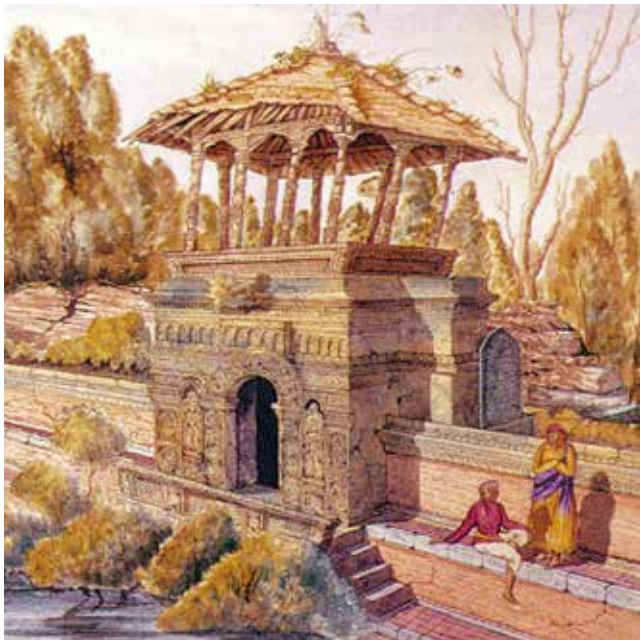
HISTORIC PRESERVATION

The garden is home to several archaeological fragments including stone spouts, sculptures, and historic 16th century terracotta tile paving. Each of these historical objects will be preserved and protected as part of the landscape in the manner of the recently restored Bhandarkhal Tank.

West–East section | 2014

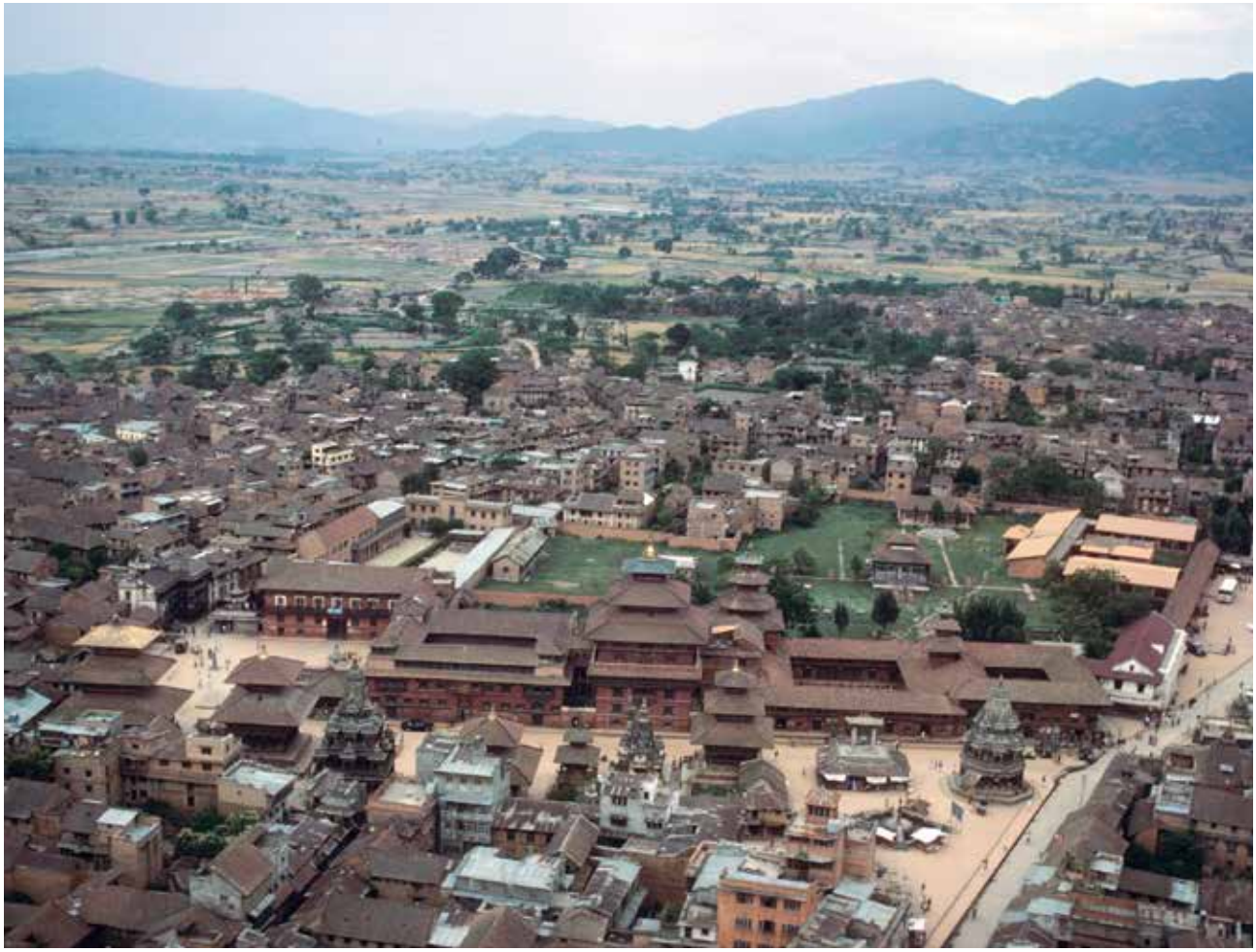


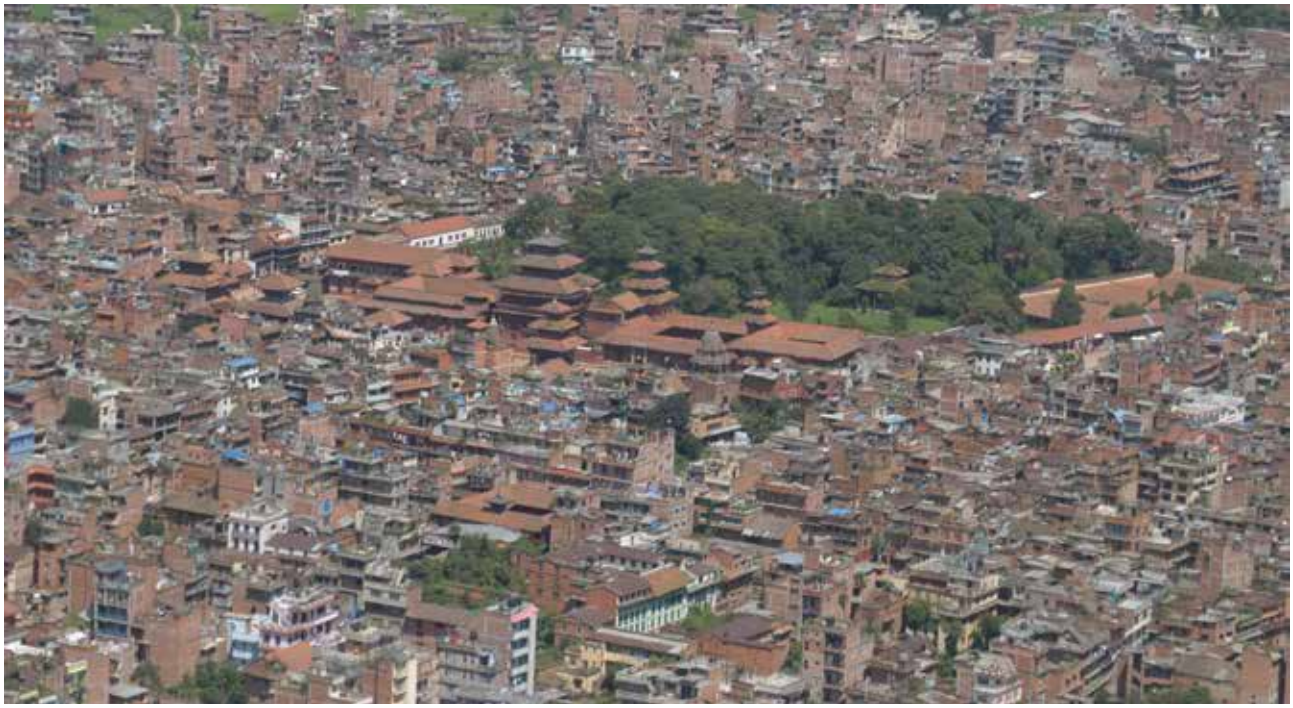
Arcaded pavilion | 2013
This proposed open columned pavilion will mark the transition between the courtyard and the palace's water architecture.



Bhandarkhal Pavilion | 2013
The pavilion of the Bhandarkhal Tank was restored with the help of a 19th century watercolor by Henry Ambrose Oldfield.

Historical paving | 2013
The historical paving discovered in the Bhandarkhal Garden will be restored as part of the integrated landscape of the garden.





Comparative aerial views of Patan Darbar and the Archaeological Garden
TOP: Johann Reinhard | 1979
ABOVE: photograph | 2008

The garden is by far the largest open space within the historic city of Patan. The recent photograph illustrates the explosive urban growth over the past 30 years, making the garden a green oasis in the center of the city.

Bhandarkhal Tank | 2013
The water architecture of the Bhandarkhal tank is the focal element of the garden, inviting visitors to enjoy close proximity to water and to learn about the city's traditional water supply system. Over recent year the historic water supply to such spouts has dramatically decreased and is expected to dry up all together due to a rapidly depleting ground water levels. This will require innovative approached to find alternative water sources through ground water harvesting and storage.

Garden of the Patan Museum Cafe | 2014
A small section of the Bhandarkhal Garden was developed for the Patan Museum Cafe in 1996. The garden has been kept intentionally informal allowing the planting of flowers to be used for temple offerings.

The Court Building
TOP | c. 1930
ABOVE | c. 1995

The photograph on top shows the building a few years before it was severely damaged in the 1934 earthquake. The top floor was later dismantled due to safety concerns and replaced with a poorly constructed roof. This photograph provides valuable evidence for the proposed reconstruction of the lost top floor and roof.

