

Urban Renewal Authority

GUIDELINES and TEMPLATES

for Preparing

MAINTENANCE MANUAL

for

Residential and Composite Buildings



DECEMBER 2024

V 1.0

Document History

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Preface

The Guidelines and Templates for Preparing Maintenance Manuals (Guidelines and Templates) represents URA's first attempt to consolidate maintenance requirements for all building components typically found in residential or composite buildings in Hong Kong. The Guidelines provide best practices for building maintenance, while the Templates serve as a tool for calculating maintenance costs.

This Guidelines and Templates is not intended to be an authoritative document but a reference for property owners and practitioners in estate development and property management individuals. It will undergo continued improvements based on feedback from stakeholders. To this end, URA will organize regular workshops and invite comments and suggestions to reflect the latest requirements and practices.

December 2024

Acknowledgement

URA has extended invitations to the following Government Departments, public bodies, professional institutes, trade associations, and registered companies in the URA's "Building Rehabilitation Company Registration Scheme" to provide feedback on the trial version of the Guidelines and Templates.

We would like to express our utmost gratitude for their invaluable comments and suggestions. Their insightful contributions have played a pivotal role in shaping this final version.

(List in alphabetical order)

A. Government departments and public bodies

- Architectural Services Department
- Buildings Department
- Civil Engineering and Development Department
- Drainage Services Department
- Electrical and Mechanical Services Department
- Fire Services Department
- Home Affairs Department
- The Hong Kong and China Gas Company Limited
- Water Supplies Department

B. Professional institutes and trade associations

- Building Services Operation and Maintenance Executives Society Hong Kong Limited
- Chartered Institute of Building Hong Kong Limited
- Chartered Institution of Building Services Engineers
- Construction Professionals' Development Centre Limited
- Contractor's Authorised Signatory Association Limited
- HK International Facility Management Association
- Hong Kong General Building Contractors Association Limited
- Hong Kong Institute of Certified Property Managers Limited
- Hong Kong Institute of Construction Managers, Limited
- Hong Kong Institute of Utility Specialists
- Hong Kong Institution of Certified Auditors Limited
- Hong Kong Small and Medium Enterprises Association Limited
- Professional Building Surveying Consultants Association of Hong Kong Limited
- Registered Minor Works Contractor Signatory Association Limited
- RICS International Limited
- The Association of Architectural Practices Limited
- The Association of Registered Fire Service Installation Contractors of Hong Kong Limited
- The Federation of Hong Kong Property Management Industry Limited
- The Hong Kong Association of Property Management Companies Limited
- The Hong Kong Construction Association, Limited
- The Hong Kong Institute of Architects
- The Hong Kong Institute of Clerks of Works
- The Hong Kong Institute of Engineers
- The Hong Kong Institute of Facility Management

- The Hong Kong Institute of Housing
 - The Hong Kong Institute of Landscape Architects
 - The Hong Kong Institute of Surveyors
 - The Hong Kong Registered Contractors Association Co., Limited
 - The Institute of Clerks of Works & Construction Inspectorate (Hong Kong)
 - The Lift and Escalator Contractors Association
- c. 63 no. of registered companies in the URA's "Building Rehabilitation Company Registration Scheme" as of April 2024

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The contents of this Guidelines and Templates will be reviewed and (where applicable) updated from time to time. Latest version of this Guidelines and Templates is available for download from the website of Building Rehabilitation Platform at www.brplatform.org.hk.

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Forward

Maintenance of a building is the owner's responsibility

The condition of a building deteriorates over time. The property value of a well-maintained building is always higher compared to a similar building that suffers from a lack of repair and maintenance. Proper maintenance can slow down the deterioration of the building's condition, and minor defects can be properly repaired before they worsen and affect the appearance of the building, the property value of all units, and the safety, comfort and convenience of all occupants and visitors.

The Common Law and the Deed of Mutual Covenant (DMC) of buildings in Hong Kong require owners to carry out maintenance works for their buildings. The Building Management Ordinance (Cap.344) ("BMO") further mandates that the owners' corporation maintains the common parts of the building in good and serviceable repair condition, and individual flat owners must also maintain their own parts in good repair.

Failure to maintain a property properly can result in statutory liabilities. Property owners may face prosecution and penalties under the Buildings Ordinance (Cap 123), Public Health and Municipal Services Ordinance (Cap 132), Summary Offences Ordinance (Cap 228), or Occupiers Liability Ordinance (Cap 314) for ignoring statutory orders to maintain buildings or when injuries or damages to properties occur due to a lack of proper maintenance.

Proper maintenance of a building is essential to maintain its value, ensure safety and comfort, and avoid legal liabilities. All owners are responsible for regular maintenance and repairs to keep their buildings in good condition.

Purpose of this Guidelines and Templates

Although the BMO and DMC require the owners to maintain their buildings, they provide little reference or guidance on how the maintenance can be properly done. As a result, most building owners are unable to plan or ensure adequate funds are available for the maintenance of their buildings.

This Guidelines and Templates pertains to help building owners, property management companies and building professionals prepare maintenance manuals for their buildings by providing recommendations on building maintenance practices, and tools to facilitate the calculation of required costs for maintenance tasks and actions. The ultimate goal is to enable owners to know the required costs for properly maintaining their buildings, such that contributions for the funds can be planned and implemented systematically.

Funds for a building

Proper maintenance is only possible if adequate funding can be made available for the required maintenance tasks and activities. It is essential to understand the arrangement of funding for buildings in Hong Kong.

The BMO (Cap. 344), the DMC Guidelines published by the Lands Department, as well as the DMC of individual buildings, list out the various funds that are related to the management and maintenance of a building. The arrangement differs slightly for buildings with and without Owners' Corporation (OC), as listed in the following table:

Name of the fund	Reference	Purpose of the fund	Responsible party to set up the fund	Authority to deploy the fund
Buildings WITHOUT OC				
" <i>management fund</i> ", " <i>general fund</i> ", or other names that may be used in the DMC	Cap. 344 Schedule 7 s3(1)	Exclusively in respect of the management of the building	The Manager	The Manager
Special Fund	Cap. 344 s4(1)	to provide for expenditure of a kind not expected to be incurred annually	The Manager	Owners' Committee (note)
Buildings WITH OC (owners are incorporated under the BMO)				
General Fund	Cap. 344 s.20(1)	To pay the costs of carrying out the duties of the OC (managing and maintaining the common parts of the building etc.)	The Incorporated Owners (IO) (the IO must set up a General Fund)	The Incorporated Owners
Contingency Fund	Cap. 344 s.20(2)	To provide for unexpected or urgent expenditures, and to provide funding when General Fund becomes insufficient	The Incorporated Owners (the IO may set up a Contingency Fund)	The Incorporated Owners
Special Fund	Cap. 344 s4(1)	to provide for expenditure of a kind not expected to be incurred annually	The Manager	Owners' Committee (note)

note: Special fund can only be deployed when approved by a resolution of the Owners Committee except in an emergency when the manager may use the special fund for unexpected expenses for the building.

Funds for building maintenance

All of the aforementioned funds can be utilized for the maintenance of a building's common areas. However, for effective planning of a building's preventive maintenance expenses, the following are the most pertinent:

The **General Fund** which budgets for expenses of the building that occur regularly and generally on an annual basis, and

The **Special Fund** which provides for expenditures that are not required every year.

Therefore, building owners must ensure that adequate funding can be made available in the general fund as well as the special fund to cater for maintenance tasks and activities that happen regularly and every year, and those that may be needed only once every few years respectively.

Requirements on “maintenance manual for the works and installations” under the DMC Guidelines

The DMC Guidelines promulgated by the Legal Advisory and Conveyancing Office (LACO) list out the basic framework for a building maintenance manual which should include the following:

- As-built record plans of the building and services installations together with the necessary technical information (such as the specification of materials and design standards) for maintenance of all facilities and equipment;
- All warranties and guarantees provided by contractors (together with the names of the companies providing the warranty and the contact telephone numbers) in respect of all facilities and equipment.
- Recommended maintenance strategy and procedures;
- A list of items of the works and installations requiring routine maintenance;
- Recommended frequency of routine maintenance inspection;
- Checklist and typical inspection record sheets for routine maintenance inspection; and
- Recommended maintenance cycle of the works and installations.

This Guidelines and Templates offers a systematic approach to cover all the above aspects of a building maintenance manual. Necessary references and recommendations, as well as working tools for its preparation, are included.

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Part 1: Introduction

1.1 WHAT IS BUILDING MAINTENANCE?

Building maintenance refers to the tasks and activities involved in keeping a building in good condition. It includes regular cleaning, inspections and repairs to ensure that the building is safe and fit for its purposes. The goal of building maintenance is to extend the lifespan of the building and its components, reduce the risk of equipment failure or accidents, and maintain a comfortable environment for occupants.

Tasks and activities for building maintenance are categorized as follows:

PREVENTIVE MAINTENANCE (Preventing and delaying major defects from happening)

Preventive maintenance ensures the building components are properly upkept by providing necessary cleaning, tuning, and oiling, etc. It also includes inspections to enable minor defects to be detected at an early stage so that they can be repaired before deteriorating into major problems which are costly to repair.

There are two aspects of Preventive Maintenance.

ROUTINE MAINTENANCE

Routine maintenance includes inspections to identify defects and upkeeping actions like cleaning, tuning, oiling, etc., which must take place every year or more often to keep the building components in good condition. The cost of routine maintenance should be expended from the building's **general fund**¹.

PERIODIC MAINTENANCE

Periodic maintenance is similar to routine maintenance, but the inspections and upkeeping actions are less frequent. The cost of periodic maintenance should be expended from the building's **special fund**².

CORRECTIVE MAINTENANCE (Repairing defects)

When defects are identified, they need to be repaired. Minor defects may not affect owners, but if left unattended, they might deteriorate into major problems that are expensive to deal with. Furthermore, some obvious defects, such as cracks, or patches of loose rendering or concrete on the external walls, may cause injury to

¹ Please refer to section 1.6 Glossary.

² Ditto

persons or damage to properties. Owners should arrange for emergency works to be carried out by registered contractors so as to remove these loose parts.

Corrective maintenance refers to repairs or replacements made to rectify defects so that the building element can perform its original functions and the building is made safe. Estimating the costs of corrective maintenance is difficult because we cannot predict when defects will appear. If a separate contingency fund is not established (as outlined in the Preface), allowance should be made in the general fund for unaccounted corrective repairs. The special fund can cover the costs of non-recurrent works and can always be used for large-scale emergency corrective repairs. In any case, both the general fund and special fund should allow for some funds to cater for repairs that are likely needed due to normal wear and tear, depending on the age and condition of the building component.

BUILDING REHABILITATION

“Building rehabilitation” generally refers to the process of restoring and improving the physical condition and functionality of an existing building. This may involve repairs, upgrades, and modifications to address deficiencies, improve safety, modernize systems, enhance livability and extend the useful life of the building. Rehabilitation can also include changes to the building's layout, design, and functionality to meet current needs and standards.

For the purpose of this Guidelines and Templates, a more specific definition of the term will be adopted. **In this document, “building rehabilitation” refers to large-scale repair works for major or extensive defects identified.**

1.2 MAINTENANCE MANUAL

What is a Maintenance Manual?

A building's maintenance manual should provide answers to the following questions according to the type, age and condition of the building:

- What tasks and activities are required for the **Routine Maintenance** of the building, how often should they be carried out, and how much should be budgeted for them in the general fund of the building?
- What tasks and activities are required for the **Periodic Maintenance** of the building, how often should they be carried out, and how much should be budgeted for them in the special fund of the building?
- What are the likely **Corrective Maintenance** activities that will be required for the building, and how much costs should be allowed in the general fund and special fund to cater for the needs?

Who should prepare a Maintenance Manual?

Providing the answers to the above questions is a challenge to most building owners and even property management companies since technical knowledge and experience in dealing with building inspections and repairs are involved. Furthermore, each building is distinct, and there cannot be a universal maintenance manual that applies to all buildings. It is essential for every building to hire a consultant to assess the building's condition, devise a maintenance plan, and estimate the necessary routine, periodic and corrective maintenance costs based on the building's requirements.

It is recommended that building owners should engage a consultant who is a building professional, possesses good experience in building maintenance and rehabilitation, and is familiar with the related statutory controls. The following building professionals are listed for building owners' reference:

Authorized Person (AP)	Means a person whose name is on the authorized persons' register kept under section 3(1) of the Buildings Ordinance (BO). Only Registered Architect (RA), Registered Professional Engineer (RPE) in the civil / structural engineering discipline, and Registered Professional Surveyor (RPS) with adequate practical experience and passed a qualification assessment, including a professional interview under the BO, can become an AP.
Registered Structural Engineer (RSE)	Means a person whose name is on the structural engineers' register kept under section 3(3) of the BO. Only Registered Professional Engineer (RPE) in the civil / structural engineering discipline with adequate practical

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	experience and passed a qualification assessment, including a professional interview under the BO, can become a RSE.
Registered Inspector (RI)	<p>Means a person whose name is on the inspectors' register kept under section 3(3B) of the BO.</p> <p>AP, RSE, RA, RPE in building, structural, civil, building services (building) or materials (building) engineering discipline, or RPS in building surveying or quantity surveying division with adequate practical experience in building repair and maintenance may become an RI.</p> <p>Depending on their qualification and experience, these professionals may or may not need to go through a professional interview to become an RI.</p>

It is not uncommon for building maintenance to also involve building services, and a building services sub-consultant may need to be engaged to provide additional support.

How should the Maintenance Manual be used?

