



# Healthy Ageing of Buildings

Social Innovation Regional Forum (SIRF) 2020

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**Urban Renewal Authority**  
**23 Oct 2020**



# Agenda

01

**Ageing problem in HK**

02

**Achieving sustainable buildings  
by good maintenance**

03

**Timely maintenance and preventive  
maintenance**

04

**URA's role in Building Rehabilitation**

05

**Case study – 618 Shanghai Street**

06

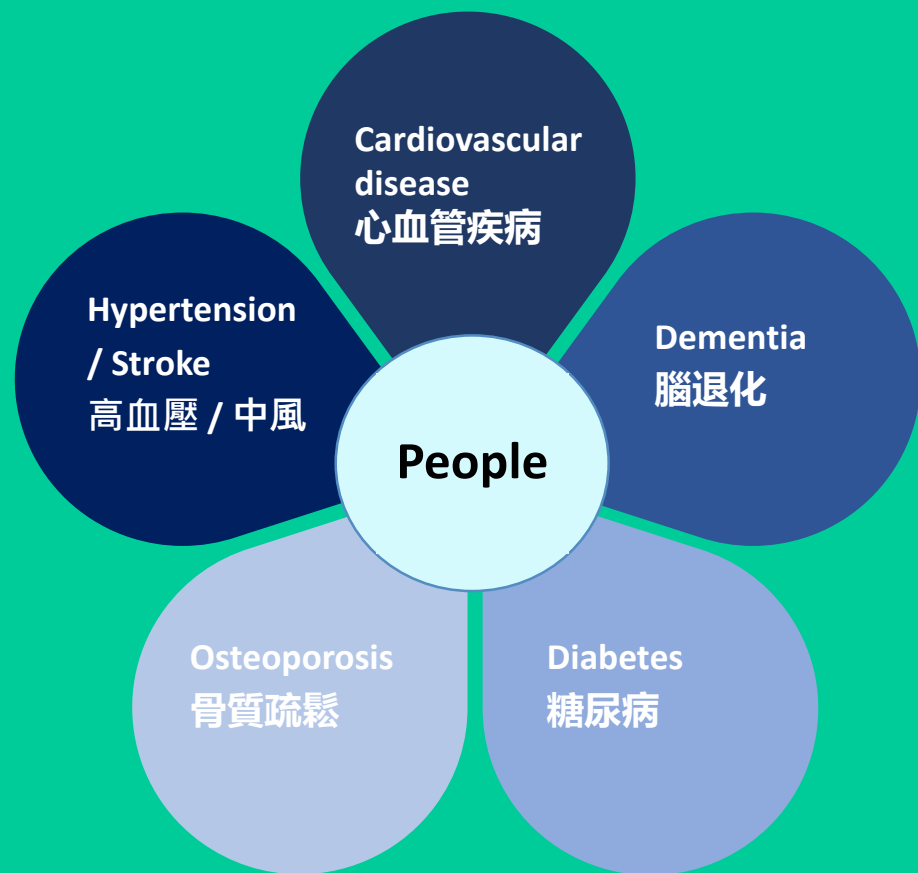
**Next attempt**



# 01 Ageing problem in Hong Kong

# By 2046,

**1/3** of our population > 65 years old



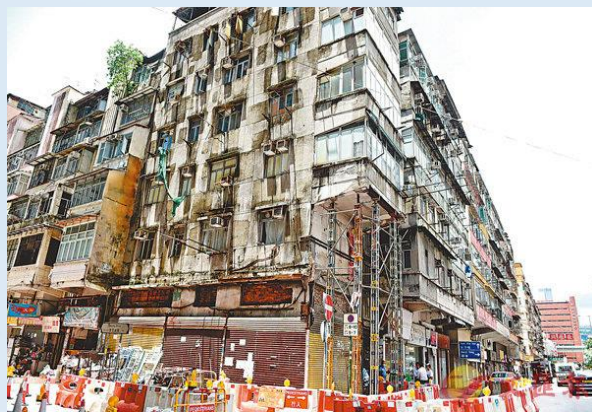
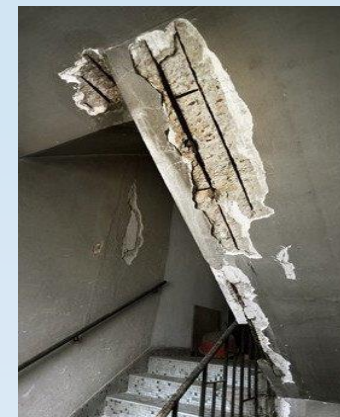
Source: Hong Kong Population Projections (2020-2069), Census and Statistics Department

**1/2** of domestic / composite buildings > 50 years



Source: URA database

**5,000** out of 24,000 domestic / composite buildings are aged 30+ and in dilapidated condition



Source: URA database



**2019**

**5,000** buildings

By 2030

**7,600** buildings

By 2046

**10,000**

buildings

# Building characteristic



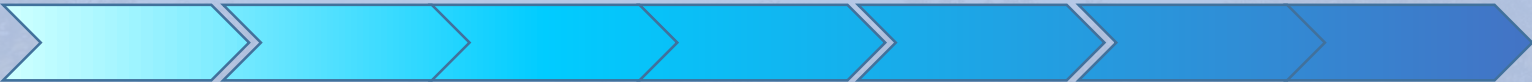
<b>Single tenement building</b>	<b>Large estate building</b>
<b>10 storeys or below</b>	<b>30 storeys or above</b>
<b>Without lift</b>	<b>With club house</b>
<b>Without Property Management Company</b>	<b>With Property Management Company</b>



