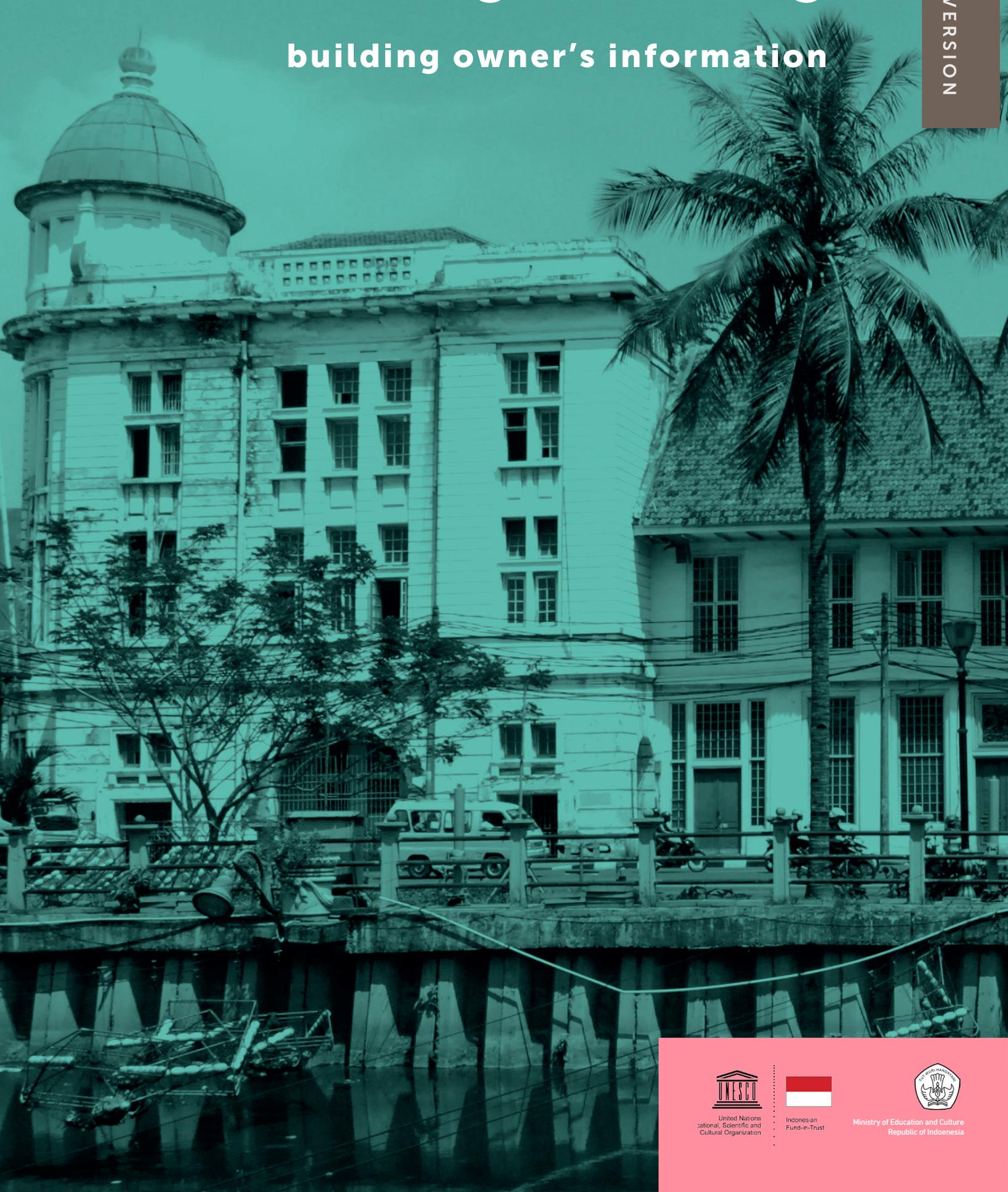


# Caring for your Heritage Building

## building owner's information

ENGLISH VERSION



United Nations  
Educational, Scientific and  
Cultural Organization



Indonesian  
Fund-in-Trust



Ministry of Education and Culture  
Republic of Indonesia

# Caring for your Heritage Building

building owner's information kit

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# Introduction

This Information Kit contains guidance on how to best care for your heritage building. The guidelines presented here are applicable to culturally significant places across Indonesia and will assist in retaining their unique identity and managing change.

The Kota Tua area of Jakarta is home to many multi-layered and complex urban heritage places which have local, national and international cultural significance.

The Information Kit utilises Kota Tua to demonstrate how conservation actions can safeguard significant heritage precincts for the benefit of the people of Indonesia, the wider region and the world.

This 'information kit' aims to:

1. describe the appropriate methods of maintaining and conserving heritage buildings and thus identify priorities for conservation work
2. provide information on sources of support (such as architects), appropriate materials and skilled craftsmen
3. guide homeowners through the requisite legal and regulatory processes before starting any conservation work
4. highlight the essential types, elements and spaces of, and materials used in heritage buildings.

The information kit is intended for those who own and maintain heritage buildings as well as those who provide services and advice for their upkeep and conservation. They include:

- Building/Homeowners
- Conservation architects and architectural historians
- Contractors
- Urban planners
- Local government officials



## Why Conserve Heritage Buildings and Places?

### Cultural Significance

- Cultural significance refers to the values and meanings places have for us and our society.
- Conservation aims to retain the significance of a place and ensures the physical and intangible values are retained for future generations.
- Kota Tua provides evidence of the rich layered history and development of Jakarta as a trading, commerce and urban centre.

### Economic Benefits

- Historic precincts provide opportunities to restore or adapt existing buildings for similar or new uses.
- Building conservation enhances real estate values and revitalisation can offer economic benefits to building owners and operators.

### Sustainability

- Conserving heritage buildings reduces energy usage associated with demolition, waste disposal and new construction and promotes sustainable development by conserving embodied energy in existing buildings.

### Tourism Potential

- Conservation and revitalisation of heritage precincts and surrounds will attract local, national and international tourist.
- Cultural tourism enables us to realise the value of our heritage and it is a major creator of jobs.

**Piagam Pelestarian Pusaka Indonesia**

*"Heritage...must be conserved and passed along to the next generation in good condition, without loss of value...to form heritage for the future."*



*Photographs and Illustrations have been supplied by AusHeritage*



### Art Deco

- Use of new building materials such as: concrete, reinforced concrete, glass blocks, steel, stained glass, ceramics, PC floor tiles
- Use of simple geometrical forms and strong horizontal lines for the façades
- Sometimes the use of curved edges and surfaces as a streamline effect
- Building types: houses, offices, public buildings, cinemas



### Modern: Between World War I (WWI) and World War II (WWII)

- The beginning of modern architecture in Indonesia
- Designed by Dutch architects
- Influenced by the new emerging architecture styles from Europe such as Arts and Crafts in decorative finishes and motifs
- Use of new building materials: cement, concrete, reinforced concrete, steel, glass block, stained glass, ceramic, PC floor tile



### Modern Post-Independence

- Influenced by international architectural movements, i.e., the International Style
- Design by Indonesian architects
- Influenced by President Soekarno's nation building philosophy and the post-independence optimism
- Modern buildings adapted to the tropical climate, i.e., use of overhanging roofs, sunscreens, natural ventilation
- Use of high quality materials
- Building types: commercial and government offices, modern houses

*Photographs and Illustrations have been supplied by PDA*

# 1 | Understanding the Historic Context



Photograph by Wikipedia

## Kota Tua: The evolution of a city

The key to understanding and managing any historic urban environment is the recognition that the city is not a static monument or group of buildings, but subject to dynamic forces in the economic, social and cultural spheres that shaped it and keep shaping it.

Indonesia has many diverse and multi-layered urban heritage places, a reflection of the multi-cultural nation itself. Kota Tua, Jakarta, is a good case study to demonstrate this.

The development and expansion of Kota Tua, is closely related to the development of trade in Southeast Asia and the wider world.

The port of Sunda Kelapa, located a few kilometres from the centre of Kota Tua, has played a central role in trade in the 5th century at the time of the Hindu Javanese kingdom of Sunda, until today.

This trade was instrumental in how the city developed, and saw the arrival of the Portuguese and then the Dutch, as well as many other ethnic groups from across the archipelago, which all played a key role in shaping the urban landscape.

Today, Kota Tua reflects a mixture of European, Chinese, Moorish and local architectural traditions.

### **What style is my building?**

Historic urban areas in Indonesia have a variety of architecture styles as a result of multi-cultural influences, construction methods and time periods. The styles of Kota Tua include:

- European
- Chinese
- Moorish
- Neo-Classical
- Art Deco
- Modern
- Modern Post-Independence
- Kampung
- Vernacular houses.

The following pages provide information to assist you in identifying your building's style.



### Kampung built over the water

- Fishing settlements dating from before the 17th century were developed in an ad hoc, organic way compared to the more planned grid structure of the cities
- Wooden houses mostly one story wooden post and beam construction, elevated above the ground/water and built on reclaimed land
- Low cost, practical style housing for harbour workers and fishermen, e.g., Luar Batang kampung next to Sunda Kelapa port



### Vernacular

- Mostly one story, free standing landed houses
- Normally has a front veranda
- Gable roof covered with terracotta tile



### European influenced timber building

- Built between the 17th and 18th century
- Wood was used for the main structure (wooden columns and beams), walls and floors (second floor)
- Brick foundations
- Terracotta roof tiles
- Natural stone floor tiles



### European influenced masonry building

- This type of building was not yet adapted to the local tropical climate or local way of life
- Thick load bearing brick walls
- Limestone for plaster
- Burnt limestone and sand mix for plaster, inside and out
- Wood was commonly used for the second floor structure and roof construction
- High ceilings, natural stone floor tiles and terracotta roof tiles were used
- Building types: wealthy merchant houses
- Terracotta roof tiles



### Chinese/Tionghoa

- Influenced by Taoism, Buddhism and Confucianism
- Distinctive curved roof ridge forms; internal courtyards for ventilation and light; distinctive use of bright colours
- Have a typical structural element consisting of a cantilever beam and roof bracket known as Tou Kung
- Hierarchical system as a space-forming element
- Building types: Temples, shop houses, domestic houses



### Moorish

- Examples can be found in the district of Pekojan, Jakarta
- Associated with the Koja merchants from West India, who were instrumental in the development of Islam in the region
- Building types: Row houses, mosques



### Neo Classic Revival C19th

- Adapted to the local climate and colonial lifestyle e.g. use of verandas at the back of the house for cool living spaces
- Symmetrical building plans
- Bearing walls made from brick
- Elevated floors
- Includes classical architecture elements



### Neo Classical Freestyle C20th

- Adapted to the local climate and colonial lifestyle, e.g., use of large internal courtyards for shade and ventilation and high ceilings
- Symmetrical building plans
- Bearing walls made from brick
- Elevated floors
- Externally includes classical architecture elements and decorated with locally themed ornaments
- Internally uses Modern/Art Deco influenced fit-outs and finishes

## 2 | Getting Started

### How to begin?

- Does your building have heritage significance? Contact the heritage authorities or an architect if you are not sure.
- Building owners have a key role in safeguarding their heritage property and protecting it as an economic asset.
- Conservation is a cooperative and multidisciplinary process. It needs expert help from people with different heritage skills.
- The chart on the next page outlines the key stages in planning a heritage project and guides you through the decision making process.



Heritage architects work with builders during the construction phase.

The following is a list of heritage professionals with expertise who may be able to assist you:

**Architect** – often the project leader and for heritage work should be licensed (IPTB-A), and IAI registered, with proven experience in conserving heritage buildings. A conservation architect has experience in assessing the heritage significance of buildings, condition surveys and repair using techniques.

**Historian** - can help you understand heritage building types and styles, design history, materials, and construction. Historians can also help identify the social, cultural and political contexts to assess the significance of your building.

**Structural Engineer** - can carry out structural assessments and advise on stabilisation, strengthening or major structural additions such as new floors or roofs. Works with the architect and owner to minimise damage, loss or change to significant fabric such as structural timber, roof trusses, staircases etc.

**Materials Conservator** - can help develop appropriate solutions to conserve or restore significant materials such as sculptures, ornamental details and decorative finishes.

**Building Services Engineer** - works closely with the architect and owner to develop design solutions that minimise damage, loss or change to significant fabric, e.g., electrical, plumbing systems, air conditioning ducting, etc.