After the consultant completes the maintenance manual, the building owners and the property management company should carry out the tasks and actions identified in the maintenance manual according to the frequencies stipulated. While some tasks and actions can be carried out by the owners or the property management's staff, procuring services from outside parties may also be required. Owners and the property management company must ensure that the procurement exercise should follow the requirements stated in the BMO.

The other crucial task is to ensure an adequate budget is available to fund the required maintenance tasks and actions. For Routine Maintenance activities and repairs that are likely to be required annually, the property management company should include their costs in the annual budget and ensure that the regular contribution to the general fund is adequate. For Periodic Maintenance and Corrective Maintenance that rely on the building's special fund, the property management company and building owners need to develop a longer-term plan (up to 10 years plan) with estimated costs so that contribution to the special fund to meet future expenses may be pursued.

When should a Maintenance Manual be prepared?

For residential and composite buildings that were put up for presale after 2006, the developer should have provided a maintenance manual under the DMC following LACO's Guidelines. This maintenance manual should include schedules to cover at least 11 works and installations items that require maintenance, and set out the details, including as-built records plans, warranties and guarantees, recommended maintenance strategy and procedures and frequencies, etc. However, the cost estimates for the maintenance tasks are seldom listed out. It is highly recommended

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that owners and PMCs of these buildings include cost estimates in the maintenance manual to facilitate the planning and funding of maintenance tasks and actions.

Older buildings, unless they are under single ownership, often do not have a maintenance manual. Therefore, owners and property management companies should hire a professional consultant to prepare a manual as soon as possible. This allows for early implementation of preventative maintenance measures and preparation for funding.

The maintenance manual of a building should also be regularly updated, especially when the following situations occur:

- Changes occur to the building, such as after building rehabilitation, replacement, or upgrading of major building components and facilities, etc.
- Changes in the maintenance requirements resulting from new enactment/amendments to relevant legislation or codes of practice
- Any incident/users' feedback/maintenance/repair reveals early symptoms of deterioration or systematic defects or deficiencies in particular building elements.
- Updates when major new technologies for inspection and maintenance are adopted.

1.3 References and Recommendations on Building Maintenance Task and Actions and Their Frequencies

Every building is unique and requires a tailored approach to maintenance. The frequency and types of maintenance tasks that are necessary depend on the building's age, condition, and type. In Part 2 of the Guidelines and Templates, we have outlined best practices for maintaining various building elements in a typical high-rise residential building in Hong Kong. Consultants preparing a maintenance manual for a specific building can refer to these recommendations to determine the appropriate maintenance tasks and their frequencies based on the building's individual requirements.

Part 2 – Reference and Recommendations on Building Maintenance	
<p>Section A – Routine Maintenance</p> <p>Tasks and activities for maintenance that should be carried out every year or less covering 20 different elements of building are listed out under this section.</p> <p>Details on what to look for during inspections, and actions that are normally required to keep the building element or component in good working order are provided together with the recommended frequencies. Relevant codes of practice and technical guidelines that are applicable to the maintenance or repair of the element are also listed.</p>	<p>Each section covers the following 20 building elements:</p> <ul style="list-style-type: none"> a) Structural Elements b) External Wall Finishes c) Internal Finishes d) Curtain Walls, Windows, Glass Doors and Glass Features e) Doors and Metal Gates f) Waterproofing g) Fire Resisting Materials h) Mechanical Ventilation and Air-conditioning System i) Fire Service Installation j) Plumbing and Drainage System k) Electrical Installation l) ELV and Security System m) Lift and Escalator Installation, and Permanent Suspended Working Platform n) Gas Supply System o) Carpark Control System p) Carpark EV Charging System q) Special Equipment and Facilities of Clubhouse r) External Area and Landscaping Works s) Man-made Slopes and Retaining Walls t) Signages and Signboards
<p>Section B – Periodic Maintenance</p> <p>This section is similar to Section A, but focuses on tasks and activities for maintenance that should be carried out once every few years. Recommended frequencies and references are also listed out.</p>	
<p>Section C – Corrective Maintenance</p> <p>This section lists out the repair works that are usually required when there are defects. The list covers also all 20 building elements and relevant code of practice and references to technical guidelines are also provided.</p>	
<p>Section D – Service life of building elements</p>	<p>Aspects covered in Section D:</p> <ul style="list-style-type: none"> • building exterior elements • building interior elements

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This section lists out the typical service life of some typical building elements.	<ul style="list-style-type: none"> • building services systems
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1.4 Maintenance Manual Templates

Part 3 contains templates for preparing a maintenance manual for a specific building. These templates enable the consultant and the PMC to insert information, task and activities, their frequencies, and unit rate costs, and calculate the estimates for carrying out the maintenance specific to a particular building.

The templates are structured as follows:

Part 3 - Maintenance Manual Templates	
<p>Section A – Building Information and Schedules (WORD FORMAT)</p> <p>This section provides the structure for systematically listing out and keeping all essential information that may affect how the building should be maintained. It is in WORD format and covers the listed aspects.</p>	<p>Aspects covered in Section A:</p> <p>Basic information of the building (DMC, record drawings, list of common facilities, etc.)</p> <p>Detailed information of the building affecting maintenance (operation and maintenance manuals, as-built drawings, approved general building plans, structural plans, drainage plans, site formation plans, alterations and additions plans, minor works submissions, warranties, lists of spare parts, records of past building inspection and repair, etc.)</p> <p>Supplementary Schedules and Emergency Contact List (warranties and certificates information and their expiry dates, etc.)</p>
<p>Section B – Routine Maintenance Actions and Frequencies (EXCEL FORMAT)</p> <p>Templates in EXCEL format enable the consultant to indicate the frequencies and the corresponding estimated costs for maintenance tasks and activities that should be carried out every year or less.</p> <p>Completing these templates will generate the total budget that should be allowed in the general fund for maintenance.</p>	<p>For Sections B and C, separate EXCEL Worksheets are designed for each Section to cover the following in order to match with the budget accounting system of typical residential buildings.</p> <ul style="list-style-type: none"> • Residential Portion • Commercial Portion • Clubhouse Portion • Carpark Portion
<p>Section C – Periodic Maintenance Actions and Frequencies (EXCEL FORMAT)</p>	<p>For each portion, the tasks and actions for the 20 building elements are listed.</p>

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<p>This section is similar to the above, but it covers tasks and activities that should be carried out every few years.</p>	
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<p>Completing these templates will enable the calculation of the required funding for future maintenance. The PMC and building owners can then decide how to meet these funding demands in the special fund.</p>	
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1.5 REFERENCES

A Guide to Compliance Requirements for the Certificate of Compliance for Clubhouses under the Clubs (Safety of Premises) Ordinance, Chapter 376 of the Home Affairs Department (latest edition)

A Safety Guide on Gate Work of the Labour Department

A Guide to the Factories and Industrial Undertakings (Suspended Working Platforms) Regulation of the Labour Department (2024 or latest edition)

Best Practices for Operation and Maintenance Service of Electrical Installations of the Electrical and Mechanical Services Department (2022 or latest edition)

Best Practices for Operation and Maintenance Service of Fire Service Installations of the Electrical and Mechanical Services Department (2022 or latest edition)

Best Practices for Operation and Maintenance Service of Heating, Ventilation and Air Conditioning Installations of the Electrical and Mechanical Services Department (2022 or latest edition)

Best Practice for Operation and Maintenance Service of Lift and Escalator Installations of the Electrical and Mechanical Services Department (2022 or latest edition)

BS EN 13306:2017, BSI Standards Publication

Code of Practice for Building Works for Lifts and Escalators 2011 of the Buildings Department (2020 or latest edition)

Code of Practice for Dead and Imposed Loads 2011 of the Buildings Department (2021 or latest edition)

Code of Practice for the Electricity (Wiring) Regulations of the Electrical and Mechanical Services Department (2020 or latest edition)

Code of Practice for Fire Safety in Buildings 2011 of the Buildings Department (2023 or latest edition)

Code of Practice for Fire Resisting Construction 1996 of the Buildings Department

Code of Practice for the Provision of Means of Access for Firefighting and Rescue 2004 of the Buildings Department

Code of Practice for the Provision of Means of Escape in Case of Fire 1996 of the Buildings Department

Code of Practice for Hong Kong LPG Industry, Module 1 (Issue 3, May 2023) – LPG Compounds and Cylinder Stores, Gas Authority, EMSD

Code of Practice for Hong Kong LPG Industry, Module 2 (Issue 2, May 2023) – Underground LPG Pipework, Gas Authority, EMSD Code of Practice for Installation of Electrically Operated Sliding Gates, Sliding Glass Doors and Rolling Shutters of the Electrical and Mechanical Services Department (2003 or latest edition)

Codes of Practice for Minimum Fire Service Installations and Equipment of the Fire Services Department (2022 or latest edition)

Code of Practice for Overall Thermal Transfer Value in Buildings of the Buildings Departments (1995 or latest edition)

Code of Practice for Prevention of Legionnaires' Disease of the Electrical and Mechanical Services Department (2021 or latest edition)

Code of Practice for Safety at Work (Lift and Escalator) of the Labour Department (1997 or latest edition)

Code of Practice for Safe Use and Operation of Suspended Working Platforms of the Labour Department (1999 or latest edition)

Code of Practice for Structural Use of Glass of the Buildings Department (2018 or latest edition)

Code of Practice for the Mandatory Building Inspection Scheme and the Mandatory Window Inspection Scheme of the Buildings Department 2012 (2023 or latest edition)

Design Guidelines for Electric Vehicle Charging-enabling Infrastructure under the EV-charging at Home Subsidy Scheme of the Environmental Protection Department (2023 or latest edition)

GEOGUIDE 5: Guide to Slope Maintenance of the Civil Engineering and Development Department (2021 or latest edition)

Geotechnical Manual for Slopes of the Civil Engineering and Development Department (2011 or latest edition)

GEO Technical Guidance Note No. 15 (TGN 15) - Guidelines for Classification of Consequence-to-Life Category for Slope Features of the Civil Engineering and Development Department (2007 or latest edition)

Good Practice Guide on Plumbing Works of the Water Supplies Department and Construction Industry Council (2017 or latest edition)

Guide to Safety of Electrically Operated Sliding Gates of the Electrical and Mechanical Services Department (2018 or latest edition)

Guide to Prepare a Building Maintenance Manual of the Hong Kong Institute of Surveyors (2009 or latest edition)

Guidebook for the Responsible Person for Lifts — Lifts and Escalators Ordinance (Cap 618) of Electrical and Mechanical Services Department (2012 or latest edition)

Guidance Notes for Solar Photovoltaic (PV) System Installation of the Electrical and Mechanical Services Department (2022 or latest edition)

Guidance Notes on Gas Supply Installations (Applicable to Conventional Projects with Modular Integrated Construction)

Guidance Note on Liquefied Petroleum Gas Storage Installations, Gas Authority, HKSAR

Handbook on Design, Operation and Maintenance of Gas Utilisation Facilities of the Electrical and Mechanical Services Department (2022 or latest edition)

HKIS Guide to Good Property Management Practices of the Hong Kong Institute of Surveyors (2008 or latest edition)

Is Your Building Safe? A quick guide to how to check it of the Buildings Department (2014 or latest edition)

Layman's Guide to Slope Maintenance of the Civil Engineering and Development Department (2013 or latest edition)

Manual for Security Personnel Providing Guarding Services in Buildings of Security and Guarding Services Industry Authority (Latest edition)

Maintenance Engineering and Management, A Guide for Designers, Maintainers, Building Owners and Operators and Facilities Managers, CIBSE, Second Edition (2014 or latest edition)

Preventive Maintenance Guidebook, Best Practices to Maintain Efficient and Sustainable Buildings, BOMA (2010 or latest edition)

Requirement of Lighting Provision for Swimming Pool Licence of the Food and Environmental Hygiene Department (Latest edition)

Supply Rules of China Light and Power Company, Limited (2022 or latest edition)

Supply Rules of Hong Kong Electric Co., Limited (2023 or latest edition)

Technical Guidelines on Charging Facilities for Electric Vehicles of the Electrical and Mechanical Services Department (2015 or latest edition)

Technical Guidelines on Minor Works Control System of the Buildings Department

香港工程師學會公眾安全系列指南：樓宇保養維修 of The Hong Kong Institution of Engineers (2020 or latest edition)

Water Seepage Thematic Webpage of the Buildings Department and the Food and Environmental Hygiene Department at <https://www.waterseepage.gov.hk> HKSAR

1.6 GLOSSARY

Common Areas and Common Facilities	These are defined under the BMO and the DMC of a building.
Condition Survey	<p>It refers to visual inspections of the building to understand the current condition and to identify defects needing repairs. It should be carried out by the consultant preparing the maintenance manual. All building elements should be covered in the survey.</p> <p>Subject to the condition of the building, the consultant may recommend further tests to verify whether defects are present.</p>
Contingency Fund	See page (iv).
Corrective Maintenance	It refers to the repair or replacement necessary to rectify defects or faults that appear in a building.
Building Elements	<p>It refers to the system, equipment and the works required to be repaired /inspected and covers all “works and installations” as stipulated in the DMC guidelines. There are 20 nos. of elements including:</p> <ul style="list-style-type: none">• Structural Elements;• External Wall Finishes;• Internal Finishes;• Curtain Walls, Windows, Glass Doors and Glass Features;• Doors and Metal Gates;• Waterproofing;• Fire Resisting materials;• Mechanical Ventilation and Air-conditioning System;• Fire Service Installation;• Plumbing and Drainage System;• Electrical Installation;• ELV and Security System;• Lift and Escalator Installation, and Permanent Suspended Working Platform;• Gas Supply System;• Carpark Control System;• Carpark EV Charging System;• Special Equipment and Facilities of Clubhouse;• External Area and Landscaping Works;• Man-made Slopes and Retaining Walls; and• Signages and Signboards.