Photos credit to Wpcpey

## Redevelopment?

**2020**



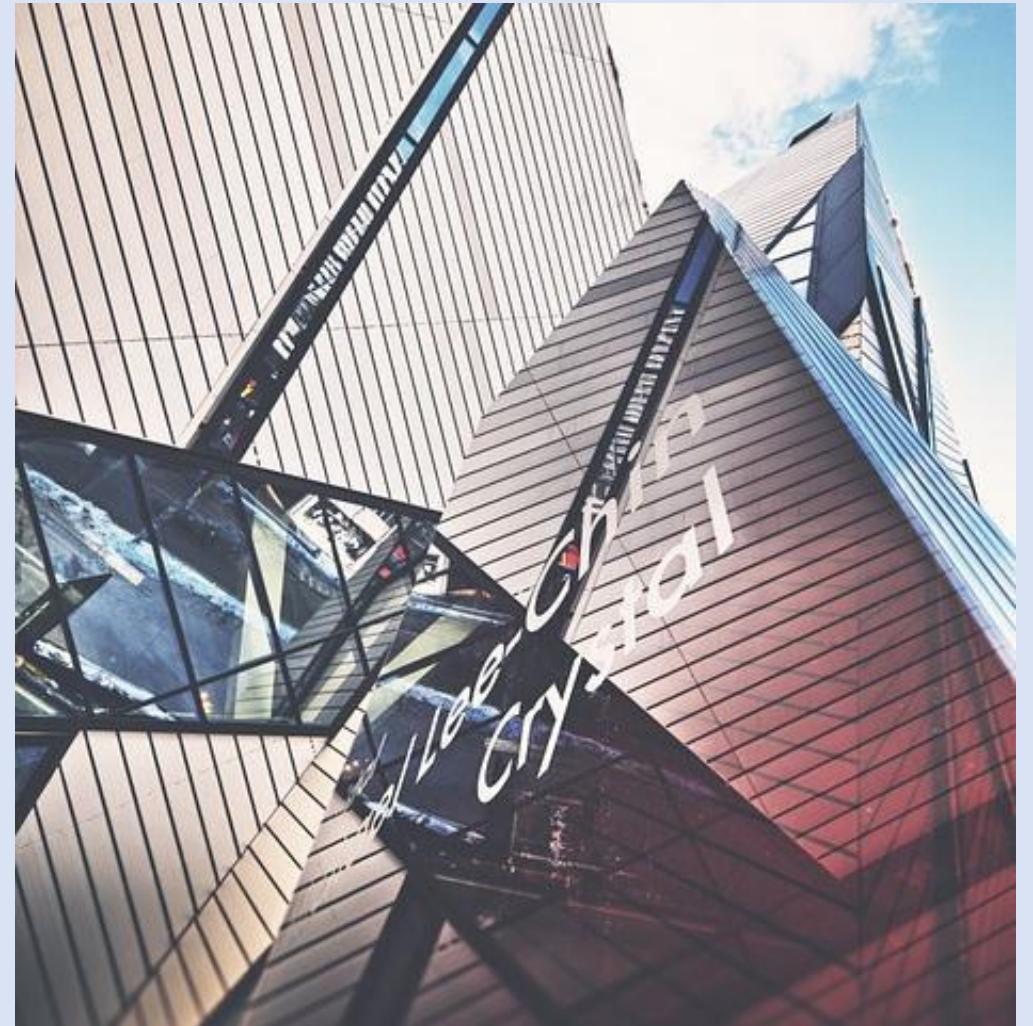
**2046**

An aerial photograph of a city highway interchange during sunset. The sky is filled with soft, golden light and scattered clouds. In the background, a dense urban skyline is visible, featuring various high-rise buildings and residential blocks. The foreground shows a multi-level highway interchange with several lanes of traffic. A prominent green and black banner is overlaid on the left side of the image, containing the text '02 Achieving sustainable buildings by good maintenance'.

## 02 Achieving sustainable buildings by good maintenance

# Definition of sustainable building

A sustainable building provides a **quality living amenity for its users and neighbors** in terms of social, environmental and economic aspects while **minimizing environmental impact** at the local, regional and global levels throughout its full life cycle.







# Reduce the need for redevelopment

Building rehabilitation can prolong the life span of a building and therefore reduce the demand for redevelopment

Reduce energy  
consumption

Reduce  
construction  
waste

Reduce  
environmental  
impact

# Improve living quality

Building rehabilitation can maintain the quality of living of building occupiers in various aspects





**Ageing**



**Dilapidated building**



**Redevelopment**

**Building  
rehabilitation**



**Healthy  
ageing**



**Sustainable  
building**

# 成也復修 敗也復修

**Rehabilitation** provides means to tackle urban decay problems more efficiently

- Lengthen **life span** of aged buildings
- Relieve the pressure on **redevelopment**
- Slow down **urban decay**
- Improve **living condition**



