

A Holistic Strategy to Extend Service Life of Aged Buildings

Ir CHAN Siu Tack

Assistant Director

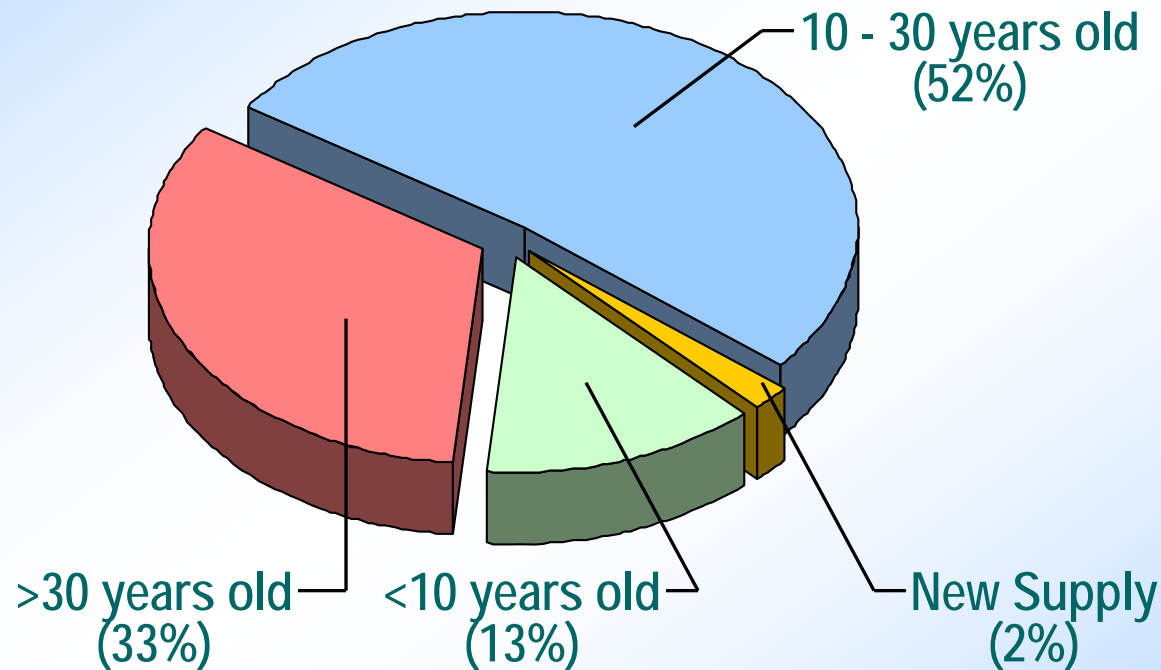
Hong Kong Housing Authority

12 September 2013



Aging Public Rental Housing (PRH) Stock

- Public housing programme has been implemented in HK for 60 years.
- About 33% of PRH flats are already over 30 years old.