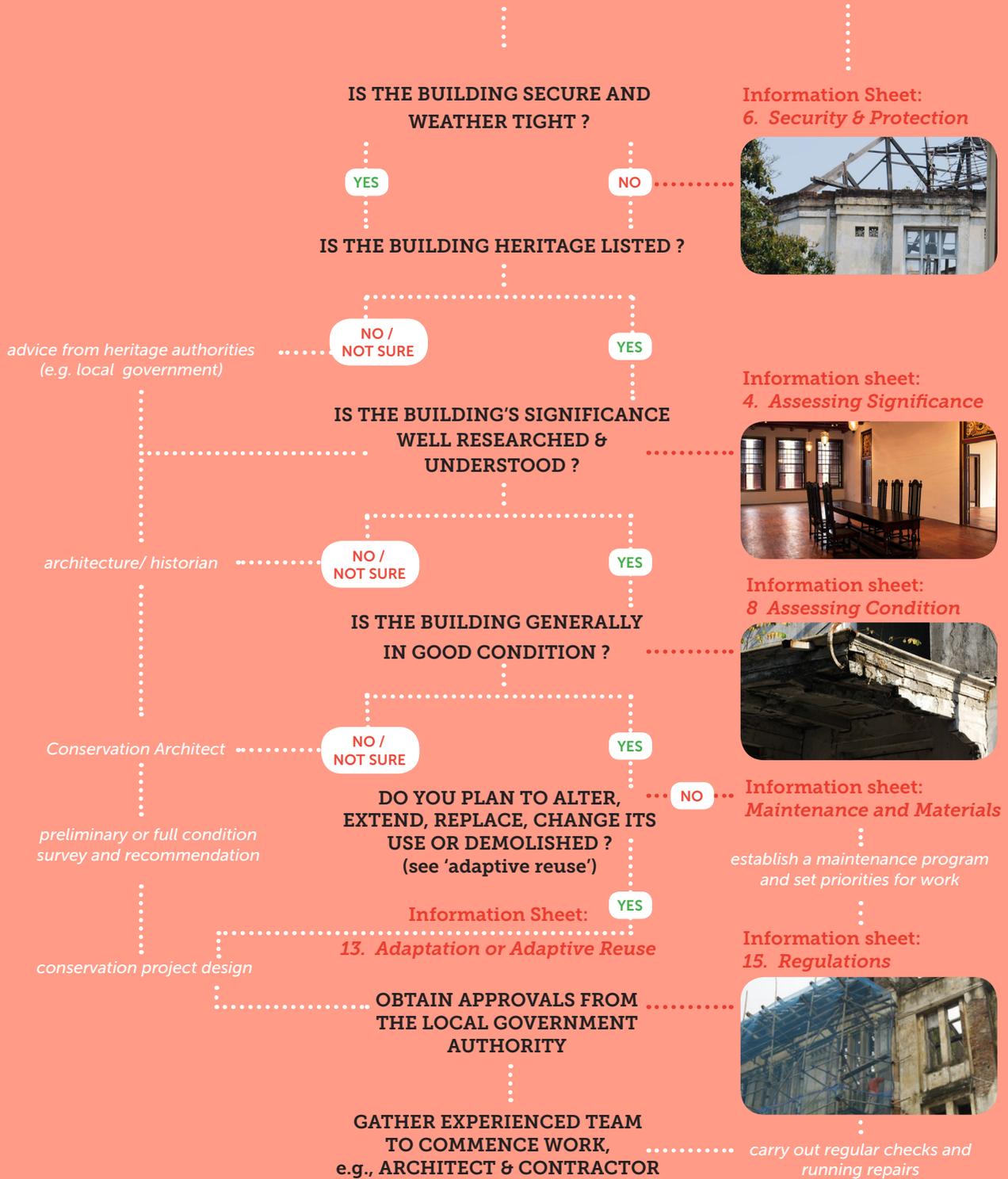
**Contractor** - works closely with the architect and owner, and specialists such as engineers. Should be an expert in one or more traditional techniques, and have a team of tradesmen covering different skills (carpentry, masonry, roofing, painting). Can propose a technical conservation methodology.

**Archaeologist** - can help predict where archaeological remains may be located, identify the construction of original foundations, monitor excavation works, document evidence revealed and manage artefacts found.

# Getting Started

This chart illustrates how to begin planning a conservation project, what specialist skills and advice you may need and what decisions you need to make before engaging a contractor.

## I want to Conserve and Use my Heritage Building



Photographs and Illustrations have been supplied by AusHeritage & PDA

# 3 | Conservation Principles

## What is good heritage practice?

Conservation aims to retain the significance of places and buildings. Conservation Principles guide decisions about changes to a place. A sample of guiding Conservation Principles are provided here.

- **Identifying significance** - Understanding the significance and values about a place is vital to inform decisions about its future. See Sheet 5 Assessing Significance for assistance in assessing and retaining the significance of your building.
- **Minimal intervention** - Do as much as is necessary, but as little as possible to make sure the integrity of a heritage place is retained. Minimal intervention is the preferred action.
- **Integrity and authenticity** - The value of cultural heritage is not only in its appearance but also in the integrity and authenticity of all its materials. New work should not mimic the original but be complementary and sympathetic to the original building.
- **Reversibility** - Where possible, any measures adopted should be "reversible" so that they can be removed or replaced with more suitable measures when new knowledge is acquired. See Sheet 13, Adaptation or Adaptive Reuse.

### Helpful Guidelines

The following documents have developed from the Venice Charter to build upon its basic principles and enlarge its scope to help people decide how best to look after important heritage buildings and places:

#### Hoi An Protocols for Best Conservation Practice in Asia (2009)

<http://unesdoc.unesco.org/images/0018/001826/182617e.pdf>

#### ICOMOS Charter - Principles for the Analysis, Conservation and Structural Restoration of Architectural Heritage (2003)

[http://www.international.icomos.org/charters/structures\\_e.pdf](http://www.international.icomos.org/charters/structures_e.pdf)

#### Burra Charter (2013)

<http://australia.icomos.org/publications/charters/>

#### Piagam Pelestarian Pusaka Indonesia (2003) (Indonesia Charter For Heritage Conservation)

<http://www.international.icomos.org/charters/indonesia-charter.pdf>

#### Nara Document on Authenticity (1994)

<http://www.icomos.org/charters/nara-e.pdf>

#### The Venice Charter: International Charter for the Conservation and Restoration of Monuments and Sites (1964)

[http://www.icomos.org/charters/venice\\_e.pdf](http://www.icomos.org/charters/venice_e.pdf)

### Heritage Laws

Heritage laws in Indonesia have changed over time, from a focus on monuments to a more holistic understanding of heritage values.

Refer to:

Undang-Undang Republik Indonesia nomor 11 tahun 2010 tentang Cagar Budaya (Law of Republic of Indonesia number 11 year 2010 – concerning Cultural Heritage)



POS INDONESIA

**Hoi An Protocols**

*"Conservation of cultural heritage is rooted in the values attributed to the heritage."*

**Nara Document on Authenticity**

*"Conservation of cultural heritage is rooted in the values attributed to the heritage"*

**Australian ICOMOS Burra Charter**

*"Do as much as necessary to care for the place ... but change it as little as possible so that its cultural significance is retained"*

*Photographs and Illustrations have been supplied by AusHeritage*

## Why assess heritage significance?

'Significance' refers to the values and meanings that places have for us and our society. An important objective in caring for heritage buildings is to retain their significance.

Identifying the significance of a place allows us to understand why it's important and helps make decisions about what elements should be retained, repaired or altered.

Before making any decisions about the future of your building it is necessary to understand its heritage values. This applies to local, provincial, national and World Heritage significance.

## Is my building significant?

The Statement of Significance should answer the question: "Why is this building important?"

- Does it contribute to the cultural history of the area?
- Does it demonstrate a high degree of aesthetic characteristics or technical achievement?
- Is it important to a particular community or cultural group?
- Does it have a strong association with an important event, person or tradition?
- Do the contents (furniture, fittings, equipment) and settings (plants, landscape elements layout) contribute to the significance of the place?
- Is it uncommon, rare or endangered?
- Did any significant events take place there?
- What is the ownership history of the building?
- What kind of lifestyle or business does the building reflect from the past?
- Does it still have original detailing and fixtures?
- Is there evidence for changes in the construction over time?
- How does it fit in with the earlier town planning?

### STEP 1

#### Gather Information

Collect all the information about your building (oral histories, drawings, photos, physical condition, comparison with similar buildings)

### STEP 2

#### Analyse Information

Identify the building's significant values (historic, aesthetic, social, spiritual)  
Understand its level of significance (rarity, representativeness, intactness)

### STEP 3

#### Statement of Significance

Write a statement of significance summarising the buildings important characteristics and values that contribute to the cultural significance of the place



## SAMPLE - **Statement of Significance** | DASAAD MUSIN CONCERN BUILDING

- The Building is associated with the past owner, Agus Dasaad Musin, who was an important, self made and successful indigenous Indonesian businessmen.
- Agus Dasaad Musin is known for his political associations and for financially assisting Sukarno prior to independence.
- The building is associated with the phase when Kota Tua was a busy business centre, strategically located close to the port and railway station.
- The building was used as Dasaad Musin's office and showroom for businesses including the largest textile factory in Indonesia, imported manufacturing tools, cars, and planes for the air force.
- The building is representative of the modern style that emerged between WWI and WWII and includes features such as repeated geometric forms.
- The building's watchtower contributes to its landmark significance and connection to the port.



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# 5 | Conservation Actions

## What repairs should I do?

'Conservation' is an umbrella term that covers all of the actions needed to care for heritage places. The following actions illustrate the application of heritage principles. In conservation works, one or more of these actions occur together in most cases:

### Protection

- Historic zones and listing heritage buildings provide protection.
- Identifying heritage curtilages (spaces around heritage buildings) protects their setting and context.
- Make sure the roof does not leak so that water, termites and dampness is excluded.
- Provide security for the place (night guard, fences, fire/ security alarms, levees, etc.) to ensure no damage, vandalism or theft.

### Maintenance

- Maintenance is the continuous protective care of the building. It deals with the causes of decay.
- Examples of Maintenance are repainting windows, checking and cleaning gutters, and treatment of corroded metal.
- Respond quickly to water problems to minimise damage.

### Preservation

- Keeping as much of the original fabric (structure, finishes, fittings, furniture, etc.) as possible when maintaining, repairing or changing the building.
- Ensure the layers of change over its history are represented.
- Try to retain original or early functions, uses and spaces where possible to best interpret the story of the place.



### Restoration

- Restoration means returning the existing materials to a known earlier state without introducing new materials.
- Restoration may include paintwork colour schemes, putting back removed pieces of the building (doors, windows, flooring, walls, etc.), re-establishing original ground levels around the building, etc.

### Adaptation

- Adaptation includes making necessary changes to ensure a place continues to be used for the original purpose in a contemporary context and into the future. This may include new services and adjustment to floor layouts.
- Adaptation can also include finding a new use that will ensure its use and care without undue physical or visual impact. It may include sensitively designed interiors, extensions or infill development within the curtilage.
- Adaptation examples from Kota Tua include Museum Bank Indonesia, Kantor Pos and Cafe Historia.

### Part Reconstruction

- Reconstruction means returning a building to a known earlier state and is different from restoration in its use of matching materials in traditional ways.
- In some instances it can be appropriate to rebuild a missing small section(s) of a structure.
- Part reconstruction does not mean demolish and rebuild. An example of Part Reconstruction is returning a roof to an original design based on historic photographs.



## Conservation Project Case Study | NATIONAL ARCHIVE BUILDING - JAKARTA

- The National Archives Building was constructed in 1760 as the residence of Reiner de Klerk, who later went on to become the Governor General of the VOC and is one of the few remaining villas of its era.
- Building condition surveys were carried out by an experienced multi-disciplined conservation team. The main cause of deterioration was due to poor site drainage, rising damp and termite affected timbers.
- Prior to the commencement of conservation works approvals were needed to be granted by the authorities.
- In accordance with the Venice Charter and other relevant documents, minimal intervention was the guiding principle (See sheet 3 Conservation Principles).
- The team studied options for repair methods and materials to assess the most appropriate approach to retain the cultural significance of the place.
- In order to retain the authenticity of the building, conservation actions included teak timber elements, which had to be partially repaired or replaced (not the entire piece) due to some termite damage.
- Wherever possible, replacements were made with old, recycled building materials. Replacement teak, for example, came from other old buildings. Similarly, broken roof tiles were replaced with roof tiles from other buildings of the same era. Also, the original kinds of building materials were used wherever possible, such as linseed-oil putty in the window frames.
- Site drainage was installed as a protective measure to safeguard against future flooding and rising damp.
- This project received the 2001 Award of Excellence, of the UNESCO Asia Pacific Awards for Cultural Heritage Conservation.



*Photographs and Illustrations have been supplied by AusHeritage & PDA*

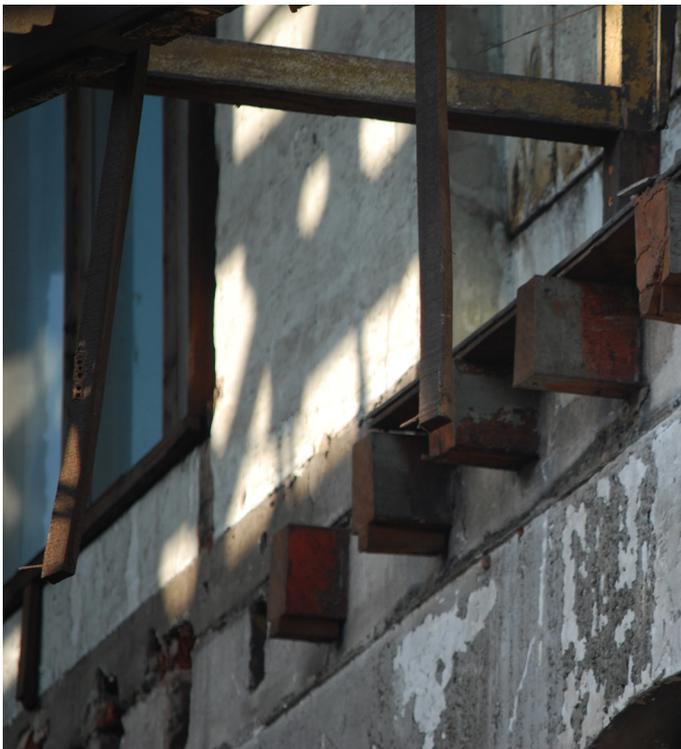
# 6 | Security & Protection

## Safeguarding the building's fabric

- Empty heritage buildings are vulnerable to fire and water damage, vandalism and building material theft.
- Security staff, night lighting and securing your building from intruders are some of the ways of managing against theft of materials.
- Ensuring the roof and other elements are watertight will safeguard against increased damage until you are able to conserve your building.



Carefully remove any plants growing on your building as soon as possible as the roots cause enormous damage to masonry walls.



Lack of security can lead to building materials being stolen. This image shows the timber floor joists missing as they have been cut and stolen.

### Helpful Hints

- A well maintained building is less liable to be damaged from fire, weather, vermin or vandals.
- Sweep rooms and courtyards regularly; open and ventilate rooms. Keep areas outside and inside free of garbage.
- Repair damaged rainwater pipes as soon as possible.
- Be careful not to throw away old building materials too soon – they may contain evidence that can help restore the building.
- Prepare a Maintenance Plan. See sheet 7 Maintenance Plan.
- Remove vegetation from the roof and walls of buildings (see sheet 9 bricks, stone and plaster) before the roots cause damage.

