HARISHANKARA TEMPLE – BASE AND SCULPTURE

Report of the Institute of Conservation (IoC), University of Applied Arts Vienna

Fig. 1: Overview of the Harishankara temple, 2022

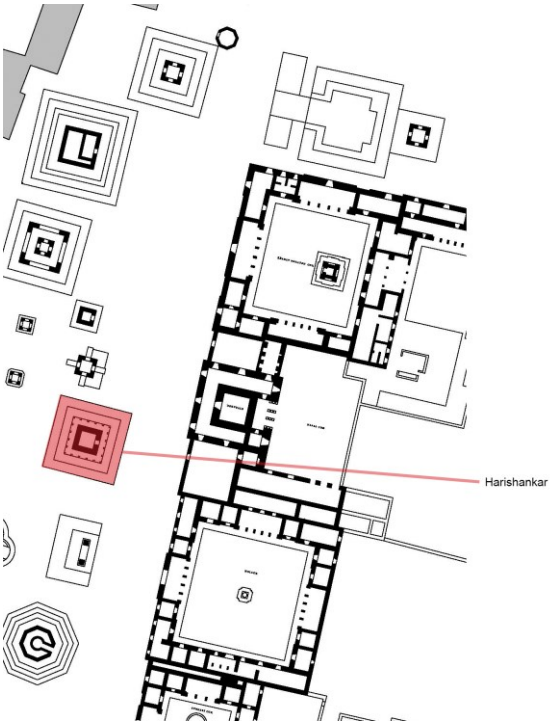

Fig. 2: Location within the Darbar Square

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Data Sheet

Description

The Harishankara Temple was consecrated in 1706. It is an example of the widespread multi-tiered temples in the Kathmandu Valley. The temple is dedicated to the eponymous god Harishankara, an eight-armed manifestation of Vishnu (*Hari*) and Shiva (*Shankara*). Erected on a three stepped plinth it is approached by a stairway past kneeling elephants. The temple itself shows elaborate stone carvings and highly decorated wooden pillars. The sculpture of the main god is the focus of worshipping, situated in the center of the temple building and is only accessible for priests. The deity is represented in standing position, one half representing Shiva (proper right), the other Vishnu (proper left). Both are depicted each holding four symbolic attributes in their hands. While Vishnu is accompanied by one of his wives (Lakshmi or Saraswati) standing beside him and his mount or vehicle Garuda, Shiva is shown with his spouse (Devi or Parvati) and his mount Nandi, the bull.
After having survived the major earthquakes of 1809, 1833 and 1934, the temple of Harishankara collapsed completely during the 2015 earthquake. Only the base of the outer ambulatory and the threshold level of the sanctum stayed in place. The sculpture split into two pieces and small parts broke off.

Names	Hariśaṅkara Mandira, Hari Shankar, Harishankar	
Dated	1706	
Measurements (H x W x D)	Total of temple base (W x D): 6.75 x 6.88 m Decorative stone blocks (deities and vahanas): 35 x 83 x 32 cm Stone basis (lions) for wooden pillars: 35 x 50 x 70 cm Stone basis (lions) for corner pillars: 35 x 65-80 x 65-80 cm Harishankara sculpture: 1.5 x ? x ? m	
Materials/Technology	Stone, colophony	
Interventions (IoC)	Survey	2015 (sculpture), 2016-2017 (base)
	Mapping	2017 (base)
	Sampling	-
	Analyses	-
	Conservation	2015 (sculpture), 2017 (base)
	Maintenance	-
Team (IoC)	Gabriela Krist, Marija Milchin, Martina Haselberger, Johannes Falkeis	
Academic Research (IoC)	-	

Survey: Materials and Technology

Plinth:

- Temple has a raised triple stepped plinth (substructure made out of brick masonry walls and timber) with a stone base and threshold on top
- Central stairway, which is flanked by two stone elephants on pedestals, counts 15 steps and leads over the bricked levels of the plinth

Base:

- Base on the top level is filled up with bricks, rubble stone and earth
- Base is framed by an outer ring, which consists of three layers: flat stone slabs on the bottom, a carved stone base and rectangular to cuboid stone blocks made of calcitic schist [2] and of a porous sandstone [1]
- Blocks with supporting function (which act as base blocks below the pillar of the ambulatory) carry the weight of the structure [2], and blocks with decorative function [1] are arranged alternately
- Stone blocks of the top layer are carved; the decorative blocks of the intercolumniations show detailed reliefs of wisdom bearers and different sceneries; the supportive stone blocks feature lion busts surrounded by architectural frames
- Besides the four corner stones with supporting function, five decorative and four supporting blocks are placed on each side (North, East, South, West) of the base
- Holes (grooves) in the stone blocks for inserting the wooden pillars
- Residues of colophony as mortar/gluing media between single stone elements

Threshold on top of the base (for the inner sanctum):

- Threshold consists of four big monolithic blocks and four cornerstones made out of schist [2]
- Blocks are less decorated; engraved lotus flower at the upper surface on the middle of four monolithic blocks (sacrifice place) and lion busts similar to the base stone blocks at the front surfaces

Sculpture:

- Monolithic sculpture depicting Harishankara made of calcitic schist ([2]

Fig. 3: Decorative block of sandstone, 2017

Fig. 4: Cornerstone block of calcite schist, 2017

Fig. 5: Detail of supporting block, 2017

Fig. 6: Filling of the top base, 2017

Fig. 7: Tool marks at an internal side surface, 2017

Fig. 8: Residues of colophony, 2017

Fig. 9: Threshold of the sanctum with lion busts, during conservation, 2017

Fig. 10: Holes/grooves for wooden pillars and lotus flower at upper surface, 2017