PROJECT COMPONENT 2

THE RESTORATION OF THE COURT BUILDING | CA. 1810

PROJECT GOALS

- Preserve one of the finest and most unique examplesof Indian-influenced early Shah period architecture in the Kathmandu Valley
- Rebuild the lost third floor
- Adaptive re-use of the interior as a contemporary arts centre or other commercial space to generate income for the palace complex and garden.

BUDGET

* Restoration of existing structure and reconstruction of the third floor	$ 425,000

PROJECT SUMMARY

Located at the southeast corner of Patan Darbar Square, adjacent to Sundari Chowk, the white stucco Court Building is a prime example of early Shah period architecture with a distinct Indian influence. Its unique architectural style makes it an important architectural monument deserving preservation.

The building was likely constructed by Bhimsen Thapa around 1810 and acquired its name since it originally housed the municipal courts. Over the years the building has been used by government offices, private stores, the local post office and the police . It is currently neglected and mostly unused but in structurally stable condition.

ARCHITECTURAL DESCRIPTION

The building is notable as a mature rendering of the Anglo-Indian idiom in Nepali architecture, with fully plastered surfaces, strict geometrical arrangement of façade elements, and vertical orientation. The building is currently composed of two stories with a south-facing masonry arcade. Historic photographs document the existence of a third story that was composed of alternating Mughal-style blind arches and large vertical shuttered windows. Above the cornice which supported the roof brackets was a series of shallow niches that contained figures rendered in sgraffito. The structure likely contained an open-span hall on the upper level that was not unlike that of the Bahadur Shah Building, the north wing of the Darbar.

Today, entry to the building is marked by an imposing timber gate located at the southeast, leading into a self-contained stairwell. The original masonry stair creates a grand ascent to the upper levels. The two-story arcade that fronts the building was probably a later addition dating to the late 19th century.

EXISTING CONDITIONS

Recent roof patching has halted any deterioration that would have been caused by water infiltration. However, the use of the front arcade by salt traders has caused considerable damage to its historical lime finish. A spectacular sgraffito frieze above the main entry is the only surviving example in the building of this decorative treatment but it too shows signs of deterioration. The original tiled masonry stair has been covered with a Portland cement finish. All rooms remain empty with the exception of the attic which is used by the police as sleeping quarters.

*** High priority**

Aerial view of Patan Darbar Square with the Court Building on the right | 2006

RESTORATION AND CONSERVATION

The absence of the original upper story of the Court Building greatly diminishes its historic value. KVPT recommends the reconstruction of the original upper story and traditional tile roof cover. The restoration of the high quality sgraffito friezes will be a valuable challenge to the project's craftspeople.

USE AND SUSTAINABILITY

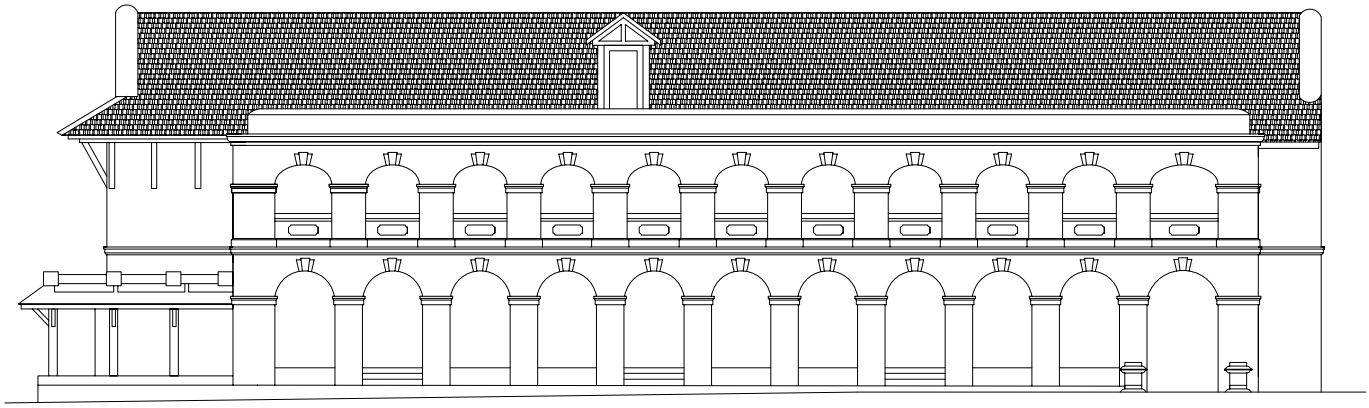
Apart from the historic significance of its location, the building is located in a prime commercial area, leading to considerations to utilize it for income generation and to provide a high exposure space for an arts and cultural center or other purposes. The management of the Patan Darbar Palace Complex relies entirely on funds raised from tourism and commercial rental fees. The restored building constitutes a major asset to the project's self-sustainability.

Sgrafitto frieze above the main entry | May 2006
A rare surviving example of sgraffito offers the opportunity to develop conservation and restoration methods for this unique decorative technique employed on early 19th century buildings.

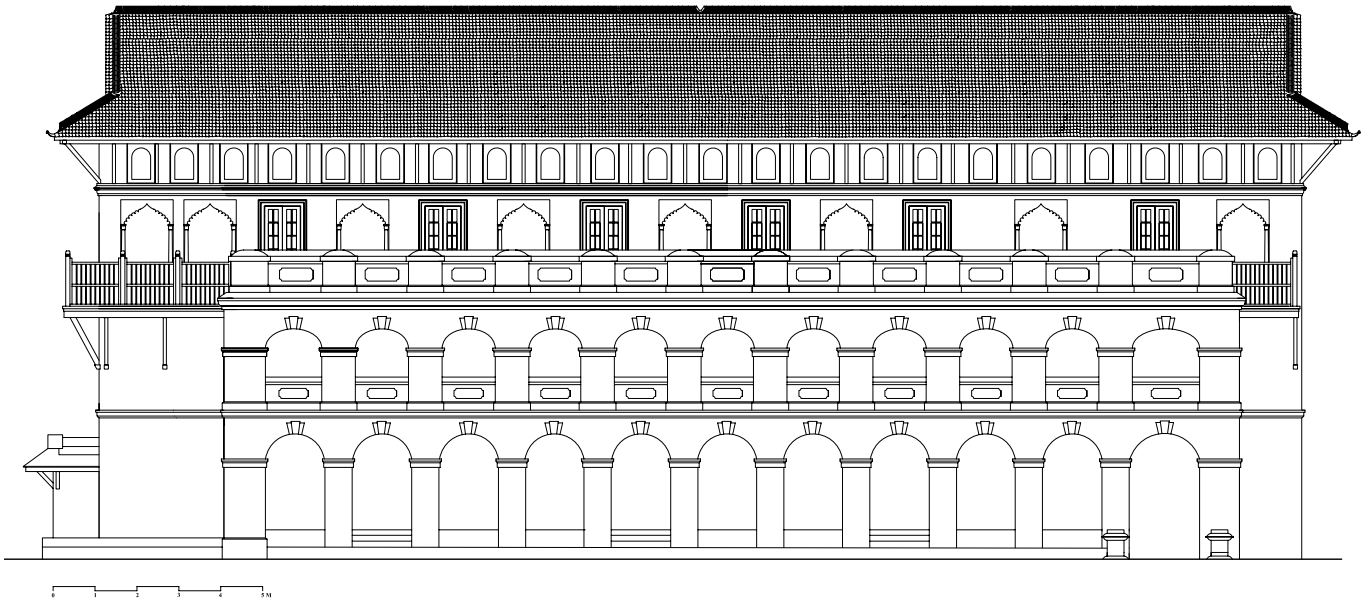
Vishweshwara Temple with the Court Building on the far right
Kurt Boeck | 1899
A part of the Court Building can be seen with a timber balcony now lost. The photo yields interesting details of the third floor ornamentation and windows which were destroyed in the 1934 earthquake. The stone Shiva temple collapsed in the 1934 earthquake and was never rebuilt. Today only the inner cell with the Shiva Lingam remains.

View over the Patan Palace Complex | 1934
This rare photograph illustrates the devastating effects of the earthquake with many temples and palaces severely damaged or lying in ruin. In the far right upper corner the Court Building can be seen on with its 3rd story still standing.

Aftermath of earthquake | 1934
The roof of the upper floor of the Court Building is visible on the far right in this photograph taken from Patan Darbar Square. Although the upper floor survived the earthquake, it was heavily damaged and was later dismantled.



Court Building | South elevation | existing conditions | 2014



Court Building | South elevation | before the 1934 earthquake

Degutale Temple from the South
Thomas Kelly | 2012
This photo shows the Degutale Temple towering over the Palace Complex. Sundari Chowk Palace is under construction by the Trust with parts of its roof removed. Note the newly installed traditional terra cotta roof cover in the background and large modern tiles used in the foreground.

PROJECT COMPONENT 3

THE RESTORATION OF THE DEGUTALE TEMPLE & NASAL CHOWK | 1661

PROJECT GOALS

- Conserve and restore the Degutale Temple, the largest temple in Patan and the focal element of Patan Darbar Square
- Degutale will be used for religious purposes exclusively
- Restore Nasal Chowk, the adjacent structure connecting Degutale with Mulchowk Palace
- Nasal Chowk will be developed as a museum and archive and Children Museum

BUDGET

Restoration of Degutale Temple	$	340,000
Restoration of Nasal Chowk	$	75,000

PROJECT SUMMARY

The tall and impressive Degutale Temple is situated at the center of the Patan Darbar, towering above the surrounding courtyards and squares. Originally built by King Siddhinarsingh Malla in 1661, the temple collapsed in the 1934 earthquake and was subsequently rebuilt by 1940. Currently in

1883

Degutale Temple from the north
This is one of the few photographs showing the building as it stood before it collapsed during the 1934 earthquake.
Johnson & Hoffman (Calcutta)

1934

Remains of Degutale Temple view from the North
This photograph shows the extent of destruction caused by the collapse of Degutale in the 1934 earthquake.