## How can I protect my building?

RISK	STRATEGIES	HERITAGE CONSIDERATION
Unauthorised entry	<i>Repair and maintain</i> existing gates, fences and doors.	Do not remove and dispose of any original doors, gates or fences. Carefully store fabric and fittings if they are genuinely at risk of damage or theft.
	Consider <i>boarding up</i> broken window and doors to deter intruders.	How will you install the boards without damaging timber frames or destroying the soft brickwork? Blocking air flow will lead to dampness, mould or fungal attack. Is the visual impact of boarding up acceptable?
	<i>Increase security</i> by arranging a live-in caretaker.	Will you need temporary power supply to assist security personnel ?  Can temporary installation be removed without destroying original material?
Theft	<i>Record</i> significant items or features with photography.	If there is genuine risk of theft, smaller elements (hinges, stays, door furniture, coloured glass, printed decorations, wall tiles, etc.) could be temporarily removed, wrapped in tissue paper and stored in a secure, dry place, but only on a temporary basis - once removed, fixtures are easily lost or mislaid.
Damage due to weather	<i>Maintain</i> roofs and rainwater services in good condition.	Make sure any temporary repairs do not damage historic fabric.
	<i>Close and secure</i> external shutters, grill and doors against wind and rain or extreme hot weather.	
	<i>Stabilise</i> any loose sheet metal or tile roof.	
Damage due to a missing roof	<i>Install temporary roofing</i> such as a bamboo pole frame with plastic sheet covering securely braced against winds.	Temporary roofs are not a long term construction solution. Plan your repairs to follow temporary work. Ensure temporary fixings do not penetrate significant walls and floors. Ensure rainwater is directly well clear of buildings.
Structural damage	<i>Remove plants/organic growth</i> from masonry before they become too big.	Ensure roots are thoroughly removed or killed using suitable herbicide.
	<i>Seek advice</i> from a heritage structural engineer on temporary supports to prevent collapse of the roof, windows, canopies, floor joists or severely cracked masonry.	Any intervention used for temporary support should be structurally reliable but it should not damaged the structure or require excessive removal of existing fabric.
Flooding	<i>Install temporary barriers</i> such as sandbags to stop floodwater damaging floors, furniture, etc.	After flooding, do not throw away historic timber elements - often they can be left in situ and allowed to dry out slowly and stabilise.
	<i>Remove</i> non-historic impermeable floor covering if possible.	Vinyl tiles, linoleum, etc., prevent timber floors from breathing and may promote wood rot.
	<i>Temporarily prevent</i> water from entering vents and grills.	Do not block permanently: openings to external walls need allow air for ventilation but should not flood water in.

## Why do I need a Maintenance Plan?

- All materials suffer deterioration over time, whether they are old or new buildings.
- Maintenance is the continuous care of the materials and slows the overall deterioration of the building.
- Maintenance is a cyclic process and can be divided into Planned and Unplanned.
- Planned Maintenance can be regular routine maintenance that is on-going in nature and should be treated as an ongoing expense. For example, removal of leaves from gutters, repair of slipped roof tiles, plumbing and electrical repairs are routine maintenance.
- Planned Maintenance can also be less frequent Major Cyclic Maintenance, such as re-painting the building or replacing the roof.
- Undertaking cyclic maintenance results in cost savings by avoiding greater deterioration.
- Unplanned Maintenance is work due to unexpected failure of the building fabric; for example, roof repairs after a storm.
- A Maintenance Plan is the most cost effective way to maintain the value of your building.
- Maintenance Plans allow building owners to forecast repairs to keep the whole building at an acceptable standard.
- The building will perform better and its life will be extended.
- The building will provide a sense of civic pride to the owner and the community.
- Costs of maintaining your building can be quantified, budgeted and planned with confidence.

## STEPS IN PREPARING A MAINTENANCE PLAN

### STEP 1

#### Condition Assessment

Regularly inspect the building and record any deterioration.  
(see Sheet 8: Assessing Condition)

### STEP 2

#### Prioritise Repairs

Order the repairs in level of importance. For example, it is more important to repair a leaking downpipe than to repaint a wall.

### STEP 3

#### Prepare a Repair Program

The cost of repairs may exceed the budget. Stage the works based on the priorities.

### STEP 4

#### Prepare a Repair Program

The cost of repairs may exceed the budget. Stage the works based on the priorities.

### STEP 5

#### Undertake Repairs

See Information Sheet 2: Getting Started and Information Sheet 16: Resources, Trades and Materials

## Example | Building Maintenance Schedule

### Weekly

Ground Areas: Clean out all rubbish and debris from courtyard and external areas around the building.

### 2 Monthly

Inspect and clean out all gutters, sumps, downpipes and drains. Check for cracked gutter and downpipe joints.

### 4 Monthly

Vegetation: Inspect all external wall areas for plant growth and remove. See Information Sheet 9.

### Yearly

Inspect and investigate cause of any failing plaster.  
Check for cracked gutter and downpipe joints.

### Every 3 Years

Inspect all metalwork including window grilles, balustrading, brackets and beams, and treat any corrosion.

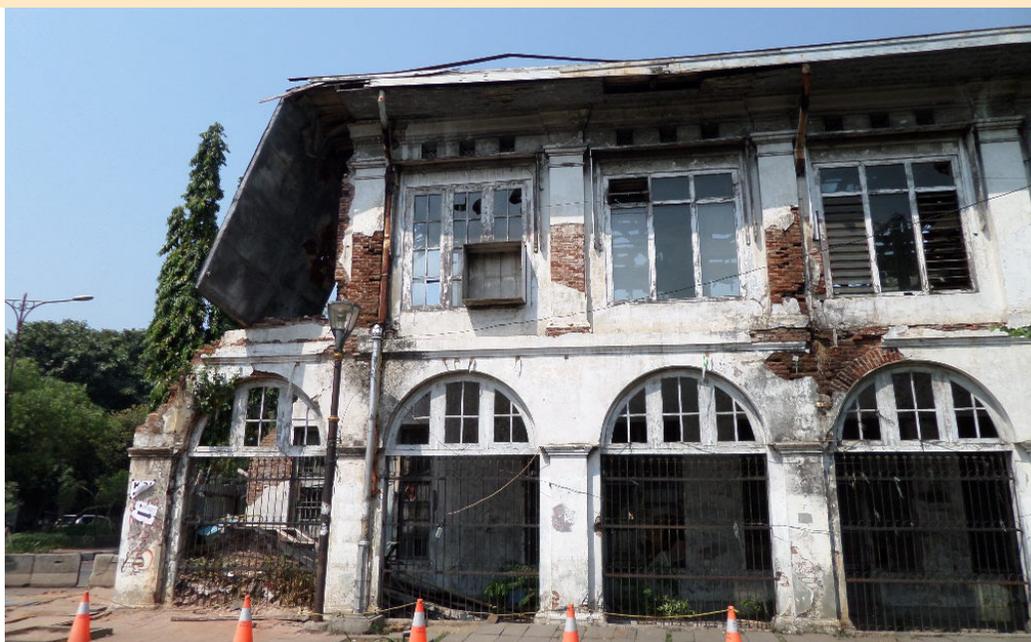
### Every 5 years

Inspect all timberwork including window frames, doors and joinery.

Repair damaged and weathered timber-work; inspect tiles; and repair tiles, flashings and battens where necessary.

### 50+ years

Terracotta roof tiles can last over 100 years, depending on fixing method and level of maintenance. Check for slipped, cracked or broken tiles.



Poor maintenance can result in extensive deterioration and high repair costs. The missing downpipe has caused water damage to paint, plaster, brickwork and timber-work. Further exposure to water may result in the wall becoming structurally unsound.



A well maintained building will prevent more serious, long term damage. Regular inspections and maintenance of the roof, gutters and downpipes is critical to protecting your building and keeping costs down in the long term.

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# 8 | Assessing Condition



## What is a Condition Survey?

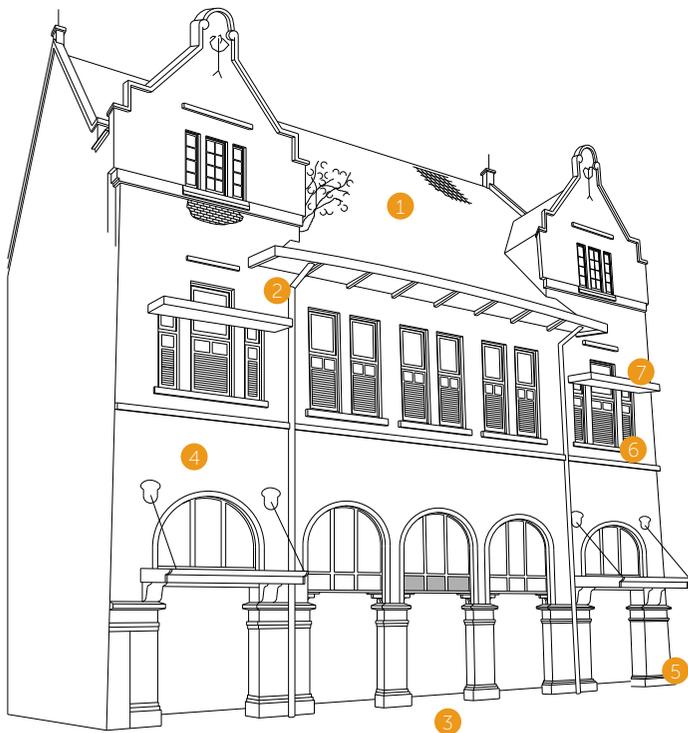
Surveys can be detailed or basic, depending on the condition of the building. Always look for the cause of the problem before deciding on the repair solution.

- A condition survey records the condition of the building. You can record the condition by writing notes, making drawings and taking photographs.
- Prepare drawings of each elevation and a floor plan and label the drawing with notes describing the condition of the materials.
- Look for possible causes of deterioration. Water penetration is the main cause of damage to heritage buildings.
- Look for signs of moisture in the roof space, at the base of walls, around gutters and down pipes.
- Check roof, gutters, flashings, downpipes and site drainage during the condition survey.
- Consult an experienced architect to assist with assessing drainage problems and damaged materials, and an engineer for structural problems.

### Helpful Hints

- Sketching on graph paper is an easy way to draw a building to scale where one square can equal one metre.
- Never give the original survey to anyone, always give out copies.
- Sound can help you assess the condition of your building. Tap the surface and listen for a hollow sound to determine if voids are present below the surface.
- Smell is another tool to assist your condition survey. A musty smell indicates a mould problem caused by damp conditions.
- Regular inspections of your building will help you understand how fast the materials are deteriorating and when to act with repairs.
- Not all repairs can happen at once. After your condition survey, prepare a list of works with important things first like roof repairs.

## What to look for during a condition survey?



### EXTERIOR

- |   |                            |   |
|---|----------------------------|---|
| 1 | <b>Roof</b>                | Loose or missing tiles, leaking flashings, sagging timbers  |
| 2 | <b>Rainwater Services</b>  | Missing sections of pipe/gutter, loose fixings or brackets, blockage, vegetation, misaligned gutters that overflow, holes and splits, staining and algae behind downpipes, inadequate sized gutters/downpipes |
| 3 | <b>Stormwater Services</b> | Ineffective disposal (e.g. no drain), vegetation (indicating blockage), cracking or staining of walls near a drain (could indicate broken drain)  |
| 4 | <b>Walls</b>               | Cracks or displacement in brickwork, missing plaster, loose cement plaster trapping water, vegetation in joints, cracks around windows (could indicate rot in wood lintel), 'tied marks' from salt damp.      |
| 5 | <b>Foundations</b>         | Leaning or vertical/diagonal cracking in walls  |
| 6 | <b>Doors &amp; windows</b> | Missing or broken external shutters, damaged window/door frames, missing ironmongery (handles, hinges, catches, etc.), termite attack, broken/missing glass, flaking/decayed paint                            |
| 7 | <b>Canopies/Eaves</b>      | Decayed timber frames, damaged or missing coverings, corroded straps, missing soffits   |



### INTERIOR

- |   |                                |  |
|---|--------------------------------|--|
| 1 | <b>Ceilings</b>                | Damp patches, loose panels, sagging or rotten timber   |
| 2 | <b>Floors</b>                  | Sagging joists, termite attack, uneven stone or tiles, damp and salt efflorescence in joints exposed concrete reinforcement  |
| 3 | <b>Walls</b>                   | Cracking and loose plaster, corrosion of embedded metal, damage to brickwork from later partitions or alterations, cracking above windows, missing skirtings   |
| 4 | <b>Finishes</b>                | Flaking paint, blistering paint on damp walls, loose plaster, missing or broken external shutters, damaged window/door frames, missing ironmongery (handles, hinges, catches, etc.), termite attack, broken/missing glass, flaking/decayed paint |
| 5 | <b>Stairs Foundations</b>      | Corroded handrails, cracked marble/stone, termites, concrete reinforcement corrosion   |
| 6 | <b>Fixtures &amp; fittings</b> | Missing fixtures or joinery details, missing panelling, joinery damage from later alterations, unsympathetic modern hardware   |
| 7 | <b>Details Services</b>        | Missing or damaged plaster or concrete moulding, damaged or loose wall tiles, damage from later services, leakage, fixing holes, notched structural timber   |