Fig. 11: Overview of stairs, 2017

Fig. 12: Sculpture recovered from the debris, © KVPT

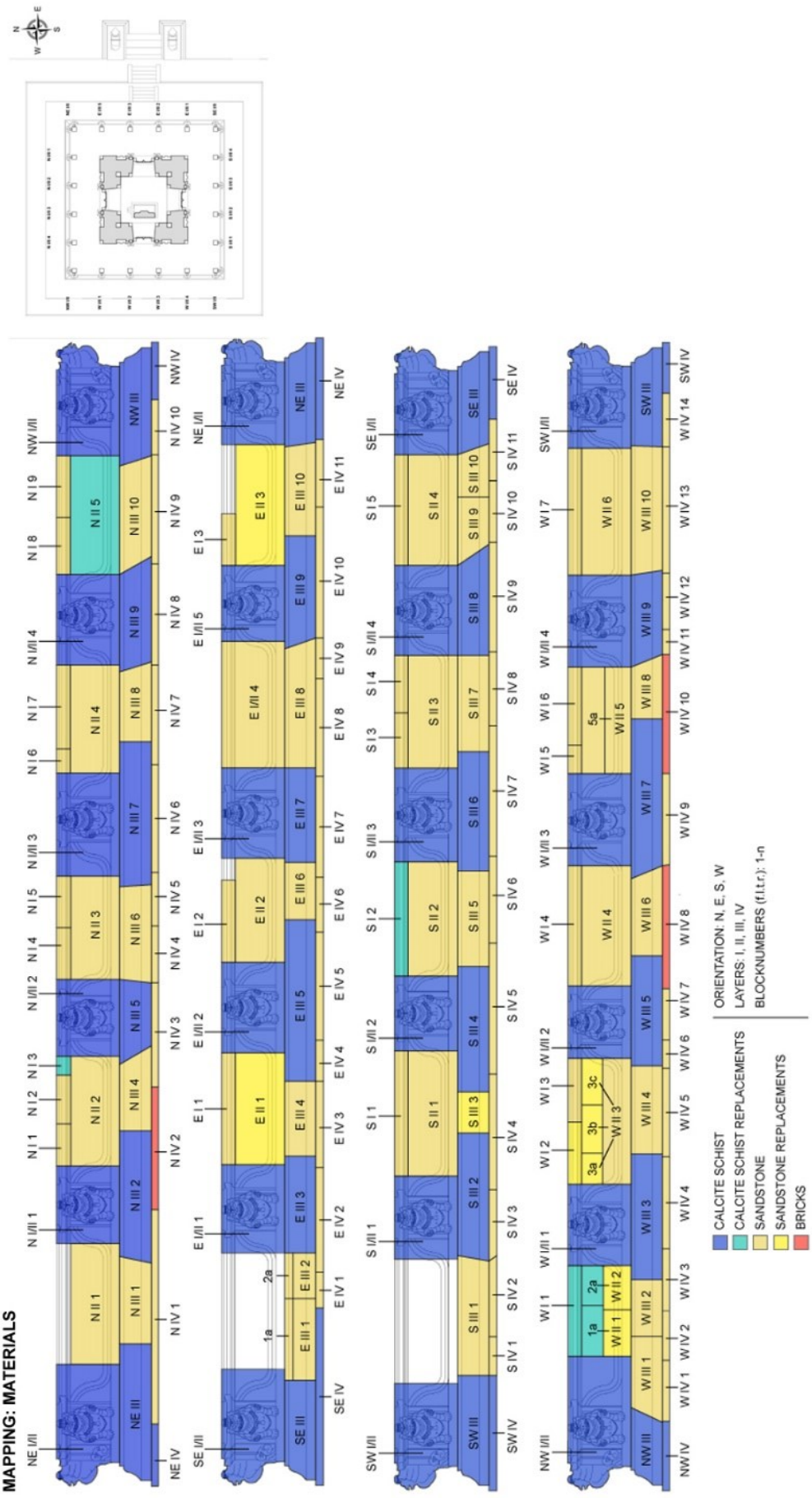


Fig. 13: Mapping of the varieties and the inscriptions of the stones, drawing by Anil Basukala, modified by Katharina Breunhölder

Previous (Conservation) Interventions

Unkown	Blocks were pointed with cement-rich mortar
1975	Introduction of flat stone tiles on top of base
After 2015	Oil applied on Harishankara sculpture

Survey: Condition and Causes of Decay (2017)

- Collapse of the temple during the Gorkha earthquake 2015 due to an insufficient connection between wooden pillars and stone blocks at the base; some of the tenons as well as edges of the holes deteriorated in the course of time and were not stable anymore
- Some stone blocks show fractures; cracks in the form of fissures on all stone blocks
- Building collapsed towards the South – therefore, stone blocks at this side suffered most (fractures, broken parts, and chipping)
- Losses and missing parts (also on carved surfaces)
- Heavy soiling and deposits on all surfaces
- Blocks made of schist show splitting (vertically oriented lamination) and delamination
- Blocks made of sandstone show sanding, microbiological growth and growth of higher plants (joints); homogeneous dark crust (few mm) covers surfaces of sandstone blocks
- Monolithic stones at the inner threshold at the north and south completely broke in the middle
- Sculpture broke in two at the waist; Parvati's head, the mace of Vishnu, Garuda's hands and a small part from the outer circle broke off
- Surface of the sculpture covered with thick layers of ritual offerings

Fig. 14: Totally cracked figurative block, 2017

Fig. 15: Cracked and fragmented sandstone, 2017

Fig. 16: Sanding, microbiological colonization, 2017

Fig. 17: Growth of higher plants within the joints, 2017

Fig. 18: Weathered cornerstone, delamination, 2017

Fig. 19: Insufficient cement joints incl. algae, 2017

Fig. 20: Broken sculpture of Harishankara, 2015

Fig. 21: Collapsed temple, 2015, © KVPT

Conservation (IoC)

2015

Sculpture:
- Two broken parts were re-adhered; reinforcement with two stainless steel pins (diameter 0.8 cm, length 10 cm) glued in drilled holed on both sides with hybrid mortar (HFX); dashes of epoxy resin (Akepox 2020) applied to the fractured surfaces
- Gluing of broken of head of Parvati with epoxy resin (Akepox 2010)
- Mechanical removing of deposits (spatulas, scapels)
- Reduction of residues with different solvents (Acetone, white spirit, ethanol and ammonium hydroxide) applied with brushes and cotton buds; oily components were reduced with additional lime putty poultice was applied; subsequent cleaning of all surfaces with water
- Reconstruction of missing attribute (stone indent) adhered to sculpture with epoxy resin (Akepox 2010)
- Pointing of breakage joints and filling of losses with mortar (in this way, the integrity and meaning of the sculpture could be fully restored)

Conservation Materials* and Recipes used:
- Akepox 2010 (Akemi)
- Hybrid mortar HFX (Hilti)
- Stainless steel rods

Joint mortar: 1 vol. part cement : 4 vol. parts stone powder : ½ vol. part pigment
- grey cement
- stone powder (bore dust)
- black pigment, mixed with water

Infill mortar: 2 vol. parts lime : 1 vol. part cement : 4 vol. parts sand : 2 vol. parts stone powder : ½- ¾ vol. parts pigment
- slaked lime (local)
- grey cement
- stone powder (bore dust)
- local sand (unsifted)
- black pigment, mixed with water

* Product / technical data sheets can be found in the supplement [A]

2017

Base
- Uncovering of schist blocks (removal of tiling and base filling) and dismantling of the sandstone blocks; each sandstone block was given a number, which was inserted in the mapping and applied on the stone itself; a small area on the stone surface was cleaned, isolated with an acrylic resin (Paraloid B 72, 10% in acetone) and inscribed with a permanent marker
- Mechanical removing of mortar residues
- Wet Cleaning with water and detergent (dish)
- Reconstruction of missing stone blocks (done by the KVPT)

Sandstone blocks:
- Biocide treatment (QUATS, 2% in water, one application); subsequent cleaning with water
- Backfilling of cracks with acrylic resin (Paraloid B72, first 10% in Acetone for deep penetration, second 30% in Acetone for filling)
- Gluing and pinning of broken blocks with epoxy resin (Akepox 2010) and carbon fibre rods
- Micro-pointing of breakage joints and splitting areas with mortar based on natural hydraulic lime (depending on the stone colour either yellow or dark sand was chosen)

Schist blocks:
- One broken base cornerstone glued with epoxy resin (Akepox 2010) and pinned with stainless steel reinforcements
- One heavily damaged base cornerstone equipped with stone indent; core was removed and indent inserted
- Broken threshold block (south) was glued with epoxy resin (Akepox 2010) and pinned with two stainless steel reinforcements (diameter 1.6 cm, length 60 cm)

- Broken threshold block (north) was reinforced with carbon fibre rods glued into four holes drilled across the crack with hybrid mortar (HFX)
- Micro-pointing of breakage joints and splitting areas with mortar based on natural hydraulic lime

Conservation Materials* and Recipes used:
- QUATS (quaternary-ammonia-salts 2% in water)
- Paraloid B72 (10% and 30% in Acetone)
- Akepox 2010 (Akemi)
- Hybrid mortar HFX (Hilti)
- Carbon fibre rod
- Stainless steel rods