2008

Degutale Temple from the north
The temple was rebuilt after the earthquake using almost 50% of the salvaged materials. Today, Degutale Temple is the focal element of Patan Darbar Square but has severely deteriorated due to lack of restoration and conservation.

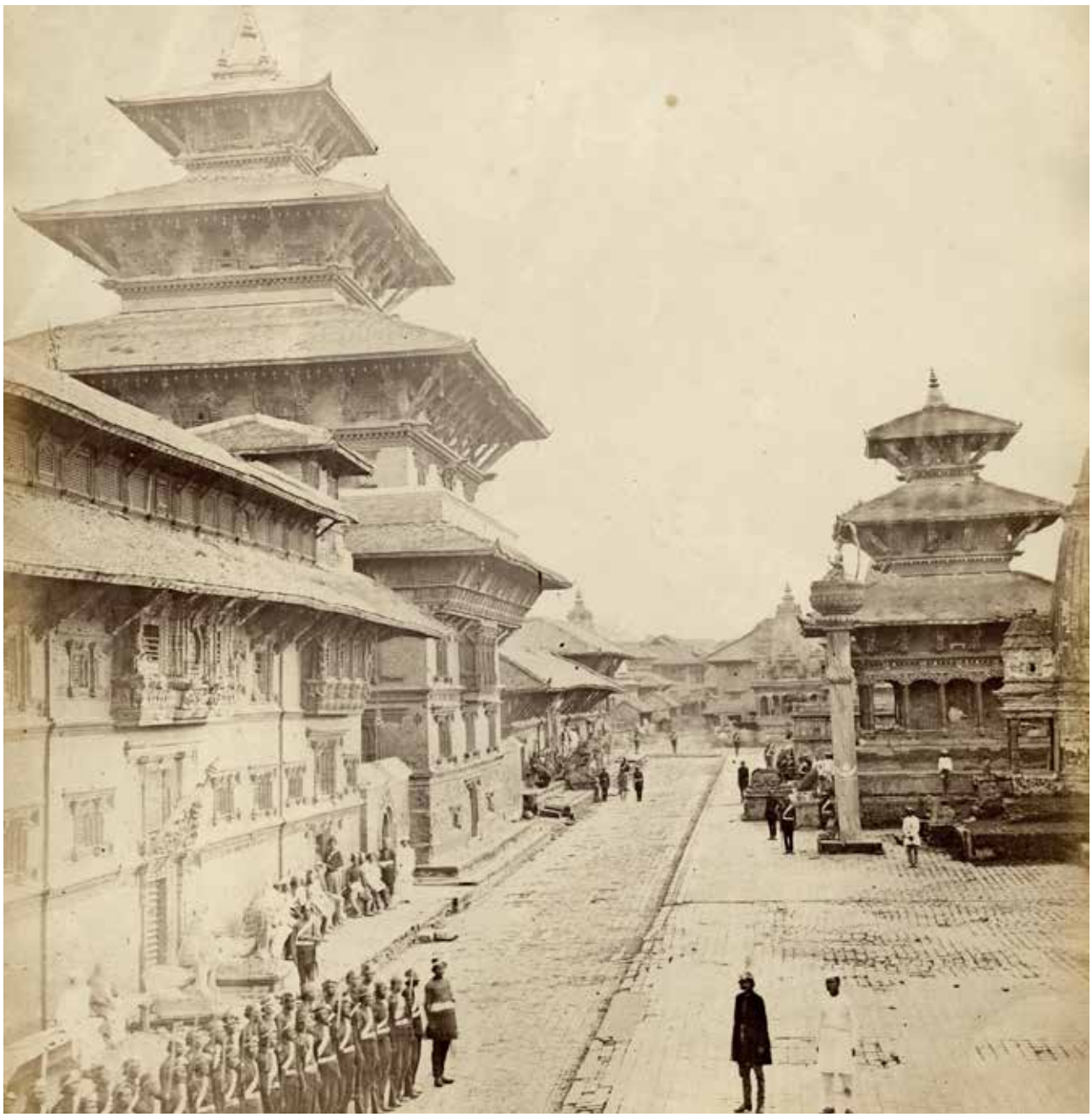
a state of disrepair, this important temple requires immediate structural reinforcement and extensive restoration in order to prevent further deterioration.

ARCHITECTURAL DESCRIPTION

The triple-tiered tower rests on a massive four-storeyed substructure, with a canted balcony below a roof overhang and a terrace on the fifth floor. Based on a square of 14 meters per side, Degutale is the largest temple in Patan and at 22 meters, rivals the height of the Taleju and Tripuresvara temples in Kathmandu.

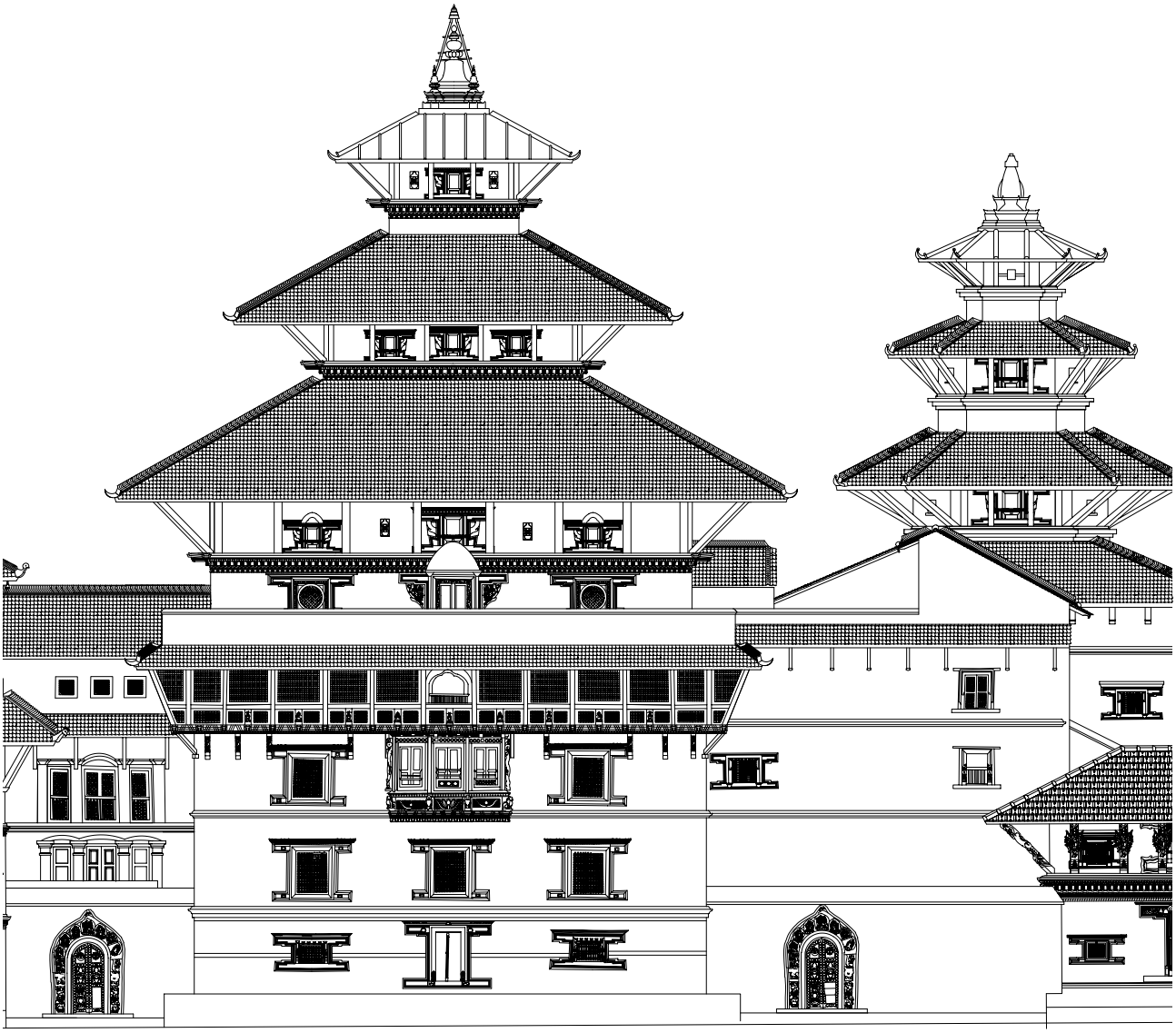
EXISTING CONDITIONS

The temple was rebuilt between 1935-1940 in a slightly altered design but re-using a large number of original building components. The decreased roof slope and floor height gives the present temple a squat appearance compared to the earlier temple seen in historic photographs. During the reconstruction, most of the timber elements and the bricks on the upper floors were reused, while the masonry on the substructure consists of newer, Rana-period bricks. The temple was again restored in 1969 but has since fallen into disrepair.



Degutale Temple from the North | c. 1863
Clarence Comyn Taylor
One of the earliest views of the square with Degutale Temple on the left.