General Fund	See page (iv).
Management Fund	See page (iv).
Mandatory Building Inspection Scheme	Buildings aged 30 years or above (except domestic buildings not exceeding 3 storeys) and served with statutory notices under s.30B of the Buildings Ordinance (BO) are required to appoint a registered inspector (RI) to carry out the prescribed inspection and supervise the prescribed repair works found necessary to the common parts, external walls and projections or signboards of the buildings.
Mandatory Window Inspection Scheme	Buildings aged 10 years or above (except domestic buildings not exceeding 3 storeys) and served with statutory notices under s.30C of the BO are required to appoint a qualified person to carry out the prescribed inspection and supervise the prescribed repair works found necessary for the windows.
Registered Inspector	The Building Authority maintains a list of registered inspectors (RI). The qualifications of RI are stated in the BO. They are professionals who are either authorized persons, registered structural engineers, registered architects, registered professional engineers in the building, structural, civil, building services (building), materials (building) engineering discipline, or registered professional surveyors in the building surveying or quantity surveying division.
Special Fund	See page (iv) of Preface.
Works and Installations	It refers to a schedule of all major works and installations in the development that must be incorporated into the DMC as stipulated in the DMC guidelines.

1.7 ABBREVIATIONS

A.	Professionals that may be involved in building maintenance
1. AP	Authorized Person under the Buildings Ordinance (Cap. 123)
2. QP	Qualified Person under the Buildings Ordinance (Cap. 123)
3. CP	Competent Person under the relevant regulations
4. RGE	Registered Geotechnical Engineer under the Buildings Ordinance (Cap. 123)
5. LC	Landscape Contractor
6. MVACC	Mechanical Ventilation and Air Conditioning Contractor
7. PDC	Plumbing and Drainage Contractor
8. PRC	Prescribed Registered Contractor under the Buildings Ordinance (Cap. 123)
9. REC	Registered Electrical Contractor under the Electricity Ordinance (Cap. 406)
10. REE	Registered Escalator Engineer under Lifts and Escalators Ordinance (Cap. 618)
11. RESC	Registered Escalator Contractor under the Lifts and Escalators Ordinance (Cap. 618)
12. REW	Registered Electrical Worker under the Electricity Ordinance (Cap. 406)
13. RFSIC	Registered Fire Service Installation Contractor under the Fire Services Ordinance (Cap. 95)
14. RGBC	Registered General Building Contractor under the Buildings Ordinance (Cap. 123)
15. RGC	Registered Gas Contractor under the Gas Safety Ordinance (Cap. 51)
16. RGI	Registered Gas Installer under Gas Safety Ordinance (cap. 51)
17. RGSC	Registered Gas Supply Company under Gas Safety Ordinance (Cap. 51)
18. RPE (G)	Registered Professional Engineer (Geotechnical) under Buildings Ordinance (Cap. 123)
19. RLC	Registered Lift Contractor under the Lifts and Escalators Ordinance (Cap. 618)

20. RLE	Registered Lift Engineer under Lifts and Escalators Ordinance (Cap. 618)
21. RMWC	Registered Minor Works Contractor under the Buildings Ordinance (Cap. 123)
22. RI	Registered Inspector under the Buildings Ordinance (Cap. 123)
23. RSE	Registered Structural Engineer under the Buildings Ordinance (Cap. 123)
24. SWPC	Suspended Working Platform Contractor

B. Government Departments

25. BD	Buildings Department
26. EMSD	Electrical and Mechanical Services Department
27. EPD	Environmental Protection Department
28. FEHD	Food and Environmental Hygiene Department
29. FSD	Fire Services Department
30. WSD	Water Supplies Department

C. Laws, standards and references

31. BO	Buildings Ordinance (Cap. 123)
32. BMO	Building Management Ordinance (Cap. 344)
33. B(MW)R	Building (Minor Works) Regulation (Cap. 123)
34. FS(B)O	Fire Safety (Buildings) Ordinance (Cap. 572)
35. FS(CP)O	Fire Safety (Commercial Premises) Ordinance (Cap. 502)

D. Other technical terms

36. AHU	Air Handling Unit
37. BMS	Building Management System
38. BS	British Standard
39. CC	Certificate of Compliance
40. CCTV	Closed Circuit Television

41. CIBSE	Chartered Institution of Building Services Engineers
42. CoP	Coefficient of Performance
43. DMC	Deed of Mutual Covenant
44. ELV	Extra Low Voltage
45. EV	Electric Vehicle
46. FCU	Fan Coil Unit
47. FSI	Fire Service Installation or Equipment
48. GBP	General Building Plan
49. GFA	Gross Floor Area
50. HOKLAS	The Hong Kong Laboratory Accreditation Scheme
51. IGU	Insulating Glass Unit
52. LACO	Legal Advisory and Conveyancing Office
53. MBIS	Mandatory Building Inspection Scheme
54. MCB	Miniature Circuit Breaker
55. MMT	Maintenance Manual Template
56. MWIS	Mandatory Window Inspection Scheme
57. MVAC	Mechanical Ventilation and Air Conditioning
58. O&M	Operation & Maintenance
59. OP	Occupation Permit
60. PAU	Primary Air Handling Unit
61. PITC	Periodic Inspection, Testing and Certification for Fixed Electrical Installation
62. PMC	Property Management Company
63. PV	Photovoltaic
64. UBW	Unauthorised Building Works
65. VAV	Variable Air Volume
66. VRV	Variable Refrigerant Volume

Part 2: Maintenance Manual Guidelines

The Maintenance Manual Guidelines are suggested best practices, information and references for building maintenance.

There are FOUR Sections:

Section 2.1 Routine Maintenance

Section 2.2 Periodic Maintenance

Section 2.3 Corrective Maintenance

Section 2.4 Service Life of Typical Building Elements

2.1 Routine Maintenance - Recommended Actions and Frequencies

2.1.1 What is routine maintenance

Routine maintenance refers to tasks and activities to be carried out at least every year to ensure the building is in proper condition and operation. The costs for routine maintenance should be allowed in the annual budget of the general fund as stipulated in the BMO or the DMC.

2.1.2 Routine maintenance tasks and actions

Some building elements require routine maintenance, while others do not. Building structures and finishes may not need annual inspections, but building services such as lifts and pumps should be regularly inspected by contractors or suppliers. The tables on the following pages list these requirements and specify the responsible party for each task.

- (a) Structural Elements
- (b) External Wall Finishes
- (c) Internal Finishes
- (d) Curtain Walls, Windows, Glass Doors and Glass Features
- (e) Doors and Metal Gates
- (f) Waterproofing
- (g) Fire Resisting Materials
- (h) Mechanical Ventilation and Air-conditioning System
- (i) Fire Service Installation
- (j) Plumbing and Drainage System
- (k) Electrical Installation
- (l) ELV and Security System
- (m) Lift and Escalator Installation, and Permanent Suspended Working Platform
- (n) Gas Supply System
- (o) Carpark Control System
- (p) Carpark EV Charging System
- (q) Special Equipment and Facilities of Clubhouse
- (r) External Area and Landscaping Works
- (s) Man-made Slopes and Retaining Walls
- (t) Signages and Signboards

2.1.3 The considerations and requirements of routine maintenance for building elements works and installations

Consultants preparing the maintenance manual may find this section unable to cover all building elements that are present in the building. In that case, the consultant should conduct his or her own research to determine the appropriate routine maintenance tasks and actions that should be adopted for the particular element.

Part 2.1 – ROUTINE MAINTENANCE

(a) Structural Elements

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
<p><u>Inspection</u></p> <p>No particular routine inspections for structural element need to be scheduled. Any defects should be spotted by occupants or PMCs easily for further corrective actions.</p>		
<p>However, visual inspection of structural elements that are concealed from view due to the presence of a false ceiling and exposed to high risks of spalling, as identified in Part 3-1 A4, should be carried out every year by PMC. Opening up the ceiling for checking will be required.</p>	PMC	Every year
<p><u>Relevant Codes of Practice and other documents:</u></p> <ul style="list-style-type: none"> • <i>Code of Practice for the Mandatory Building Inspection Scheme (MBIS) and the Mandatory Window Inspection Scheme (MWIS) 2012</i> of the Buildings Department (2023 or latest edition) • <i>“Is Your Building Safe? A quick guide to how to check it”</i> of the Buildings Department (2014 or latest edition) • <i>Technical Guidelines on Minor Works Control System</i> of the Buildings Department (2010 or latest edition) • <i>General Guidelines on Minor Works Control System</i> of the Buildings Department (2010 or latest edition) 		

Part 2.1 – ROUTINE MAINTENANCE

(b) External Wall Finishes

There are various items attached to external walls that demand the attention of all owners and PMC, as their failures may result in objects falling off the external walls and causing damage to properties or injuries. The owners and PMC may be subject to criminal offences when falling objects happen, even when no injuries or damages are caused.

Paints or tiling are the most common external wall finishes. Defects in these external finishes usually occur when the substrate to which they are applied (the rendering) becomes detached from the external concrete wall due to thermal movements, material deterioration, or workmanship. Defective external walls and finishes may result in water seepage, affecting the building fabrics and internal areas of a building.

Stone or metal cladding are also common external finishes. These claddings usually hang onto external concrete walls by metal fixtures. Typhoon-proof ceilings are similar, but they are installed on the underside of concrete slabs that are exposed to weather. These items always require approval from the Building Authority and are constructed by RGBC. Their fixings are usually concealed from view. Some external cladding works may be carried out under the simplified requirements of the Minor Works Control System by PRCs.

Other frequently seen fixtures attached to external walls include drainage and vent pipes, metal screens, drying racks, air-conditioning platforms, and so on. The PMC should make reference to building records (including the approved plans and minor works records) to check whether there exist UBW at the external walls of the building. When in doubt, the PMC should seek advice from a building professional.

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
<p><u>Inspection</u></p> <p>Visual inspection of external walls to</p> <ul style="list-style-type: none"> • Ensure no UBW have appeared at the external walls <p>All fixtures to external walls</p> <ul style="list-style-type: none"> • All fixings to external walls are intact with no rusting or loose parts <p>For external wall finishing including paint and tiles</p> <ul style="list-style-type: none"> • Carry out visual inspection or non-destructive tests to check for debonding, bulging, cracks, paint peeling off, signs of water seepage, etc. 	<p>PMC</p>	<p>Annually</p>

Part 2.1 – ROUTINE MAINTENANCE

(b) External Wall Finishes

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
<p>Useful Tip</p> <p><u>External appendages</u></p> <p>External appendages are usually cantilevered structures (e.g. air-conditioning hoods, canopies, drying racks, etc.) installed on external walls and, in most cases, are not structural elements. Lack of maintenance and repair to combat natural weathering would unduly shorten their lifespan and eventually result in collapse. Therefore, PMC and owners should arrange regular inspections and repair of those external appendages to prevent them from becoming falling hazards.</p> <p>Owners spotting any defects in the exterior of the building should report to PMC or OC for their action, irrespective of whether the defects are at the exterior of their own units or other units.</p>		
<p><u>Remarks</u></p> <p>Seek building professional’s advice immediately if UBW is identified or when extent or seriousness of defects may pose dangers to public pavement or lead to water seepage.</p>		
<p><u>Relevant Codes of Practice and other documents:</u></p> <ul style="list-style-type: none"> • <i>Code of Practice for the Mandatory Building Inspection Scheme (MBIS) and the Mandatory Window Inspection Scheme (MWIS) 2012</i> of the Buildings Department (2023 or latest edition) • <i>“Is Your Building Safe? A quick guide to how to check it”</i> of the Buildings Department (2014 or latest edition) • <i>Technical Guidelines on Minor Works Control System</i> of the Buildings Department (2010 or latest edition) • <i>General Guidelines on Minor Works Control System</i> of the Buildings Department (2010 or latest edition) 		

Part 2.1 – ROUTINE MAINTENANCE

(c) Internal Finishes

Owners and PMC should pay attention to the conditions of supports to heavy fixtures which are hanged from the underside of the building’s structural slabs. These include building services equipment in mechanical plant rooms, large ductworks that run above passages, or heavy chandeliers or other items. Sometimes, the fixings are concealed from view by false ceilings or other decorative items.

With proper workmanship during their installation, failures of these items are very rare. However, the consultant preparing the maintenance manual should review the risks’ impact and propose the frequencies of inspection which may involve opening up false ceilings, working at high level, etc.

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
<p><u>Inspection</u></p> <p>No particular routine inspections for internal finishes need to be scheduled. Any defects should be easily spotted by occupants or property management companies for further corrective actions.</p>	---	---
<p>Inspections for the condition of fixing to concrete soffit supporting heavy internal fixtures, which are concealed from view, are to be carried out regularly.</p>	PMC	Annually
<p><u>Relevant Codes of Practice and other documents:</u></p> <ul style="list-style-type: none"> • <i>Code of Practice for the Mandatory Building Inspection Scheme (MBIS) and the Mandatory Window Inspection Scheme (MWIS) 2012</i> of the Buildings Department (2023 or latest edition) • <i>“Is Your Building Safe? A quick guide to how to check it”</i> of the Buildings Department (2014 or latest edition) • <i>Technical Guidelines on Minor Works Control System</i> of the Buildings Department (2010 or latest edition) • <i>General Guidelines on Minor Works Control System</i> of the Buildings Department (2010 or latest edition) 		

Part 2.1 – ROUTINE MAINTENANCE

(d) Curtain Walls, Windows, Glass Doors and Glass Features

Curtain walls, glass canopies, glass walls, skylights, windows (both large windows requiring approval and consent under the Buildings Ordinance, or smaller windows carried out under the MWCS are included under this subsection.