Mortar sandstone: 1 vol. part natural hydraulic lime : 3 vol. part bore dust : 1 vol. part sand
- Natural hydraulic lime (NHL 3.5, LaFarge)
- Bore dust
- local sand (yellow or dark)

Mortar schist: 3 vol. part natural hydraulic lime : 1 vol. part sand
- Natural hydraulic lime (NHL 3.5, LaFarge)
- local sand, sieved

* Product / technical data sheets can be found in the supplement [A]

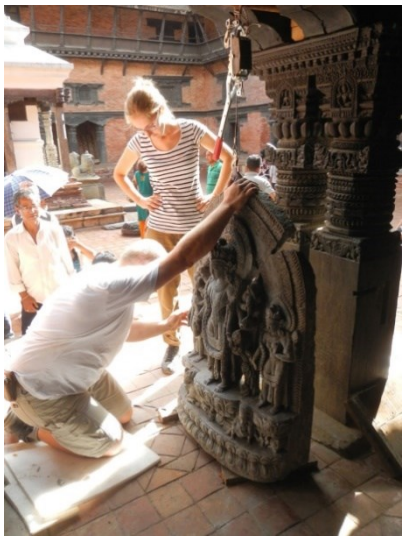


Fig. 22 - 23: Drilling of holes for pins and re-adhering, 2015

Fig. 24: Re-adhering broken head, 2015

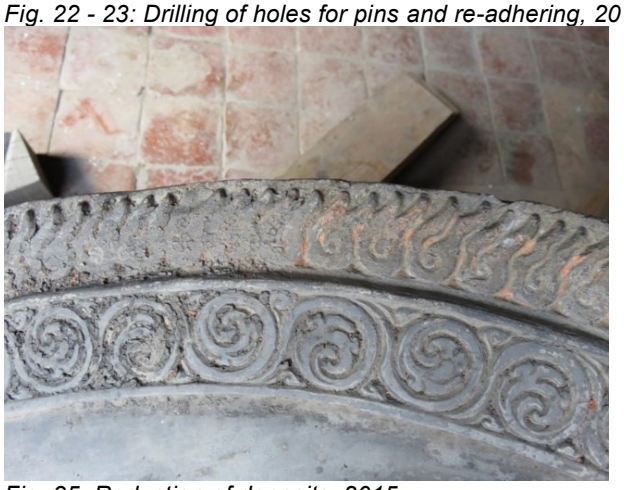


Fig. 25: Reduction of deposits, 2015

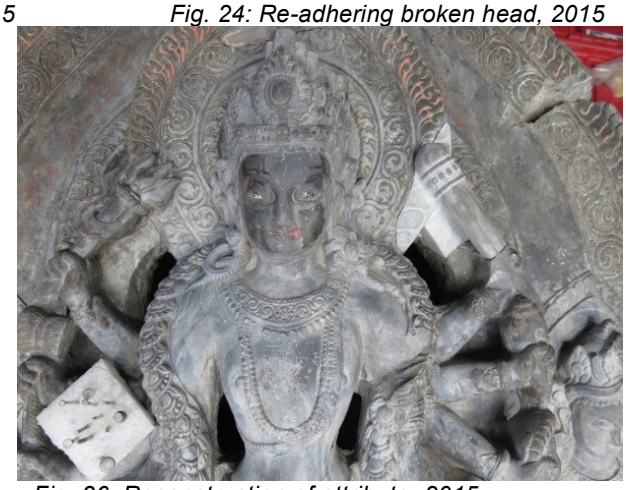


Fig. 26: Reconstruction of attribute, 2015

Fig. 27: Sandstone, wet cleaning, 2017

Fig. 28: Sandstone, backfilling with injections, 2017

Fig. 29: Sandstone, gluing of broken parts, 2017

Fig. 30: Schist, drilling of holes for pinning, 2017

Fig. 31: Schist, pins in threshold block (south), 2017

Fig. 32: Schist, reinforced threshold block (north), 2017

Fig. 33: Schist, cornerstones with stone indent, 2017

Before and after Conservation


Fig. 34 - 35: Condition of the stone base before conservation, 2017

Fig. 36: Condition of the stone base during conservation, 2017

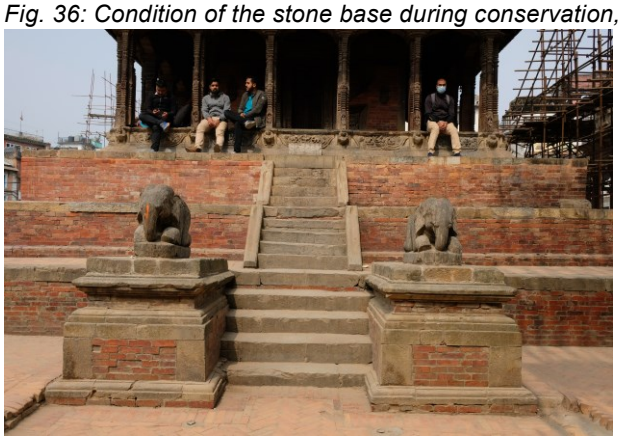



Fig. 37 - 38: Condition of the base after conservation, 2022

Fig. 39 - Fig. 40: Details of the stone base after conservation, 2022

Fig. 41: Sculpture after conservation, 2015

List of Publications / Reports (IoC)

Haselberger, Martina, and Gabriela Krist. 2022. “Applied Conservation Practice Within a Living Heritage Site.” *Studies in Conservation* 67/sup1: 96-104. https://doi.org/10.1080/00393630.2022.2076778.

Haselberger, Martina, Ranjitkar, Rohit, and Gabriela Krist. 2021. “Post-Earthquake Recovery and Conservation-Restoration in Patan, Nepal.” In *Analysis of Case Studies in Recovery and Reconstruction, Case Studies*, Vol. 2, edited by ICCROM and ICOMOS, 6-37. Rome: ICCROM and ICOMOS.

Haselberger, Martina, and Gabriela Krist. 2020. “Tracking Trends: A Study of Post-Earthquake Approaches to Conservation in Patan, Nepal.” *Studies in Conservation* 65/Issue sup1: Special issue: IIC 2020 Edinburgh Congress preprints. https://doi.org/10.1080/00393630.2020.1758872.

Krist, Gabriela, Milchin, Marija and Martina Haselberger. 2016. “The Durbar Square and the Royal Palace of Patan, Nepal – Stone Conservation before and after the Great Earthquake of April 2015.” *In Science and Art: A Future for Stone: Proceedings of the 13th International Congress on the Deterioration and Conservation of Stone*, Volume II, edited by John Hughes and Torsten Howind, 1171-1180. Paisley: University of the West of Scotland.

Krist, Gabriela, Haselberger, Martina and Marija Milchin. 2016. “Restoration of the Harishankara idol.” In *Nepal Patan Darbar. Earthquake Response Campaign*, edited by Kathmandu Valley Preservation Trust, 226-232. N.p.: Kathmandu Valley Preservation Trust.