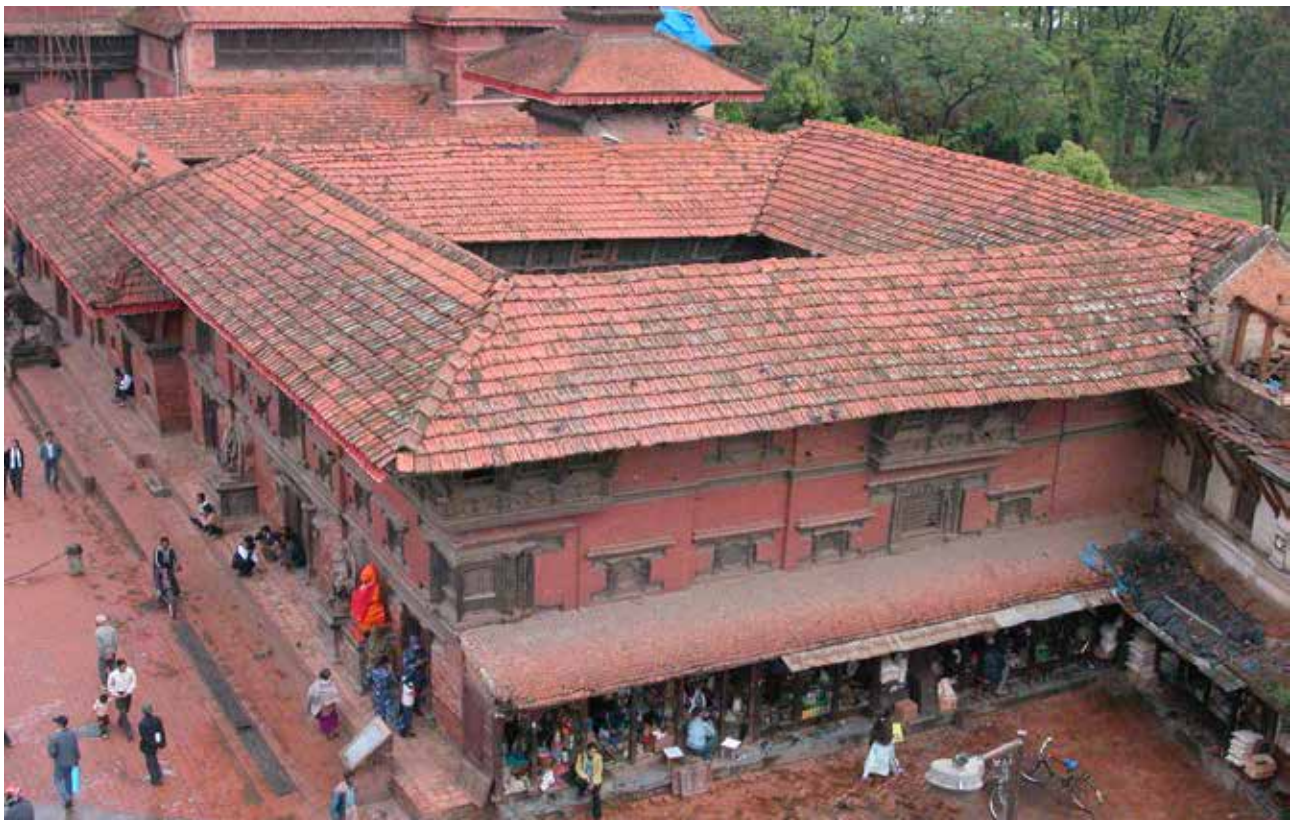
Comparison with contemporary photos shows that the historic roofs of the temples were steeper than at present.

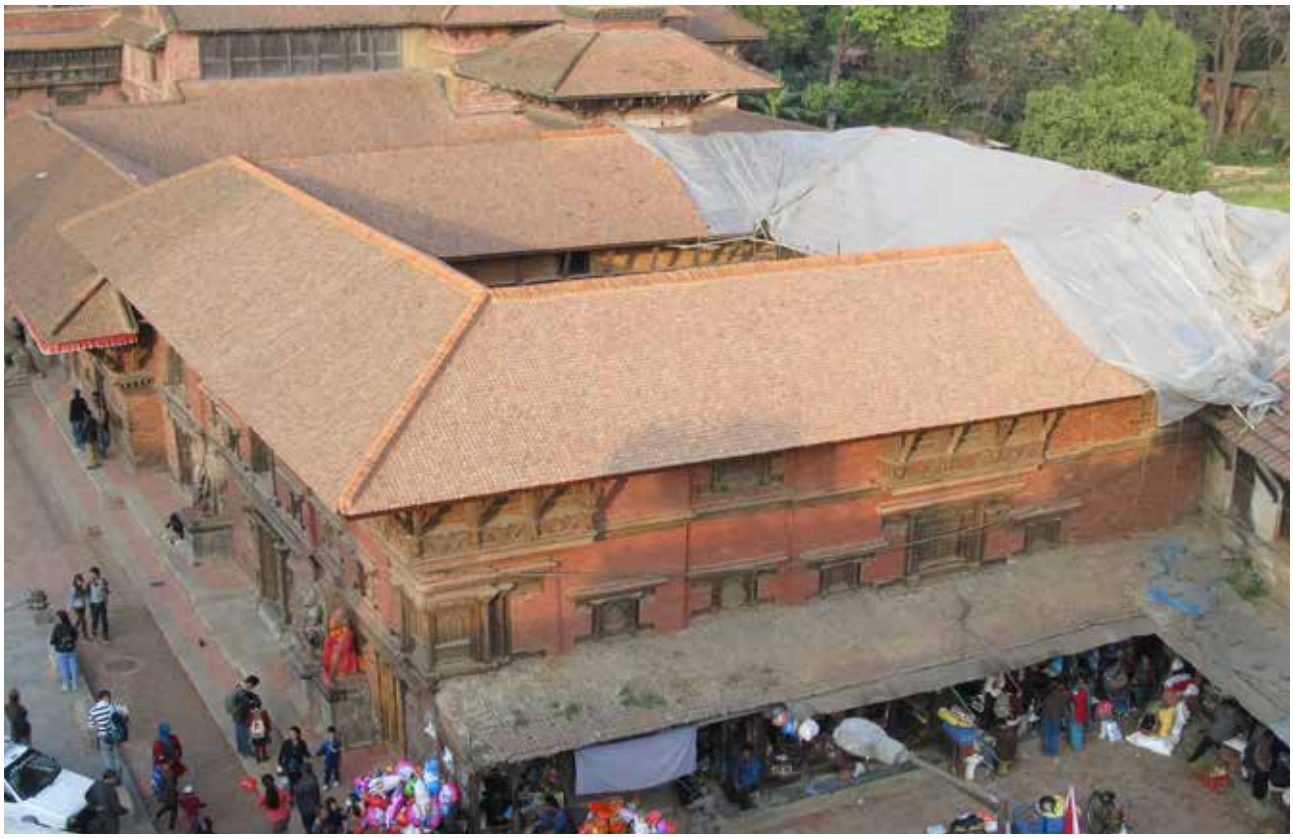


North-South Elevation | 2006
The Degutale Temple is the focal element of the Patan Darbar skyline, towering above the square and the adjacent palace courtyards. The temple's design was altered when it was reconstructed in 1940, with slightly decreased roof slope and floor height.

RESTORATION AMD CONSERVATION

The primary aim of the restoration is to reinforce the temple in order to stabilize the structure against seismic motion. In addition the project will include extensive restoration of the damaged timber frame, partial reconstruction of the roof, repair of the gilded pinnacle, and restoration of damaged decorative elements such as lintels, struts, and latticework. The restoration of the Nasal Chowk courtyard will be a major contribution, linking the existing public space of Patan Darbar Square and the future public space of Bhandarkhal Garden.





TOP:
Sundari Chowk from the South
2005
This photograph shows the condition of the building before restoration work began. The poorly constructed roof, covered with machine-made pan tiles in 1936, was responsible for much of the damages endured by the building.

ABOVE:
Sundari Chowk from the South
2013
The roof has been reconstructed on the North, South, and West wings. The remaining East wing roof is temporarily covered with tarpaulin.

PROJECT COMPONENT 4

THE RESTORATION OF THE SUNDARI CHOWK PALACE -EAST WING | 1628

PROJECT GOALS

- Cleaning and repair of the existing façade walls and restoration of masonry
- Restoration of wall openings and decorative elements
- Structural reinforcement and seismic strengthening of all three floors
- Reconstruction of traditional tiled roof using new wall plates and hardwood timber trusses
- In some cases, replication of key carved components that are broken or missing

PROJECT SUMMARY

During a first phase the restoration of the North, West, and South wings of Sundari Chowk were implemented. KVPT is now searching for funding to support the complete restoration of the remaining East wing structure. Once restoration work is completed the entire palace building will be adapted to house museum and exhibition galleries.

BUDGET

Restoration of the East wing	$ 110,000
Installation of museum and exhibition galleries	$ 40,000