*Photographs and Illustrations have been supplied by AusHeritage*

PROBLEM	CAUSE	WHAT TO DO	WHAT NOT TO DO
	<p>Loose or cracked plaster</p> <ul style="list-style-type: none"> <li>• Hard cement plaster poorly bonded to soft brick</li> <li>• Water trapped behind hard plaster causing salt attack</li> <li>• Poorly mixed or unclean sands and cements for repair work</li> <li>• Pressure from plant roots or corroding metal</li> </ul>	<ul style="list-style-type: none"> <li>• Remove loose plaster, dry and re-plaster in more suitable lime-sand</li> <li>• Ensure sands for repair are clean and salt-free</li> <li>• Remove or treat embedded iron/steel; cut out and kill woody plants</li> <li>• Maintain the building with regular roof and drainage checks</li> </ul>	<ul style="list-style-type: none"> <li>• Do not repair using concrete and portland cement mortar</li> </ul>
	<p>Efflorescence / salt damp</p> <ul style="list-style-type: none"> <li>• Groundwater ('rising damp') attacking porous walls</li> <li>• Contamination by water runoff or sulphates in cement materials</li> </ul>	<ul style="list-style-type: none"> <li>• Remove hard cement plasters and allow walls to breathe</li> <li>• Keep roofs and gutters maintained so masonry is not wetted by runoff</li> <li>• Use permeable paints and mortars to accommodate salt crystallization</li> <li>• Provide effective storm drainage at ground level</li> </ul>	<ul style="list-style-type: none"> <li>• Do not apply sealants or 'water-proofing' coatings on porous masonry or plaster walls</li> </ul>
	<p>Individual bricks shattered or crumbling</p> <ul style="list-style-type: none"> <li>• Structural failure</li> <li>• Salt damp</li> <li>• Fire damage</li> <li>• Vegetation damage</li> <li>• Thermal cracking (wetting and drying cycles in exposed areas)</li> </ul>	<ul style="list-style-type: none"> <li>• Individual decayed or missing bricks can be replaced using bricks of similar shape and size, ideally of the same clay type, set in lime mortar</li> </ul>	<ul style="list-style-type: none"> <li>• Do not repair using hard modern bricks or concrete and portland cement mortar</li> </ul>
	<p>Long cracks in plaster or areas of brickwork cracked through the joints or through the bricks</p> <ul style="list-style-type: none"> <li>• Structural movement, settlement or subsidence</li> <li>• Vibration</li> <li>• Failure of floor beams or wood lintels or supports</li> </ul>	<ul style="list-style-type: none"> <li>• Contact a structural engineer experienced in heritage buildings and familiar with the local area</li> <li>• Explore arrange of remedial solutions; keep the cracking under observation if no immediate risk</li> </ul>	<ul style="list-style-type: none"> <li>• Do not demolish or add intrusive concrete or steel supports</li> </ul>
	<p>Loose and flaking paint</p> <ul style="list-style-type: none"> <li>• Salt damage in damp walls</li> <li>• Inadequate surface preparation during repainting</li> </ul>	<ul style="list-style-type: none"> <li>• Remove loose paint and salty deposits, sand back to a sound surface and repaint with suitable paint</li> </ul>	<ul style="list-style-type: none"> <li>• Do not apply sealants or 'water-proofing' coatings to salt-affected walls</li> </ul>
	<p>Plant roots penetrating joints</p> <ul style="list-style-type: none"> <li>• Plant growth encouraged by dampness in masonry (especially under eaves, near drainpipes or in exposed brick joints)</li> </ul>	<ul style="list-style-type: none"> <li>• Apply herbicide, allow to die back, remove plants carefully by pulling out or cutting (without damaging masonry), repair brickwork as necessary.</li> </ul>	<ul style="list-style-type: none"> <li>• Do not destroy or demolish fragile masonry by carelessly extracting roots and stems</li> <li>• Do not neglect to undertake regular maintenance</li> </ul>
	<p>Green staining/algae</p> <ul style="list-style-type: none"> <li>• Vegetation cover preventing drying of surfaces</li> <li>• Water accumulation from ineffective roof or storm drainage</li> <li>• Dampness behind cracked or defective cement finishes</li> </ul>	<ul style="list-style-type: none"> <li>• Cut back overhanging vegetation</li> <li>• Repair and reconnect drainage pipes</li> <li>• Remedy the causes of dampness behind finishes (e.g. water leak)</li> </ul>	

Photographs and Illustrations have been supplied by AusHeritage & PDA

# 9 | Brick, Stone & Plaster



*Originally the plaster which covered the bricks was lime-based, but this wall was re-plastered with high levels of cement. The hard plaster has cracked and fallen off, exposing the soft original bricks to salt damage.*

## What is Masonry ?

- Common masonry materials include brick, marble, granite and plaster.
- Masonry is among the most durable of historic building materials, but it is vulnerable to damage by improper maintenance and water.
- Most heritage buildings were not originally constructed using cement. Cement based plaster repairs are a common cause of damage to heritage buildings because it is less porous than lime mortar and can trap moisture in the walls.
- If replacing an original element (e.g. plaster finishes, decayed brick, broken stone steps) that is beyond repair, adopt a like-for-like approach, i.e., use identical materials, identical colour, shape and form and identical methods of construction.
- Make sure to fix the cause of any defects, e.g., a leaking roof or blocked drain, before repairing any walls and surfaces.

## How can salt damage buildings?

- Salt damage is caused by salty ground water or rain water entering the walls of a building.
- As the water evaporates, the salt dries and expands just below the surface of the wall.
- Pressure from the enlarged salt causes the surface of the wall to breakdown.
- Salt damage often looks like a white loose powder on the wall surface.

### Helpful Hints

Traditional lime and sand mortar is the best material to use when patching old brickwork and plaster

Plaster which is considered historically significant and has become detached from the brickwork can be re-fixed by injecting grout into the voids behind the surface. The grout should be made of lime putty, fine sand and brick dust. Do not use modern adhesives as this will cause more damage by trapping moisture in the wall. This is specialised work and should be carried out by someone experienced in this work and supervised by a heritage architect.

Lime plasters should **not** be painted with acrylic or vinyl paint – this seals the surface and traps water in the wall and accelerates decay.

## Brick

Brick, made from fired clay, is a common material in Kota Tua. Bricks are bonded by mortar made of lime and sand. The sand contains a range of particle sizes, including small pebbles. Brick walls were often covered with soft lime plaster – this protected the soft bricks from moisture and salts and prevents the growth of mould and algae.

Mortar and plaster must be softer and weaker than brick. This allows damp and salts to travel through mortar rather than bricks.

Brick wall can crack for various reasons. Sometimes cracks are caused by ground movement. Cracks can be stitched using new matching bricks and proper mortar. A structural engineer can advise on the cause of wall cracks and the best way to repair them.

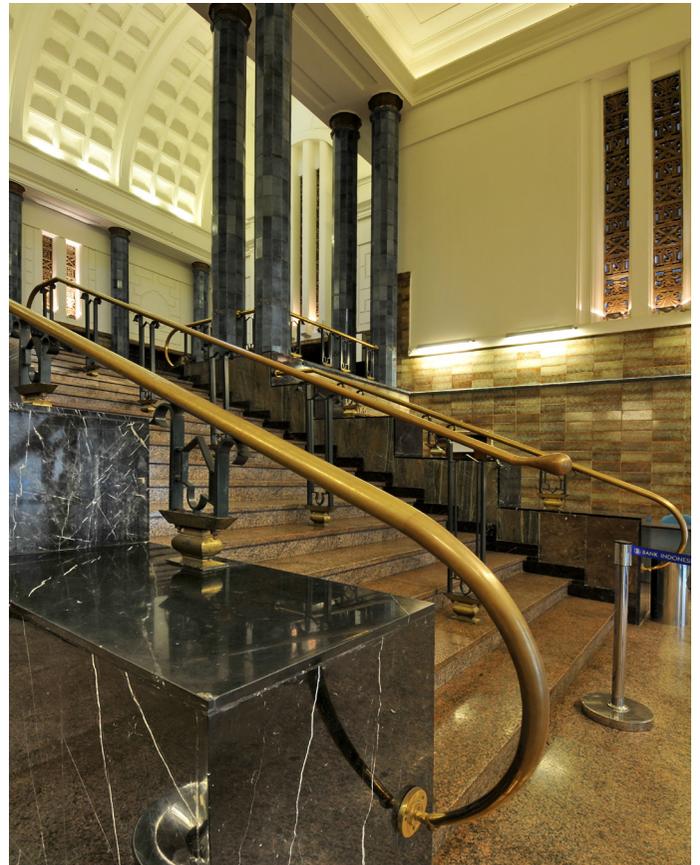
## Plaster

Traditional lime plasters are designed to keep buildings dry by allowing moisture to move freely in the wall and evaporate naturally from surfaces that are exposed to air movement and higher temperature.

In old masonry buildings, when repairs are carried out with impermeable materials (like cements and most modern paints), moisture is trapped in the masonry. Trapped salt causes the plaster to fall off.



*A brick and plaster wall showing typical problems caused by cement plaster*



*A grand marble and granite stairway*

## Stone

When repairing or replacing stone elements it is important to select matching stone (the same geological type, with similar porosity, strength, colour, salt resistance and weathering properties).

Damaged or missing stone can be carefully patched by skilled tradespeople. The joint between the old and new stone must be a tight fit.

When cleaning or polishing granite or marble, always begin by testing the gentlest methods first. Choose a discreet location for your test. Start with water washing, water plus non-ionic detergent, then water plus gentle solvent such as white spirit.

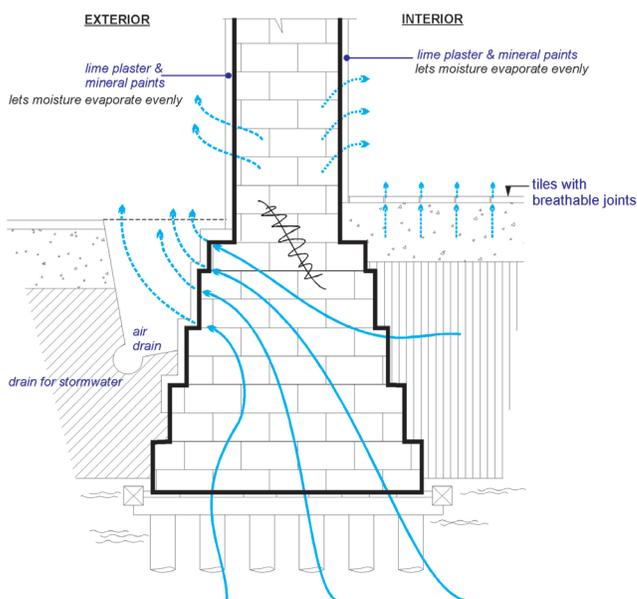
## What is rising damp?

Rising damp is a common problem for heritage buildings. Moisture is drawn up the wall from the ground or the foundations.

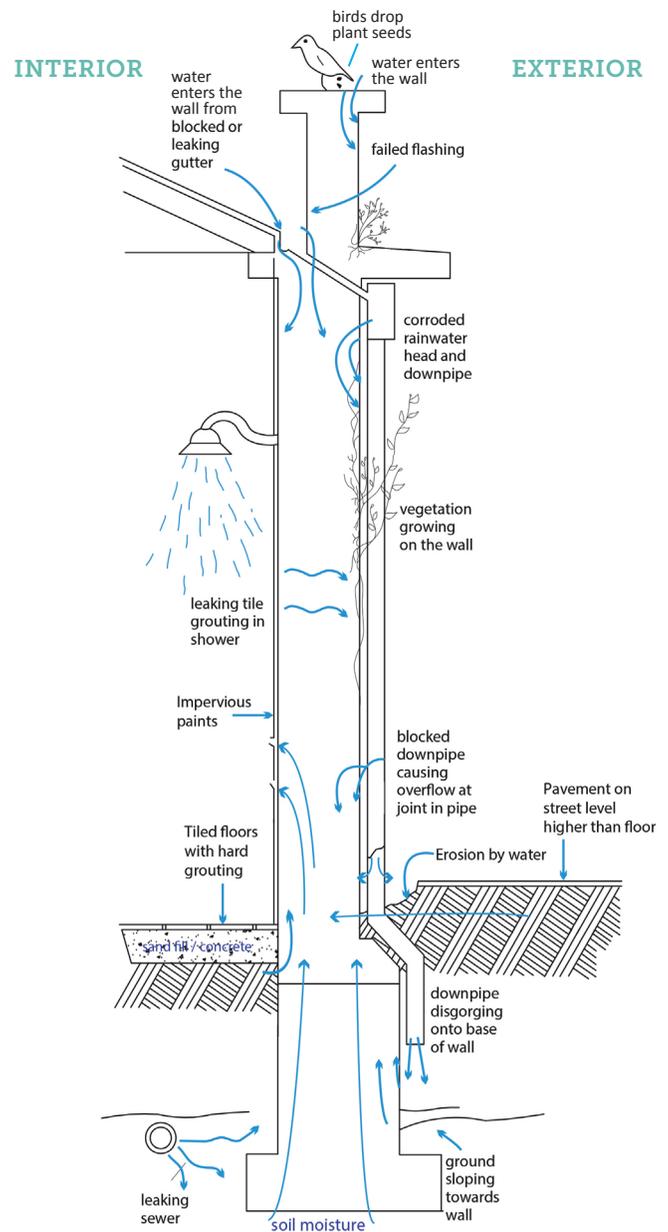
Heritage buildings were originally constructed from materials that allowed moisture to evaporate easily. However, when changes or repairs are made that introduce impervious materials such as cement or tiles, the moisture will travel to the edges of floors and travel up walls. Causes of rising damp include:

- replacing a timber floor with concrete or tiles,
- painting wall with paint that seals the surface such as acrylic or oil based paint. Lime based paints are best,
- re-plastering brickwork with hard cement plaster,
- exterior paths sloping towards the building rather than away from the building to prevent rainwater flowing onto the base of the walls,
- roof gutters and downpipes not being connected properly allows rainwater to fall on the walls and base of the building.

## Preventing rising damp



## Causes of rising damp



Drawing based on 'The maintenance series - Rising damp' NSW Heritage Office.