Supplements

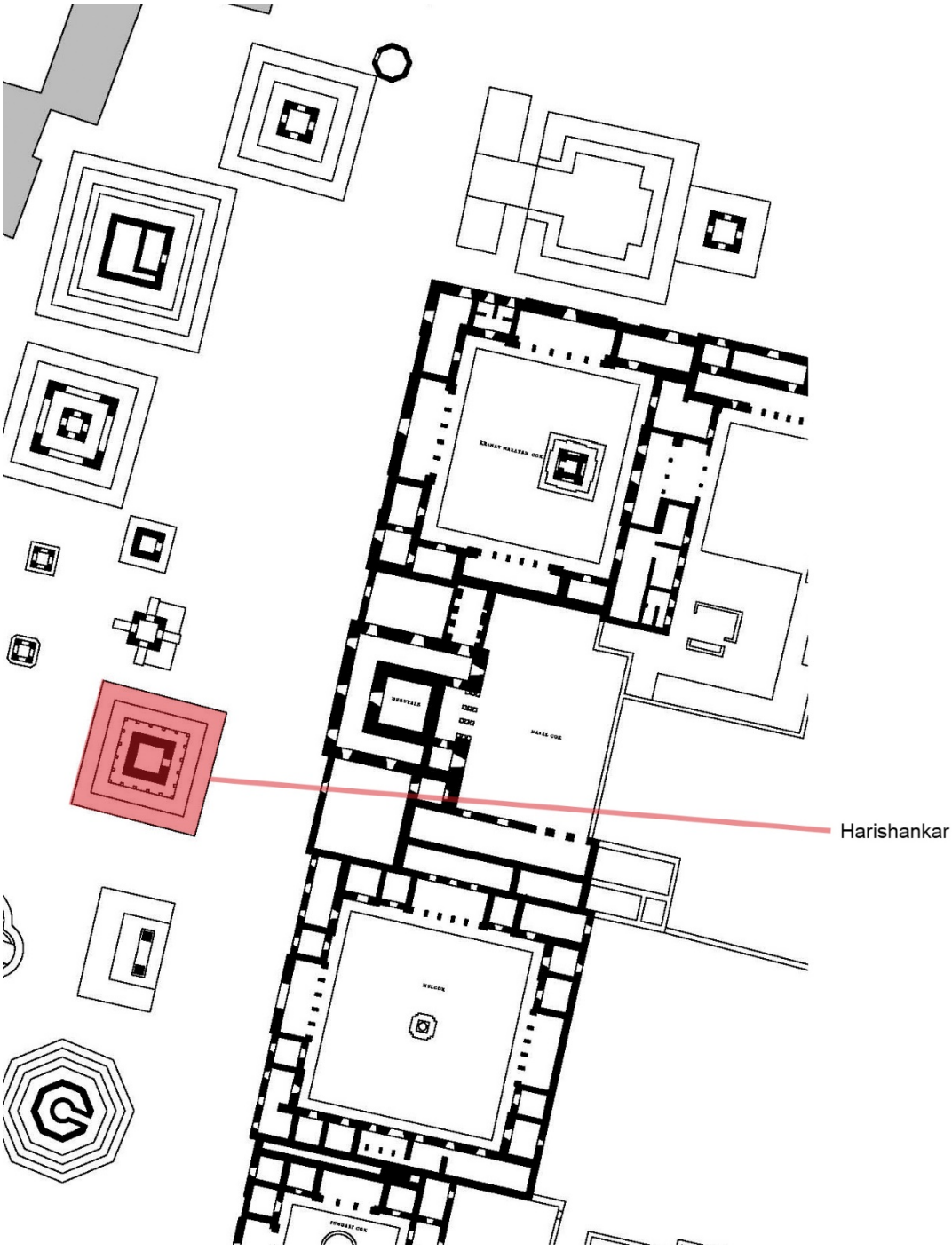
[A] List of all product / technical data sheets

[1] Detailed material characterisation - sandstone

[2] Detailed material characterisation - calcitic schist

Photo Credits

GENERAL INFORMATION		
Monument Harishankar temple base (schist stone)	**Orientation** -	**Size (H x L x W)** 675 x 688 cm
Date of Production Ca. 1700 (1706)		**Location** Sanctum of Harishankar temple
Date of the last Treatment Conservation 2017		**Institutions of the last Treatment** IoC



Condition Assessment		
Date of Evaluation May 2024	**Evaluation done by** Martina Haselberger Sarah Moyschewitz	
Recent Damages:		
☐ Stability Problems ☒Not detected	☐ Major ☐ Medium ☐ Minor	
Comment:		
☐ Broken / - into several Pieces ☒Not detected	☐ Many ☐ Some ☐ Few	
Comment:		
☐ Lose / Missing Parts ☒Not detected	☐ Many ☐ Some ☐ Few	
Comment:		
☐ Joints ☒Not detected	☐ Open ☐ Cracked	□ Many □ Some □ Few □ Many □ Some □ Few
Comment:		
☒ Scaling, Sanding or Powdering ☐Not detected	☐ Major ☐ Medium ☒ Minor	 Partial delamination on some blocks
Comment:		
☒ Biological Colonization ☐Not detected	☒ Microbiological Growth	☐ Major ☐Medium

		☒ Minor	Minor microbiological growth is present in form of small black dots, particularly on the north side, and the east side towards the south corner (Fig. 1).
	☐ Mosses	☐ Major	
		☐Medium	
		☐ Minor	
	☐ Higher Plants	☐ Major	
		☐Medium	
		☐ Minor	
Comment:			
☐ Mechanical Damage ☒Not detected	☐ Abrasion	☐ Major	
		☐Medium	
		☐ Minor	
	☐ Other	☐ Major	
		☐Medium	
		☐ Minor	
Comment:			
☒ Salt Deterioration ☐Not detected	☒ Efflorescence	☐ Major	
		☐Medium	
		☒ Minor	Mostly on the north and west side, mainly along the joint to the base (Fig. 2, 3).
	☐ Subflorescense	☐ Major	
		☐Medium	
		☐Minor	
Comment:			
☒ Soiling ☐Not detected	☐ Heavy		
	☐ Medium		

	☒ Light	Chewing gum (Fig. 4), dust, dirt Epoxy remains on threshold blocks on the west side, from gluing of the replaced lion bust
Comment:		
☒ Other	Comment:	

Evaluation of the Condition

☒ good (no need for treatment)

☐ satisfactory (some minor treatments necessary)

☐ unsatisfactory (major conservation measures necessary)

Conclusion

The mortar used for filling the breakage joints is in good condition, i.e. it is not sanding and displays good adhesion to the stone

Micro-pointing on schist is in good condition - no sanding and good adhesion to the stone

Joints, especially those to the base, seem salt loaded at some parts - salt efflorescence is present

There is no hint that the presence of salts increases delamination of the stone

Gluing of threshold elements is in good condition

Microbiological growth is present predominantly on schist stone

PHOTO DOCUMENTATION

Condition at Evaluation Date

Fig. 1: Microbiological growth in the form of black dots.

Fig. 2: Material loss due to salt efflorescence.

Fig. 3: Salt efflorescence.

Fig. 4: Chewing gum under cornice.