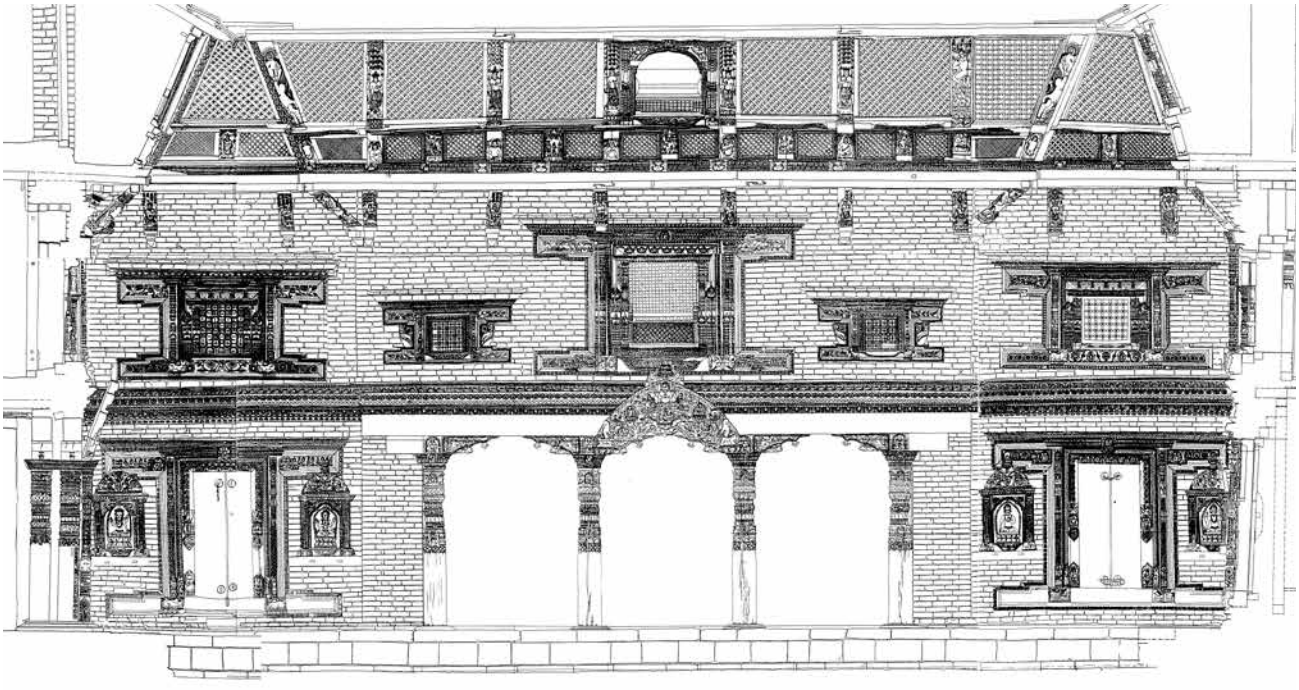
ARCHITECTURAL DESCRIPTION AND HISTORICAL SIGNIFICANCE

The Sundari Chowk courtyard is an outstanding example of Malla-period palace architecture, situated at the southeast corner of Patan Darbar Square. Its prominent position at the major crossroads of the city makes it an important public monument, while its extraordinary courtyard enclosure - never before opened to the public - makes it the most significant structure within the former palace complex. Commissioned in 1628 by King Siddhinarasimha Malla, the courtyard served primarily as the stage for the Tushahiti, a sunken carved stone stepwell. While little is known of the exact interior layout and function of the building itself, the rooms on the ground floor level were likely used for rituals related to Tushahiti.

The courtyard's intimate scale gives it a unique atmosphere, while its intricately carved doors and windows attest to an extraordinary artistic legacy. Since its construction in the 17th century, the building has undergone a series of interventions, retaining stylistic features from various time periods. The building was initially a free-standing two-storied. The pillars of the court's *dalan* arcades and the wall brackets of the principal entrance represent 17th century traditions.

In the 1730s, the building received an additional floor, distinctive triple-bayed windows, and an ambulatory running along the courtyard façade. The introduction of dragon-shaped struts toward the square and a screened gallery facing the court is a departure from earlier building practices and anticipates a change in style that became more common later in the 18th century.

With minimal written documentation and few historical photographs, the reading of history from the physical layers of the building itself becomes important. Adding to the complexity of reading the building is its history of repeated earthquakes and cyclical renewal, resulting in the blurring of traces of physical history. For this reason, KVPT has undertaken extensive documentation and analyses of the building's existing conditions.



TOP:
Courtyard façade | Stanisław Klimek, 2006

ABOVE:
Courtyard façade | Hans Bjonness, 1995
Historical and Architectural Investigation, HMG/UNESCO/Japan Trust Fund project 536/NEP/71, Vol. I, Kathmandu, 1995

The East wing is notable for facing the Bhandarkhal Garden to the east of the courtyard, of which little is known. The building collapsed eastward during the 1934 earthquake, leaving the East wing in ruins. There is no historical evidence that tells us anything about the design of the 18th century East façade except for 19th century drawings that suggest the introduction of a terrace on the top floor.

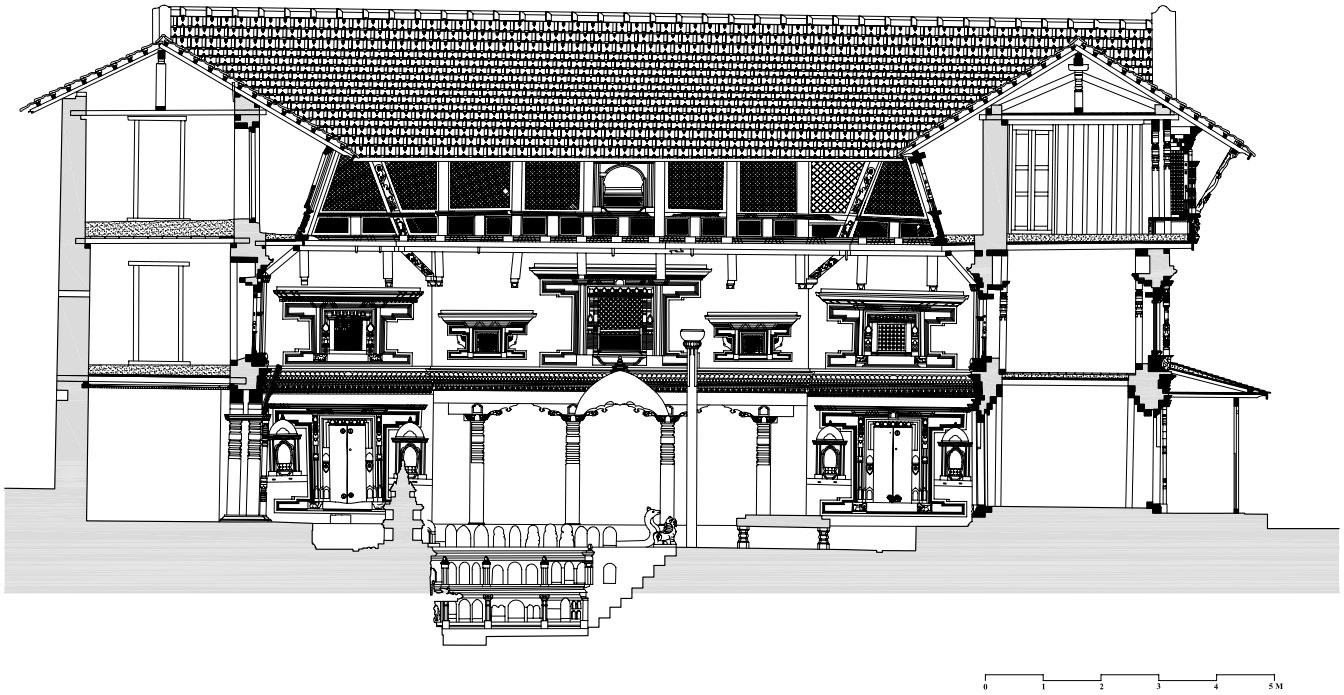
The existing East façade, designed and constructed after the 1934 earthquake, contrasts starkly with the rest of the building for its lack of ornament and use of ordinary bricks (*ma apa*). This façade breaks with the conventions of Newar architecture by introducing upright rectangular windows. The elongation to the North, covering the gap between Sundari Chowk and Mulchowk, may have originated earlier.

RESTORATION PLAN FOR THE EAST WING

The proposed restoration of the East wing aims to preserve as much of the historic fabric as possible, to repair and replace damaged or lost elements, and to structurally reinforce the building's bearing structure of brick and timber. Modern concealed methods will be employed to seismically strengthen the building, reversing the damaging effects of improper restorations undertaken after the 1934 earthquake. It is understood that the history of a monument should be celebrated and exhibited, rather than obscured and falsified during the preservation process.

The objective of the present restoration is not to bring the building back to its original form but to restore certain missing elements that are central to its cultural and religious history, and to repair damages that would cause further deterioration. With this in mind, several designs were proposed for the East façade. Rather than adopt a conjectural approach, the restoration aims to "freeze" the existing East façade as a testament to the 1934 earthquake. This is particularly important in the absence of historical evidence of what the East wing looked like before 1934. The façade was rebuilt after the 1934 earthquake to suit the requirements of administrative offices and eventually the central police station, with certain space reserved for a temporary jail.

An important aspect of the restoration is thus the coexistence of the two opposite elevations. The "poor" East façade does not diminish the value of the "rich" courtyard façade. On the contrary, it enriches the space by highlighting the layers of history translated into bricks, stones, and timber. An important distinction of the East façade is that it belongs to Bhandarkhal, a physically distinct space from both Patan Darbar Square and the palace courtyards. The fact that the other façades are never visible at the same time as the east façade further justifies its distinct character.



Courtyard façade of Sundari Chowk | existing condition | 2008

Façade facing the garden | existing condition | 2008

COURT YARD FAÇADE
EXISTING CONDITIONS

The façade wall retains high-fired veneer bricks (*daci apa*) that were used in the 1936 restoration, many of which date to the 18th century. The wall is in a poor structural condition due to the failure of weakened floor joists to withstand seismic activity. The courtyard wall of the ground floor is bulging outwards due to seismic movement over a period of decades, causing voids to develop inside the walls. This has also caused the wooden cornices to pull apart.

Loss of brick surface material occurs in patches throughout the zone of rising damp at the base of the walls in the ground floor area. Without the protective surface, bricks are susceptible to water infiltration. The brick also tends to spall. Where heavy efflorescence is observed, severe spalling tends to follow (see page 27). The varied types of bricks used in repairs since 1936 are also a factor in spalling.

Although the brick fabricated and installed in 1936 is not exactly of the same size, color, and quality as the older *daci apa,* its appearance is generally similar enough to satisfy the casual eye at a middle distance.

The mouldedeyebrow cornices of above the windows (*mikhafusi*) were replaced in 1936 with inferior replicas that were not moulded but merely dressed.