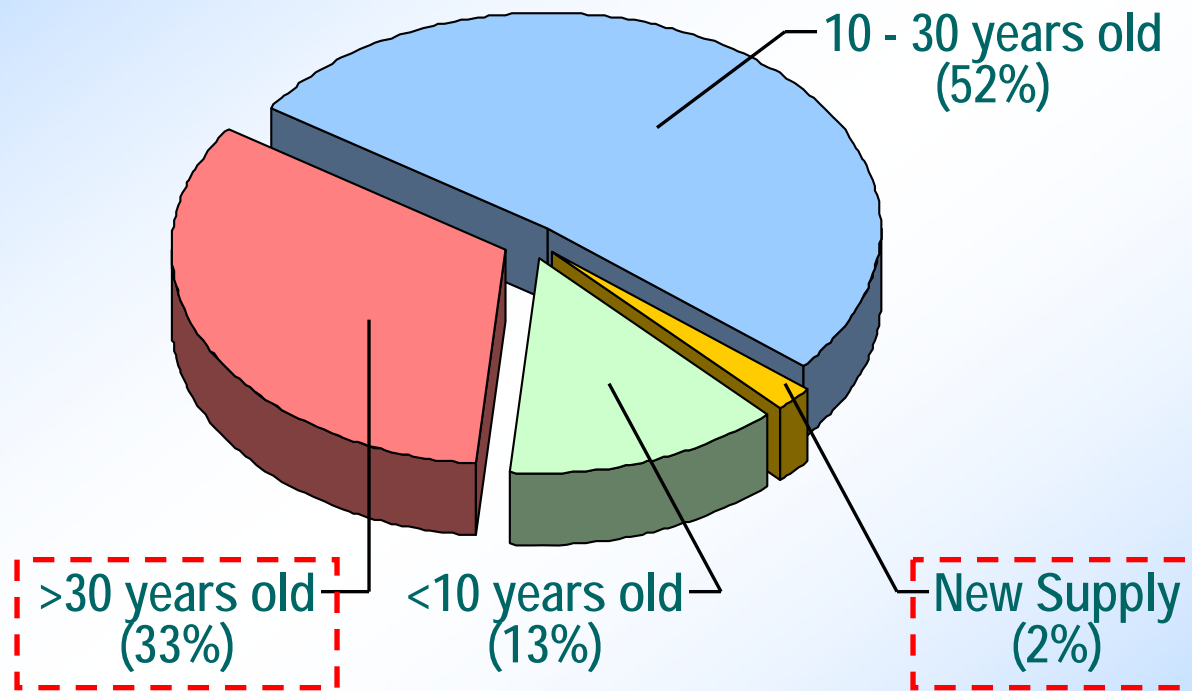


Age Distribution of PRH Flats



Aging Public Rental Housing (PRH) Stock

Extending the service life of aged buildings is key to building sustainability.



Age Distribution of PRH Flats



Service Life of Aged Buildings

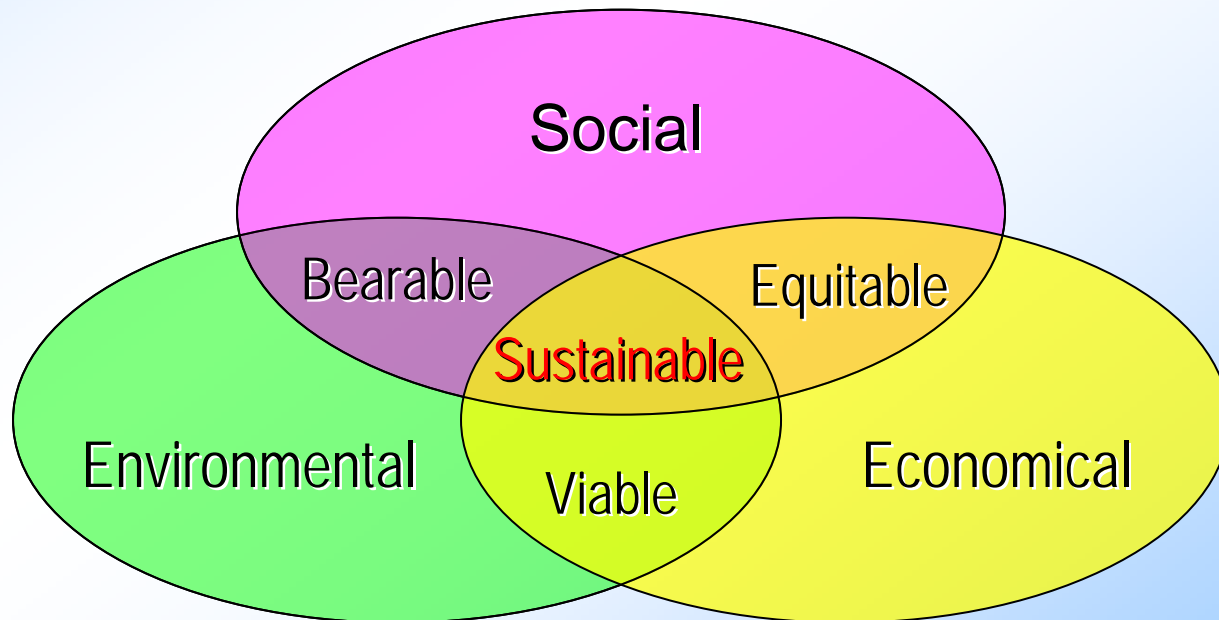
- Characterized by the time limit at which the required operating qualities can be adequately served by a building.
- End of service life may be due to physical degradation or obsolescence