[A] Product Data Sheets – Links[1] to Suppliers/Manufacturers

AEROSIL® 200
https://products.evonik.com/assets/or/ld/AEROSIL_200_TDS_DE_DE_TDS_PV_52043839_de_DE_WORLD.pdf

Aviva Silikat Grundierung
https://www.adler-lacke.com/Canto/tmb/aviva-silikat-grundierung_tmb_4079_de.pdfA
Alkylbenzyldimethylammonium chloride
https://www.sigmaaldrich.com/AT/en/sds/mm/8.14858?userType=anonymous

Klucel™ EF
https://www.kremer-pigmente.com/elements/resources/products/files/63701-63713.pdf

Aviva Tirokat-Color, Adler
https://www.adler-lacke.com/Canto/tmb/aviva-tirokat-color_tmb_4087_de.pdf

Mixtion Le Franc, Kremer
https://shop.kremerpigments.com/elements/resources/products/files/98000e.pdf

Waxes, Deffner und Johann
https://deffner-johann.de/media/datasheets/4186000/EN/Zusatzinformation_Wachse_DE_DJ.PDF

Injection mortar HFX
https://productdata.hilti.com/APQ_HC_RAW/ASSET_DOC_7567931.pdf

Kölner Classic Ölmixtion 3h; 12h; 24h
https://www.kolner-vergolderprodukte.de/produkte/koelner-oelmixtion/

KSE 500 E
https://media.remmers.com/celum/export/documents/Remmers_0715_KSE-500-E-_Technisches-Merkblatt_de_DE_26355.pdf

Lascaux 498 20 X acrylic adhesive
https://deffner-johann.de/media/datasheets/2051100/DE/2051100_Technisches%20Datenblatt_Lascaux%20Acrylkleber%20498%2020%20X_DE_DJ.pdf

Marble dust
https://www.kremer-pigmente.com/elements/resources/products/files/58500-58580_59001-59690.pdf

Natural hydraulic lime
https://www.preservationworks.us/wp-content/uploads/2019/10/NHL-Datasheet-Lafarge-23.5.pdf

Plextol B-500 (acrylic dispersion)
https://deffner-johann.de/media/datasheets/2556500/DE/2556500_Technical%20Data%20Sheet_Acrylic%20Dispersion%20B%20500_EN_DJ.pdf

Primal® SF 016
https://deffner-johann.de/media/datasheets/2543001/DE/2543001_Technical_Data_Sheet_Primal_SF_016_DJ_EN.pdf

AKEPOX® 2010
https://data.akemi.de/fileadmin/user_upload/products/productdocuments/TMB/Akepox_2010_TMB_D.pdf

[1] All links were last accessed on 13 May 2025.

EPO-TEK® 301-1
https://www.epotek.com/docs/en/Datasheet/301-1.pdf

Titebond Wood Glue
http://sds.franklini.com/msds/1411.042k0nmo0020.pdf

Paraloid™ B-72, Kremer
https://www.kremer-pigmente.com/elements/resources/products/files/67400-67409.pdf

Keim Granital®
https://www.keim.com/documents/de-AT/723/TM_Granital_DE-AT.pdf

[1]“Sandstone”	
Visual characteristics	- Fine and homogenous grain structure - Whitish to ochre colour
Samples taken (sample names and origin)	- **KAT2**, (Leiner 2010) Bhandarkhal Tank Pavilion Base (Fig. 3, 4) - **KRP Original** (Fuchs 2013), Stone Gate, Patan Darbar Square (Fig. 5–9) Cross and thin sections of the samples were prepared and examined with light microscopy and SEM. **Sources**: Leiner, Susanne. 2010. “Der Pavillon am Bhandarkhal-Tank. Palastkomplex Patan, Nepal.” Pre-thesis, University of Applied Arts Vienna. Fuchs, Katharina. 2013. “Bitumen Coating on Stone, a Nepalese Problem? The Conservation of Two Stone Relief Gates at the Nasal Chowk, Patan Royal Palace.” Pre-thesis, University of Applied Arts Vienna.
Petrographic/geological characterization	- quartz sandstone ("arkose" sandstone) - rich in feldspar - silica grains angular, interlocked and covered by layers of iron oxides/hydroxides and clay - clayey binder (contains mostly sheet silicates) - different amounts of iron-compounds with sheet structure - fine grained with average grain size of 50 µm, coarse grain fraction with 250 µm
Physical properties	- varying porosity but in general highly porous, 20–25% porosity (Leiner 2010, S. 62), intergranular porosity - capillary active - varying colours and weathering behaviour due to different clay and iron content - homogenous structure with some bedding - relatively soft
Use at Patan Darbar Square	Scientifically confirmed: - Stone Gates - Bhandarkhal Tank By visual inspection only: - Harishankara temple base - Vishveshvara temple base and elephants - Krishna Mandir - Tusha Hiti - Mul Chowk Lions
Origin of material	- unknown

Fig. 1: Visual inspection of the sandstone from Bhandarkhal Tank Pavilion Base, © IoC 2010.

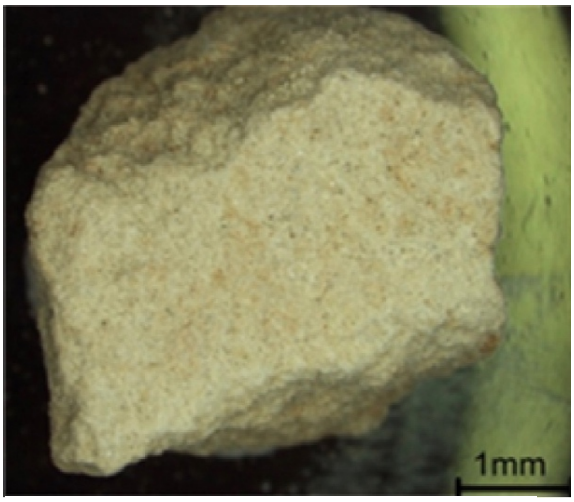


Fig. 2: Visual inspection of the sandstone from Bhandarkhal Tank Pavilion Base, © IoC 2010.

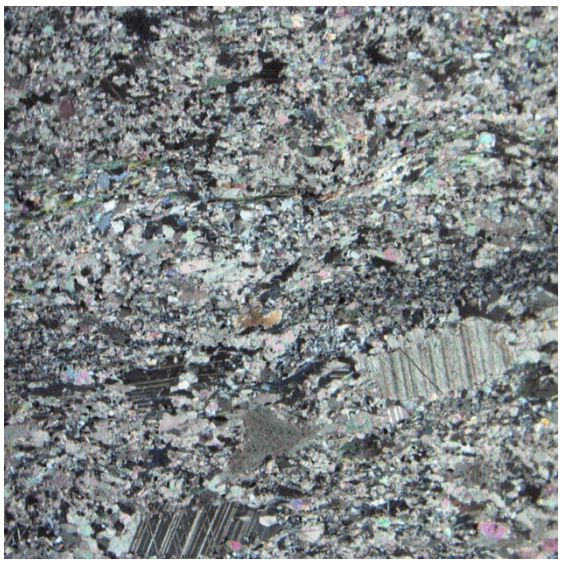


Fig. 3: Sample KAT2, thin section, optical microscopy, polarized light, x24.

Fig. 4: Sample KAT2, thin section, optical microscopy, transmitted light, x24.

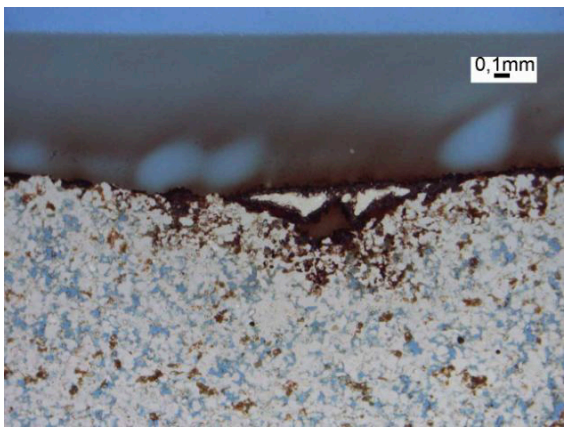


Fig. 5: Sample KRP Original, polished thin section, stereo microscope (Nikon SMZ 1500), reflected light, polarized light. The sample shows stone with bitumen coating.