	PROBLEM	CAUSE	WHAT TO DO	WHAT NOT TO DO
<b>Iron &amp; Steel</b>				
	Surface rust on unpainted joinery fittings and fixtures	<ul style="list-style-type: none"> <li>Natural oxidation of ferrous metals</li> </ul>	<ul style="list-style-type: none"> <li>Lightly clean, de-rust and paint with a suitable oil-based or enamel paint, or finish with natural (coconut?) oil</li> </ul>	<ul style="list-style-type: none"> <li>Replace sound, working elements with stainless or galvanised steel</li> </ul>
	Flaking paint on fixtures, gates, grills, balustrades and canopy supports, sheet metal etc.	<ul style="list-style-type: none"> <li>Poor maintenance: water or condensation ingress behind cracked paint causing corrosion and iron staining</li> <li>Thermal movement of metal and breakdown of paint resins through oxidation in areas of high exposure</li> </ul>	<ul style="list-style-type: none"> <li>Clean off loose paint, prepare rusted metal by wire brushing and repaint using a suitable corrosion-resistant primer (e.g. zinc phosphate) for longer paint life</li> </ul>	<ul style="list-style-type: none"> <li>Do not apply sealants or 'water-proofing' coatings on porous masonry or plaster walls</li> </ul>
	Stone or concrete damaged by corrosion of embedded metal	<ul style="list-style-type: none"> <li>Corrosion due to moisture in masonry</li> </ul>	<ul style="list-style-type: none"> <li>Remove broken masonry, clean and treat the rust fully (in situ if possible), repaint with a zinc primer</li> </ul>	<ul style="list-style-type: none"> <li>Dismantle iron structures without first recording them in detail and establishing how they will be conserved and reinstalled without further loss or damage</li> </ul>
<b>Concrete</b>				
	General dirt and soiling	<ul style="list-style-type: none"> <li>Urban grime and pollution</li> </ul>		
	Vertical cracks in columns and walls	<ul style="list-style-type: none"> <li>Corrosion due to 'carbonation' of concrete (often due to high porosity of inferior materials, allowing water vapour to attack steel)</li> </ul>	<ul style="list-style-type: none"> <li>Contact a structural engineer experienced in historic concrete repair</li> <li>Concrete patch repairs can be used where reinforcement steel is mechanically sound</li> <li>Corrosion treatment and synthetic patching is needed if steel is in poor condition</li> </ul>	<ul style="list-style-type: none"> <li>Cover the damage with Fibreglass Reinforced Plastic (FRP) or other materials without rectifying the cause of damage</li> </ul>
	Breaking concrete, loose surface layers revealing rusted reinforcement	<ul style="list-style-type: none"> <li>Corrosion and/or attack from soluble salts (e.g. chlorides, sulphates)</li> <li>Potentially caused by water from leaking roofs or gutters</li> </ul>		
	Loose or flaking paint	<ul style="list-style-type: none"> <li>Corrosion, salt attack, lack of maintenance</li> </ul>	<ul style="list-style-type: none"> <li>Clean, inspect, investigate causes of salt attack, repaint if the concrete is sound and stable</li> </ul>	<ul style="list-style-type: none"> <li>Remove old paint without considering the possibility of historically or artistically important painted decoration being present</li> </ul>
	Bending or distortion or lintels, slabs, columns, with lateral cracking	<ul style="list-style-type: none"> <li>Structural movement, settlement or subsidence</li> <li>Vibration</li> <li>Inadequate or corroded reinforcement in the concrete</li> <li>Overloading impacting on structural performance</li> </ul>	<ul style="list-style-type: none"> <li>Contact a structural engineer experienced in historic concrete repair</li> </ul>	

Photographs and Illustrations have been supplied by AusHeritage

# 10 | Concrete & Metal



## Concrete

Concrete appeared in Kota Tua in the early 20th century. Steel reinforcement was embedded in the concrete during construction for additional strength.

Moisture and salt from the sand used to construct the building or from rain or floods, enters the concrete and if the steel inside the concrete comes in contact with the salty moisture, the steel will rust and crack the concrete.

Patching damaged concrete without addressing the cause of the cracks is a short term solution.



*This concrete slab was poured with the steel reinforcement positioned too close to the surface. Moisture has penetrated the concrete and caused the steel to rust and expand, and resulted in cracking the concrete.*

### Helpful Hints

- Good surface preparation is essential for the success of a concrete patch repair.
- If the damage is limited to the surface, only remove deteriorated concrete when preparing an area for patching.
- After removing all decayed concrete make sure the surface is not smooth, but rough to ensure the new patch material adheres to the surface.
- If the damage is due to rusted steel reinforcement, you can cut out the corroded steel and splice in new reinforcement. A structural engineer can advise you on this.
- Don't paint over cracked concrete to hide cracks as the cracks will only increase. Its best to solve the cause of the cracks.
- Applying modern sealers and coating are not recommended because they can change the appearance of the surface, are not reversible and can trap moisture in the concrete.
- Architects and structural engineers experienced in heritage buildings can advise you on how to conserve deteriorated concrete.



Repainting historic cast iron railings

## Metalwork

When a building is of heritage significance it constitutes everything within the building including the metalwork. Metalwork commonly includes vent and security grills, stair balustrades, gutters, downpipes, rainwater heads and canopies above windows and doors.

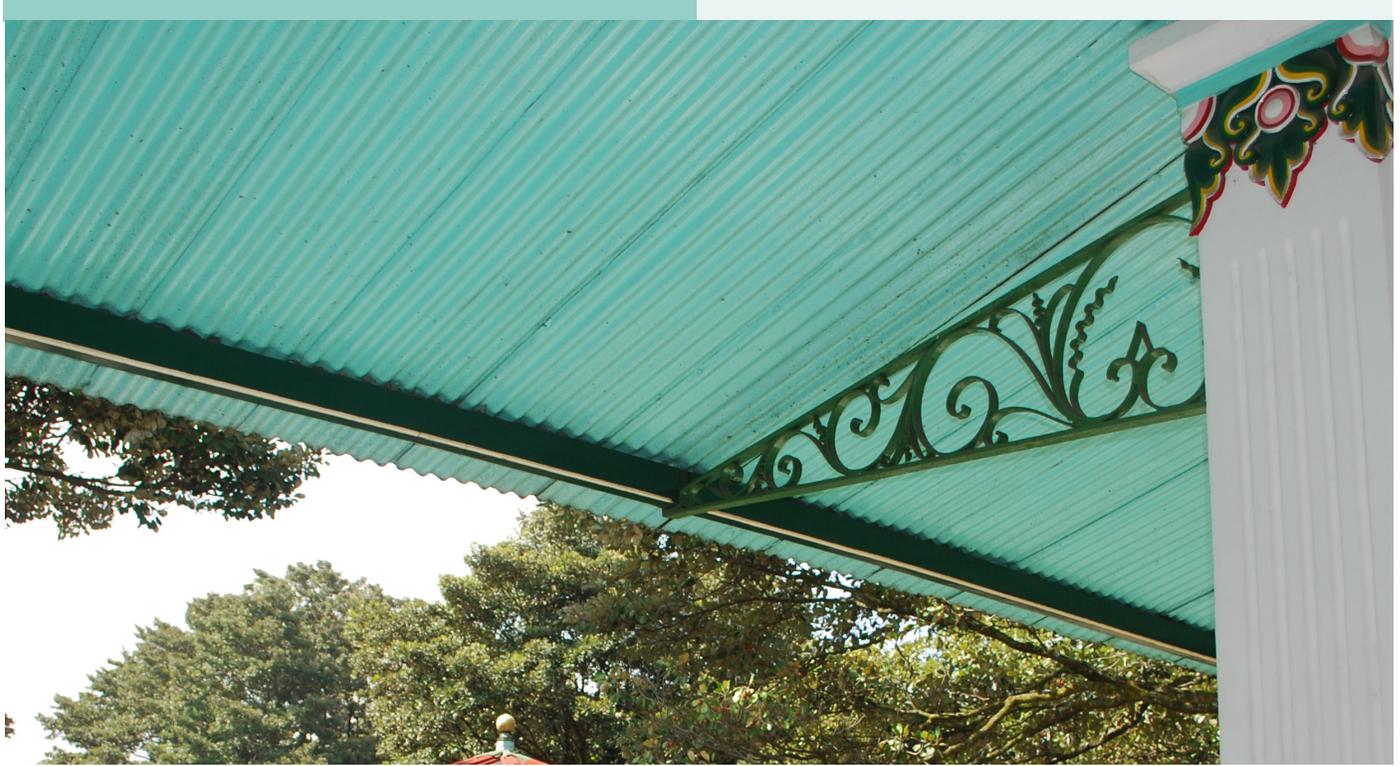
Maintenance is one of the most important factors in safeguarding metalwork against deterioration. Moisture causes rust, splitting, cracking or staining if fixed into stone, brickwork or concrete. Non-ferrous metals (copper, brass, tin, lead) may tarnish or discolour over time but are relatively resistant to corrosion.

Check the condition of the metalwork once a year to make sure it is in good condition. If badly damaged metalwork must be replaced, choose materials that match the existing in material, size and shape.

When preparing rusted metalwork for repainting, remove all rust using scrapers or wire brushes. Apply a rust inhibiting primer immediately after cleaning. See Sheet 12: Paint for more information on painting.

### Helpful Hints

- Conserve rather than replace historic metalwork where possible.
- If replacement is necessary due to the level of decay, adopt a like-for-like approach i.e., use an identical material, identical shape and form, and identical fixtures and fittings to the original.
- Small areas of corrosion can be removed with lime juice and coconut fibre. It's important to wash off the lime juice with water before repainting.
- Allow repainting of metalwork once every 5-7 years.
- Scrap metal is valuable, which has resulted in metalwork being stolen from heritage buildings. Reduce the risk of theft by increasing security and lighting, and prevent easy access to the roof.
- Do not install new corrugated iron sheets directly on top of existing corroded sheets as this will trap moisture and cause the new sheet to deteriorate.



*This heritage building has decorative structural members and corrugated iron roofing*

## Sheet metal

Metal sheets are lightweight and easily transportable. Used for almost 200 years, corrugated iron was often used to replace damaged terracotta tiles or thatch roofs on heritage buildings.

Corrugated iron was coated with oil based paint or dipped into zinc to form a protective surface layer. The main cause of deterioration is failure of the coating caused by acid rain, condensation, and wetting and drying cycles. This results in corrosion (rust appearance).

Original or significant roofing sheets with small areas of damage can be patch repaired. Try to obtain matching sheet materials and profiles.

## Ironmongery

Architectural ironmongery such as hinges, bolts, catches, stays, gratings, grills, railings and metal windows are important heritage features and should be conserved and maintained.

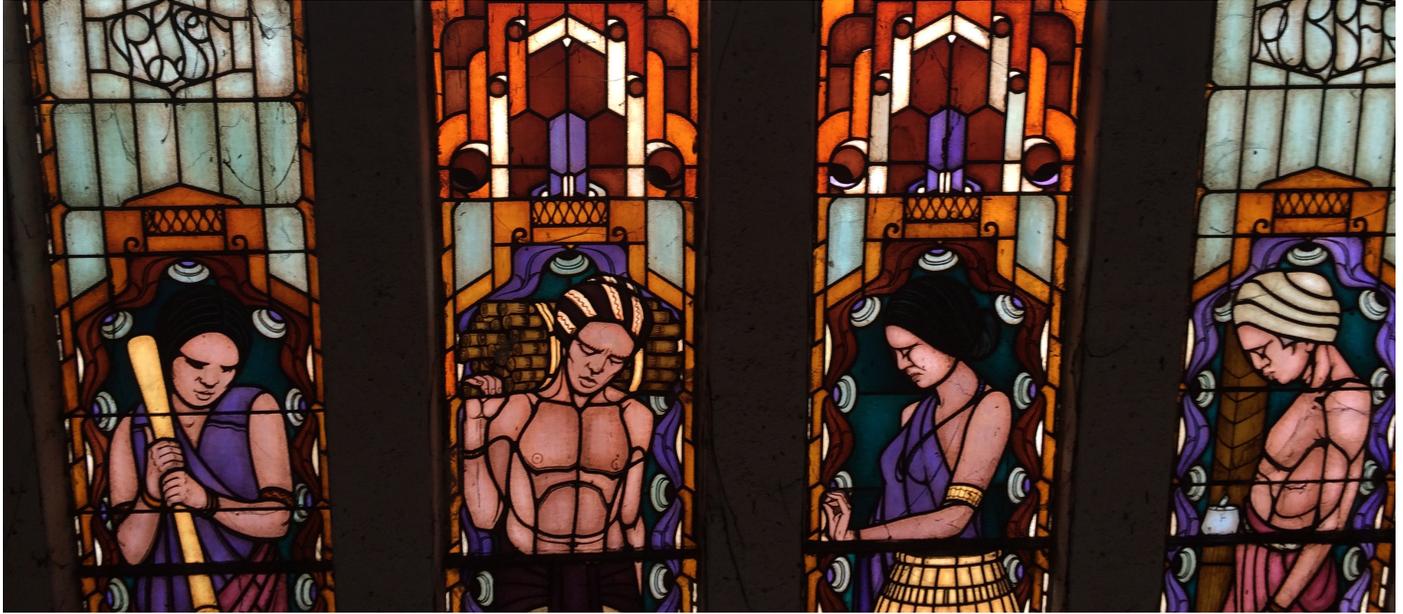
Iron and steel should be painted. Brass and bronze should be gently cleaned with neutral soap and possibly a non-abrasive heritage metal cleaner and soft cloth .