Except for those related to weatherproofing, the inspection items also apply to glass balustrades.

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
(i) <u>Curtain walls, windows, glass doors, glass features</u>		
<p><u>Inspection</u></p> <p>Visual inspection of any defects, such as:</p> <ul style="list-style-type: none"> • Water seepage or signs of water seepage • Delamination if laminated glass is used • Moisture between glass panes if IGU glass is used (signs of failure of edge seal of the IGU) • Signs of condensation at air-conditioning outlets in the interior (signs of infiltration of moist air through curtain wall), • Deformation of gaskets or gaskets detached from glass and supporting frames • Deterioration of sealant, including peeling off or detachment • Corrosion or loosening of screws, rivets, fasteners, etc. • Other cracks, loose parts, deformation including misalignment of window or door panes, etc. <p>Checking of the following</p> <ul style="list-style-type: none"> • Proper functioning of all ironmongeries for openable curtain wall panels, windows or doors so that they can be opened and securely closed after being opened. • Proper functioning of floor springs 	PMC	Annually
<p><u>Maintenance</u></p> <ul style="list-style-type: none"> • Oil or lubricate all moveable parts and locking parts once a year. Only use non-corrosive oil or grease 	PMC	Annually
<p><u>Inspection after extreme weather or typhoon</u></p> <p>Visual inspection of any defects, such as:</p> <ul style="list-style-type: none"> • Missing glass panes • Broken or cracked glass panes • Damaged locking devices, bar hinges, etc. • Dampness, water stains, etc. 	PMC	After extreme weather and typhoon
<p><u>Relevant Codes of Practice and other documents:</u></p> <ul style="list-style-type: none"> • <i>Code of Practice for Fire Safety in Buildings</i> of the Buildings Department (2023 or latest edition) • <i>Code of Practice for Overall Thermal Transfer Value in Buildings</i> of the Buildings Department (1995 or latest edition) • <i>Code of Practice for Structural Use of Glass</i> of the Buildings Department (2018 or latest edition) 		

Part 2.1 – ROUTINE MAINTENANCE

(d) Curtain Walls, Windows, Glass Doors and Glass Features

- *Code of Practice for the Mandatory Building Inspection Scheme (MBIS) and the Mandatory Window Inspection Scheme (MWIS) 2012* of the Buildings Department (2023 or latest edition)
- *“Is Your Building Safe? A quick guide to how to check it”* of the Buildings Department (2014 or latest edition)
- *Technical Guidelines on Minor Works Control System* of the Buildings Department (2010 or latest edition)
- *General Guidelines on Minor Works Control System* of the Buildings Department (2010 or latest edition)

Part 2.1 – ROUTINE MAINTENANCE

(e) Doors and Metal Gates

Metal gates should be properly designed and installed. Please refer to the following links to the Buildings Department’s circular letter dated 19 August 2022 and the Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers APP-146 for details of proper metal gates design and maintenance.

https://www.bd.gov.hk/doc/en/resources/codes-and-references/practice-notes-and-circular-letters/circular/CL_RIMLMG2022e.pdf and <https://www.bd.gov.hk/doc/en/resources/codes-and-references/practice-notes-and-circular-letters/pnap/APP/APP146.pdf>.

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
(i) <u>Timber doors</u>		
<p><u>Inspection</u> Any defects at doors should be easily spotted by occupants or property management companies through daily uses. Common defects usually happen at the door hinges when they become loose, causing the door leave to tilt or unable to close properly.</p> <p>Please refer to section (g) for maintenance tasks and actions for fire-rated doors.</p>	PMC	---
(ii) <u>Metal Doors and Metal Gates</u>		
<p><u>Inspection and Actions</u></p> <p>For swing type or folding type,</p> <ul style="list-style-type: none"> • Check that the gate can operate smoothly, especially for gates that are not regularly used • Lubricate hinges and moving parts to minimize wear and tear • Check the condition and levelling of the floor track • Inspect the components that secure the hinges onto the concrete structure and check the concrete surface for any sign of loosening • Check all welding points, hinges and bearings regularly for wear and tear <p>Additional items for horizontal sliding type</p> <ul style="list-style-type: none"> • Check that all components are in place, including rubber to slide stopper and additional slide stopper • Check that all guiding wheels are in place and that their numbers match the width and position of the gate • Check guiding wheels and the axle for wear and tear <p>Visual inspection of safety chains</p> <ul style="list-style-type: none"> • Missing safety chains • The chain and the fixing of safety chains to building structures deformed or rusted 	PMC	Quarterly
<p><u>Maintenance</u></p> <ul style="list-style-type: none"> • Oil or lubricate all movable and locking parts, i.e. flush bolts, hinges, locks, etc. 	PMC	Quarterly

Part 2.1 – ROUTINE MAINTENANCE

(e) Doors and Metal Gates

Relevant Codes of Practice and other documents:

- *A Safety Guide on Gate Work* of the Labour Department (latest edition)
- *Code of Practice for Installation of Electrically Operated Sliding Gates, Sliding Glass Doors and Rolling Shutters* of the Electrical and Mechanical Services Department (2003 or latest edition)
- *Guide to Safety of Electrically Operated Sliding Gates* of the Electrical and Mechanical Services Department (latest edition)
- *PNAP APP-146 on Large Metal Gates* of the Buildings Department
- *Technical Guidelines on Minor Works Control System* of the Buildings Department (2010 or latest edition)
- *General Guidelines on Minor Works Control System* of the Buildings Department (2010 or latest edition)

Part 2.1 – ROUTINE MAINTENANCE

(f) Waterproofing

Waterproofing refers to the layer of construction that prevents water from passing through from above to below or from one room to another. Unlike leakage from water pipes, water seepage due to defects in the waterproofing is usually very slow and difficult to detect which may cause nuisance or concrete spalling in the long run. This is particularly true when the soffit of the waterproofed area is concealed from view by false ceilings or other decorations. To carry out an inspection, opening up the false ceiling and using torches for visibility may be necessary.

When preparing the maintenance manual, the consultant should also refer to their assessment of **high-risk areas for flooding under Templates Section A4**. They should include any maintenance tasks and actions that may be necessary to ensure that flooding can be effectively prevented during extreme weather.

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
<p><u>Inspection</u></p> <p>Visual inspection or non-destructive testing of the underside of the waterproofed area annually for water seepage or damp spots, or after extreme weather and typhoon.</p> <p>Carry out maintenance actions or tasks identified for the prevention of flooding according to Section A4.</p>	<p>PMC</p>	<p>Annually / After extreme weather and typhoon</p>
<p><u>Relevant Codes of Practice and other documents:</u></p> <ul style="list-style-type: none"> • <i>Code of Practice for the Mandatory Building Inspection Scheme (MBIS) and the Mandatory Window Inspection Scheme (MWIS) 2012</i> of the Buildings Department (2023 or latest edition) • <i>“Is Your Building Safe? A quick guide to how to check it”</i> of the Buildings Department (2014 or latest edition) • <i>Technical Guidelines on Minor Works Control System</i> of the Buildings Department (2010 or latest edition) • <i>General Guidelines on Minor Works Control System</i> of the Buildings Department (2010 or latest edition) 		

Part 2.1 – ROUTINE MAINTENANCE

(g) Fire Resisting Materials

Fire rated materials are essential components in ensuring the fire safety of a building. They are designed to contain a fire and prevent it from easily spreading to other parts of the building. This provides occupants with a safe means of escape from the building when there is a fire, and allows firefighters the opportunity to access the building safely to carry out fire-fighting and rescue to prevent catastrophic destruction.

Fire-rated materials come in different forms. For instance, entrance doors to individual residential units in residential buildings, doors leading to protected lobbies, fireman’s lift lobbies, and escape staircases are usually **fire-rated doors**. For fire-rated doors with a smoke seal function, smoke seals at the door leaves or the door frame will prevent smoke from entering the unit or escape staircase when there is a fire.

Fire dampers are also provided at air ducts when they pass through different fire compartments. These dampers close when there is a fire, preventing the spread of smoke from one compartment to another through the air ducts.

Other types of fire-rated materials are often used in protected lobbies and fire exits. Building services ductworks and equipment, including electrical conduits, wiring, air ducts, water pipes, etc., that run inside a fireman’s lift lobby, protected lobby, or protected exit must be encased in **fire-rated** enclosures in these areas. This ensures that if any of these items catch fire, they will not affect the lobbies or exits.

Additionally, for lobbies that use wood or wallpaper for their interiors, **fire retardant paint/coatings** are usually applied to these finishing. These coatings are "invisible" and are applied to prevent the spread of fire on the material.

It is important to note that extra care must be taken to ensure that the required fire-rated materials for the building are still in place when repairs or replacements are carried out.

The general building plan (GBP), structural plan, alterations and additions plan approved by the Building Authority, plans and details of minor works carried out under the simplified requirements of Minor Works Control System contain important information on fire-rated materials used in the building, including the type, location, and fire rating. The PMC and building professionals responsible for maintaining the building should always refer to these records when carrying out their tasks.

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
<p>i. <u>Fire-rated doors</u> <u>Inspection and actions</u> Visual inspection and checking for</p> <ul style="list-style-type: none"> • The door can be self-closing • Fire seals and smoke seals at the top and sides of the door leaves / frame are intact • Fire-rated glazing at the doors is not delaminated or becomes obscure / milky • Proper functioning of all ironmongeries • Deformation and damages to door frame • Lubricate all moving parts to prevent wear and tear 	PMC	Annually
<p>ii. <u>Fire dampers</u> <u>Statutory inspection</u> Inspections of ventilation system with associated components such as damper, filter, etc., should be carried out by a registered specialist contractor to ensure that they are in safe and efficient working order within 12 months to fulfill the requirements of the Building (Ventilating Systems) Regulation.</p>	MVACC	Annually

Part 2.1 – ROUTINE MAINTENANCE

(h) Mechanical Ventilation and Air-conditioning Systems

The maintenance tasks and actions listed are general only. Please always refer to the manufacturer's operation and maintenance manuals for every equipment and plant in the system.

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
(i) Window type / Split type / Variable Refrigerant Volume (VRV)		
<p><u>Inspection and Maintenance</u></p> <ul style="list-style-type: none"> • Check air-conditioning performance. There should be an 8-10°C temperature difference between the outlet air and the room temperature when the air-conditioning compressor is running. When the difference is below 8-10°C, there is likely some malfunction in the system. • Check for leakage of refrigerant. • Clean the air filters, evaporator, fan blades of the air blower, drain pan with hose and other components • Check any defects on the evaporator and condenser fins, such as bent, corroded, etc. 	PMC	Quarterly
<p><u>Inspection and Maintenance (in addition to quarterly service)</u></p> <ul style="list-style-type: none"> • Check that the air conditioner is securely fixed • Check the refrigerant pressure • Check fan motors for any abnormal vibration. • Check the condition of the condensate drain pipe and condensate water pump • Lubricate all moving parts where able and required • Check the condition of thermal insulation, especially the outdoor refrigerant pipes. • Check whether equipment using flammable refrigerant has a "flame symbol". • Clean the condenser coil • Tightness test electrical connections, and check for water ingress • Full test run of system in all modes • Contact the maintenance contractor to carry out remediation if any abnormal conditions are found • Check the supporting frames and fixing 	PMC/MVACC	Annually
(ii) Air Handling Unit (AHU) / Primary Air Handling Unit (PAU) / Fan Coil Unit (FCU) / Variable Air Volume (VAV)		
<p><u>Inspection and Maintenance</u></p> <ul style="list-style-type: none"> • Check for abnormal vibration and observe any unusual odors • Check the set point and use a thermometer to ensure the temperature is as per design and meets the operation needs 	PMC	Monthly

Part 2.1 – ROUTINE MAINTENANCE

(h) Mechanical Ventilation and Air-conditioning Systems

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
<ul style="list-style-type: none"> • Check for damage to components such as the filter, filter frame, humidifier and associated parts, drain pan and hose, electrical connection, etc. • Clean filters, grilles and diffusers of the FCU / VAV 		
<p><u>Inspection and Maintenance</u> (in addition to monthly service)</p> <ul style="list-style-type: none"> • Check any defects such as overheating on the attenuator/ fan motor/ cooling coil / heating coil / damper / evaporator / condensate / thermal wheel / compressor, pump, control valve, sensors, air duct with insulation materials with associated parts to ensure the components without any defects • Test the control panel • Clean the grilles and diffusers of the AHU / PAU • Check the supporting frames and fixing annually 	PMC/ MVACC	Bi-Annually
<p><u>Inspection and Maintenance</u> (in addition to monthly and bi-annually service)</p> <ul style="list-style-type: none"> • Check for any defects in the intake / exhaust louvre, unit door seals, casing, fan impeller, electrical connections, etc. • Ensure the screws and bolts of each component are tight and secure • Check the alignment of the belts • Replace the bag filters • Measure the current from the motor whilst in operation and compare it with the manufacturer’s data sheet • Measure the differential pressure across all filters by using a calibrated instrument • Measure the coil flow rate on cooling coil / heating coil by calibrated instrument • Functional test of the emergency stop, safety switches, compressor sensors, etc. • Test the VAC trip function • Perform sensor calibration • Clean the cooling coil • Check the condensate drain system 	PMC/ MVACC	Annually
(iii) Chiller		
<p><u>Inspection and Maintenance</u></p> <ul style="list-style-type: none"> • Check for any abnormal conditions such as leakage and vibration, etc. • Clean condenser coil • Check the control devices, sensors, chilled water pump, condensing water pump, etc. 	MVACC	Monthly