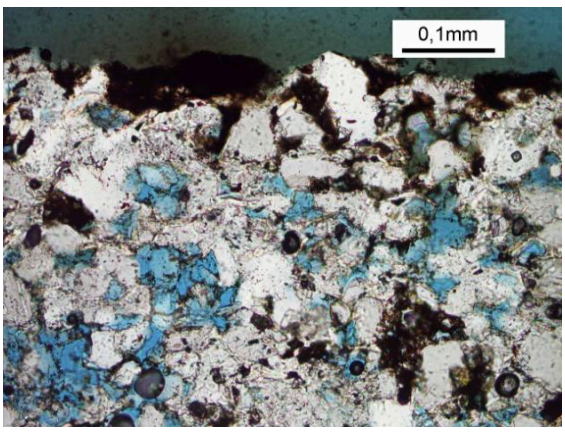


Fig. 6: Sample KRP Original, polished thin section, stereo microscope (Nikon SMZ 1500), reflected light, polarized light. The sample shows stone with bitumen coating.

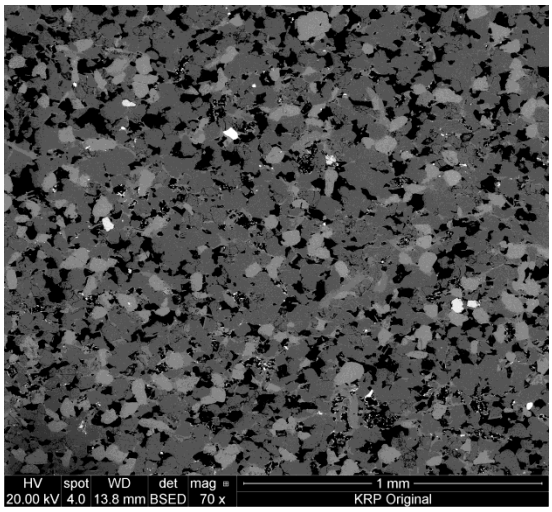


Fig. 7: Sample KRP Original, SEM; description: black = pores, dark grey = quartz, light grey = feldspar, white spots= Fe-(hydr)oxides.

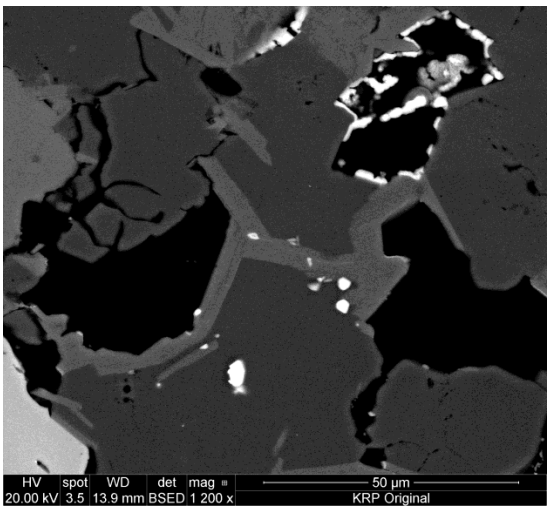


Fig. 8: Sample KRP Original, SEM; description: black = pores, dark grey = quartz, light grey = feldspar, white spots= Fe-(hydr)oxides.

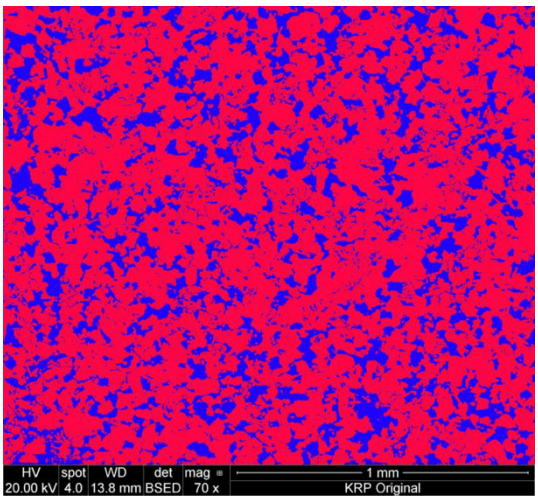


Fig. 9: Sample KRP Original, SEM photo of thin section in false colours (red = grains, blue = pores).

[2]“Calcitic schist”

Description of visual characteristics	- light grey to almost black colour - occasional white inclusions with reddish center - characteristic schist surface with homogeneous foliation and inclusions
Samples taken (sample name and origin)	- **KAT1** (Leiner 2010), Bhandarkhal Tank Pavilion Base (upper covering) (Fig. 3, 4) - **P06, P07** (Kaipf 2017), Yoganarendra Pillar (Fig. 5–16) - **NEP_ST_1** (Haselberger/Fuchs 2023), loose material around Royal Garden workshop (Fig. 17–22) Cross and thin sections of the samples were prepared and examined with light microscopy and SEM. **Sources**: Leiner, Susanne. 2010. “Der Pavillon am Bhandarkhal-Tank. Palastkomplex Patan, Nepal.” Pre-thesis, University of Applied Arts Vienna. Kaipf, Luis. 2017. “The Pillar of Yoganarendra Malla. Condition Survey, Conservation Treatment and Re-erection.” Pre-thesis, University of Applied Arts Vienna. Johannes Weber, Katharina Fuchs, Martina Haselberger. 2023. Scientific investigation of the stone sample NEP_ST_1 from Patan Royal Garden Workshop. Unpublished report, Institute of Conservation, University of Applied Arts Vienna.
Petrographic/geological characterization	- weakly metamorphic schist, predominantly calcareous - high concentration of silicates arranged in foliations, surrounded by a very fine-grained siliceous marble - homogenous matrix and slight banding - average grain size of major calcite crystals between 0.03–0.05 mm; 0.05–0.25mm for silicate crystals - minor components of Phlogopite mica (grain size 0.1–0.2mm) - grain borders linear or curved - analyzed sample displays shear zone of ore minerals or graphite
Pyhsical properties	- relatively dense and heavy material - almost no water absorption
Damage patterns	- (hair) cracks and loss of material due to mechanical stress – probably stone intrinsic due to metamorphosis - almost no water related damage
	Scientifically confirmed: - Pillar Yoganarendra Malla - Bhandarkhal Tank Pavilion Base (upper covering)

Use at Patan Darbar Square:	By visual inspection only: - Lion Pillar - Garuda Pillar - Harishankara Temple Base (cornerstones with lion protomes, inner threshold) - Kings Throne - Stone Gates (inner profile) - Tusha Hiti - Visveshvara Temple Base (cornerstones with lion protomes, inner threshold)
Probable origin of material:	- Probably mined in the Kathmandu Valley – the alluvium filled Kathmandu Valley is bordered by a sequence of unmetamorphosed to slightly metamorphosed sedimentary rock in the east, south and west - Most probably from the southern part of the Kathmandu Valley, according to the geological map (Himalayan Maphouse [Ed.] Comprehensive Geological Map, GL701), possibly associated with the Chandragiri Formation. - According to the map, the stone from the Chandragiri Formation is defined as following: *"light fine grained crystalline limestones partly siliceaus thick to massively bedded white quartzites in upper parts. Wavy limestones contain late ordovician schinoderms."*

Fig. 1: Upper stone covering of Bhandarkhal Tank Pavilion Base, © IoC, 2010.