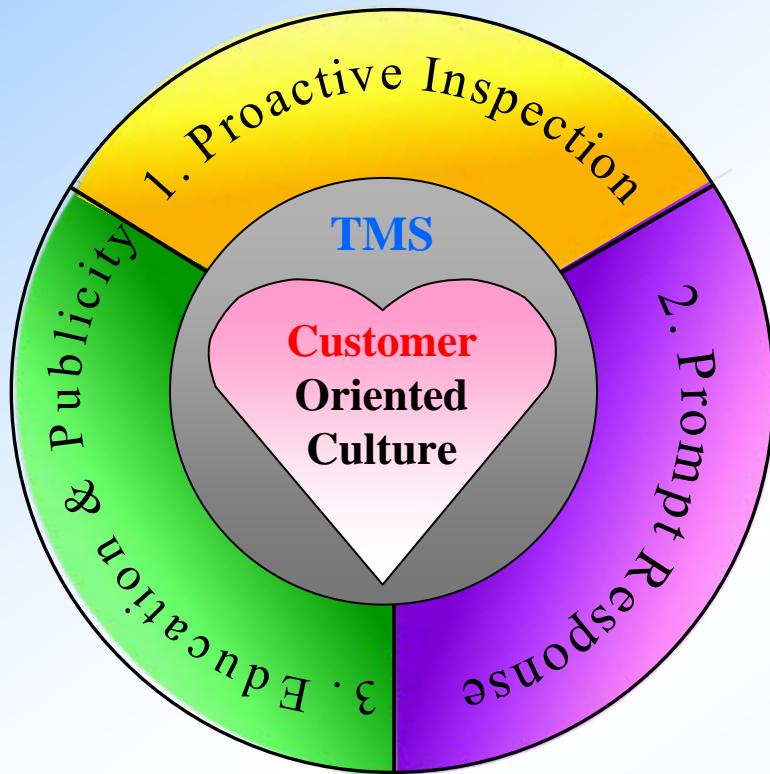
The Holistic Strategy of HKHA

3 Key Sustainable Initiatives for Service Life Extension

- Total Maintenance Scheme (TMS)
- Comprehensive Structural Investigation Programme (CSIP)
- Estate Improvement Programme (EIP)



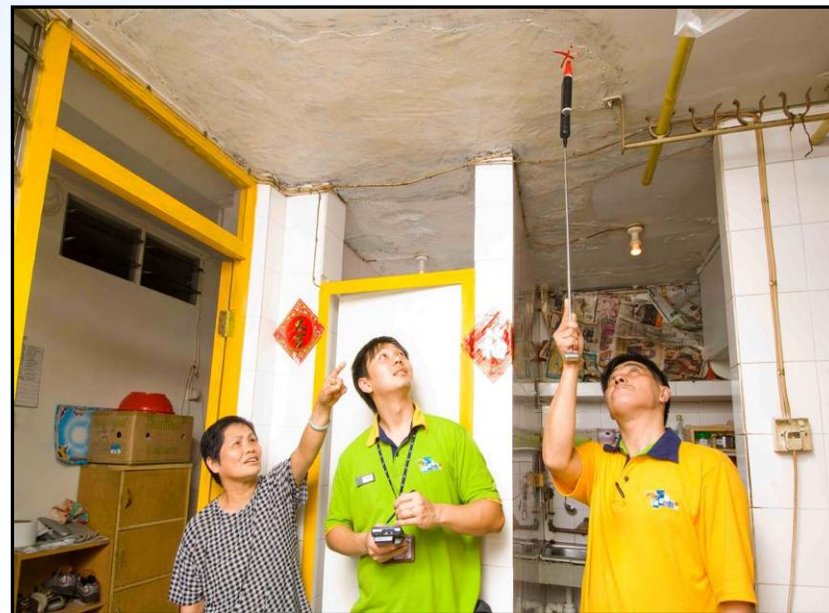
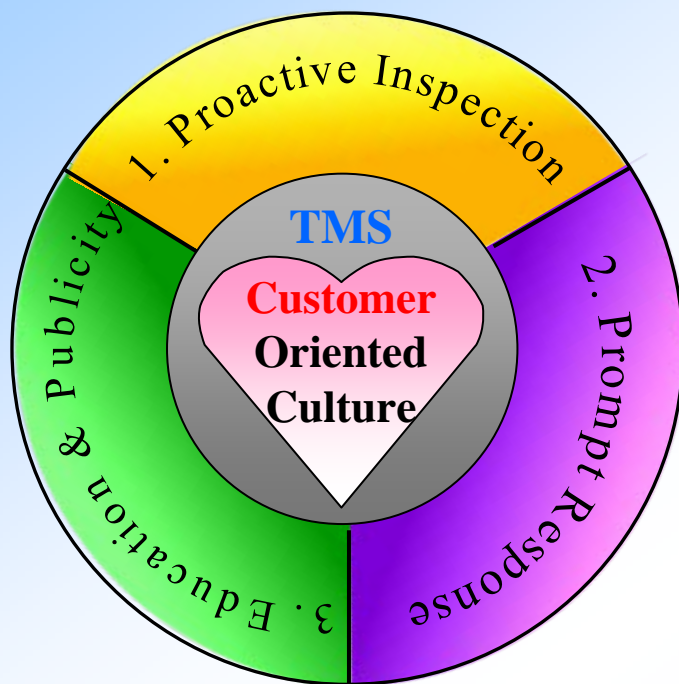
Total Maintenance Scheme (TMS)