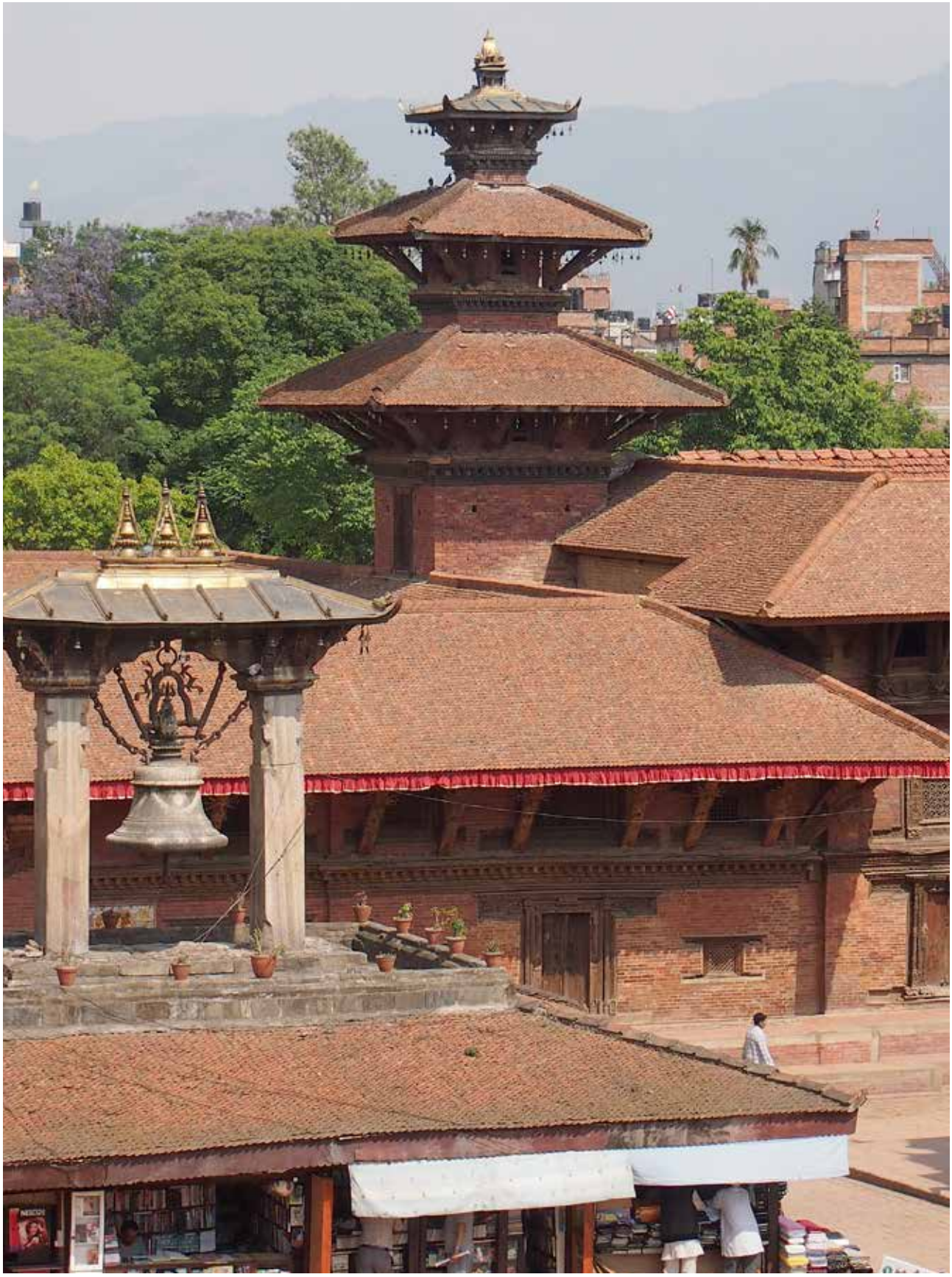
PROPOSED RESTORATION

The majority of the individual bricks will be reused. However, many areas will need to be dismantled and reconstructed using mud mortar. Often, structural weaknesses are only revealed by carefully removing the façade bricks. As past experience has shown, hidden voids inside the walls pose structural dangers. For this reason, parts of the wall will be dismantled and voids will be filled with brick masonry in mud mortar.

To slow the process of brick deterioration, the rising damp will be minimized by lowering the grade to the historical levels and improving the drainage on both sides of the east wing.

Because of the difficulty of producing appropriate *daci apa* bricks, replacements will be limited to bricks salvaged from demolished buildings. Only bricks which have lost more than 60% of their original veneer will be replaced.

The brick cornices dating to 1936 will be carefully removed. New terracotta cornices will be moulded by local tile-makers following historic samples.



View from the west | May 2013
The South Taleju Temple dominates the roofscape of Mulchowk and Sundari Chowk courtyard palaces. KVPT recently completed the restoration of Mulchowk including a rebuilt, waterproof roof.

PROJECT COMPONENT 5

RESTORATION AND SEISMIC STRENGTHENING OF SOUTH TALEJU TEMPLE | C. 1666

PROJECT GOALS

- Structural reinforcement and seismic strengthening of all three roofs
- Cleaning and repair of the existing façade walls and restoration of masonry
- Restoration of wall openings and decorative elements
- Reconstruction of traditional tiled roof using new wall plates and hardwood timber trusses
- In some cases, replication of key carved components that are broken or missing

BUDGET

Restoration of the temple	$ 45,000
* Funding short fall	$ 20,000

PROJECT SUMMARY

The South Taleju Temple was consecrated by King Srinivasamalla in 1666 atop the preexisting south wing of Mulchowk Palace. The smallest of the three surviving temples attached to the palace, the temple nonetheless occupies a prominent position.

Through a variety of small-scale, concealed reinforcements using timber and stainless steel, the extent of damage and structural failure during future earthquakes will be substantially minimized.

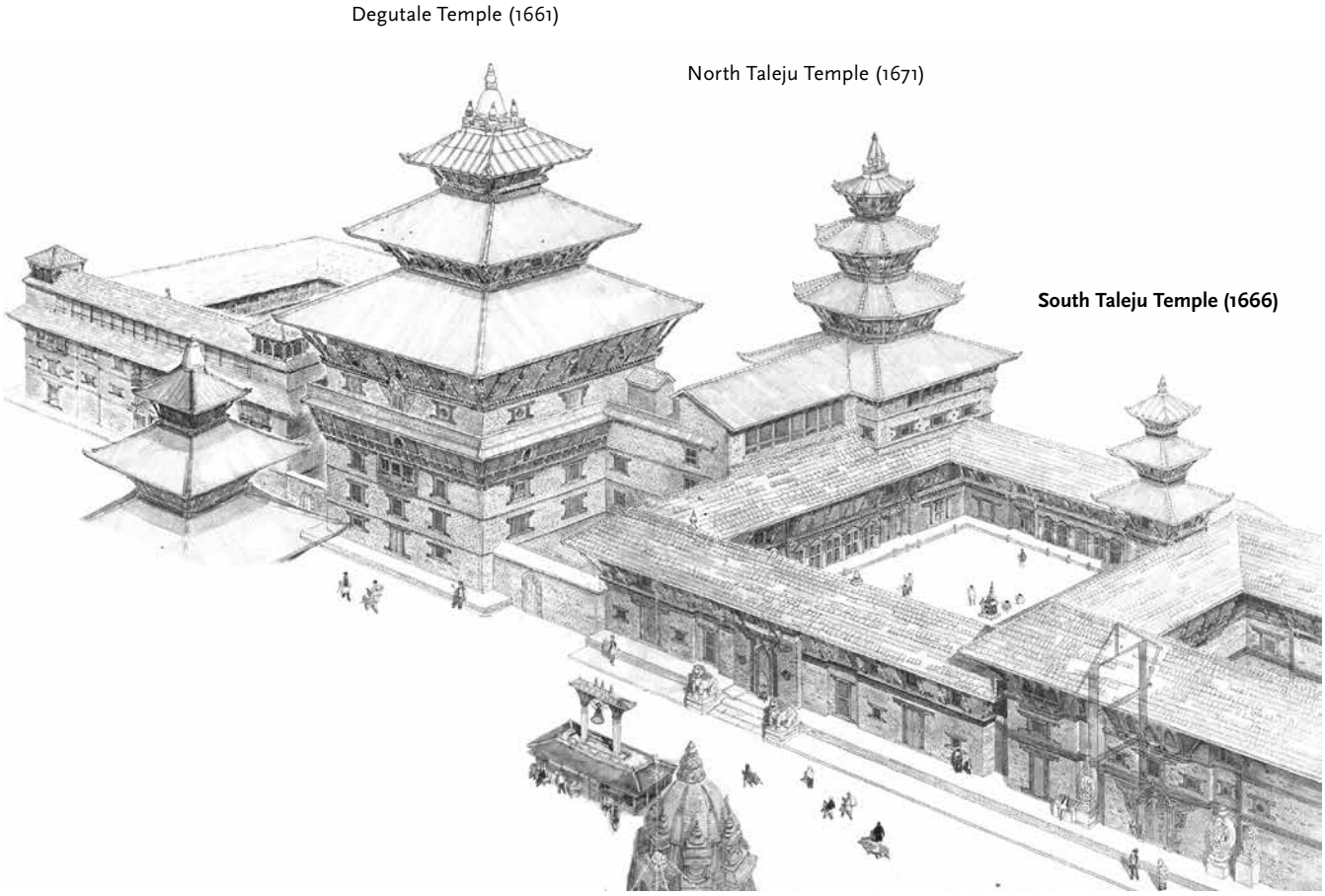
ARCHITECTURAL DESCRIPTION

The South Taleju Temple is a fine example of a well proportioned, triple-tiered brick and timber temple of the Malla period (1200-1769). It is one of three existing tiered temples attached to the Patan Darbar Palace Complex, a block of buildings adjacent to Patan's town square. Unlike the temples on the square that are situated on ground-level platforms, the three temples tower above the roofscape. Historical photographs show that a fourth temple stood on the northwest corner of Mulchowk, featuring an unusual combination of round, square, and octagonal roofs. During the great earthquake of 1934, all four palace temples collapsed but only three were rebuilt: Degutale Temple, Taleju Temple, and South Taleju Temple. The "floating" roof top design of these temples is unique to Nepali architecture. Although visually stunning, these temples are not structurally secured to the ground and are therefore prone to damage in the event of an earthquake.