proper  
maintenance  
and repair

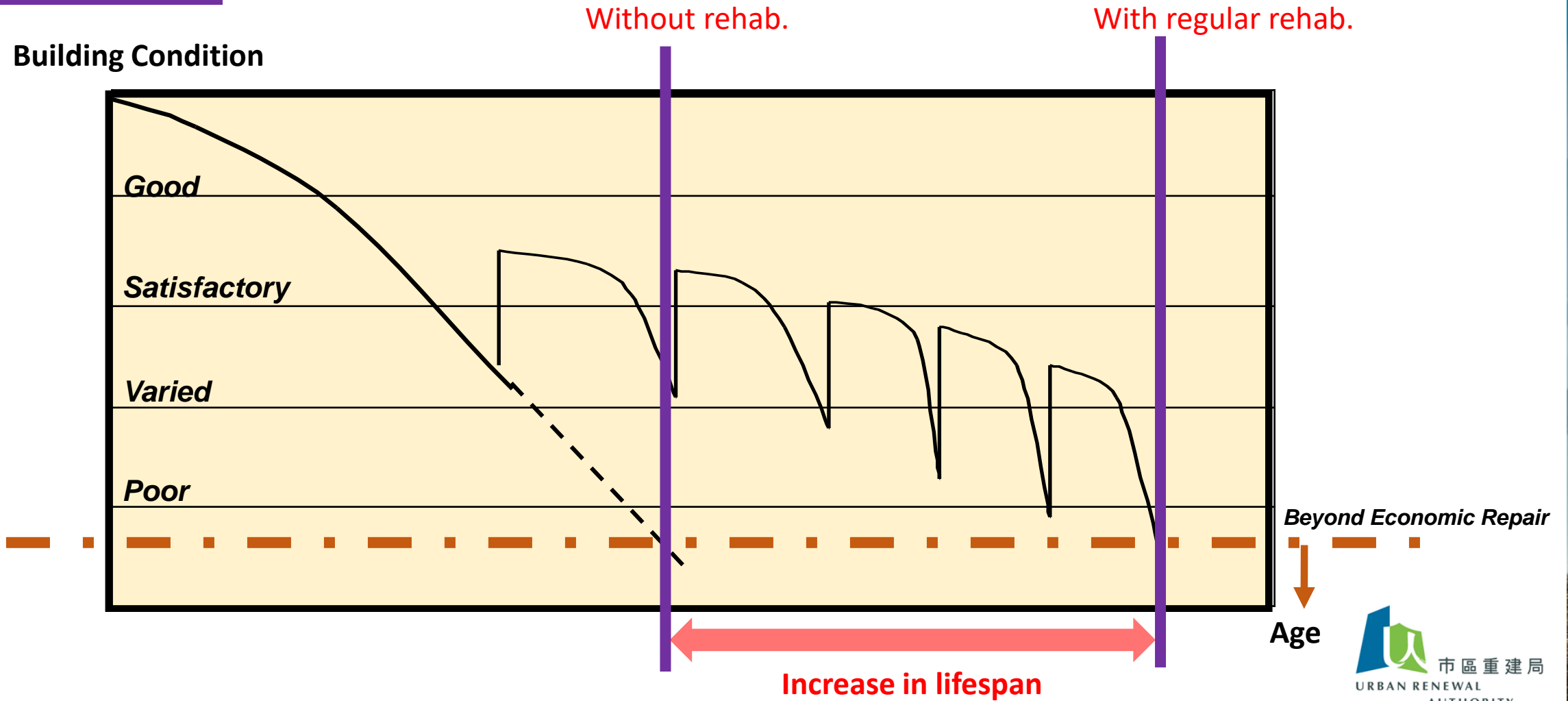




# 03 Timely maintenance and preventive maintenance

# Typical Building Condition Change with Short Term Repair

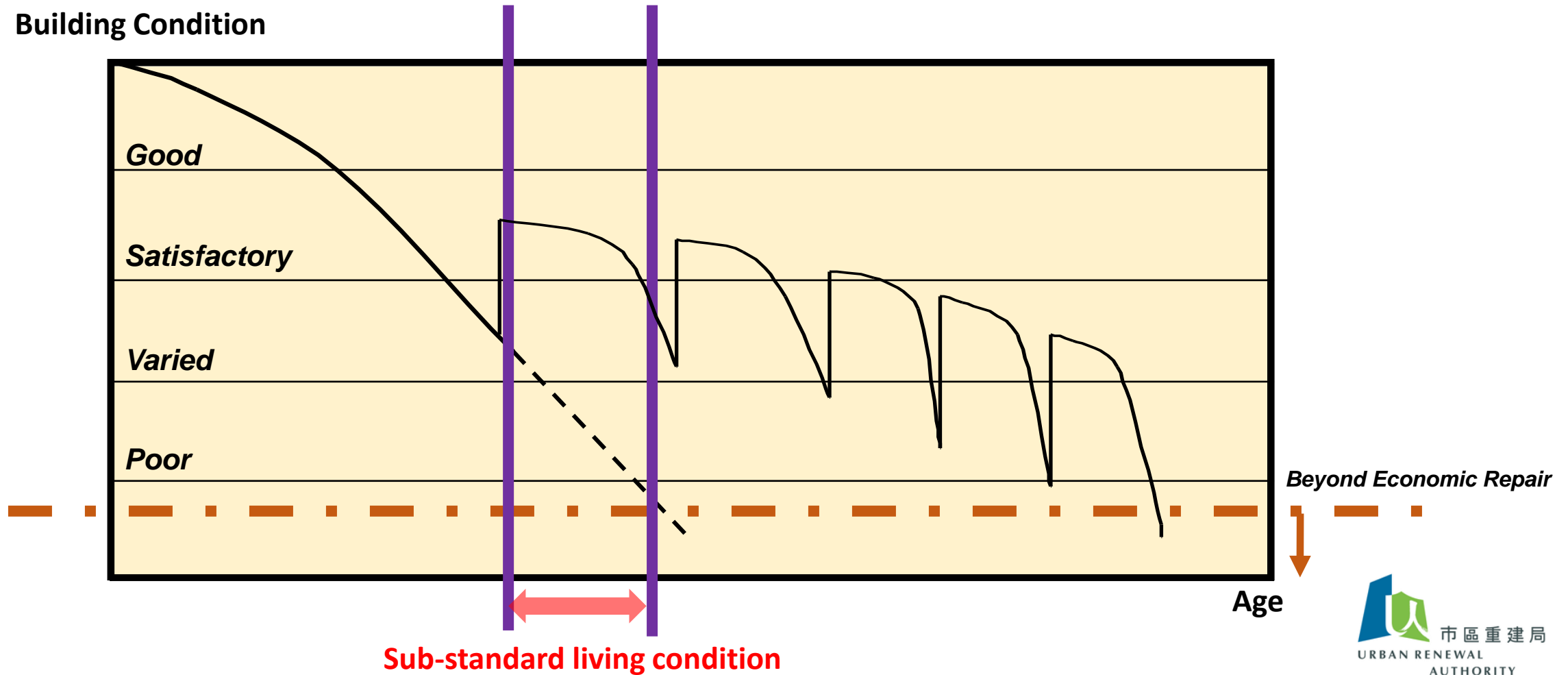
Hypothetical graph



# Typical Building Condition Change with Short Term Repair

Hypothetical graph

Building Condition





## People

### Health check and regular exercise

- Reduce Health Risk
- Strengthen Bones and Muscles
- Improve Ability to do Daily Activities and Prevent Falls
- Longer life



## Building

### Regular inspection and maintenance

- Maintain in good condition for optimal functioning
- Eliminate hazards to residents and the public
- Minimise the inconvenience caused by emergency maintenance
- Slow down the dilapidation
- Extend its lifespan