- Proactive Maintenance Programme
- Launched in 2006
- Target : Estates over 10 years old
- 5-year cycle afterwards
- Three-Pronged Approach to prevent minor defects from blowing up into major problems



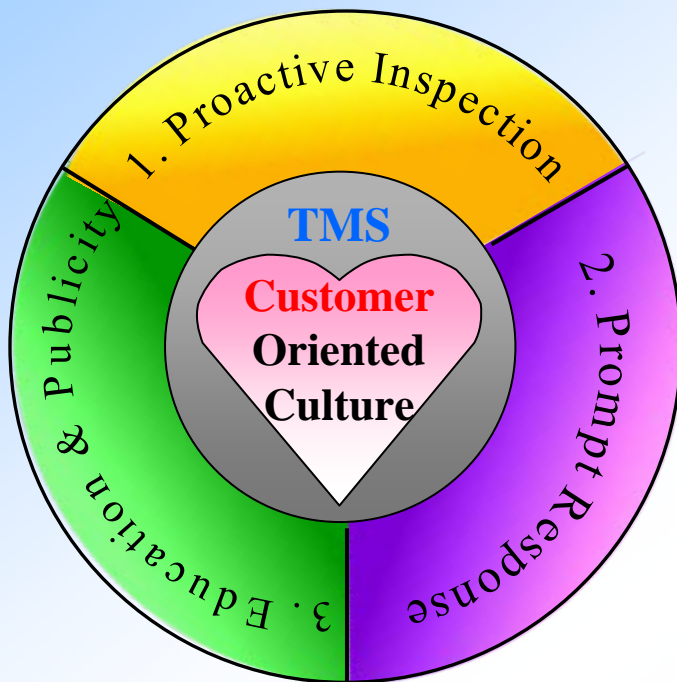
Total Maintenance Scheme (TMS)



- In-flat inspection ambassadors to conduct home visits and inspections
- Minor defects to be repaired on-the-spot and works orders to be issued for more complex problems for prompt action



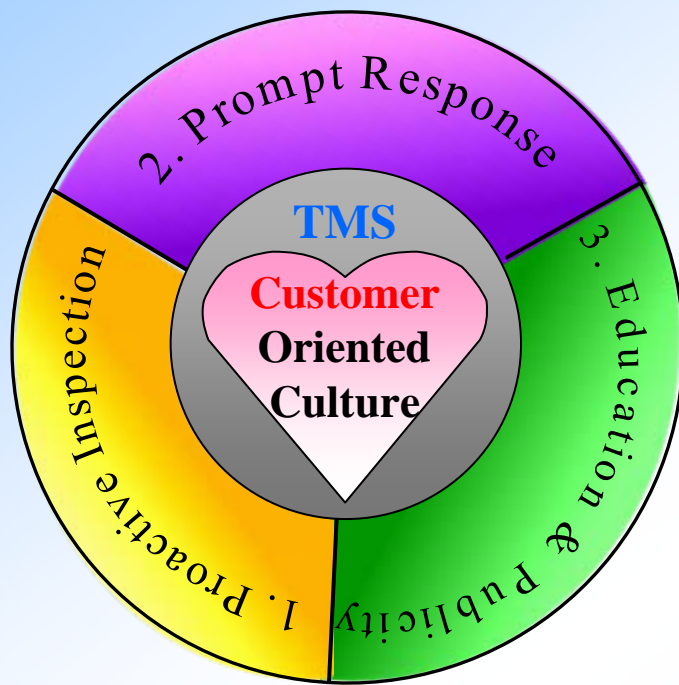
Total Maintenance Scheme (TMS)