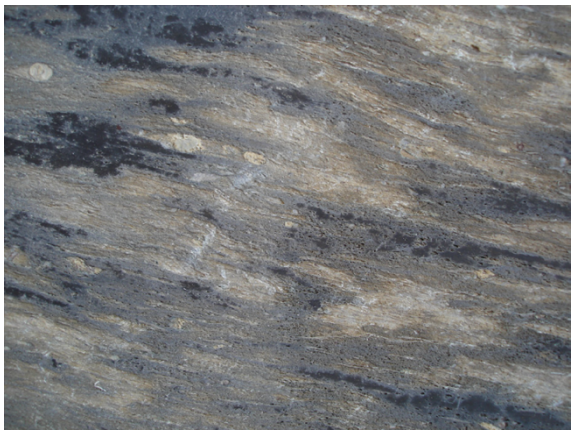


Fig. 2: Visual inspection of stone from Yoganarendra Malla Pillar, © IoC, Kaipf, 2017.

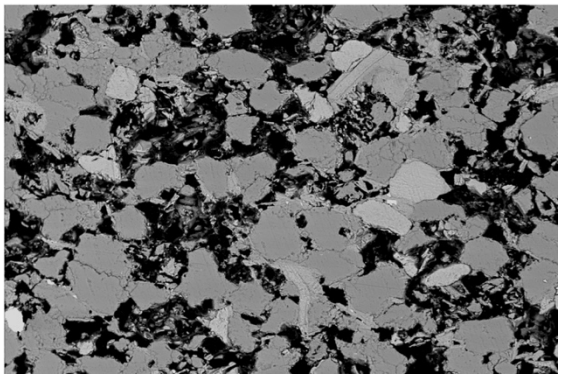


Fig. 3: Sample KAT1BS1, thin Section, SEM BSE.

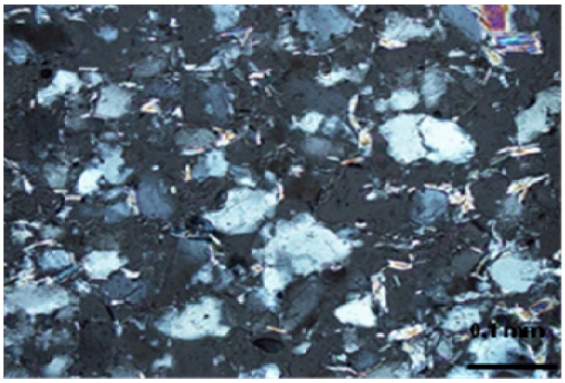


Fig. 4: Sample KAT1, thin section, optical microscopy, x200.

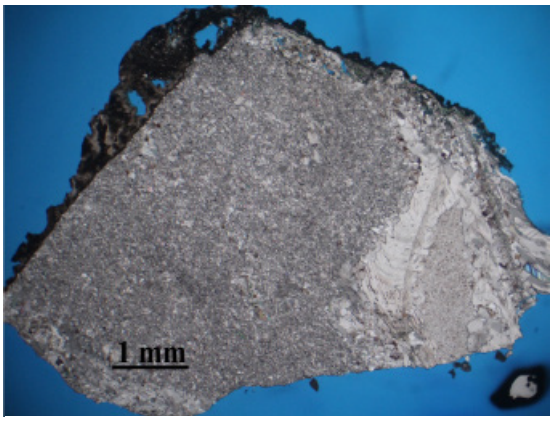


Fig. 5: Sample P06, thin section, optical microscopy, x24.

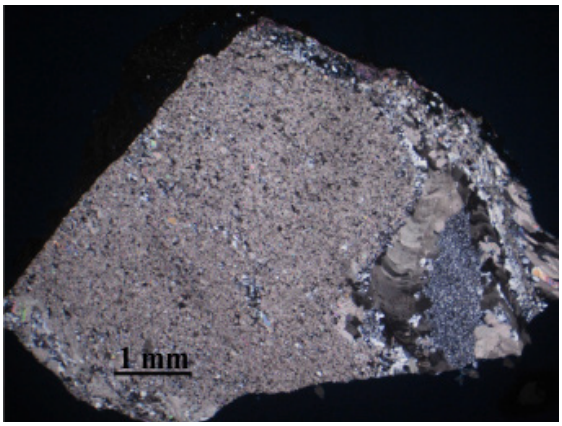


Fig. 6: Sample P06, thin section, optical microscopy, x24.

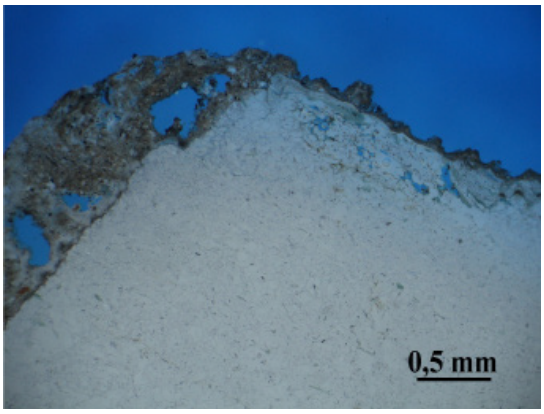


Fig. 7: Sample P06, thin section, optical microscopy, x48.

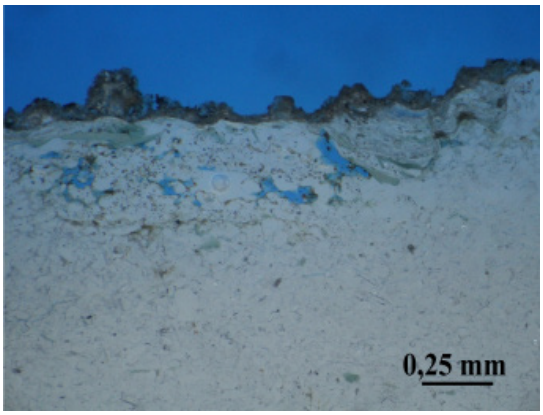


Fig. 8: Sample P06, thin section, optical microscopy, x48.

Fig. 9: Sample P07 taken in 2016, Lotus ring, Pillar of Yoganarendra Malla, Kaipf 2017.

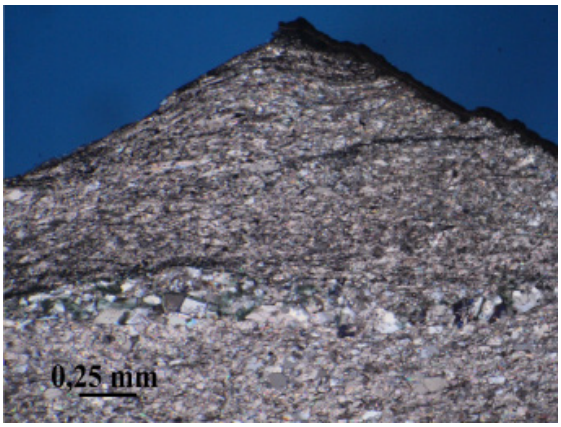


Fig. 10: Sample P07, thin section, x72. Fabric with relatively homogenous matrix and slightly developed banding.

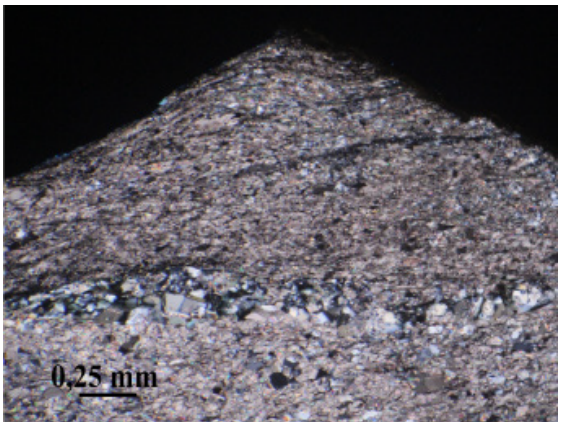


Fig. 11: Sample P07, thin section, x72.