# Prevention is better than cure

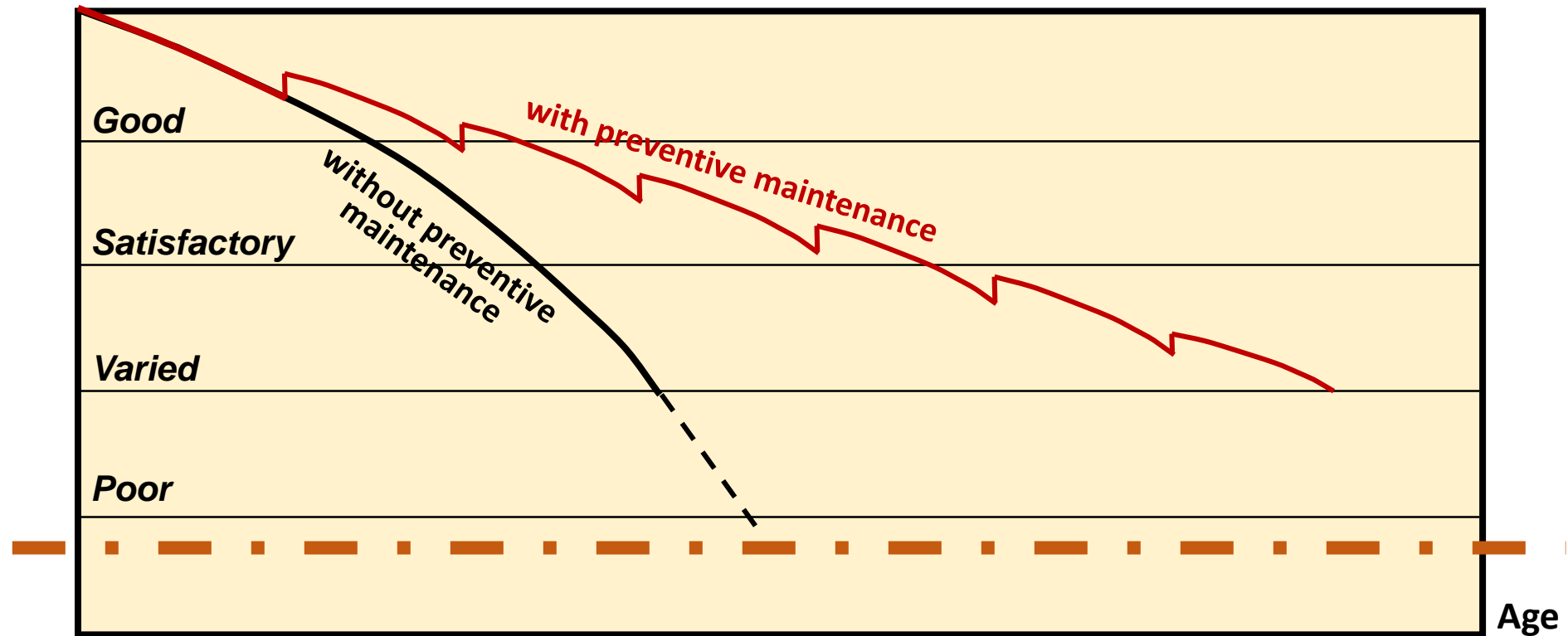
## Preventive Maintenance:

- ✓ intends to **mitigate degradation** and reduce the **probability of failure** of building elements, facilities and systems by conducting **regular** and **appropriate inspections and maintenance**
- ✓ Should be **carried out continuously** within the anticipated life cycle to mitigate degradation and reduce the probability of failure

# Typical Building Condition Change with Short Term Repair

Hypothetical graph

Building Condition



Beyond  
Economic  
Repair



## 04 URA's role in Building Rehabilitation

# URA role in promoting building rehabilitation

## URBAN RENEWAL AUTHORITY ORDINANCE

### CHAPTER 563

This booklet is published under section 2(3) of  
the Laws (Loose-leaf Publication) Ordinance  
1990. It is up to date as of 30 September 2000.

## URAO part II 5 - Purposes of Authority

(d) prevent the decay of the built environment ..... by promoting the maintenance and improvement of individual buildings ..... structural stability, integrity of external finishes and fire safety ..... improvement of the physical appearance and conditions of that built environment

## People First

A District-based and  
Public Participatory Approach  
to Urban Renewal

## Urban Renewal Strategy

February 2011



## Urban Renewal Strategy (Feb 2011)

“...promote rehabilitation of buildings in need of repair as one of its (two) core businesses.....”

Major objectives of urban renewal:-

(f) promoting the timely maintenance and rehabilitation of buildings in need of repair