- Maintenance hotline to strengthen communication and handle calls concerning repair appointments, complaints and enquiries
- Computerized system to streamline the workflow of maintenance service and facilitate performance monitoring



Total Maintenance Scheme (TMS)



- Ambassadors to provide handy information for tenants on maintenance issues
- Maintenance Education Centre and mobile booths to promote daily maintenance awareness

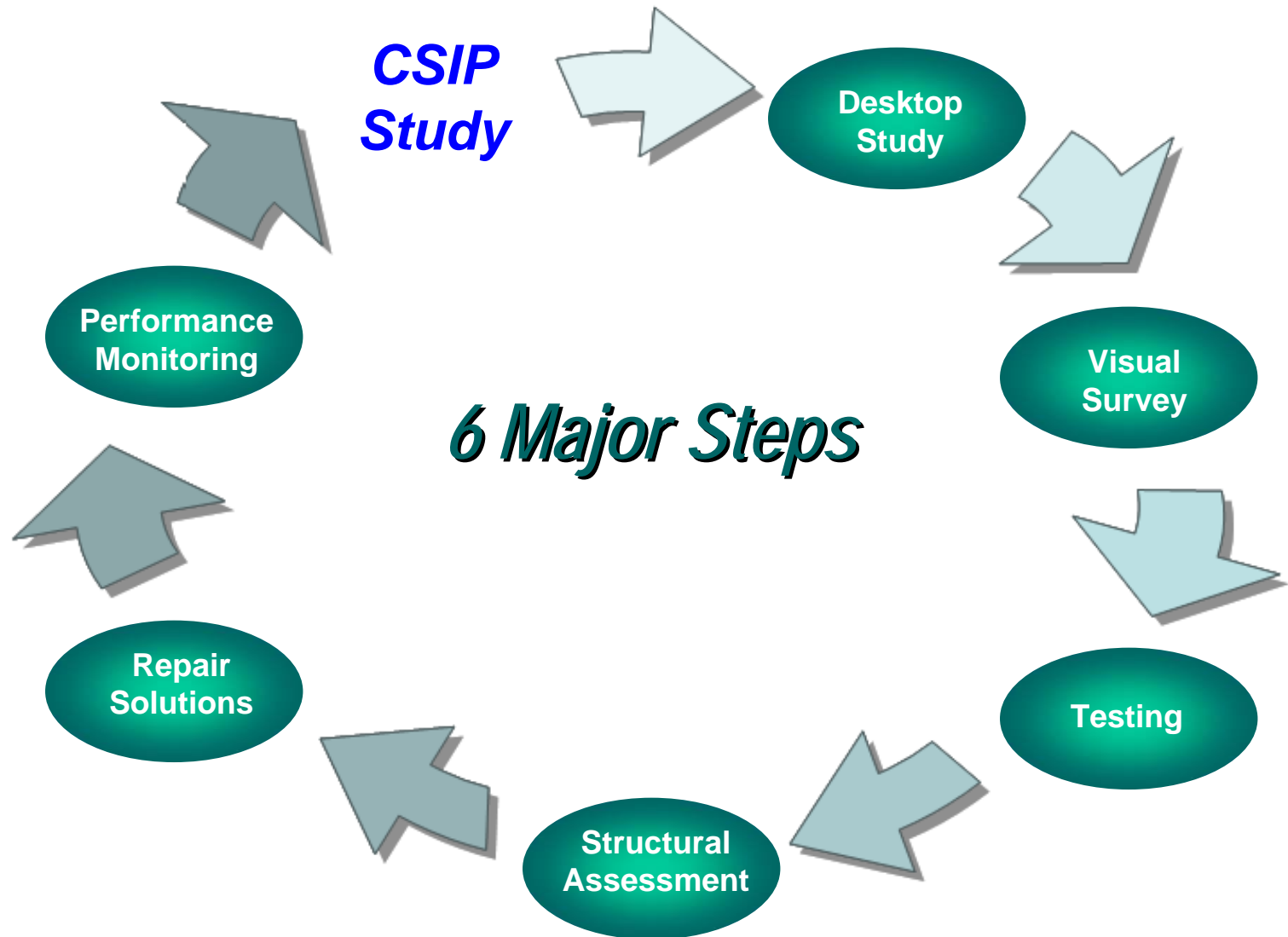


Comprehensive Structural Investigation Programme (CSIP)