*Metal window latches, locks and door hinges are all part of the significant materials of heritage buildings.*

	PROBLEM	CAUSE	WHAT TO DO	WHAT NOT TO DO
<b>Wood</b>				
	Rot in timber windows, shutters and joinery	<ul style="list-style-type: none"> <li>Water infiltration, lack of maintenance</li> </ul>	<ul style="list-style-type: none"> <li>Cut back to sound timber and introduce a new piece of the same or similar species as an indent or scarfed section</li> </ul>	<ul style="list-style-type: none"> <li>Do not throw away the whole element</li> </ul>
	Termite damage	<ul style="list-style-type: none"> <li>Termites</li> </ul>	<ul style="list-style-type: none"> <li>Repair and strengthen by injecting epoxy resins</li> <li>Patch with resin mixed with wood dust or face patches or for larger cavities, apply an insecticide such as clove oil and tobacco juice</li> </ul>	<ul style="list-style-type: none"> <li>Do not cut out and discard sound, undamaged wood</li> </ul>
	Decay of timber floor bearers	<ul style="list-style-type: none"> <li>Timber rot due to water infiltration</li> </ul>	<ul style="list-style-type: none"> <li>Repaired using stainless steel plates; one method is an external plate bolted through the timber</li> <li>Decayed joists can also sometimes be repaired by direct pairing with a new partner timber to carry the load</li> <li>Provide adequate under floor ventilation to floorboards</li> </ul>	<ul style="list-style-type: none"> <li>Do not replace timber with concrete floors</li> </ul>
	Decay of verandah posts	<ul style="list-style-type: none"> <li>Timber rot due to water ingress and/or termites</li> </ul>	<ul style="list-style-type: none"> <li>Use 'timber-to-timber' repairs (e.g. scarf joint) secured with stainless steel screws or wooden dowels</li> <li>Protect timber posts from rising damp</li> </ul>	<ul style="list-style-type: none"> <li>Do not throw away the whole post</li> </ul>
	Missing or decayed eaves soffits	<ul style="list-style-type: none"> <li>Water leakage</li> </ul>	<ul style="list-style-type: none"> <li>Ensure roofs, canopies and downpipes are drained effectively</li> </ul>	<ul style="list-style-type: none"> <li>Do not demolish timber lined canopies and eave details</li> </ul>
<b>Glass</b>				
	Missing panes Cracked panes	<ul style="list-style-type: none"> <li>Wind/weather, vandalism, failure of glazing putty or timber decay</li> </ul>	<ul style="list-style-type: none"> <li>Identify a suitably matched glass product for replacement</li> <li>Repair cracked significant, rare or unusual glass using epoxy resin</li> </ul>	
	Loose putty, caulk or missing timber beads	<ul style="list-style-type: none"> <li>Degradation of oils and resins in the putty</li> </ul>	<ul style="list-style-type: none"> <li>Repair using suitable glazing putty or joinery beads</li> </ul>	
<b>Ceramics</b>				
	Loose or missing tiles	<ul style="list-style-type: none"> <li>Poor bonding to the wall, corrosion of hidden metal</li> </ul>	<ul style="list-style-type: none"> <li>Re-adhere with a bonding material to match the original</li> <li>Source missing tiles to match from specialist suppliers</li> </ul>	<ul style="list-style-type: none"> <li>Do not introduce non-matching tiles</li> <li>Patch with cement</li> </ul>
	Crazing or spalling of glaze	<ul style="list-style-type: none"> <li>Manufacturing defect</li> </ul>	<ul style="list-style-type: none"> <li>Not normally a cause for concern</li> </ul>	
	Cracked tiles	<ul style="list-style-type: none"> <li>Movement in the wall or corrosion from fixings</li> </ul>	<ul style="list-style-type: none"> <li>Carefully remove tiles, remove or treat rusting fixings; tiles can be re-adhered with epoxy resin. If necessary, create a control joint</li> </ul>	<ul style="list-style-type: none"> <li>Do not re-adhere or fill cracks with Portland cement</li> </ul>
	Bulging areas of tiled wall	<ul style="list-style-type: none"> <li>Failure of bonding material</li> </ul>	<ul style="list-style-type: none"> <li>If possible, repair in situ with matching liquid grout</li> </ul>	

Photographs and Illustrations have been supplied by AusHeritage



## Glass

Many different types of glass are found in heritage buildings in Kota Tua: clear float glass, textured glass, coloured glass with plain or textured surfaces, lead light glass made from sections of thin glass set into lead frames and glass blocks .

Glass in heritage buildings often had an imperfect way finish caused when the glass was 'blown' or 'floated', which provides the character and contributes to the historic integrity of the place.

It is important that all original glass be retained in old buildings wherever possible to enable repairs or reconstruction. It should not be removed or thrown away.

Early glass tends to be very fragile and susceptible to damage or loss if not protected or if vandalised. When conservation works are occurring in old buildings, existing glass should be temporarily protected to avoid breakage, damage or theft.

Stained glass windows are often highly significant. Common problems include the warping of the lead framing the glass. A specialist with experience is necessary to repair stained glass.

### Helpful Hints - Glass

- Cleaning of glass can be simple, using warm soapy water and a soft cloth or sponge. Gently dry off with newspaper.
- Replace missing glass panes as soon as possible. Besides looking derelict, missing glass can let water in and invite intruders.
- Don't replace historic glass with small imperfections and cracks as it is unnecessary and usually irreplaceable.
- When replacement glass is necessary it is important to match the colour, texture and thickness of the original.
- The repair of leaded panels of stained glass is specialist work that should be carried out by experts.
- Take extra care to protect window glass from cracking when repainting the window frames.



*Traditional timber louvre shutters are an important feature of Heritage buildings and contribute to the character of the streetscape.*

## Timber

Timber is wood from trees that has been prepared for use in buildings and is an important part of almost all historic buildings.

Traditional buildings in Indonesia commonly used teak for structural elements (roof frames, columns and beams, floors), and other woods (klenkeng, meranti, etc.) for floorboards, windows, shutters, panelling, canopies, and furniture. Hardwood can last for hundreds of years if the building is well maintained.

The main cause of damage to timber in heritage buildings is water penetration. Good conservation practice means 'doing as little as possible but as much as necessary'. This means retaining the maximum amount of original material. Consider repair rather than replacement of damaged timber.

Do not use 'green' or unseasoned timber as it may shrink, crack, twist or warp. Replacement timber patches should be made from adequately air dried or kiln dried hardwood.

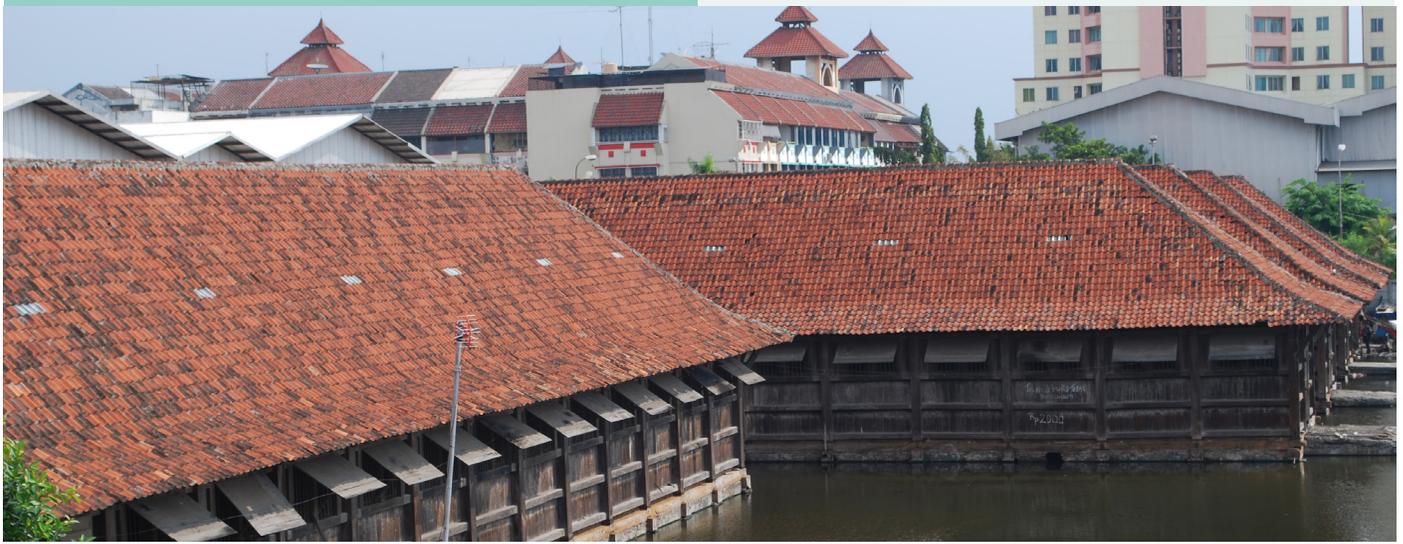
Old or recycled timber from other buildings can be a good solution for patching or replacing timber. Make sure it is in good condition before re-using.



*Traditional timber peg fixings allow the building to flex in times of high winds and earthquakes.*

### Helpful Hints - Timber

- If a small area or end of timber is damaged you may not need to replace the whole piece. Consider replacing just the damaged area. This will save you money as well as retain as much of the original material as possible.
- It may be cheaper to engage an architect or engineer on your behalf to direct a contractor, as they are can safeguard against over replacement.
- Don't look at the damaged timber in isolation but rather consider the building as a whole; and the investigate cause of damage e.g., source of moisture, structural movement.
- Repair timber with wood of matching species, moisture content, grain, shape and size, using experienced carpenters.
- Do not allow timber elements to be cut for new service pipes. Surface mounting in discreet areas is preferred.
- Traditional oil, wax, varnish and shellac finishes are more appropriate for timber than polyurethane, which is an impervious inflexible finish.



Timber buildings with terracotta tiles in Kota Tua

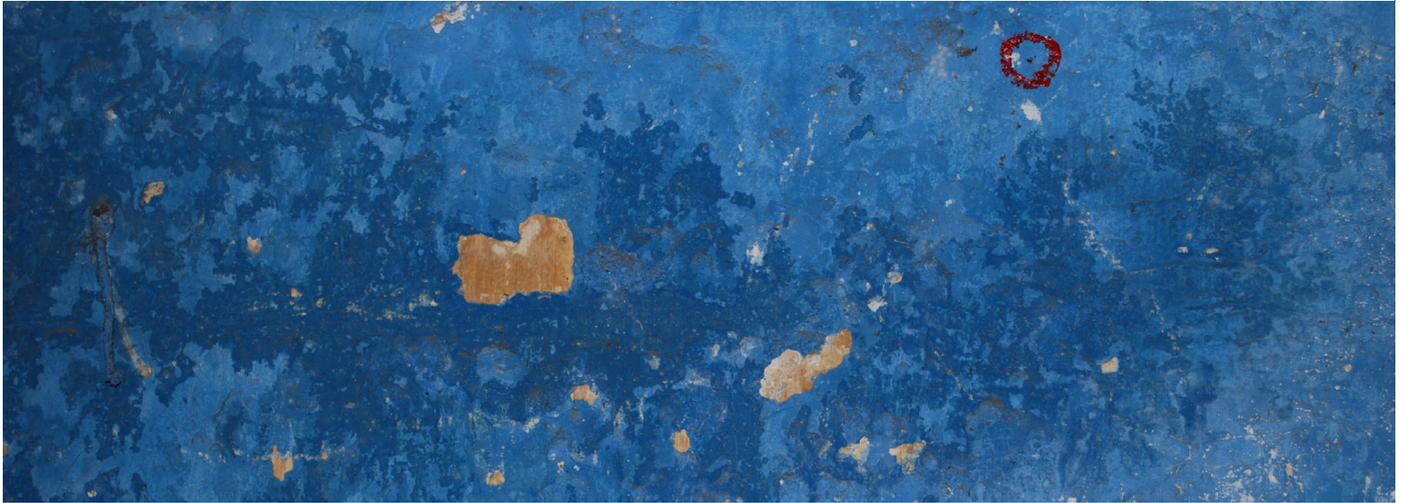
## Tiles

- Floor, wall and roof tiles are an important part of the character of a heritage building. While reasonably durable, movement and impact are the most common causes of damage to tiles.
- Terracotta roof tiles are commonly found on traditional buildings. Their unique colour and texture contribute to the significance of heritage buildings.
- Terracotta tiles were shaped to interlock with one another. Broken roof tiles should be replaced with matching tiles to fit properly and prevent gaps where rain water can penetrating the roof.
- Check your terracotta roof after strong winds or storms for loose or broken tiles.
- New matching tiles can be made by specialist manufacturers. Always ask for a sample to check for a good colour, thickness, shape and texture match.



### Helpful Hints - Rot and insect attack of timber

- The most effective long-term way to prevent timber from insect attack and rot damage is to reduce the moisture in the timber.
- Timber is at risk from two types of fungal attack, wet and dry rot. Caused by damp conditions, rot affected timber will need to be cut out and the adjacent timbers treated with a fungicide.
- Look for signs of termites - sagging floors, small piles of wings that resemble fish scales, mud tunnels, tiny holes, sawdust-like droppings, tapping for hollow sounds.
- If insects such as termites or borers are a problem, contact a specialist contractor to identify the insect and best chemical treatment.
- Chemicals can be toxic and safety measures should be taken when applying insecticides. Completely seal water tanks to avoid chemical contamination. Water-based products are often more environmentally friendly than oil-based solvents.
- Following treatment, prevent a recurrence by making sure the timbers are kept dry or they will be vulnerable to further attack. Sources of water include leaking roofs, peeling paint or wet floors.



Modern acrylic and oil paint traps moisture behind the surface and causes damage to the plaster and paint.

## What paint do I choose?

The early buildings in Kota Tua and the region were painted with limewash over plastered brickwork. Lime based paint acts as a biocide to kill mould and mildew, and allows moisture to pass through the wall freely. Limewash is still available today and a heritage specialist can help you source the right paint for your building.

Timber joinery and ironwork (doors, shutters, grills) of heritage buildings were commonly painted with enamel (oil based) paint. Oil based paint is more durable than acrylic (water based) paint. Traditionally, oil paints were made from linseed oil, white lead and turpentine. Internal wooden surfaces were finished with oil based stains.



Mineral paints (such as Keim 'Royalan') allow the brickwork and plaster to breathe.

### Helpful Hints - Painting

- The first step is to identify the condition of the paint and investigate causes of damage.
- Paint failure is mostly caused by moisture problems, wrong paint choice or poor repainting preparation.
- Look for signs of chalking, blistering, peeling and cracking of paintwork and address the cause of paint failure before repainting.
- Do not remove all the layers of paint using harsh methods (grit blasting, strong chemicals) as this will damage surfaces and remove evidence of earlier colour schemes.
- Traces of the original colours can often be found in difficult to get to places such as small crevices, behind cupboards and under doors.
- Preparation is essential before repainting. Gently wash surfaces clean and lightly sand to improve adhesion. Fill holes to prevent water pooling with plaster. Do not paint over rusted metal or wood rot.
- To test if paint is enamel (oil based) or acrylic (water based) rub a small area with methylated spirits. If it dissolves it is acrylic paint.
- Where possible, the original colours should be re-instated as part of the conservation process.



The paint at the base of this significant mural is deteriorating. Ground moisture cannot evaporate through the ceramic floor tiles or cement mortar joints. This causes moisture to travel through the softer materials (wall bricks, plaster and painted surface). The cause of the moisture must be addressed before conservation of the mural can commence.

## Conserving existing paint

Paint provides an essential protective layer over heritage materials. Repainting small defective areas quickly can extend the life of the materials and save the cost of repainting larger repairs.