The temple has a conventional square plan and typical proportions but is unusually wedged between the roofs of two palace courtyards and supported by timber pillars extending into the first floor of Mulchowk's South wing. The southern half of the temple's base rests on the walls of Mulchowk and Sundari Chowk, while the northern half is supported by wooden pillars extending to ground floor level. The temple features unusual, exquisite carved timber struts representing the Bhairabs and the Matrikas among other tantric divinities. It is crowned with a gilt *gajura* (finial) in the form of a miniature sikhara temple, similar to the gajura of the chief Taleju Temple on the North-east corner of Mulchowk.

Royal temples to this lineage deity of the Malla Kings were erected in all three Darbar Squares of the Kathmandu Valley, making Patan's Taleju temples an historic and artistic testament to the five and a half century rule of the Malla Kings, under whose patronage the craftsmanship of the Kathmandu Valley flourished.

*** High priority**



Patan Darbar axonometric | 1977
Survey by Nippon Institute of Technology
The triple-tiered South Taleju Temple, far right, overlooks the Mulchowk and Sundari Chowk Palace quadrangles.

CULTURAL AND RELIGIOUS SIGNIFICANCE

The South Taleju Temple is dedicated to Taleju Bhawani, the tutelary deity *(istadevata)* of the Malla Kings. Although the deity has limited influence today, she is conceived as a form of Durga and is known by many alternate names, such as Tulja, Turja, Tava, Tamva, Talamonde, Talesvari, and Manesvari. As a tantric manifestation, Taleju is worshipped esoterically in aniconic form as a diagram *(yantra)*, but almost all of the accessory iconography related to her and her temples is that of Durga.

In Patan, Durga's principal sacrifice is rendered to Taleju in the ground floor of the South Taleju Temple, a practice that began during the reign of King Srinivasamalla. Mary Slusser writes in Nepal Mandala that the King introduced the practice of celebrating Dasain sacrifices here in 1666, which formerly had been conducted in the "stone pati of Thamthyaka." It was for this purpose that the King commissioned the Taleju temple immediately after constructing the Mulchowk Palace courtyard.

The temple is sometimes referred to as an agamchen (literally "shrine house"), the name for esoteric shrine buildings of the Kathmandu Valley. Like vihara shrines, the temple is incorporated into one wing of the quadrangle. Kedar Jwalananda, a descendant of the same Newar Brahmin family that oversaw temple activities during the Malla reign, performs a traditional puja ceremony twice daily. Except for the priest, no one has the right to see the deity housed within the shrine.

SEISMIC REINFORCEMENT AND STRUCTURAL DESIGN

Through a variety of small-scale, concealed reinforcements using timber and stainless steel, the extent of damage and structural failure during future earthquakes will be substantially minimized. By increasing the stiffness of floor plates and roof planes, the entire building will act as a single unit in the event of an earthquake. Tying together individual members like wall plates and wooden struts will prevent dislodgement and progressive collapse under seismic motion. The following major structural interventions have been proposed:

- Layers of marine grade plywood will be added in a staggered arrangement to create rigid diaphragms.
- A-Frames to brace and support timber members
- Stainless steel braces will be installed in order to support and unite all the timber members against seismic motion.
- Steel corner bracing to strengthen wall plates
- Reinforced connections between timber joints
- Connections between rafters, wall plates, wooden struts, and purlins will be strengthened using stainless steel collar braces and pins.

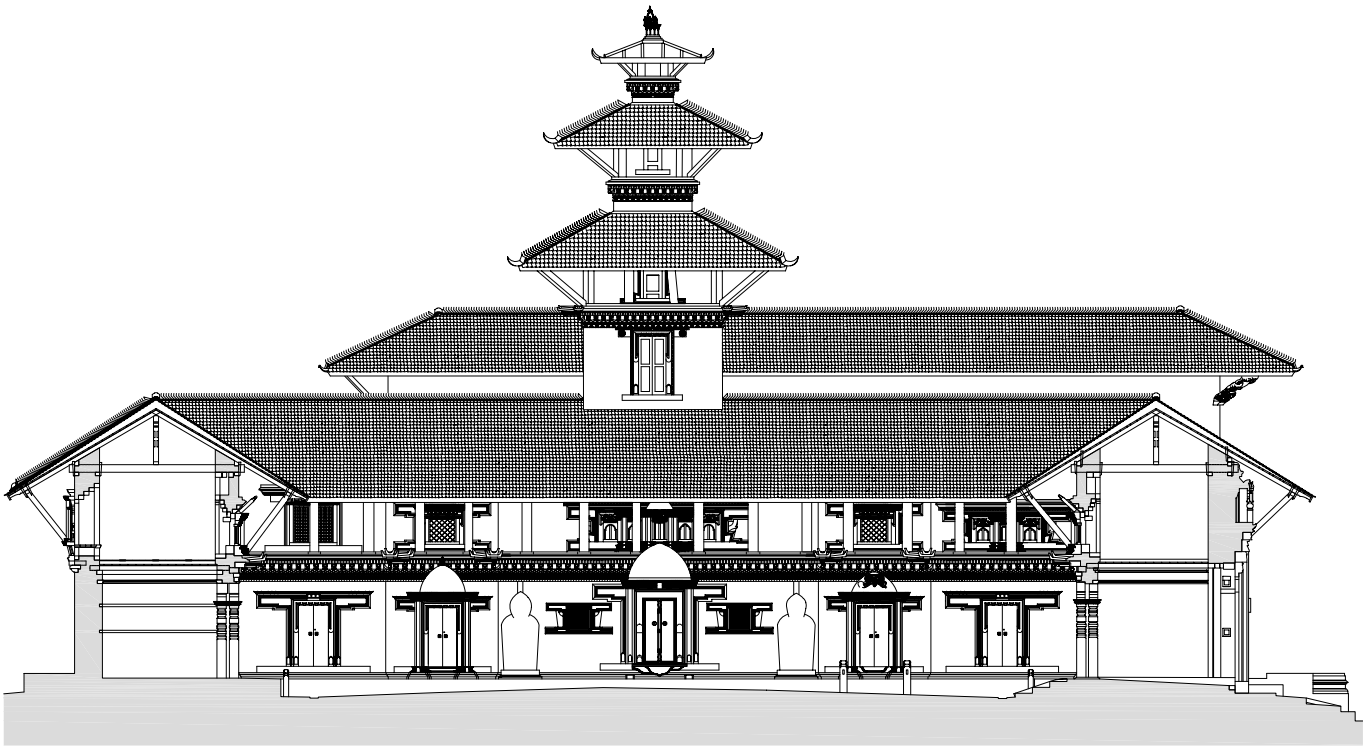
PROPOSED RESTORATION

Damaged timber rafters (up to 50%) will be replaced. Door and window frames will be repaired since they are integral to the structural stability of the building. New joists will be added to strengthen the support structure inside Mulchowk's south wing.

All three roofs will be reconstructed using existing and new timber members. Decayed wooden joists will be replaced with new ones. A layer of 1/2" marine-grade plywood diaphragm will be added to provide resistance to seismic movement. A durable waterproofing membrane will be placed between the plywood planking and the mud mortar. Damaged traditional terracotta tiles *(jhingati)* will be replaced including special ridge tiles and corner oviform tiles. Since the quality of new tiles has been found to be inferior to that of old, existing tiles will be reused wherever possible and replacements will be salvaged from old demolished buildings in the valley. The gilt metal of the uppermost roof will be replaced and regilded where necessary, including the sikhara-shaped pinnacle and the metal corner birds.

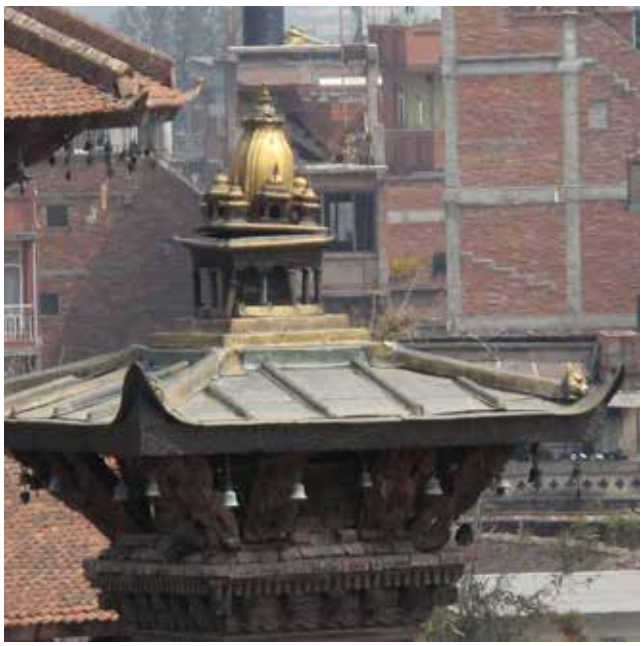
Damaged bricks will be replaced where necessary and parts of the wall fabric will be rebuilt with new *daci apa* bricks in traditional mud mortar.

Due to the lack of historical evidence, no changes will made to the existing carved struts except for cleaning and minor restoration. The project aims to retain the plain uncarved struts that replaced the stolen struts in 1994. The exterior timber cornices and window frames will be repaired and replaced with new carved timber components wherever necessary.