- Investigate PRH buildings approaching 40 years old
- 15-year cycles afterwards
- Assess in-depth structural condition
- Develop and implement tailor-designed repair solutions to prolong physical service life of buildings



Comprehensive Structural Investigation Programme (CSIP)



Comprehensive Structural Investigation Programme (CSIP)

Desktop
Study

Visual
Survey

Testing

Structural
Assessment

Repair
Solutions

Performance
Monitoring



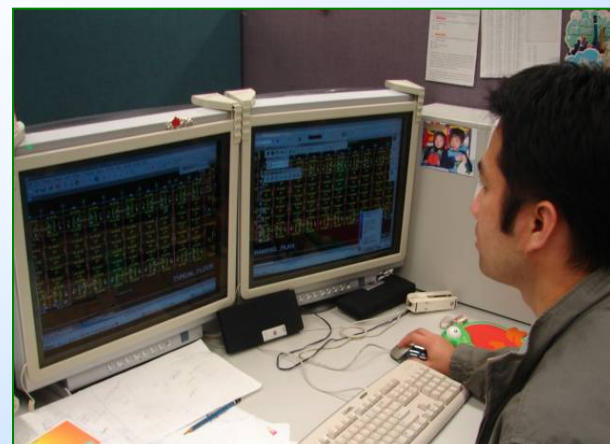
Record Drawings



Design



Reports



Repair Records



Comprehensive Structural Investigation Programme (CSIP)

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Visual
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Measurement



Moisture Survey



Photo Records



Tapping Test



Comprehensive Structural Investigation Programme (CSIP)

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Core Compression Test



Steel Bar Measurement



Carbonation Test



Laboratory Test



Comprehensive Structural Investigation Programme (CSIP)

Desktop
Study

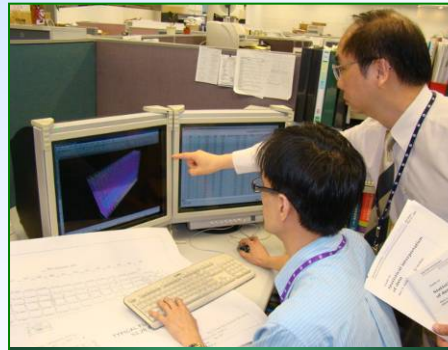
Visual
Survey

Testing

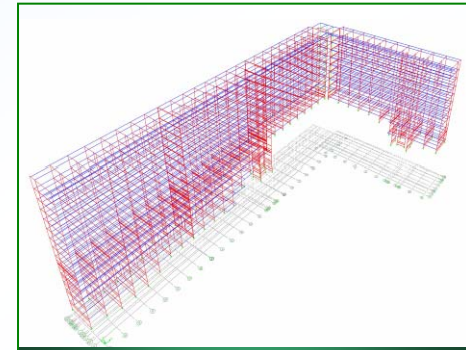
**Structural
Assessment**

Repair
Solutions

Performance
Monitoring

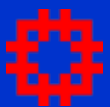
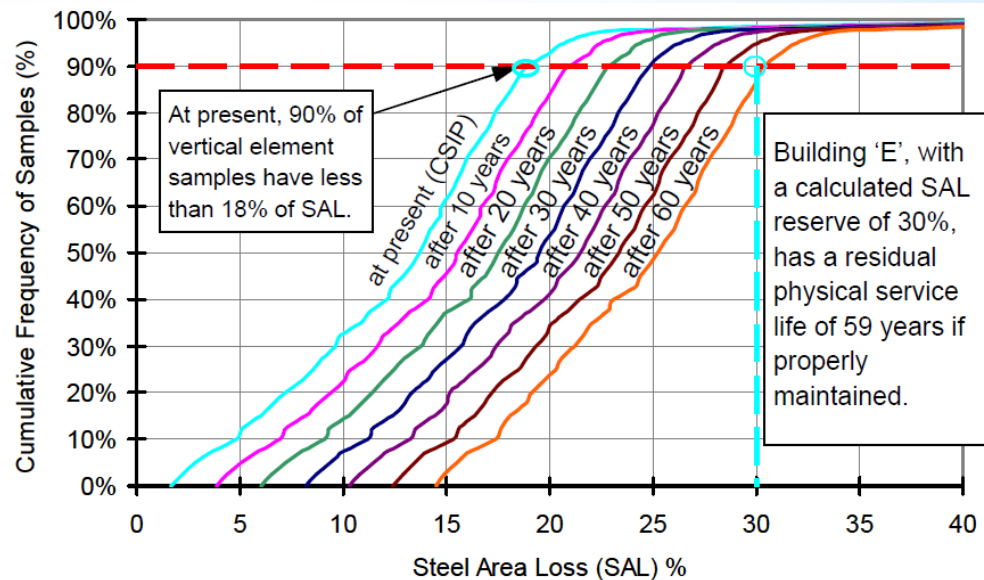