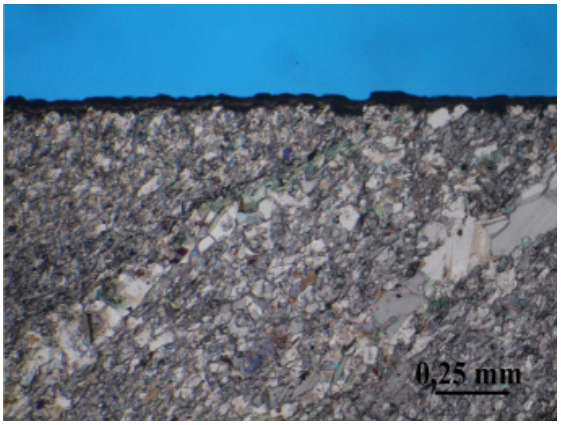


Fig. 12: Sample P07, thin section, x90.

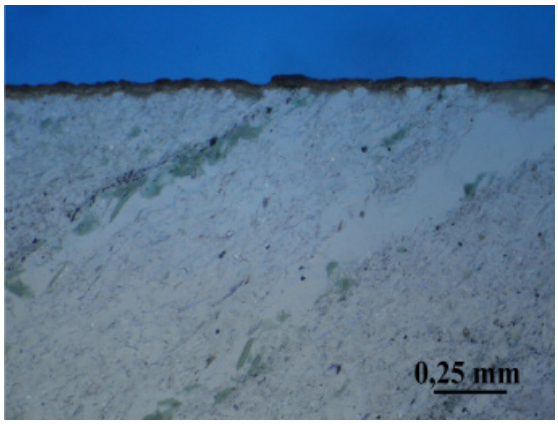


Fig. 13: Sample P07. thin section, x90.

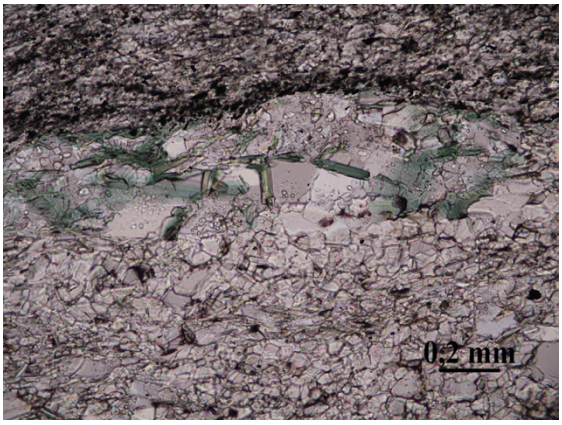


Fig. 14: Sample P07, thin section, x100; Phlogopite.

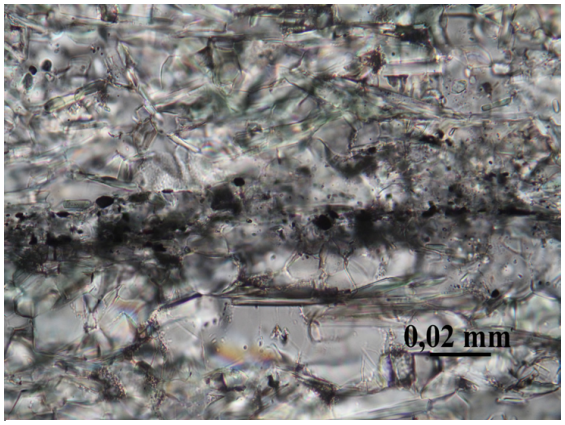


Fig. 15: Sample P07, thin section, x1000; Shear zone.

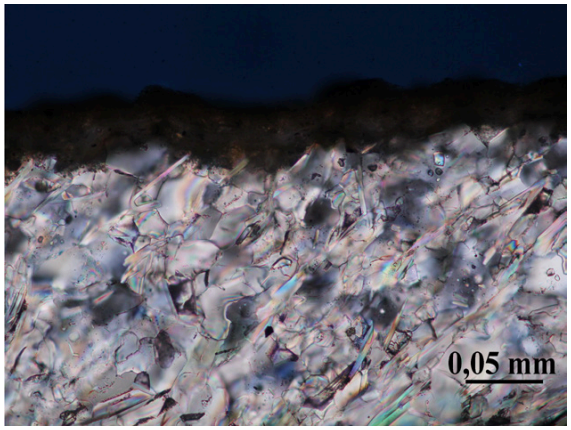


Fig. 16: Sample P07, thin section, x500. Equigranular grain aggregate with mainly polygonal grain forms.

Fig. 17: Sample NEP_ST_1.

Fig. 18: Sample NEP_ST_1.

Fig. 19: Sample NEP_ST_1, Nikon SMZ 500, transmitted light, crossed polarizers. Overview of the rock matrix with coarser and finer layers.

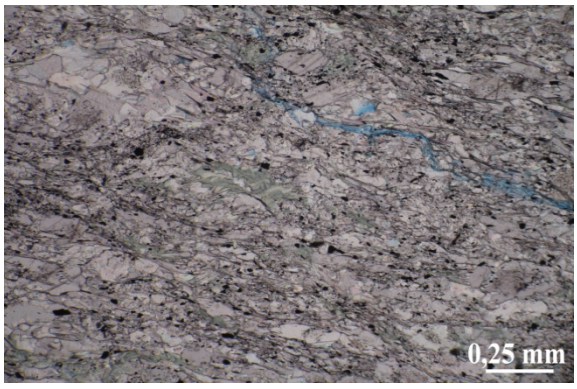


Fig. 20: Sample NEP_ST_1, Nikon SMZ 500, transmitted light, parallel polarizers. Detailed view of the matrix.

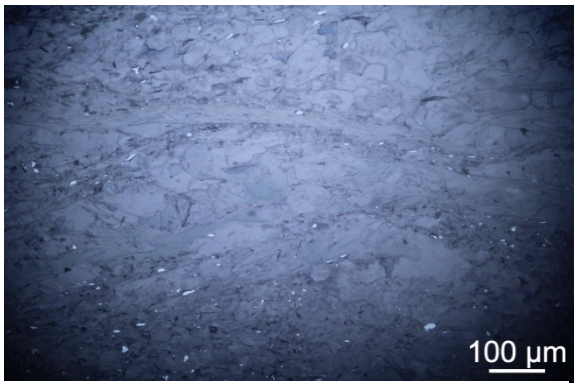


Fig. 21: Sample NEP_ST_1, Olympus BX40, incident light, bright field. Overview of mica inclusions (whitish spots).

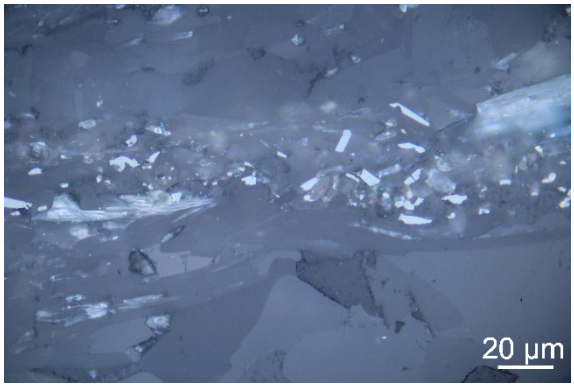


Fig. 22: Sample NEP_ST_1, Olympus BX40, incident light, bright field. Detail of a fine layer with mica flakes.