Before repainting plaster, metal or joinery it is often necessary to examine historic paint layers in case they contain evidence of original painted finishes and colours.

- Look for a surface which has been covered over at some stage in the life of the building (e.g. behind downpipes and cupboards, electrical conduits, panelling).
- With a scalpel, layers of paint can be carefully removed to reveal what lies beneath.
- Magnified images (and even microscopic examination) can help with interpreting the sequence of paint layers.
- Too often, the original paint colour is lost because all the paint layers were removed with earlier repainting.



This image shows a microscopic view of a scrap of paint taken from a heritage door. It reveals a history of multiple layers of paint and colours.

### Helpful Tips - Are old signs important?

Traditional signage was painted on buildings as advertising or name signs. They are evidence of a connection with an earlier building use or occupant and are an important cultural heritage resource.

Historic painted signs are becoming rare as they deteriorate or are painted over. A heritage architect can advise you on the best way to approach signage on your heritage building.

Conservation options include photographic recording; using a conservator to paint a clear isolation layer over the sign before painting over, protecting the paint for future generations or 'inpainting' missing or damaged areas.

*Photographs and Illustrations have been supplied by AusHeritage & PDA*

## Managing change

Heritage conservation doesn't mean freezing a building in time. Instead it seeks to maintain the significance, care for the building and provide an economical asset. Before making changes, consider:

- What do you understand about the history and significance of the place?
- What is your expectation of the potentials for using the place?
- What is your essential financial/business/lifestyle objectives and expectations for using the place?
- Are all of the above sympathetic to the buildings heritage significance?



### Helpful Hints - Adaptation and Adaptive Reuse

- Whether you are maintaining or changing your heritage building, the aim is the same - to **retain** its integrity and significance (See Sheet 3: Conservation Principles).
- Understand the **significant values** of the site before planning changes. (See Sheet 5: Assessing Significance).
- **Minimal change** will ensure the adaptation has the least impact on the significance and original materials.
- **New additions** should not try to mimic the heritage building and be clearly identified as new. At the same time, additions should be sympathetic and in harmony with the existing building.
- A change in use should be **compatible** with the buildings significance, character, scale, materials and significance.
- Change may be necessary to comply with modern building codes, e.g., for health/ safety/ amenity/fire. This may result in **negative impacts**. Carefully consider all alternatives to minimise the impacts.
- Adaptation or adaptive reuse may be for a short time. A heritage building modified for a shop or cafe may not last for very long (2 yrs, 5 yrs, 10 yrs?). Changes made need to be **reversible**, as far as practical, so that the heritage building can be adapted again without losing more fabric and integrity.
- A **setting** contributes to the heritage significance of a place. Adaptation needs to keep in mind the surrounding streets, public or private gardens and landscaping around heritage buildings.
- An **Impact Assessment** should be carried out on proposed new paint colour schemes, decoration, fittings and signage.
- Also consider the impact of upgraded services. Installing piping, cabling, control systems, lighting, ventilation and air conditioning **without damage** to a heritage building's special character can be a huge challenge.

# 13 | Adaptation & Adaptive Reuse



Museum Bank Indonesia, Jakarta

## What is Adaptation?

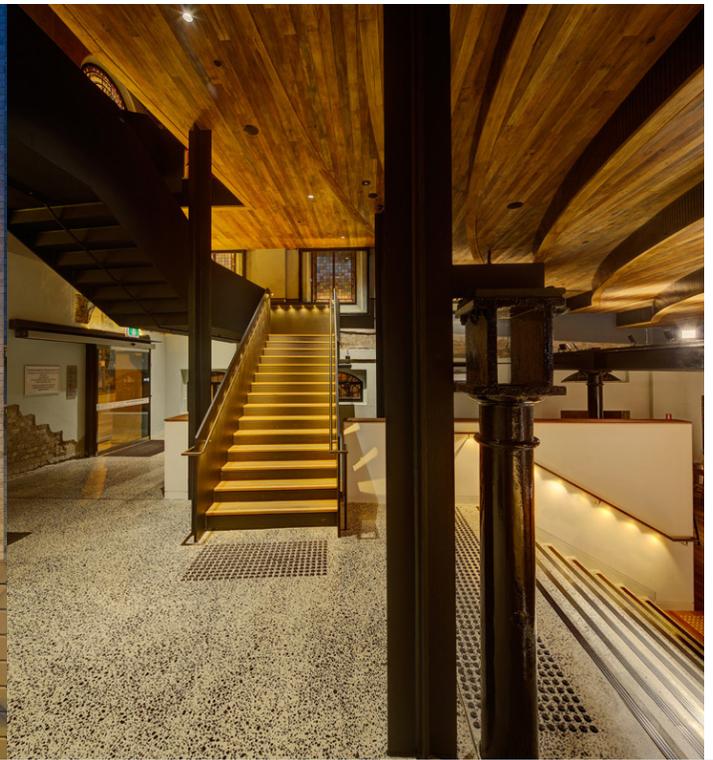
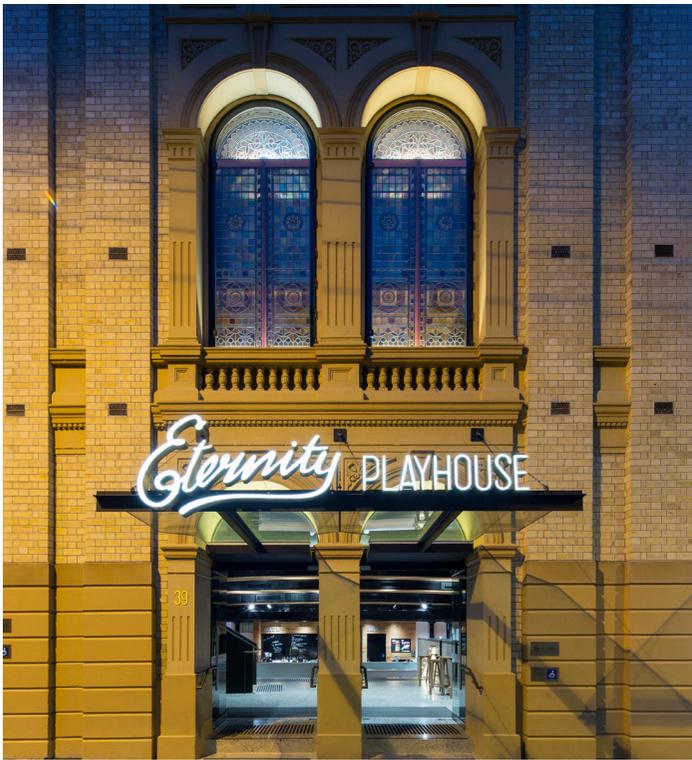
Continued and careful use of heritage buildings is essential for their survival and conservation. Over many decades, and even centuries, some heritage buildings have continued to be used for their original purpose or have changed their use to suit a new need and so are still with us today. This process is known as Adaptation. There are generally two types of Adaptation:

**Adaptation of old buildings** – maintaining the same or similar use of the building but changing or upgrading the building to support new needs and also new expectations, codes and standards.

**Adaptive reuse of old buildings** – finding new use(s) suitable for a place which respects its form, character, structure and historic integrity. This often requires some careful changes to a place (e.g. government buildings to galleries/ museums/ hotels; warehouses to offices/ apartments; commercial offices to apartments/restaurants/hotels; wharf buildings to theatres/ cafés/ exhibition spaces/offices; etc.).

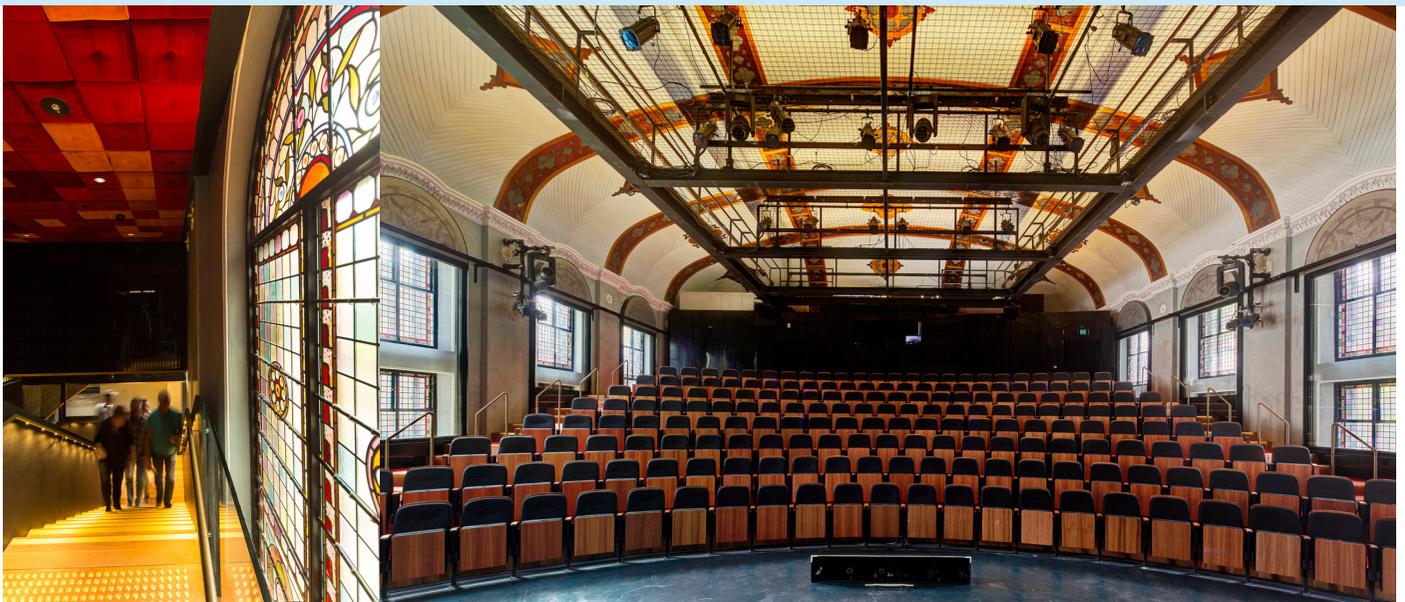
### Legislative Controls & Approvals

- Adaptation and adaptive reuse requires approvals from authorities and preparation of documents (such as Heritage Impact Assessments) to explain the intended work and its impact, and to achieve heritage and planning approvals, etc.
- Check with the relevant authorities on building uses and height restrictions in your area.
- The need for compliance with modern building codes – for health/ safety/ amenity/fire – can have negative impacts on heritage buildings if not done sensitively. Ramps, emergency exits, vents, fire escape, etc. can change a building substantially.
- Consult with qualified and experienced professionals before making changes to your building to ensure you have complied with your legal obligations.



## Adaptive Reuse Case Study | ETERNITY PLAYHOUSE - SYDNEY, AUSTRALIA

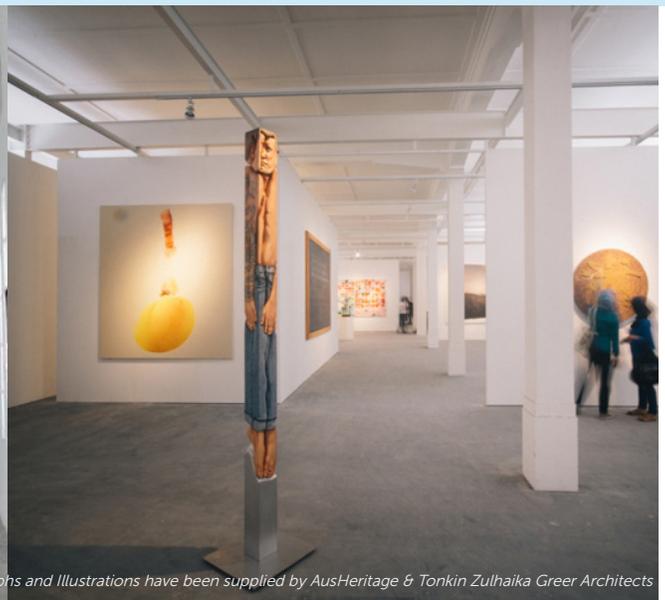
- This heritage building, listed as a former church dating back to 1887, was adaptively reused as a technically advanced theatre that is also accessible, intimate and sustainable.
- The refurbishment includes a 200 seat theatre, contemporary theatre foyer, cafe and backstage area.
- Purchased from the church in 2004 by the local government, the building was in poor condition. Conservation works included repairs to the timber roof structure and replacement of missing or damaged tiles with tiles to match the existing.
- The building's restored heritage features have been complemented with contemporary details such as the folded steel staircase.
- Environmentally sustainable initiatives include energy efficient lighting, crowd responsive air conditioning and photovoltaic cells on the roof.
- Internally and externally, original finishes have been conserved intact, and new elements reuse salvaged material where possible. The original stain glass windows and decorative interior ceilings were retained and restored. The foyer ceiling is made from recycled timber from the original church floor.