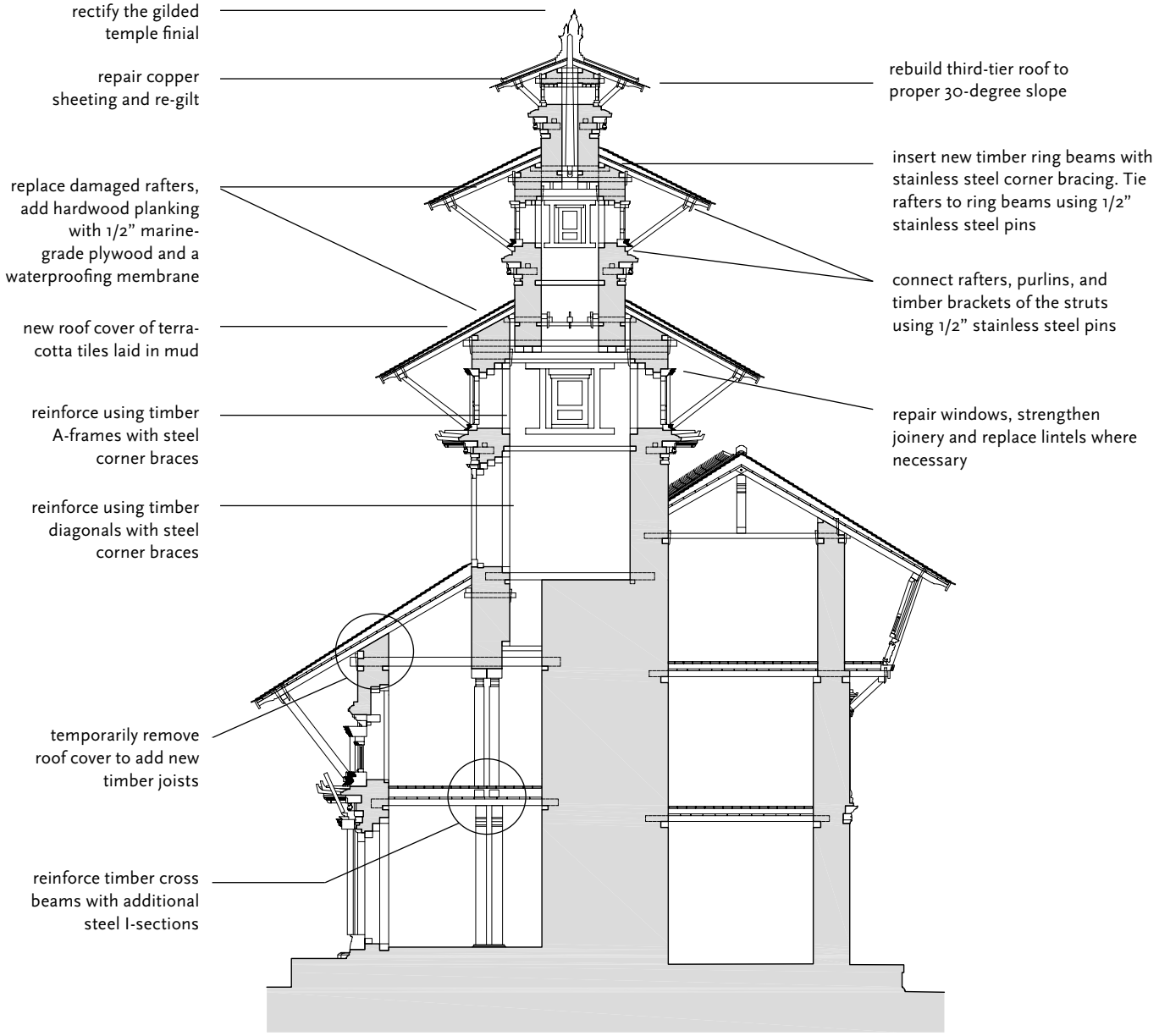


Mulchowk South wing and South Taleju Temple | North elevation | proposed restoration

View from the North | May 2013
The South Taleju Temple towers above the roof of the Mulchowk Palace courtyard. Dasain sacrifices are carried out on the plinth of the courtyard, directly beneath the temple. The recently restored Yantaju shrine is visible in the foreground.

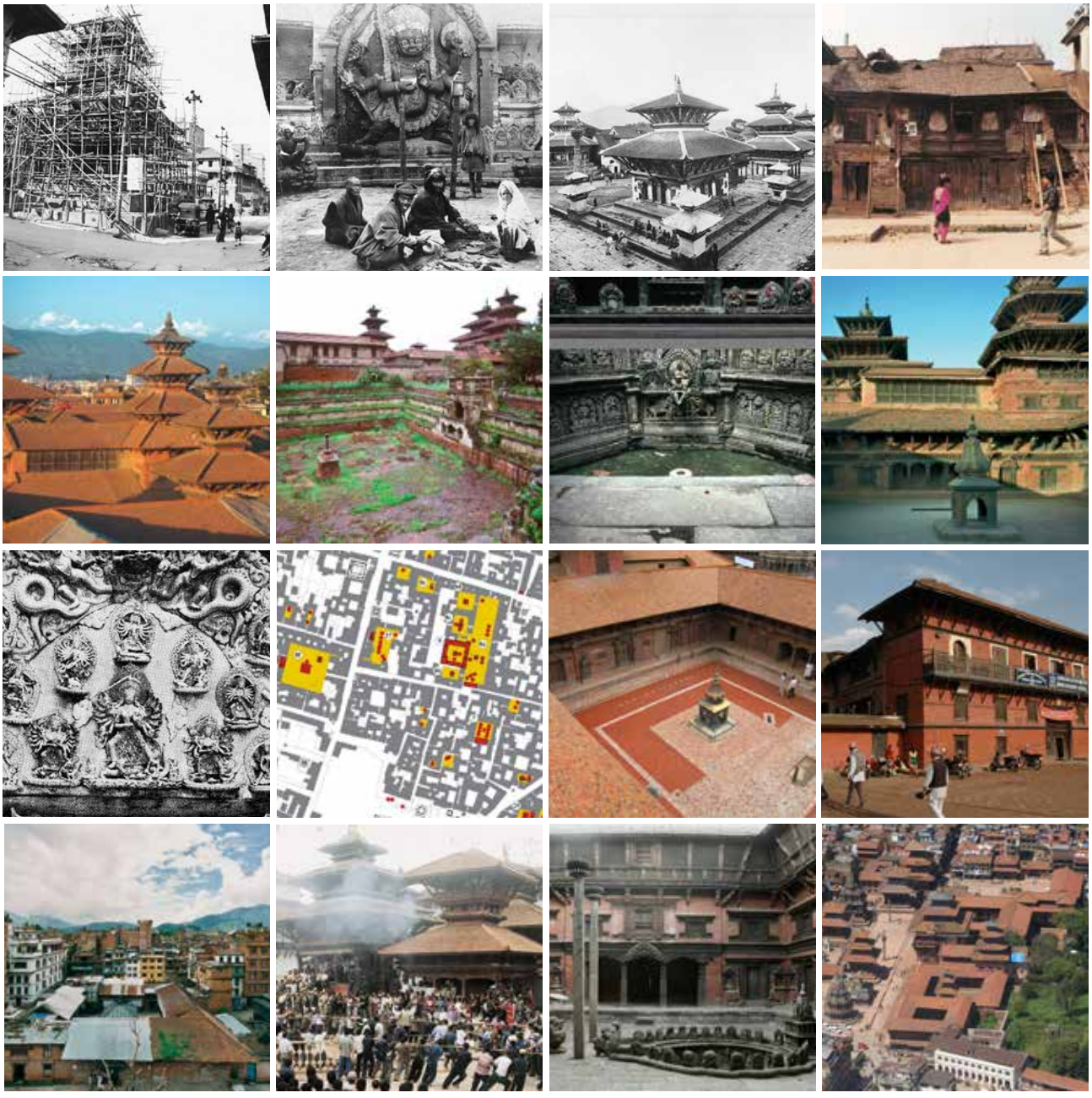


Second and third tier roof s and pinnaclecover | March 2011
The original slope of the uppermost gilded roof is 30-degrees. The terracotta roof cover has suffered extensive damage and requires complete rebuilding. Some of the gilded sheeting will have to be replaced. The pinnacle is bent out of shape due to the decay of its timber armature.



South Taleju Temple | North-South section

South Taleju Temple from the East
June 2011
The temple as seen during the reconstruction of the South wing of Mulchowk. South Taleju is supported by the North wing of Sundari Chowk and the South wing of Mulchowk.



THE KATHMANDU VALLEY PRESERVATION TRUST

Over the last 22 years, the Trust has developed a unique model for working in a developing country; operating in concert with world experts, building at local construction rates, and achieving and maintaining the highest standards of both preservation and construction practice. The turn-key model on which the Trust operates, in which the agency acts not only as adviser to the government but also as the actual implementing agency, is one of the key contributors to the Trust's success. The Trust identifies, fund-raises for, and implements projects in close cooperation with the local authorities, but operates as an independent and private international non-government agency.

The Trust's novel conception of its role as actual implementors of the projects relies on the private sector and allows the hiring and training of Nepali architects, engineers, drafstmen and skilled traditional craftsmen. The Trust's projects thus draw on the best local talent, offering challenging work to local professionals and opportunities to collaborate with leading experts from around the world. The Trust has been a continuous employer of five to ten Nepali conservation professionals, and dozens of carpenters, masons, and artisans since the early 1990s. The diverse scope of project work - from wood carving, stone cutting, gilding, and repoussé metalwork - has offered individualized and on-the-job training for Nepali craftsmen and professionals.

The Trust provides technical expertise and training, as well as the academic and historical research to locate all relevant historical documentation, and to guide the restoration designs, which are then executed to the highest artistic standards by local craftsmen. The Trust's projects benefit greatly from the survival of historical techniques in Nepal, meaning that local craftsmen can restore the Temple, including its decorative carvings and its metal-clad gilt rooftop, using the very same methods that first created them hundreds of years ago.

Furthermore, these traditional building methods have been supplemented with modern conservation and seismic strengthening technologies, developed over the past decade in collaboration with Robert Silman of Robert Silman Associates in New York and Dr. Matthias Beckh from the Technical University of Munich. These methods, specifically developed to complement and be in accordance with the traditional building methods used in Newar architecture, will be employed in the rehabilitation and seismic strengthening of all projects.

PRIORITY BUDGET SUMMARY

7	PROJECT COMPONENT 1			
	Restoration of shrines & infrastructure development			$60,000
	Sound and Light show			$60,000
15	PROJECT COMPONENT 2			
	Restoration of existing structure and reconstruction of the third floor			$425,000
31	PROJECT COMPONENT 5			
	Restoration of the temple	$45,000	Funding short fall	$20,000
TOTAL OF PRIORITY BUDGET				**$565,000**

KATHMANDU VALLEY PRESERVATION TRUST