Part 2.1 – ROUTINE MAINTENANCE

(h) Mechanical Ventilation and Air-conditioning Systems

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
<p><u>Inspection and Maintenance</u></p> <ul style="list-style-type: none"> • Clean all the filtration systems for condensing water circuits • Clean the strainers • Mandatory test of legionella bacteria count (LBC) by HOKLAS laboratory 	MVACC	Quarterly
<p><u>Inspection and Maintenance (in addition to quarterly service)</u></p> <ul style="list-style-type: none"> • Check on the tightness of bolts and nuts of the mechanical or electrical joints and fixings • Check the valve, clean the surface corrosion and touch-up paint work if necessary • Check the condition of the flexible connector and all the isolation valves • Check required items of the compressor, including suction and discharge pressure reading, oil pressure, terminal box of the compressor motor with associated parts and other parts • Check required items of the chiller control panel, including all contactors, timer relay and delay timer, transformers and fuses, connection and contacts of the terminal and other parts • Check the evaporator or cooler shell joints and connections, pipes to ensure no water leakage • Check other chiller components such as condenser fan with fan blades, valves, high-pressure cut-out switch, expansion valve, thermometer, pressure gauge and valve, etc., to ensure without any damage • Lubricate pumps as well • Carry out vibration tests for pumps • Check the pump motor operating temperature • Test the insulation resistance of motor winding by the instrument • Lubricate oil analysis of chiller units • Carry out vibration test • Perform sensor calibration • Check the supporting frames and fixing 	MVACC	Annually
(iv) Mechanical Ventilation		
<p><u>Inspection and Maintenance</u></p> <ul style="list-style-type: none"> • Clean the filters, grilles and diffusers in the washroom 	PMC	Monthly
<p><u>Inspection and Maintenance (in addition to monthly service)</u></p> <ul style="list-style-type: none"> • Clean the grilles, diffusers, air filters and fan blades of motor fans 	PMC	Quarterly
<p><u>Inspection and Maintenance (in addition to monthly and quarterly service)</u></p> <ul style="list-style-type: none"> • Check for damage on mechanical ventilation such as ventilation fan, pipe ducts, dampers or other components 	MVACC	Annually

Part 2.1 – ROUTINE MAINTENANCE

(h) Mechanical Ventilation and Air-conditioning Systems

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
<p>to ensure that there are no defects such as loose, dent, deformation, air leakage, abnormal vibration and corrosion, etc.</p> <ul style="list-style-type: none"> • Carry out functional tests on the control panel, switch, safety devices and other electrical connections • Measure the flow rate of the ventilation system by the flow meter to ensure the setting is as designed / needed • Test the VAC trip function • Measure the noise level, motor operating temperature, control terminal temperature, etc. • Check the supporting frames and fixing <p><u>Statutory Inspection</u> Inspection of ventilation systems with associated components such as damper, filter, etc., should be carried out by a registered specialist contractor to ensure that they are in safe and efficient working order within 12 months to fulfill the requirements of the Building (Ventilating Systems) Regulations.</p>		
<p><u>Relevant Codes of Practice and other documents:</u></p> <ul style="list-style-type: none"> • <i>Best Practices for Operation and Maintenance Service of Electrical Installations</i> of the Electrical and Mechanical Services Department (2022 Edition) • <i>Best Practices for Operation and Maintenance Service of Heating, Ventilation and Air Conditioning Installations</i> of the Electrical and Mechanical Services Department (2022 Edition) • <i>Code of Practice for Prevention of Legionnaires’ Disease</i> of the Electrical and Mechanical Services Department (2021 Edition) 		

Part 2.1 – ROUTINE MAINTENANCE

(i) Fire Service Installation

The maintenance tasks and actions listed are general only. Please always refer to the manufacturer’s operation and maintenance manuals for every equipment and plant in the system.

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
<p><u>Statutory Annual Inspection</u></p> <p>Inspection for any fire service installation or equipment (FSI) installed in the premises that is required to have an inspection carried out by an RFSIC at least once every 12 months under Regulation 8(b) of the Fire Service (Installations and Equipment) Regulations, Cap. 95B.</p> <p>Check the FSI, including:</p> <ul style="list-style-type: none"> • Audio / visual advisory system • Automatic actuating devices (fire shutter, roof vent, etc.) • Automatic fixed installation (sprinkler system, deluge system, etc.) • Fire alarm system • Fire detection system • Fire control center • Fire hydrant/hose reel system • Fireman’s lift • Emergency generator • Emergency lighting • Exit sign • Portable hand-operated approved appliance, etc. <p>to ensure the installation is in efficient working order. Checklist and the detailed requirements of the inspection should follow the Codes of Practice for Minimum Fire Service Installations and Equipment and Inspection, Testing and Maintenance of Installation and Equipment.</p> <p>The RFSIC should identify any defects and advise necessary rectification works. Defective FSIs should not be used unless they have undergone rectification and re-inspection by the RFSIC.</p> <p><u>Remarks:</u></p> <p>If the FSI, such as sprinkler system, fire alarm system etc., is required to be suspended overnight or more than 24 hours continuously, RFSIC should notify FSD and advise the owner / building manager to take preventative measures to mitigate the risk during the suspended periods.</p> <p>Following the inspection, the RFSIC will issue the Certificate of Fire Service Installations and Equipment (F.S. 251) <u>within 14 days</u> to the owner for record-keeping and forward a copy to the Director of Fire Services.</p> <p>It is recommended that the maintenance works should follow the FSI manufacturers’ instructions and appropriate standards.</p>	<p>RFSIC</p>	<p>Annually</p>

Part 2.1 – ROUTINE MAINTENANCE

(i) Fire Service Installation

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
<p>All FSIs should undergo maintenance works carried out by the RFSIC to ensure their effective and normal functioning, following the requirements outlined in the Codes of Practice for Minimum Fire Service Installations and Equipment and Inspection, Testing and Maintenance of Installations and Equipment.</p>		
<p><u>Relevant Codes of Practice and other documents:</u></p> <ul style="list-style-type: none"> • <i>Best Practices for Operation and Maintenance Service of Fire Service Installations</i> of the Electrical and Mechanical Services Department (2022 or latest edition) • <i>Codes of Practice for Inspection, Testing and Maintenance of Installations and Equipment</i> of the Fire Services Department (2022 or latest edition) • <i>Codes of Practice for Minimum Fire Service Installations and Equipment</i> of the Fire Services Department (2022 or latest edition) • <i>FSD Circular Letters</i> https://www.hkfsd.gov.hk/eng/fire_protection/notices/circular.html • <i>Revised Testing and Commissioning Checklist for Fire Detection and Fire Alarm Systems</i> https://www.hkfsd.gov.hk/eng/source/checklist/Revised_TC_Checklist_FireAlarm_DetectionSystems_eng_20210617_165858.pdf 		

Part 2.1 – ROUTINE MAINTENANCE

(j) Plumbing and Drainage System

The maintenance tasks and actions listed are general only. Please always refer to the manufacturer’s operation and maintenance manuals for every equipment and plant in the system.

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
<p>(i) Fresh Water / Flush Water Supply System / Cleansing Water Supply System, etc. [Applied to the system including pump, water tank, piping, etc.]</p>		
<p><u>Inspection and Maintenance</u></p> <ul style="list-style-type: none"> • Ensure all gate valves of fresh water and flush water supply system should be kept open at normal operation • Check the pump pressure gauge reading and the current for each pump to prevent any abnormal condition and the pump from dry running or air-locked • Check the packing flush water supply pipes to ensure that without any blockage by debris or some object from seawater • Check ball float valves of fresh & flush water tanks to ensure that they are functioning properly, i.e. no water overflow from the water tank is observed • Check the pressure reducing valves (PRV), if any, to ensure that they function properly with the designed pressure reduction 	<p>PMC</p>	<p>Monthly</p>
<p><u>Inspection and Maintenance (in addition to monthly service)</u></p> <ul style="list-style-type: none"> • Cleanse fresh water tanks and other parts, such as strainers, etc. • For pumps and motors: <ul style="list-style-type: none"> ○ Check for charging up required air pressure, control valves, etc., of the pneumatic booster system ○ Check all flexible connectors, gate valves, control valves, pressure switches, etc. ○ Check on the cut-in, cut-out pressure switches <p><u>Remarks</u> Water tank is classified as a confined space. To safeguard the safety of the working staff, it is required to ensure that the cleansing procedures comply with the relevant statutory requirements for safety, such as the Factories and Industrial Undertakings (Confined Spaces) Regulations, Cap 59AE. Attention should be paid to the safety measures and requirements on the aspects of lighting, ventilation, gas and personal protective equipment.</p>	<p>PMC / PDC</p>	<p>Quarterly</p>

Part 2.1 – ROUTINE MAINTENANCE

(j) Plumbing and Drainage System

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
<p><u>Inspection and Maintenance</u> (in addition to monthly and quarterly service)</p> <ul style="list-style-type: none"> • Cleanse flush water tanks <p><u>Remarks</u> Water tank is classified as a confined space. To safeguard the safety of the working staff, it is required to ensure that the cleansing procedures comply with the relevant statutory requirements for safety, such as the Factories and Industrial Undertakings (Confined Spaces) Regulations, Cap 59AE. Attention should be paid to the safety measures and requirements on the aspects of lighting, ventilation, gas and personal protective equipment.</p>	PDC	Bi-Annually
<p><u>Inspection and Maintenance</u> (in addition to monthly, quarterly and bi-annually service)</p> <ul style="list-style-type: none"> • For pumps and motors: <ul style="list-style-type: none"> ○ Clearance of rust and apply the corrosion resistance coating if necessary ○ Megger test of pump motor and electrical circuit ○ Check the tightness of the bolts and nuts of mechanical and electrical joints ○ Check the setting and operation of all electrical control safety devices 	PDC	Annually
(ii) Swimming Pool Filtration System		
<p><u>Inspection and Maintenance</u></p> <ul style="list-style-type: none"> • Clean the swimming pool and various filters and the sand tank • Monitor the water quality parameters like pH levels and chlorine content • Check and maintain the function of all components, such as pumps and pipes, similar to other plumbing installations 	PDC	Monthly
(iii) Drainage System (including Soil, Waste & Vent System, Rain Water System)		
<p><u>Inspection and Maintenance</u></p> <ul style="list-style-type: none"> • Ensure the outdoor floor drainage, surface channel, traps, wash basins, sinks, etc., are clean without any blockage by the debris sheet, sand, etc. • For pumps and motors: <ul style="list-style-type: none"> ○ Check and conduct functional tests on all pump sets, including submersible pump and sump pit pumps 	PMC/ PDC	Quarterly Before and after extreme weather and typhoon

Part 2.1 – ROUTINE MAINTENANCE

(j) Plumbing and Drainage System

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
<ul style="list-style-type: none"> ○ Check the system’s water frequency convertor reading to ensure water pressure has been maintained in the system 		
<p><u>Inspection and Maintenance</u> (in addition to quarterly service)</p> <ul style="list-style-type: none"> • Check the external drainage pipework, supporting brackets and fixing • Carry out pressure hydraulic cleaning to the underground drainage and deluge foul manholes • Inspect underground drainage pipes by CCTV survey <p>The following functions are recommended for the CCTV survey:</p> <ul style="list-style-type: none"> • Integral lighting unit • Capable of operating in 100% relative humidity • Fitted with a rotating mirror for complete circumferential viewing • Capable of producing a clear, high-quality picture of the entire periphery of the pipe • Images can be displayed on a monitor screen and saved as an electronic record 	PMC/PDC	Annually
<p>(iv) Grease Trap / Petrol Interceptor Inspection and Maintenance</p>		
<p><u>Inspection and Maintenance</u></p> <ul style="list-style-type: none"> • Clean entire trap / interceptor subject to their consumption volume 	PDC	Quarterly
<p><u>Relevant Codes of Practice and other documents:</u></p> <ul style="list-style-type: none"> • <i>Good Practice Guide on Plumbing Works</i> of the Water Supplies Department and Construction Industry Council (2017 or latest edition) • <i>Technical Guidelines on Minor Works Control System</i> of the Buildings Departments (2010 or latest edition) • <i>General Guidelines on Minor Works Control System</i> of the Buildings Department (2010 or latest edition) • <i>Code of Practice for Drainage in Buildings</i> of the Buildings Department (to be published in Q4 of 2024) • <i>Guidelines for Cleansing of Fresh Water Tanks</i> of the Water Supplies Department • <i>Guidelines for Cleansing of Flush Water Tanks</i> of the Water Supplies Department • <i>Code of Practice for Prevention of Legionnaires’ Disease</i> of the Electrical and Mechanical Services Department (2021 Edition) 		

Part 2.1 – ROUTINE MAINTENANCE

(k) Electrical Installation

The maintenance tasks and actions listed are general only. Please always refer to the manufacturer’s operation and maintenance manuals for every equipment and plant in the system.