Computer Modeling



Building Structural Model

Modeling of Structural Residual Life



Comprehensive Structural Investigation Programme (CSIP)

Desktop
Study

Visual
Survey

Testing

Structural
Assessment

**Repair
Solutions**

Performance
Monitoring

CSIP Repair Solutions:

- Extend the physical service life for at least 15 years
- Address root causes
- Reduce future deterioration rates
- Lower life-cycle cost
- Minimize nuisance to tenants



Comprehensive Structural Investigation Programme (CSIP)

Desktop
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Visual
Survey

Testing

Structural
Assessment

**Repair
Solutions**

Performance
Monitoring

Minimizing Nuisance to Tenants:

➤ Noise, Dust, Tidiness, Frequency, Duration



Noise Absorbing Panels
enclosing Works Areas



Dust Screen Protection
inside Tenant's Flat



Comprehensive Structural Investigation Programme (CSIP)

Desktop
Study

Visual
Survey

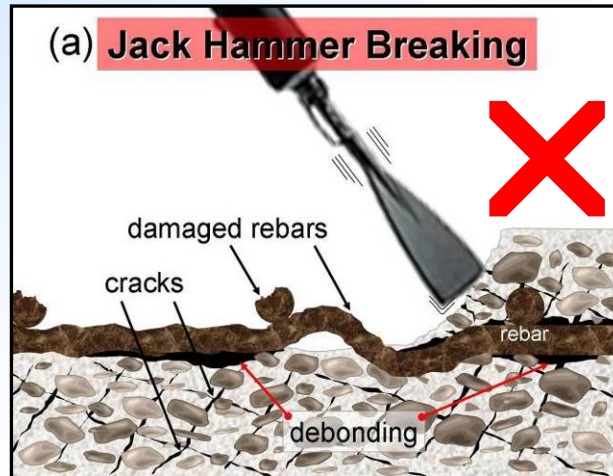
Testing

Structural
Assessment

Repair
Solutions

Performance
Monitoring

Thinking out-of-the-box : Hydro-scarification



Comprehensive Structural Investigation Programme (CSIP)