## Adaptive Reuse Case Study | KANTOR POS FATAHILLAH - KOTA TUA

- The Kantor Pos is a landmark colonial building located at the vibrant Fatahillah Square. The building was designed by Dutch architect R. Baumgartner and constructed in 1746.
- The building is significant for its continuing use as a public post office and a new contemporary artspace is located on the second floor, while the use of the post office continues on the ground floor.
- It is important for new uses to be compatible in heritage buildings and this project successfully fulfils this criteria.
- Originally used for administration purposes, the area has been sensitively re-designed by contemporary architect Andra Matin as exhibitions spaces and a meeting room.
- The buildings external facade has not been altered and the new interior has minimal impact on the existing materials.
- The design concept was to juxtapose old and new to show the progress and distance between the old era and contemporary circumstances.
- The concept was executed by inserting a structure within a structure.
- Good conservation practices include visually concealing and surface mounting new electrical services, rather than fixing new lighting to the existing
- New fixings have been minimalised by keeping the ceiling free supporting



*Photographs and Illustrations have been supplied by AusHeritage & Tonkin Zuhlhaika Greer Architects*

**Adaptation:** modifying a place to suit the existing use or a new use

**Adaptive Reuse:** alteration of an old building for a new purpose or function

**Art Deco:** a style of art and architecture popular from 1920-45, characterized by stylized geometric patterns, sleek lines and streamlined forms

**Authenticity:** characteristics that most truthfully reflect and embody the cultural heritage values of a place

**Brickwork:** construction using fired clay or terracotta blocks usually bedded on a mortar

**Cast Iron:** hard and brittle iron that is heated until it liquefies and is poured into a mould

**Compatible Use:** a use which involves no change to the culturally significant fabric, changes which are substantially reversible, or changes which require minimal impact

**Conservation:** all the processes of looking after a place to retain its heritage significance

**Conservation Plan:** a document which sets out what is significant in a place and what policies are appropriate to enable that significance to be retained in its future use and development

**Cultural Significance:** aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects

**Cultural Tourism:** a branch of tourism whose objective is to provide understanding of monuments and sites, focusing on historical authenticity, preservation and local involvement

**Deterioration:** process of making or becoming worse or lower in quality, value or character

**Heritage Impact Statement:** a document that evaluates the likely impact of proposed development on the significance

of a heritage place and its setting and outlines measures proposed to minimise any identified impact

**Efflorescence:** the migration of salt to the surface of masonry materials, forming a powdery white coating

**Fabric:** means all the physical material of the place including components, fixtures, contents and objects

**In situ:** situated in the original, natural or existing place or position

**Intact:** whole, not altered or damaged

**Intangible Culture:** includes songs, music, skills, festivals and other parts of culture that can be recorded but cannot be touched or interacted with

**Integrity:** in conservation, refers to the intactness of the physical and historic features of the building

**Interpretation:** all the ways to communicate the information, meaning, ideas and feelings about a place to enrich the understanding and appreciation of the place

**Lime Mortar:** a traditional mixture of lime putty and sand used in building brick or masonry buildings

**Lime Wash:** an impermanent coating for walls and other surfaces made from lime and water

**Maintenance:** continuous protective care of the fabric and setting of a place

**Meaning:** relates to what a place signifies, symbolic qualities, memories, beliefs or stories

**Monitor:** the continuous observation, assessment and recording of the condition of heritage materials

**Mothballing:** the process of closing up a building temporarily to protect it from the weather, as well as to secure it from vandalism

**Patina:** the sense of age or passage of time as reflected in the layers of visible change to fabric of a building or object



### **Integrity**

*“In conservation, refers to the intactness of the physical and historic features of the building.”*

*Photograph by AusHeritage*

**Place:** building, site, area, land, landscape or other works and may include components, contents, spaces

**Preservation:** maintaining the materials of a place in its existing state or slowing down deterioration

**Reconstruction:** returning something to a earlier known state

**Repointing:** the filling in or removal of mortar from the joints of masonry units and the replacing of it with new mortar

**Research:** systematic investigation or study to establish facts and gain information about a place

**Statement of Significance:** a summary of the buildings heritage values

**Rising Damp:** the rise of moisture from the ground up through the porous wall via capillary action

**Setting:** the area around a place, which may include the natural and built aspects, fixtures, activities associated with it and views seen from it

**Shop Drawing:** detailed construction and fabrication drawing that shows the proposed material, shape, size and assembly of the parts

**Tangible Culture:** touchable, physical embodiment of cultural values such as historic towns, buildings, archaeological sites, cultural landscapes and objects

**Timber:** wood prepared for use in buildings and carpentry

**Value:** meaning, significance, worth or importance attached by people to qualities of places. Cultural significance is embodied in the aesthetic, historical, scientific, social and spiritual values of a place.

**Wrought Iron:** iron often used for decorative work, traditionally made in a forge and hammered into shape

## Planning Regulations - Kota Tua

### Undang-Undang No. 11 tahun 2010 tentang Cagar Budaya

(Law of Republic of Indonesia number 11 year 2010 – concerning Cultural Heritage)

### Undang Undang No. 28 tahun 2008 tentang Bangunan Gedung

(Law of Republic of Indonesia number 28 year 2002 – concerning Building)

### Peraturan Menteri Pekerjaan Umum nomor 24/PRT/M/2008 tentang Pedoman Pemeliharaan dan Perawatan Bangunan Gedung

(Minister Regulation of General Development number 24/PRT/M/2008 – Buildings Preservation Guidelines)

### Peraturan Daerah DKI Jakarta No. 9 tahun 1999 tentang Pelestarian Pemanfaatan Lingkungan dan Bangunan Cagar Budaya

(Provincial Regulation of DKI Jakarta number 9 year 1999 – concerning Preservation and Neighborhood Uses of Cultural Heritage Buildings)

### Peraturan Daerah DKI Jakarta No. 7 tahun 2010 tentang Bangunan Gedung

(Provincial Regulation of DKI Jakarta number 7 year 2010 – concerning Buildings)

### Peraturan Daerah Provinsi DKI Jakarta nomor 1 tahun 2012 tentang Rencana Tata Ruang Wilayah 2030 pasal 71

(Provincial Regulation of DKI Jakarta number 1 year 2012 – concerning Masterplan of Space and Region Order 2030 article 71)

### Peraturan Gubernur Provinsi DKI Jakarta No. 8 tahun 2011 tentang Pembentukan Organisasi dan Tata Kerja Unit Pengelola Kawasan Kota Tua

(Governor Regulation of DKI Jakarta number 8 year 2011 – concerning Establishment of the Organization and Working System of Kota Tua Management Unit)

### Perturan Gubernur Provinsi DKI Jakarta No. 36 tahun 2014 tentang Rencana Induk Kawasan Kota Tua

(Governor Regulation of DKI Jakarta number 36 year 2014 – concerning Masterplan of Kota Tua Area)

### SK.Gubernur DKI Jakarta No. 475 tahun 1993 tentang Penetapan Bangunan-bangunan Bersejarah di DKI Jakarta sebagai Benda Cagar Budaya

(Governor Decree of DKI Jakarta number 475 year 1993 – concerning Determination of Historical Buildings in DKI Jakarta as Cultural Heritage Assets)

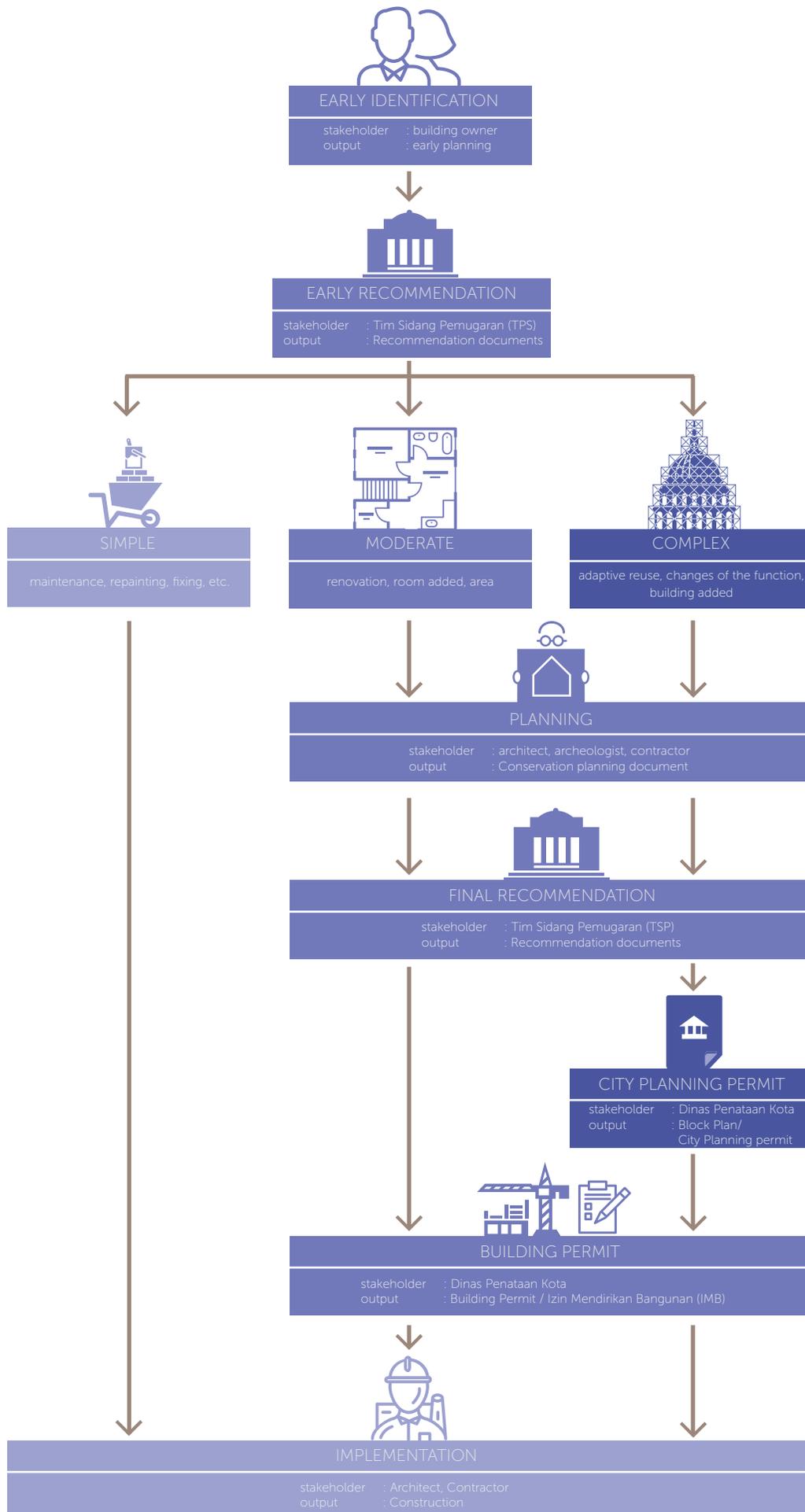
### SK.Gubernur KDKI Jakarta No. Cd.3/1/1970 tentang Pernyataan Daerah Taman Fatahillah, sebagai Daerah di bawah Pemugaran Pemerintah DKI Jakarta yang dilindungi oleh Undang-Undang Monumen (Stbl Th. 1931 No. 238)

(Governor Decree of DKI Jakarta number Cd.3/1/1970 – concerning Statement of Taman Fatahillah as Conserved Area Under DKI Jakarta Government that is protected by the Law of Monument Stbl year 1931 number 238)



Photograph by AusHeritage

# Process of Building Permit at Kota Tua Jakarta



While a lot of building maintenance can be undertaken by property owners, some types of work require advice from heritage architects and the expertise of tradespeople experienced in conservation work.

The services and suppliers named in this directory are providers of heritage related services. Please note that inclusion in this directory is not a recommendation or endorsement of any qualifications, skills or experience,

or ability to meet your project requirements. The directory will be updated periodically on the Information Kit website: <http://www.unesco.org/new/en/jakarta/culture>

Before purchasing supplies or engaging a firm, you should always check their suitability for your project requirements first! Ask about their relevant experience and to see examples of previous work, as well as references from previous clients.

## Building Craft / Tradespeople & Suppliers

COMPANY / TRADE	TYPE OF WORK	ADDRESS	CONTACT
Keim Sole Distributor PT. Romulo Nusantara Perkasa	Exterior & Interior Paint	Jl. Bendungan Jatiluhur No.17B Benhil Jakarta Pusat 10210	Dicky 021-5740357 08158198062 / 081310099252 dicky.fardian@romulo.co.id
PT. EZTU GLASS	Stained Glass & Decorative Art Glass	Jl. S. Parman Raya No. 6B Slipi Jakarta 11480	Heni 021-63856386 / 0811832852 Brian 08161837837 Marketing1@eztuglass.com exim@eztuglass.com
PT. Matta Indonesia	PC Floor Tile	Jl. Pakuningratan 70 Yogyakarta	Mega 0274-512707 mattaindonesia@yahoo.com Gede 0811907917
Solo Design	Floor Tile	Griya Sekar Asri Kav .6 Bangunharjo, Sewon Bantul Yogyakarta	Yanti 081229826110 Gijs 082110684508 rubiyantibasuki@yahoo.com rubyanti@solo-design.nl
PT. Graha Citra Anugrah Lesstari	Structure Reinforcement	Karawaci Office Park Blok D No. 36 Jl. Pintu Besar, Lippo Karawaci, Tangerang 15811	Ratna Dewi 08129908587 ratnadewi_2007@yahoo.com
CV. Kandura	Wall Tile	Jl. Ligar Kencana 88 Bukit Ligar, Bandung 40191	Fauzi 022-2506587 08122006401 info@kandurakeramik.com
PT. Propan Raya	Floor Coating		Geti 0818661541 getiwitayani@propanraya.com
CV. Lan	Brass	Jl. Raya Km 88 Ciracas, Jakarta	Syamsari 021-87704822
PT. Merpati Balap Sakti	Teccu & Copper	Jl. Jababeka 9C Blok P no 58 Ka- wasan Industri Jababeka Cikarang - Bekasi	Fery 021-8936650151 johannes@automodeck.com anthony@automodeck.com 081703494571 (jozefine)
CV. Berdikari Teknik	Flag Pole, Window & Door	Jl. Raya Mauk KM 16 Pasar Jati Kp. Jungkel No. 45	Soleh 021-98185708 081398843348
CV. Ampat Lima	Shingle Roof		Susi 021-7987516
CV. JASA KARYA	Terrazo Tile	JL. Lilin Mas Blok A N 11 Batu, Malang - Jawa Timur	Zainul 0811397278 zaifin88@gmail.com
PT. EXSOL TRIMITRA (FARO)	3D Scan		Stanley 0818198614 stanley@exsol-trimitra.com

POS INDONESIA

Cultural significance

*"Means aesthetic, historic, scientific, social or spiritual value for past, present or future generations."*

Photograph by AusHeritage



Photographs by UNESCO

## Acknowledgement

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Ministry of Education and Culture  
Republic of Indonesia



Pusat Dokumentasi Arsitektur  
Indonesia



Ikatan Arsitek Indonesia



United Nations  
Educational, Scientific and  
Cultural Organization

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