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
(i) General Electrical Installation (i.e. Main & Sub-main switchgear, MCB Board)		
<p><u>Inspection and Maintenance</u></p> <p>Electrical works should be carried out by a Registered Electrical Contractor (REC), or Registered Electrical Workers (REWs) of the appropriate grade.</p> <ul style="list-style-type: none"> • Check the component connections • Inspect all switchboard & power monitor systems • Measure the temperature of the switchboard and bus duct by infrared thermographic scan for any abnormal condition • Clean the dust and dirt from all external and internal parts of the equipment • Functional check • Check the tightness of all cable terminations and earth connections • Check that the door of the switchroom and electrical duct can be securely closed by the screws or closing device fitted • Check the function of the lock if it is installed • Carry out earth resistance and earth continuity tests. The cable connection, especially for the equipotential bonding system, should be free from oxides and not be removed by others • Check conditions of the switchroom and associated provisions, e.g. room conditions, condition of rubber mat and ventilation • Check the setting of equipment or component, e.g. discrimination setting, power factor control setting and fuse in place • Check remote monitoring devices of electrical installations, e.g. switchboard wireless temperature sensor, switchroom temperature / humidity sensor and water leakage detection sensor, whenever applicable 	REC/REW	Annually
(ii) Emergency Generator		
<p><u>Inspection and Maintenance</u></p> <ul style="list-style-type: none"> • Check lube oil, fuel tank, electrolyte & engine coolant level, running of generator, etc. • Lubricate any engine parts • Check all fuel pipes without blocked • Carry out no load test • Carry out on-load tests and ensure the testing time is at least 30 minutes to check the operation • Carry out function tests on all automatic and manual starting devices and safety control • Refill fuel tanks after testing 	REC	Monthly

Part 2.1 – ROUTINE MAINTENANCE

(k) Electrical Installation

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
<p><u>Annual On-Load Test: (in addition to monthly service)</u></p> <ul style="list-style-type: none"> Carry out annual On-Load Test and submit FS251 certificate to FSD 	REC	Annually
(iii) Photovoltaic (PV) System		
<p><u>Inspection and Maintenance</u></p> <ul style="list-style-type: none"> Check for defects in components such as the PV panel, control panel, inverter, protection device and electrical connections, etc. Clean the surface of the PV panel Check all structural elements, including supporting frames, concrete plinths/supporting footings and all connections, for any signs of defects (e.g. dilapidation, loose/defective connections, deformation or displacement, etc.) Check the parent supporting structures for any signs of adverse effects (e.g. cracks, signs of distress or deformation, etc.) Provide routine inspection and maintenance on the PV system, including the supporting structures, before/after extreme weather or typhoon. Introduce any necessary precautionary measures (e.g. tie wire installation or reinforcement of structures), particularly the onset of rainy and typhoon seasons <p>Remarks: PV systems should be properly designed and installed. Please refer to the following links to Correct Installation of Photovoltaic (PV) System by the Buildings Department. https://www.bd.gov.hk/en/resources/codes-and-references/pv-panel/index.html</p> <p>For the inspection and maintenance of the supporting structure of PV systems, please refer to Routine Maintenance Part 2.1 (a).</p>	REC	Annually Pre-typhoon and Post-typhoon inspection
<p><u>Relevant Codes of Practice and other documents:</u></p> <ul style="list-style-type: none"> <i>Best Practices for Operation and Maintenance Service of Electrical Installations</i> of the Electrical and Mechanical Services Department (2022 or latest) <i>Code of Practice for the Electricity (Wiring) Regulations</i> of the Electrical and Mechanical Services Department (2020 or latest edition) <i>Supply Rules</i> of China Light and Power Company, Limited (2022 or latest edition) <i>Supply Rules</i> of Hong Kong Electric Co., Limited (2023 or latest edition) <i>Technical Guidelines on Minor Works Control System</i> of the Buildings Department (2010 or latest edition) <i>General Guidelines on Minor Works Control System</i> of the Buildings Department (2010 or latest edition) <i>Guidance Notes for Solar Photovoltaic (PV) System Installation</i> of the Electrical and Mechanical Services Department (2022 or latest edition) <i>Handbook on Design, Operation and Maintenance of Solar Photovoltaic Systems</i> of the Electrical and Mechanical Services Department (latest edition) 		

Part 2.1 – ROUTINE MAINTENANCE

(I) ELV and Security System

Under the Security and Guarding Services Ordinance (Cap.460), installation, maintenance and/or repair of a security device or designing of a system incorporating a security device can only be undertaken by a person with a Grade D Security Personnel Permit. A staff with such qualification should be provided by the PMC or a specialist contractor to be responsible for the following routine maintenance actions. The contractor responsible for the installation, maintenance and repair of security system devices must also have obtained a Security Company License (III).

The maintenance tasks and actions listed are general only. Please always refer to the manufacturer’s operation and maintenance manuals for every equipment and plant in the system.

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
(i) Security, CABD systems and Other ELV systems		
<p><u>Inspection and Maintenance</u></p> <ul style="list-style-type: none"> • Check the security system (i.e. CCTV cameras, components, motion sensors, door contacts, key-switch, etc.) to ensure the system is in normal working condition • Check the access control system (i.e. intercom panels, control panels, video door phones, etc.) to ensure the system is in normal working condition • Check repeaters, gateways and wireless door contacts connectivity by pinging the computer with the LoRa system • Check battery indicator for wireless door contacts 	PMC/REC	Monthly
<p><u>Inspection and Maintenance (in addition to monthly service)</u></p> <ul style="list-style-type: none"> • Carry out functional tests on the security system (i.e. CCTV cameras, components, UPS, motion sensors, door contacts, key-switch, etc.) to ensure the system is in normal working condition • Carry out functional tests on the access control system (i.e. intercom panels, control panels, video door phones, etc.) to ensure the system is in normal working condition • Carry out functional tests on the repeaters, gateways and wireless door contacts connectivity by pinging the computer with the LoRa system 	REC	Annually
(ii) Building Management System (BMS)		
<p><u>Inspection and Maintenance</u></p> <ul style="list-style-type: none"> • Check the building management system to ensure the system is in normal working condition • Backup the database of the BMS system and calibrate sensors if necessary 	REC	Monthly
<p><u>Inspection and Maintenance (in addition to monthly service)</u></p> <ul style="list-style-type: none"> • Carry out functional tests on the building management system to ensure the system is in normal working condition 	REC	Annually

Part 2.1 – ROUTINE MAINTENANCE

(I) ELV and Security System

Relevant Codes of Practice and other documents:

- *Best Practices for Operation and Maintenance Service of Electrical Installations* of the Electrical and Mechanical Services Department (2022 or latest edition)
- *Code of Practice for the Electricity (Wiring) Regulations* of the Electrical and Mechanical Services Department (2020 or latest edition)
- *Manual for Security Personnel Providing Guarding Services in Buildings* of the Security and Guarding Services Industry Authority (latest edition)
- *Supply Rules* of China Light and Power Company, Limited (2022 or latest edition)
- *Supply Rules* of Hong Kong Electric Co., Limited (2023 or latest edition)

Part 2.1 – ROUTINE MAINTENANCE

(m) Lift and Escalator Installation and Permanent Suspended Working Platform

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
<p>(i) Lift Installation</p> <p>Registered Lift Contractor (RLC) shall be engaged to undertake the lift maintenance works in accordance with the Lifts and Escalators Ordinance (Cap. 618).</p> <p><u>Maintenance Works</u> Carry out maintenance works including inspection, cleaning, oiling, adjusting, repair, and replacement of parts and components in accordance with a schedule as well as the methodologies recommended by a lift manufacturer to keep the lift and its associated equipment or machinery in safe working order, such as:</p> <ul style="list-style-type: none"> • machine motor and gearbox • suspension/governor ropes • braking system • overspeed governor • control panel • counterweight • lift car, door mechanism and safety gear • buffer • safety devices and switches • alarm, CCTV and intercom • safety notices and signs <p>Other than the maintenance contract with RLC, the cost of spare parts, which was not included in the contract, is also very important. Electrical and electronic components are suggested to be replaced according to the manufacturer's recommended lifetime before a fault occurs, which could further improve the reliability of the lifts.</p> <p>Once any defects and risks are identified during inspection, examination, audit and assessment, corrective maintenance should be carried out according to Part 2.3.</p> <p><u>Remarks</u> "Use Permit" shall be displayed at all times in a conspicuous position inside the lift car in accordance with the Lifts and Escalators Ordinance (Cap. 618).</p>	<p>RLC</p>	<p>At least monthly</p> <p>(frequency could be increased subject to the actual needs)</p>
<p><u>Special Maintenance for Aged Lifts</u> "Special maintenance" shall be carried out if the concerned lift is not equipped with all of the following: the unintended car movement protection device, the ascending car overspeed protection device and the double braking system, according to the Code of Practice for lift works and escalator works. The following maintenance works shall be carried out in order to ensure the parameters comply with the lift manufacturer's requirements:</p> <ul style="list-style-type: none"> • Disassembly maintenance of the braking mechanism for the lift machine brake, • Measure the braking distance by performing no-load brake test • Measure the grooves of the traction sheave in the lift traction machine and replace the traction sheave • Perform no-load traction tests for the lift 	<p>RLC</p>	<p>Twice a year</p>

Part 2.1 – ROUTINE MAINTENANCE

(m) Lift and Escalator Installation and Permanent Suspended Working Platform

<ul style="list-style-type: none"> • Measure the leveling accuracy • Check the mechanical locks and electrical contacts of all lift landing doors 		
<p><u>Statutory Annual Examination (in addition to maintenance works)</u></p> <p>Registered Lift Engineer (RLE) shall carry out a thorough examination of the lift and associated equipment or machinery <u>without any load</u>, and Form LE11 shall be submitted to the EMSD for the “Use Permit” of lifts in accordance with the Lifts and Escalators Ordinance (Cap. 618)</p>	RLE	Annually
(ii) Escalator Installation		
<p>Registered Escalator Contractor (RESC) shall be engaged to undertake the escalator maintenance works in accordance with the Lifts and Escalators Ordinance (Cap. 618).</p> <p><u>Maintenance Works</u></p> <p>Carry out maintenance works including inspection, cleaning, oiling, adjusting, repair, and replacement of parts and components in accordance with a schedule as well as the methodologies recommended by an escalator manufacturer to keep the escalator and its associated equipment or machinery in safe working order, such as:</p> <ul style="list-style-type: none"> • driving motor, gearbox and coupling • driving chains and sprocket • operational brake and auxiliary brake (if any) • handrail • controller • steps/pallet rollers and step/pallet chain/comb • equipment and devices in escalator truss • safety devices and switches • clearances of steps/pallets/skirt panels • safety notices and signs <p>Other than the maintenance contract with REC, the cost of spare parts, which was not included in the contract, is also very important. Electrical and electronic components are suggested to be replaced according to the manufacturer’s recommended lifetime before a fault occurs, which could further improve the reliability of the escalators.</p> <p>Once any defects and risks are identified during inspection, examination, audit and assessment, corrective maintenance should be carried out according to Part 2.3.</p> <p><u>Remarks</u></p> <p>“Use Permit” shall be displayed at all times in a conspicuous position adjacent to a landing of the escalator in accordance with the Lifts and Escalators Ordinance (Cap. 618).</p>	RESC	At least monthly (frequency could be increased subject to the actual needs)
<p><u>Statutory Half-yearly Examination (in addition to maintenance works)</u></p> <p>Registered Escalator Engineer (REE) shall carry out a thorough examination of the escalator and associated</p>	REE	Bi-annually

Part 2.1 – ROUTINE MAINTENANCE

(m) Lift and Escalator Installation and Permanent Suspended Working Platform

<p>equipment or machine without any load, and Form LE12 shall be submitted to the EMSD for the “Use Permit” of escalator in accordance with the Lifts and Escalators Ordinance (Cap. 618)</p>		
<p>Relevant Codes of Practice and other documents:</p> <ul style="list-style-type: none"> • <i>The Lifts and Escalator Ordinance (Cap 618)</i> • <i>The Code of Practice for Lift Works and Escalator Works</i> of the Electrical and Mechanical Services Department (2021 or latest edition) • <i>Guidelines for Modernising Existing Lifts</i> of the Electrical and Mechanical Services Department (2011 or latest edition) • <i>Best Practices for Operation and Maintenance Service of Lift and Escalator Installations</i> of the Electrical and Mechanical Services Department (2022 or latest edition) • <i>Guidebook for the Responsible Person for Lifts – The Lifts and Escalator Ordinance (Cap 618)</i> of the Electrical and Mechanical Services Department (2012 or latest edition) • <i>Code of Practice for Building Works for Lifts and Escalators 2011</i> of the Buildings Department (2020 or latest edition) • <i>Code of Practice for Safety at Work (Lift and Escalator)</i> of the Labour Department (1997 or latest edition) • <i>PNAP APP-91 on Maintenance and Replacement Works of Lift Installations</i> of the Buildings Department • <i>Code of Practice for Safe Use and Operation of Suspended Working Platforms</i> of the Labour Department • <i>A Guide to the Factories and Industrial Undertakings (Suspended Working Platforms) Regulation</i> of the Labour Department 		

Part 2.1 – ROUTINE MAINTENANCE**(m) Lift and Escalator Installation and Permanent Suspended Working Platform**

Suspended working platforms, commonly known as gondolas, are widely used in Hong Kong. Suspended working platforms can be classified as permanent or temporary suspended working platforms. In this manual, the permanent suspended working platform (Platform) means the one that is designed especially to be permanently installed on a building for the inspection, cleaning, and maintenance of the façades. However, this manual does not cover the maintenance of a permanent platform by a mobile crane or a tower crane.