Desktop
Study

Visual Survey

Testing

Structural
Assessment

Repair
Solutions

Performance
Monitoring



Visual Confirmation



Non-destructive Tests



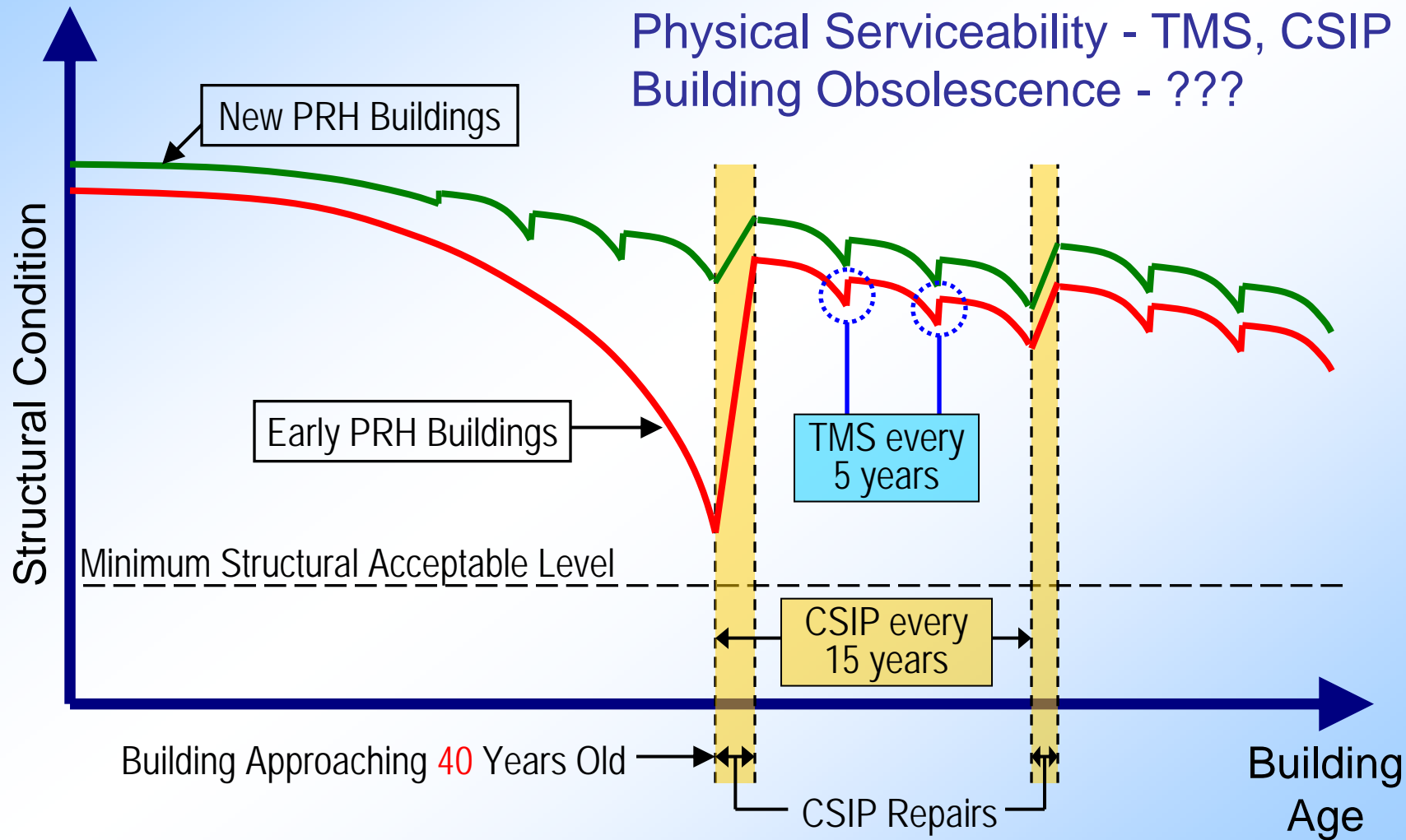
Post Repair Record Monitoring



Tenant Interview



Physical Service Life Extension



Estate Improvement Programme (EIP)

Enhancing estate facilities to cater for our tenants' needs

Enhancing
public areas

Improving
pedestrian
circulation

Optimizing
land use

Upgrading
facilities
inside block



Central Event Square



Playground



Roof Greening



Estate Improvement Programme (EIP)

Providing barrier-free access and weather-protected passage

Enhancing
public areas

Improving
pedestrian
circulation

Optimizing
land use

Upgrading
facilities
inside block



Lift Addition and Modernization



New Weather-Protected Passage



Estate Improvement Programme (EIP)

Optimizing public space to satisfy changing demands

Enhancing
public areas

Improving
pedestrian
circulation

Optimizing
land use

Upgrading
facilities
inside block



From Underutilized Shops
to a Well-being Centre



From Underutilized Parking
Space to a Rental Lane



Estate Improvement Programme (EIP)

Upgrading facilities and amenities with tenants at heart

Enhancing
public areas

Improving
pedestrian
circulation

Optimizing
land use

Upgrading
facilities
inside block

Existing Main Lobby



Redecorated Main Lobby

New Laundry Rack



Handrailing for Elderly and Disabled



Conclusions

- The HKHA is committed to provide affordable quality housing to meet the needs and expectations of our tenants.
- With the aging tenant population along with our housing stock, the HKHA is reinventing our existing estates through the TMS, CSIP, and EIP.
- Under this holistic strategy, building sustainability is achieved through the service life extension of our estates.

- END -