# Building Rehabilitation Strategy (BRS) Study

Review the current regulatory framework



Formulate holistic strategies for building at different ages

Identify forward-looking initiatives

# Challenges faced by owners in building rehabilitation

## Lack of relevant **Knowledge** of rehab. works:

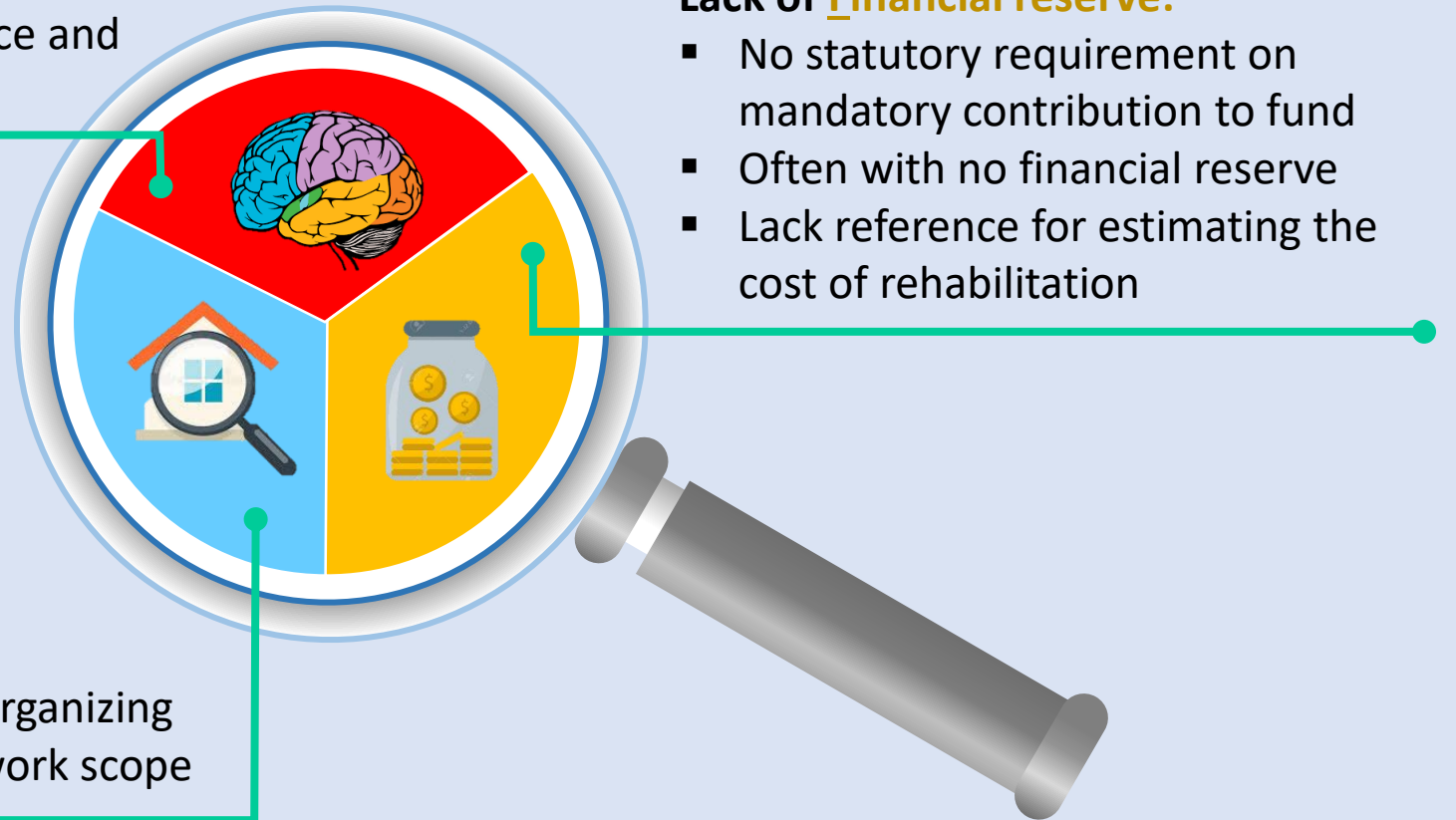
- Unaware of owners' responsibility
- Unfamiliar with appointment of consultants and contractors for works inspections
- Inadequate knowledge in the procedure for carrying out preventive maintenance and rehabilitation

## Lack of **Financial reserve**:

- No statutory requirement on mandatory contribution to fund
- Often with no financial reserve
- Lack reference for estimating the cost of rehabilitation

## Lack of **Capability** to organise:

- Buildings without OC or PMC
- Elderly people have difficulties in organizing owners' meetings and confirming work scope



# Key findings under BRS study

	Findings	Recommendations
<b>Perceived needs for building rehabilitation</b>	Over <b>60%</b> consider that building rehabilitation was not required due to the disrepair condition not serious	<ul style="list-style-type: none"><li>• Raise the <b>awareness</b> on building rehabilitation</li><li>• Bridge the <b>capability</b> and <b>affordability gaps</b> of building owners</li></ul>
<b>Perceived needs for preventive maintenance</b>	Though about <b>50%</b> are aware of and capable to conduct preventive maintenance but only focus on statutory requirements, i.e. lift, FS installations, electricity...etc.	<ul style="list-style-type: none"><li>• Provide a <b>maintenance manual template</b> for public reference</li><li>• Add the requirement for <b>regular inspection</b> and <b>maintenance</b> at fixed intervals in DMCs</li></ul>
<b>Any reserve fund for maintenance</b>	Only <b>9%</b> paid off the cost of rehab. works by reserve fund while <b>85%</b> paid for the work when it happened	<ul style="list-style-type: none"><li>• Encourage setting up the <b>voluntary reserve fund</b> requiring regular contribution for future maintenance</li></ul>

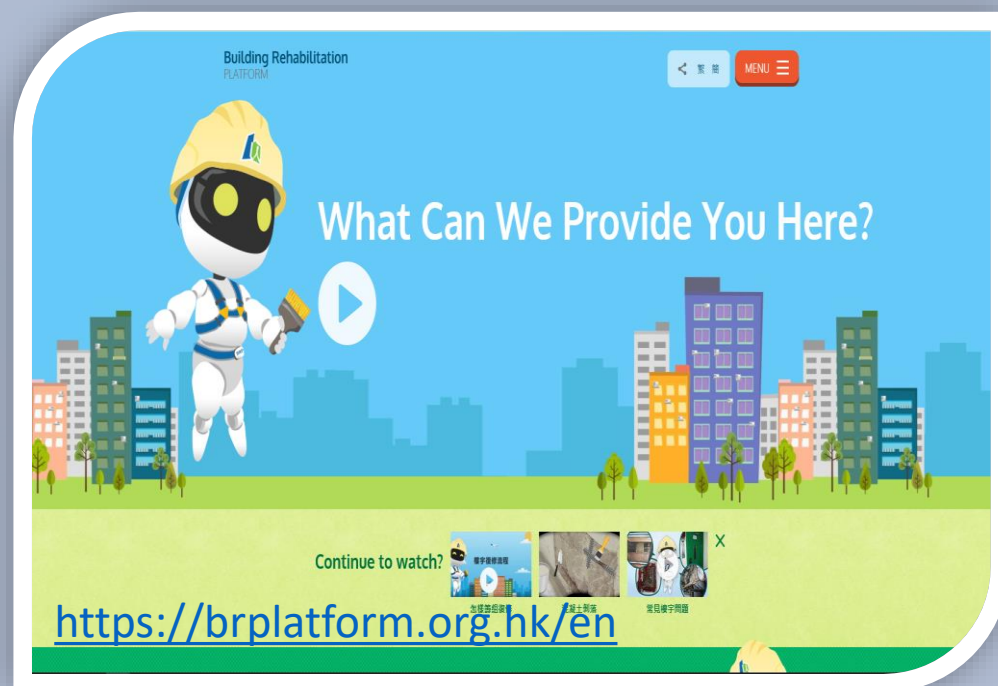
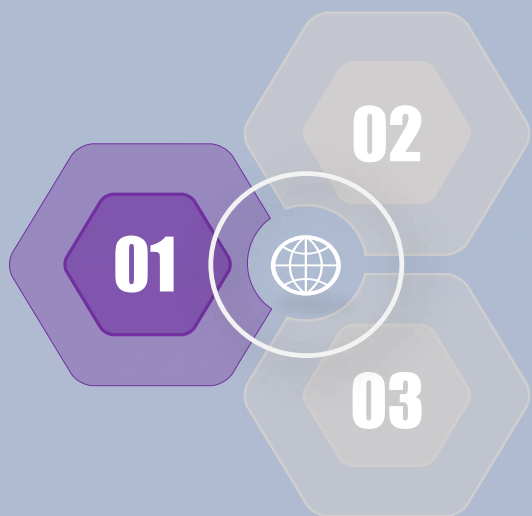
# Future promotion strategy