The maintenance and examination of Suspended Working Platforms shall follow the Factories and Industrial Undertakings Ordinance (Cap. 59), the Factories and Industrial Undertakings (Suspended Working Platforms) Regulation (Cap. 59AC), the Code of Practice for Safe Use and Operation of Suspended Working Platforms issued by the Labour Department, and the manufacturer's recommendations.

According to the Factories and Industrial Undertakings (Suspended Working Platforms) Regulation ("SWPR"), a Competent Person ("CP") and Competent Examiner ("CE") shall be appointed to carry out the inspection to ensure the suspended working platform is in safe working order. For the responsibility of owners, CP, CE, and working personnel, please refer to the Code of Practice for Safe Use and Operation of Suspended Working Platforms.

For details on the operation requirements, please refer to the Code of Practice for Safe Use and Operation of Suspended Working Platform issued by the Labour Department and the Code of Conduct for Handling Suspended Working Platform Works (Code No: C14/2022) issued by the Property Management Services Authority.

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
(iii) Permanent Suspended Working Platform		
<p>Prior to the commencement of daily work, all the suspension ropes and safety ropes should be inspected by a CP. The ropes should be in safe working condition before they are put into use. According to regulation 17(1) of the SWPR, every person operating the suspended working platform or working thereon should have undergone training that is either recognized by the Commissioner for Labour or provided by the manufacturer of the suspended working platform or its local agent, and have obtained a certificate in respect of such training from the person who provided the training.</p>	<p>PMC/ SWPC/ CP</p>	<p>On the day of use prior to commencement of daily work</p>
<p>Every Platform should be inspected within the immediately preceding 7 days before its use by a CP. A statement to the effect that it is in safe working order should be entered into an approved form (Form 1—Certificate of Weekly Inspection of Suspended Working Platform).</p> <p>The inspection should include but not be limited to the following (subject to the model of the suspended working platform):</p> <ul style="list-style-type: none"> • Any apparent defect in the hoist mechanism, wire ropes and shackles • Any abnormal function of braking system, the automatic safety device • The condition of the outriggers and sockets for the davit arm • Any defect in the power cable, control button, or plug • Incorrect fitting of lifeline and safety harness and their anchorages; 	<p>PMC/ SWPC/ CP</p>	<p>Immediately preceding 7 days before use</p>

Part 2.1 – ROUTINE MAINTENANCE

(m) Lift and Escalator Installation and Permanent Suspended Working Platform

<ul style="list-style-type: none"> • The condition of guide rails and toe-boards of the working platform <p>In addition, the functional test should be conducted according to the manufacturer’s instructions.</p> <ul style="list-style-type: none"> • All operational control, including emergency stops; • Communication system; • Manual descend facility; • All limit switches; • All electrical wiring and earthing components; • Automatic safety devices; and • Braking systems. <p>Any defect and abnormal function noted during the inspection should be recorded in the maintenance log book. Minor repairs, such as tightening bolts and nuts, should be immediately carried out. If repairs involve the strength and stability of the suspended working platform, the effectiveness and efficiency of the driving mechanism, the function of electrical equipment or the proper function of the various safety devices, the suspended working platform should be removed immediately from service. The suspended working platform should be returned to the maintenance contractor for repair, then tested and thoroughly examined before being put into service again.</p>		
<p><u>Statutory Thorough Examination</u></p> <p>A Platform should be thoroughly examined by a Competent Examiner (“CE”) in the immediately preceding 6 months before it is put into use. A certificate in the approved form (Form 2) should be obtained from the CE to certify that the Platform is in safe work order.</p> <p>Every thorough examination of a suspended working platform should identify and detect significant defects in critical parts before they result in the failure of the working platform structure, anchorage system, suspension gear, or safety device.</p> <p>All critical parts of the working platform structure, anchorage system, suspension gear and safety devices should, where accessible, be examined for failures, cracks, broken members, deformation, corrosion or excessive wear.</p> <p>The following parts should also be examined:</p> <ul style="list-style-type: none"> • The frame, decking, weld and other joints of the working platform structure • The whole length of every wire rope, including safety ropes • The anchorage system, including the outriggers, tie-back ropes, turnbuckles, imbedded eye-bolts, anchor bolts or other roof fixings • Rollers and guide pulley • All lock nuts, cotter pins and other retaining devices • All critical parts of every winch, climber and drive mechanism • All electrical components and earthing capacity <p>Where necessary, a non-destructive test should be carried out to determine or confirm whether the load-bearing capacity of the</p>	<p>SWPC/ CE</p>	<p>6 months</p>

Part 2.1 – ROUTINE MAINTENANCE

(m) Lift and Escalator Installation and Permanent Suspended Working Platform

<p>suspended working platform system is adversely affected to the extent that a repair must be immediately carried out, and that the safe working load may have to be reduced.</p> <p>Functional tests of the following devices should be conducted under the <u>maximum safe working load</u>:</p> <ul style="list-style-type: none"> • All operational control, including emergency stops; • Manual descend facility; • All limit switches; • Automatic safety devices; and • Braking systems. 		
<p><u>Statutory Load Testing and Examination</u></p> <p>A Platform shall be load tested and thoroughly examined by a CE during the immediately preceding 12 months before its use. A certificate in the approved form (Form 3) contains a statement to the effect that the Platform is in safe working order.</p> <p>In addition, the Platform has to be further load tested and thoroughly examined by a CE when it has subsequently undergone substantial repair, re-erection, adjustment, failure or collapse.</p> <p>The details of the test requirements of the load test and thorough examination include:</p> <ul style="list-style-type: none"> • Prior to any overload test, a thorough examination by a competent examiner should be conducted to ensure that the suspended working platform is suitable for the overload test. • Every suspended working platform should be subject to a load test at the installation site. • The proof load for testing a suspended working platform should be 150 per cent of the safe working load. • The proof load for testing a rope, chain or lifting gear should be at least twice the safe working load. • Where a wire rope is tested, a sample of the rope should be tested to destruction, and the safe working load should not exceed 1/8 of the breaking load of the sample tested. • Overload device function test and drop test should be carried out. • Proof load test, overload device function test and operational test should be conducted at or near ground or landing level. Before conducting the tests, a thorough examination should be carried out by the competent examiner to ensure that no defective parts, malfunction of devices or loose components are present in the suspended working platform. • After the proof load test, drop test, overload device function test and operational test, the suspended working platform should be thoroughly examined by the competent examiner to ensure that it is in safe working order. 	<p>SWPC/ CE</p>	<p>12 months</p>
<p>Remarks:</p> <p>A record of maintenance, i.e., a maintenance log book, should be kept up-to-date to record the parts or items of the suspended working platform that have been inspected, repaired, or replaced. It should include the dates of repairs or replacements. This record</p>		

Part 2.1 – ROUTINE MAINTENANCE

(m) Lift and Escalator Installation and Permanent Suspended Working Platform

<p>must be stored securely. Maintenance records should be retained for at least six years If the Platform is taken out of use, as per regulation 24 of the Factories and Industrial Undertakings (Suspended Working Platforms) Regulation.</p>		
<p>Relevant Codes of Practice and other documents:</p> <ul style="list-style-type: none">• <i>Code of Practice for Safe Use and Operation of Suspended Working Platforms of the Labour Department</i>• <i>A Guide to the Factories and Industrial Undertakings (Suspended Working Platforms) Regulation of the Labour Department</i>• <i>Code of Conduct for Handling Suspended Working Platform Works (Code No: C14/2022) of Property Management Services Authority (2022 or latest edition)</i>		

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(n) Gas Supply System

The maintenance tasks and actions listed are general only. Please always refer to the manufacturer’s operation and maintenance manuals for every equipment and plant in the system.

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
<p><u>Inspection and Maintenance</u></p> <p>No particular routine inspections for gas supply system need to be scheduled. Any defects should be easily spotted by occupants or property management companies for further corrective actions.</p> <p>Remarks:</p> <p>Only Registered Gas Installer (RGI) registered to the appropriate class and employed by Registered Gas Contractor (RGC) can carry out gas installation work (including testing, maintenance, repair or replacement of service risers, gas pipes and associated gas fittings, gas appliances, etc.) in accordance with the Gas Safety (Registration of Gas Installers and Gas Contractors) Regulations (Cap.51D).</p> <p>If the separation between gas pipes and the plumbing or drainage services is less than 50mm, gas pipes shall be relocated.</p> <div data-bbox="266 1120 957 1364" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Useful Tip</p> <p>If there is any add-on structure covering the gas pipe, especially inside the individual units, an access panel shall be provided for future maintenance and repair.</p> </div>	---	---
<p><u>Inspection of LPG Compounds and Cylinder Stores for buildings with piped LPG supply</u></p> <p>According to regulation 6C of the Gas Safety (Gas Supply) Regulations, the owner of LPG compounds and cylinder stores shall arrange tests, examinations and inspections by a competent person to ascertain that the LPG storage installation has been maintained and operated.</p>	RGC	Annually
<p><u>Codes of Practice and other documents:</u></p> <ul style="list-style-type: none"> • <i>Handbook on Design, Operation and Maintenance of Gas Utilisation Facilities</i> of the Electrical and Mechanical Services Department (2022 or latest edition) • <i>For the relevant Guidance Notes, Codes of Practice and other gas safety publication materials, please refer to the below EMSD’s website for details:</i> https://www.emsd.gov.hk/en/gas_safety/publications/index.html 		

Part 2.1 – ROUTINE MAINTENANCE

(o) Carpark Control System

A carpark control system may be part of the building’s security system. In such case, please refer to Part 2.1 (l) on statutory criteria about Permit and License requirements for carrying out maintenance and repairs for security systems.

The maintenance tasks and actions listed are general only. Please always refer to the manufacturer’s operation and maintenance manuals for every equipment and plant in the system.

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
<p><u>Inspection and Maintenance</u></p> <ul style="list-style-type: none"> • Check, clean and ensure mechanical and electrical contacts for electric installation • Check the barrier gate manual control and automatic control with the induction loop • Check, adjust and lubricate the barrier gate • Check the infrared sensor safety function • Check the camera angle of the license plate recognition function • Check and adjust the induction loops and recalibrate as required • Check and ensure the normal operation of intercom installation • Check the computer system and server • Check the payment system function 	<p>REC</p>	<p>Monthly</p>
<p><u>Relevant Codes of Practice and other documents:</u></p> <ul style="list-style-type: none"> • <i>Best Practices for Operation and Maintenance Service of Electrical Installations</i> of the Electrical and Mechanical Services Department (2022 or latest edition) • <i>Code of Practice for the Electricity (Wiring) Regulations</i> of the Electrical and Mechanical Services Department (2020 or latest edition) • <i>Manual for Security Personnel Providing Guarding Services in Buildings</i> of the Security and Guarding Services Industry Authority (Latest Edition) • <i>Supply Rules</i> of China Light and Power Company, Limited (2022 or latest edition) • <i>Supply Rules of Hong Kong Electric Co., Limited</i> (2023 or latest edition) 		

Part 2.1 – ROUTINE MAINTENANCE

(p) Carpark EV Charging System

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
<p><u>Inspection</u></p> <ul style="list-style-type: none"> • Check the components such as fault protection devices, meters, switches, cables, plugs, control panel, etc. • Check the EV charger unit & payment kiosk • Carry out function tests to the charging facilities 	REC	Annually
<p><u>Relevant Codes of Practice and other documents:</u></p> <ul style="list-style-type: none"> • <i>Design Guidelines for Electric Vehicle Charging-enabling Infrastructure under the EV-charging at Home Subsidy Scheme</i> of the Environmental Protection Department (2023 or latest edition) • <i>Technical Guidelines on Charging Facilities for Electric Vehicles</i> of the Electrical and Mechanical Services Department (2015 or latest edition) 		

Part 2.1 – ROUTINE MAINTENANCE

(q) Special Equipment and Facilities of Clubhouse

The maintenance tasks and actions listed are general only. Please always refer to the manufacturer’s operation and maintenance manuals for every equipment present.

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
(i) Equipment		
<p>The manufacturer’s recommendation should be followed for the maintenance of all equipment for use by residents.</p>	PMC	Monthly [Subject to the supplier’s instruction]
(ii) Swimming Pool		
<p>The Swimming Pools Regulation (Cap. 132CA) stipulates that any person who establishes or maintains a swimming pool must obtain a swimming pool license from FEHD. However, this regulation does not apply to a swimming pool serving not more than 20 residential units and to which the public has no access.</p> <p>The swimming pool filtration system should comply with the requirements of water quality and system circulation before the application of the license.</p> <p><u>Inspection and Maintenance</u></p> <ul style="list-style-type: none"> • Follow all license requirements for pool water quality testing. • Ensure that the lighting level at the pool service meets license requirements (200 lux), i.e., all pool lighting is functioning properly • Check that the scum channel or the overflow channel drains properly • Ensure that the filtration system is being serviced regularly by the supplier according to the manufacturer’s recommendation, such that the water change rates and filtration criteria required for the pool license can be met. <p>Please also refer to Part 2.1 (j) for Plumbing and Drainage System - Swimming pool filtration system.</p>	PMC	Weekly
<p><u>Relevant Codes of Practice and other documents:</u></p> <ul style="list-style-type: none"> • <i>A Guide to Compliance Requirements for the Certificate of Compliance for Club-houses under the Clubs (Safety of Premises) Ordinance, Chapter 376</i> of the Home Affairs Department (latest edition) • <i>Requirement of Lighting Provision for Swimming Pool Licence</i> of the Food and Environmental Hygiene Department (latest edition) 		

Part 2.1 – ROUTINE MAINTENANCE

(r) External Area and Landscaping Works

The maintenance tasks and actions listed are general only. Please always refer to the manufacturer’s operation and maintenance manuals for every equipment and plant in the system.