# Raise awareness on building rehabilitation

## Knowledge



樓宇復修6步曲

- 1 取得業主同意進行復修
- 2 招聘專業復修工程顧問
- 3 進行樓宇勘察及制定標準
- 4 招聘復修工程承辦商
- 5 展開工程及工地監管
- 6 復修工程及完工

樓宇復修實務指南  
(適用於公共屋宇)

Rehabilitation Workflow

Rehabilitation Guidebook

Animation Videos

Media Series

# Facilitating owners in carrying out building rehabilitation



## Finance & Capability



Financial Assistance



NGO Services



Cost Reference Centre

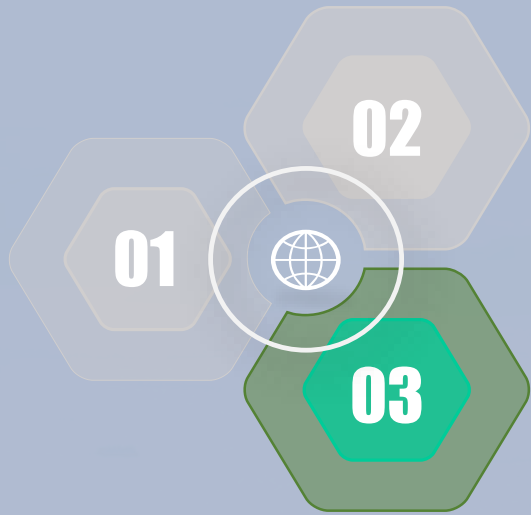


Sample document



E-tender platform

# Instill culture of preventive maintenance and reserve fund



## Explore



Maintenance Manual



Good Clause in DMC

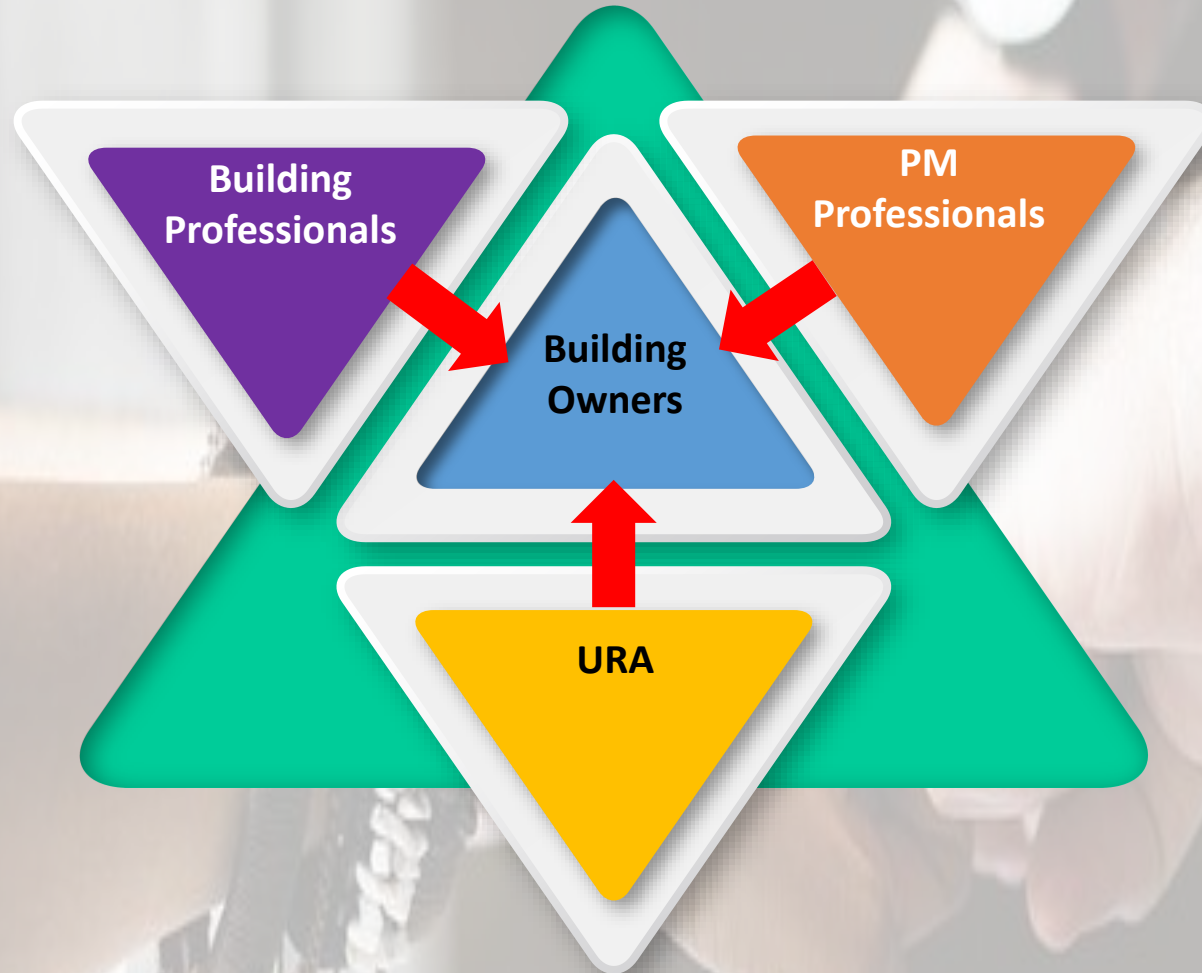


Maintenance plan with estimate



Design for maintenance

# Collaboration with stakeholders



Educate owners to carry out **preventive maintenance** and set up the **reserve fund** for future maintenance

# Support from the stakeholders

## Building Professionals



- **Comprehensive maintenance manual**
- **Maintenance schedule**
- **Design for maintenance**

## Property Management Practitioners




- **Enhance knowledge about preventive maintenance**
- **Assist owners to implement preventive maintenance**
- **Assist the owners to set up and monitor the reserve fund**

## Building Owners



- **Understand the needs of timely maintenance and preventive maintenance**
- **Contribution to Reserve Fund**



**05** Case Study - 618 Shanghai Street

## Preservation and Revitalisation Project

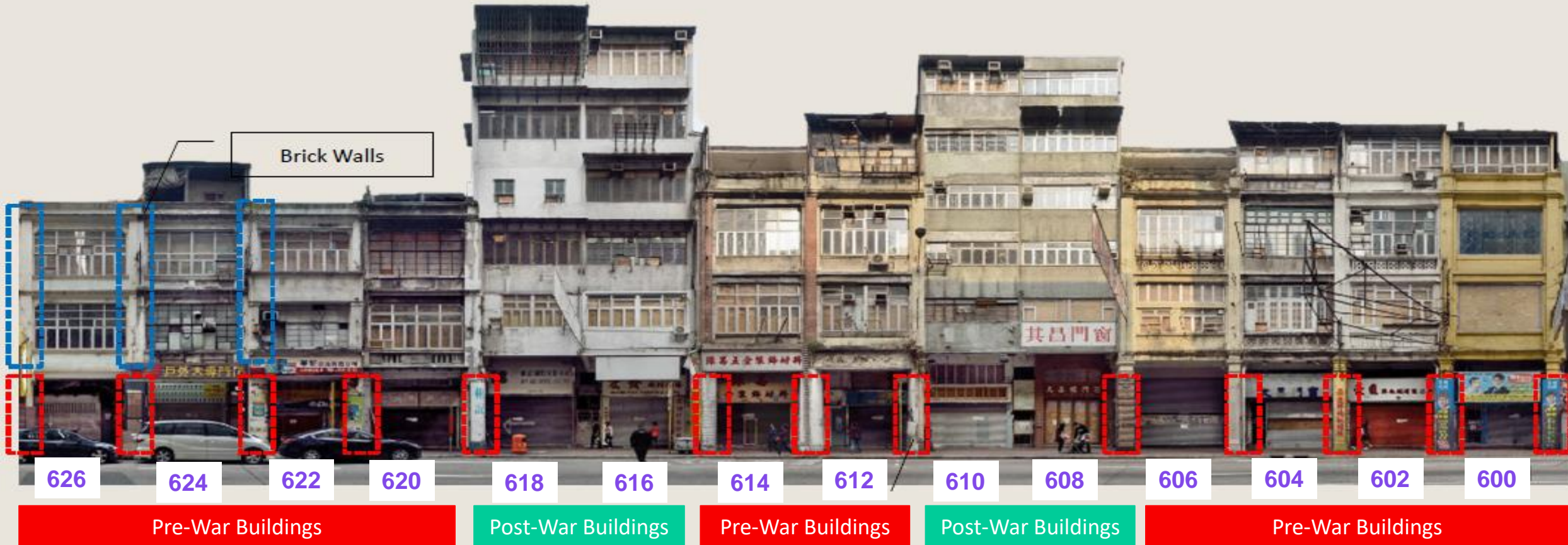
- verandah-type tenement buildings built in the 1920s
- Grade Two historical buildings

# 618 Shanghai Street



# Buildings in poor condition

- Multiple signs of structural defects
- Reinforced concrete materials are **beyond their design life expectancy**
- Considered **unsustainable** even if the defects are rectified





# Before Rehabilitation



Severely dilapidated



# Building Rehabilitation

- Supporting structure were erected to strengthen the historic structure
- 4 post war buildings have been redeveloped
  - to provide spaces for necessary ancillary facilities to cope with the contemporary standard of building safety and health
  - Connect the pre-war blocks and post war blocks



# After Rehabilitation



**Prolong the building life and sustainable**



# BIM for preventive maintenance

**Building Information Modeling (BIM)**

Tailor-made BIM Facility Management system with a centralized platform for integrating BIM model, CCTV and lot devices

監察設備狀態

Check equipment status



監察能源使用

Monitor energy use



維修日程提示

Alert maintenance



整理安排工單

Arrange works order



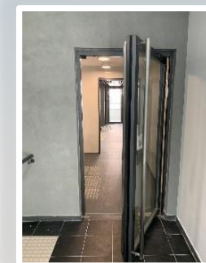
費用管理

Manage cost



維修保養紀錄

Upkeep record



# Green building with the use of sustainable materials

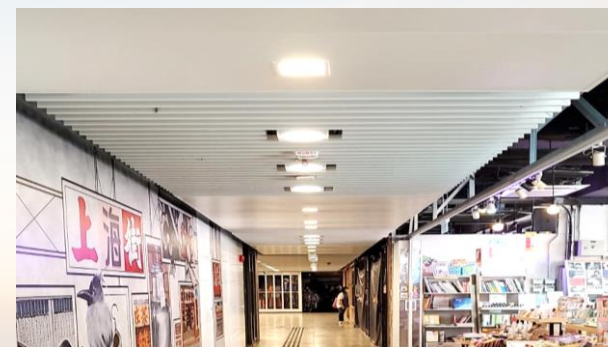
**Touchless button**



**Water-saving automatic faucet**



**LED Lighting (By BMS)**



**Greening and recreational facilities**



**Greening**

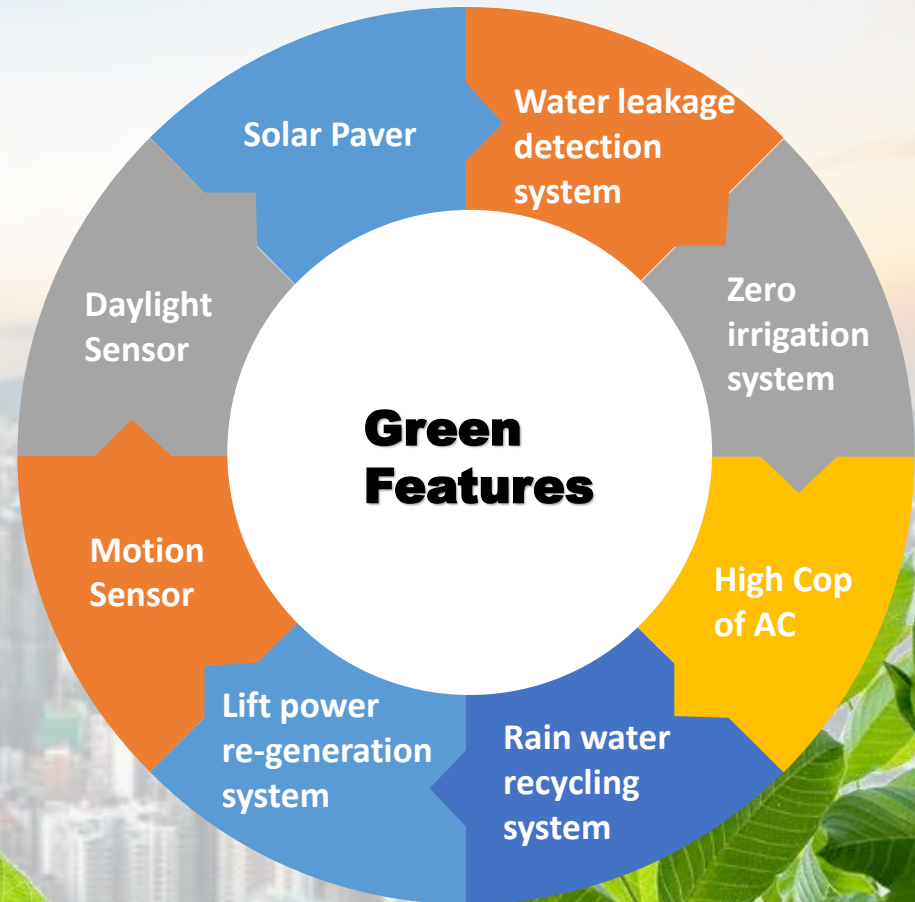


**Wooden deck  
(Sustainable product)**

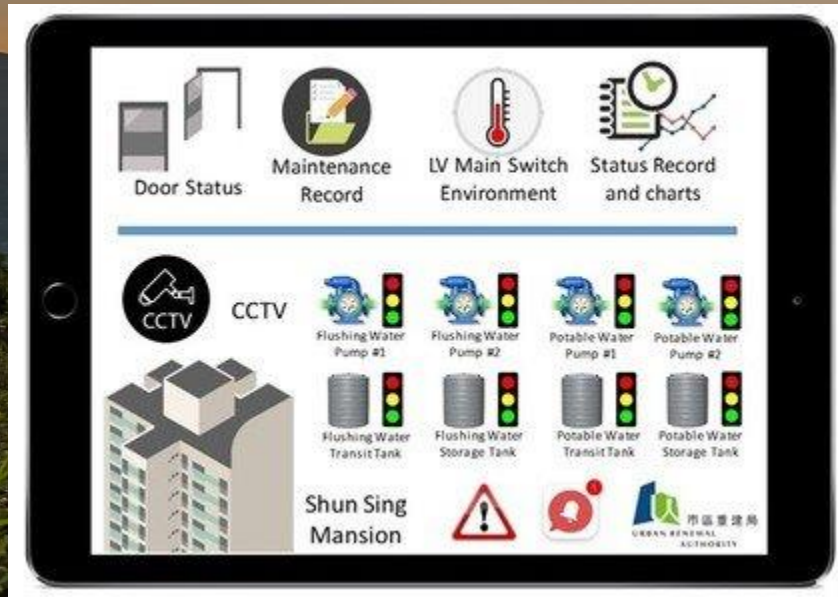


# Green Features in 618 Shanghai Street

## BEAM Plus – New Buildings (Final Platinum)



# Digital Maintenance Manual



維修保護紀錄

標題	維修日期 ↑	完成日期
P&D facere	9/25/2019 08:29	9/25/2019 09:29
P&D occaecati	9/24/2019 17:43	9/24/2019 18:43
P&D quaerat	9/24/2019 01:46	9/24/2019 02:46
ELV soluta	9/22/2019 03:11	9/22/2019 04:11
ELV culpa	9/21/2019 07:39	9/21/2019 08:39
AC doloribus	9/20/2019 16:54	9/20/2019 17:54
P&D dignissimos	9/19/2019 18:20	9/19/2019 19:20
FSI quia	9/18/2019 15:40	9/18/2019 16:40
ELV aliquid	9/18/2019 04:38	9/18/2019 05:38
ELE quas	9/15/2019 12:55	9/15/2019 13:55
ELV quis	9/13/2019 07:54	9/13/2019 08:54
ELE aliquam	9/13/2019 05:37	9/13/2019 06:37



With **timely building rehabilitation**,  
buildings can grow old  
- **healthily** to be a sustainable building

With the aid of **new technology**,  
Building can grow old  
- **smartly** to be a smart building



# Become **Sustainable** and **Smart** Building





**05**

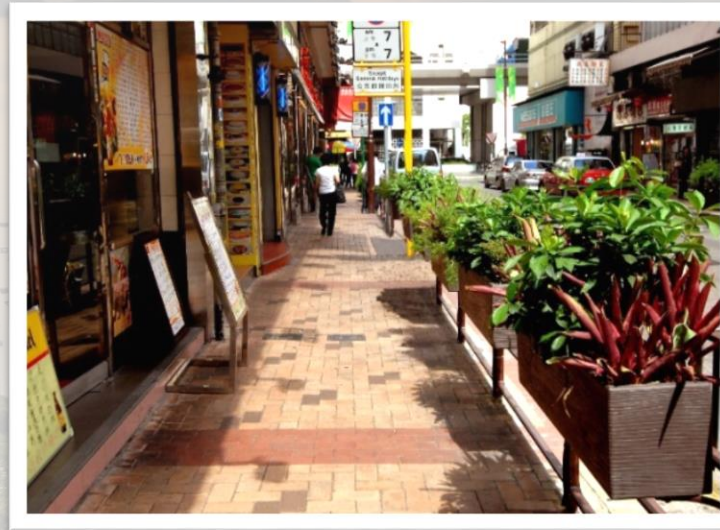
**Next Attempt**

# Next Attempt – Neighborhood Rehabilitation

External wall beautification



Street Improvement works



Place-making



# Count on you



# Healthy Ageing of Buildings

[End]