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
(i) External Area, including Paving, Green Roof, Planter, Play Equipment, etc.		
<p><u>Inspection</u></p> <p>Visual inspection of any defects, such as:</p> <ul style="list-style-type: none"> • Cracks on concrete structure due to plant growth or movement or abnormal shrinkage or failure of the structure • Defective paving tiles, such as cracks, missing and chipped tiles etc. • Any abnormal condition of the facilities, floor mat etc. 	PMC/LC	Annually
(ii) Landscaping		
<p><u>Soft Landscape Maintenance</u></p> <ul style="list-style-type: none"> • Watering • Weeding and clean-up • Pest and disease control • Pruning • Grass cutting, re-sodding, firming up, etc. • Fertilizing • Securing stakes and ties • Replenishing plants 	LC	Bi-Monthly
<p><u>Tree Inspection and maintenance</u></p> <p>Inspect condition of the trees and identify any potential issues of the tree which might arise in the near future.</p> <p>The Consultant should make reference to the Handbook on Tree Management published by the Development Bureau regarding maintenance and tree risks assessment recommendations.</p> <p>If there is any doubt on tree condition, a certified arborist should be appointed to carry out tree inspections.</p>	LC	Annually
<p><u>Vertical Green Inspection</u></p> <p>Visual inspection of any defects, such as:</p> <ul style="list-style-type: none"> • Defective automatic irrigation system • Defective drainage system • Check the supporting frames and fixing <p><u>Maintenance</u></p> <ul style="list-style-type: none"> • Repair defective parts of the automatic irrigation system • Repair or replace defective drainage pipes • Weeding, check for plant pest & disease 	<p>LC</p> <p>LC</p> <p>LC</p> <p>LC</p>	<p>Monthly</p> <p>Monthly</p> <p>Annually</p> <p>Monthly</p>

Part 2.1 – ROUTINE MAINTENANCE

(r) External Area and Landscaping Works

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
<ul style="list-style-type: none"> • Check soil infill inside the planting cell and pruning • Fertilize plants 		
<p><u>Relevant Codes of Practice and other documents:</u></p> <ul style="list-style-type: none"> • <i>Handbook on Tree Management</i> of the Greening, Landscape and Tree Management Section, Development Bureau (2023 or latest edition) 		

Part 2.1 – ROUTINE MAINTENANCE

(s) Man-made Slopes and Retaining Walls

Slopes and retaining structures within the lot is always under the maintenance responsibility of the building owners.

Sometimes, maintenance of slopes and retaining structures outside the lot boundary are also under the responsibility of the lot owners. Please refer to documents in (s) of Templates Section A10.

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
(i) Man-made Slopes and Retaining Walls		
<p><u>Inspection and Maintenance</u></p> <p>Please refer to Section 3.1 Maintenance Requirements for Man-made Slopes and Retaining Walls of the Geoguide 5 – Guide to Slope Maintenance (latest edition) for routine inspection actions and frequencies.</p> <p><u>Routine Maintenance Inspections</u></p> <ul style="list-style-type: none"> • Preferably be carried out between October and February, and any required maintenance works should be completed prior to the onset of the wet season in April, • clearance of accumulated debris from drainage channels and slope surface, • repair of cracked or damaged drainage channels or pavement, • repair or replacement of cracked or damaged slope surface cover, • unblocking of weepholes and outlet drainpipes, • removal of any vegetation that has caused cracking of slope surface cover and drainage channels, • re-grassing of bare soil slope surface areas, • repair of missing or deteriorated pointing in masonry walls, • removal of loose rock debris and undesirable vegetation from rock slopes or around boulders, • checking for signs of leakage of buried and exposed water-carrying services and, if signs of leakage are identified, alerting relevant services’ owners, maintenance parties or relevant authorities to take prompt actions, • repair or replacement of rusted steel slope furniture, • maintenance of landscape items on the slope, and • good practice to inspect the drainage channels and clear any blockage after a heavy rainstorm. <p>The problems should be investigated where repeated maintenance works are required, such as repair of cracked drainage channels or surface cover, clearance of severely silted-up drainage channels, or reinstatement of areas of severe erosion.</p>	<p>PMC/PRC</p>	<p>Annually for Category 1 and 2 Slopes and Retaining Walls</p> <p>Bi-annually for Category 3 Slopes and Retaining Walls</p> <p>Or more frequently as recommended in the slope maintenance manual</p>

Part 2.1 – ROUTINE MAINTENANCE

(s) Man-made Slopes and Retaining Walls

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
<p><u>Regular Check of Buried Water-carrying Services</u></p> <p>A Regular Check of Buried Water-carrying Services for suspected leakage on or adjacent to soil slopes or retaining walls should be undertaken by owners or parties responsible for maintaining these water-carrying services in accordance with “Code of Practice on Monitoring and Maintenance of Water-Carrying Services Affecting Slopes” (ETWB, 2006).</p> <p><u>Regular Monitoring of Special Measures</u></p> <p>Regular Monitoring of special measures will generally be necessary for:</p> <ul style="list-style-type: none"> (a) permanent prestressed ground anchors, (b) purposely designed raking drains which are not used in a prescriptive manner, and (c) performance monitoring of other special measures which has been specified by the Building Authority or by the Geotechnical Engineering Office. <p>Such monitoring work needs to be carried out by specialist firms. Please refer to the maintenance manuals of the slopes / retaining walls and Section 3.5 of Geoguide 5 – Guide to Slope Maintenance for details.</p> <p><u>Need for Immediate Engineer Inspections for Maintenance</u></p> <p>Immediate Engineer Inspections are required if unusual or abnormal condition is noted during the routine maintenance inspections. Please refer to Part 2.3 of this Guideline or Section 3.1.5 of Geoguide 5 – Guide to Slope Maintenance for details.</p>	<p>Specialist leakage detection contractor</p>	<p>As recommended in the “Code of Practice on Monitoring and Maintenance of Water-Carrying Services Affecting Slopes”</p> <p>As recommended in the Maintenance Manual</p>
<p>(ii) Natural Terrain Hazard Mitigation Measures</p>		
<p><u>Inspection and Maintenance</u></p> <p>Routine Maintenance Inspections should cover the measures, the area containing the measures and the adjoining ground. In general, the inspection should assess the need for carrying out maintenance works of man-made items such as:</p> <ul style="list-style-type: none"> • clearing debris from drainage channels, catch trenches and pits, containment basins and straining structures, • repairing or replacing damaged sections, • unblocking weepholes and drainage outlets, • removing any vegetation that has caused cracking of channels or hard surfaces, • repairing or reinstating the ground adjoining the measures if affected by severe erosion, • other routine maintenance works to upkeep the integrity and function of the measures, 	<p>PMC/PRC</p>	<p>Annually</p>

Part 2.1 – ROUTINE MAINTENANCE

(s) Man-made Slopes and Retaining Walls

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
<ul style="list-style-type: none"> • removal of accumulated debris behind Defence Measures such as rigid and flexible barriers, gabion walls, • trimming or removal of trees affecting flexible barriers, • preferably be completed before the onset of the wet season, and • good practice to inspect Defence Measures and clear any significant volume of debris accumulated after a heavy rainstorm. <p>Please refer to the corresponding maintenance manuals and Section 6 and 7 of Geoguide 5 – Guide to Slope Maintenance for details.</p> <p><u>Special Follow-up Review for Defence Measures Involving Steel Flexible Barrier</u></p> <p>Where steel flexible barriers are erected as a defence measure, a Special Follow-up Review should be triggered when major defects or anomalies are observed. Please refer to Part 2.3(s) of this Guideline or Section 6.6 of Geoguide 5 for details.</p>		
<p><u>Relevant Codes of Practice and other documents:</u></p> <ul style="list-style-type: none"> • <i>Building Maintenance Guidebook</i> of the Buildings Department (2002 or latest edition) • <i>GEOGUIDE 5 : Guide to Slope Maintenance</i> of the Civil Engineering and Development Department (2021 or latest edition) • <i>Geotechnical Manual for Slopes</i> of the Civil Engineering and Development Department (2011 or latest edition) • <i>GEO Technical Guidance Note No. 15 (TGN 15) - Guidelines for Classification of Consequence-to-Life Category for Slope Features</i> of the Civil Engineering and Development Department (2007 or latest edition) • <i>Layman’s Guide to Slope Maintenance</i> of the Civil Engineering and Development Department (2013 or latest edition) 		

Part 2.1 – ROUTINE MAINTENANCE

(t) Signages and Signboards

Routine maintenance tasks and actions	Concerned Party	Suggested Frequency
<p><u>Signboard Control System</u></p> <p>BD introduced the Signboard Control System to control new and existing signboards with detailed information for Signages and Signboards in Part 3: Maintenance Manual Template.</p> <p>The Signboard Validation Scheme (SVS) allows certain unauthorised signboards meeting the specified criteria to be retained for continued use after validation. SVS is a voluntary scheme implemented since 2 September 2013, and the safety check is required to be carried out again every 5 years, or the signboards should be removed. Please refer to the Minor Works Control System for the requirements of small signboards for the SVS.</p> <p>If any signboard exists, the Consultant should check whether that signboard was erected under the approval and consent for the commencement of works granted by the BD, the MWCS, classified as Designated Exempted Works, or has been validated. If not, the Consultant should assess whether the existing unauthorised signboard can meet the specified requirements under the SVS and join the SVS if applicable. Otherwise, the signboard should be removed following the procedures under the MWCS. For the defective signboards, they should be removed.</p>		
<p><u>Inspection</u></p> <p>Visual inspection of any abandoned signboards/ signboard supporting frames and any defects of signages and signboards, such as</p> <ul style="list-style-type: none"> • Rusting of signage letters, sub-frame or fixing • Loosen bolts and nuts • Missing signage letters • Broken display • Aging sealants • Tilting • Deformed • Lighting out of order etc. 	<p>PMC</p>	<p>Annually Pre-typhoon and Post-typhoon inspection</p>
<p><u>Relevant Codes of Practice and other documents:</u></p> <ul style="list-style-type: none"> • <i>Guidelines for Identification of Abandoned or Dangerous Signboards</i> of the Buildings Department (latest edition) • <i>Technical Guidelines on Minor Works Control System</i> of the Buildings Department (2010 or latest edition) • <i>General Guidelines on Minor Works Control System</i> of the Buildings Department (2010 or latest edition) 		

Part 2.2 – PERIODIC MAINTENANCE

2.2 Periodic Maintenance for a Ten-year Cycle – Recommended Actions and Frequencies

2.2.1 What is periodic maintenance

Periodic maintenance refers to maintenance tasks and activities that should be carried out once every few years. The costs of periodic maintenance should be allowed in the building's special fund under the DMC.

Unlike the building's general fund to which regular contributions are accepted as a "management fee," collecting funds from owners for the special fund requires resolution in an OGM of the owners' meeting.

2.2.2 10-year cycle

The suggested frequencies in this section follow a 10-year cycle such that all periodic maintenance activities can be carried out at least once within a decade. In reality, some items may be carried out less frequently depending on the workmanship and material of the original building and past maintenance histories. The consultant preparing the maintenance manual should conduct inspections of the building elements before determining the frequencies for these periodic inspection frequencies for cost estimation purposes.

Some of the maintenance actions recommended for periodic maintenance are similar to those for routine maintenance. For example, visual inspections of structural elements and checking of window supports are included in both Routine Maintenance and Periodic Maintenance sections. However, the key difference between the two is the responsible party for each task. For periodic maintenance, it is recommended that building professionals are engaged to carry out the inspections, while annual routine inspections can be undertaken by the property management company. Please refer to the descriptions of the "concerned party" in each of the following sections for further guidance.

2.2.3 Replacement

Replacement of building services equipment is usually necessary during a building's service life such that equipment approaching its end of life can be replaced before it breaks down. Periodic maintenance includes determining the frequencies of these replacements such that the costs can be estimated and fundings can be allowed. The recommended frequencies of replacing different building services equipment are provided in this section for the consultant's reference.

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Periodic maintenance requirements for the following building elements are covered in this section.

- (a) Structural Elements
- (b) External Wall Finishes
- (c) Internal Finishes
- (d) Curtain Walls, Windows, Glass Doors and Glass Features
- (e) Doors and Metal Gates
- (f) Waterproofing
- (g) Fire Resisting Materials
- (h) Mechanical Ventilation and Air-conditioning System
- (i) Fire Service Installation
- (j) Plumbing and Drainage System
- (k) Electrical Installation
- (l) ELV and Security System
- (m) Lift and Escalator Installation, and Permanent Suspended Working Platform
- (n) Gas Supply System
- (o) Carpark Control System
- (p) Carpark EV Charging System
- (q) Special Equipment and Facilities of Clubhouse
- (r) External Area and Landscaping Works
- (s) Man-made Slopes and Retaining Walls
- (t) Signages and Signboards

Part 2.2 – PERIODIC MAINTENANCE

(a) Structural Elements

Periodic maintenance tasks and actions	Concerned Party	Suggested Frequency
(i) Structural elements for both exterior and interior		
<p>Before conducting an inspection, a Qualified Professional should check if any structural elements within the residential units are defined as common areas according to Part 3 Section A3. If the structural elements are located within the residential units, consent of the occupants should be obtained for the inspection and necessary tests.</p>		
<p><u>Inspection</u></p> <p>Engage a Qualified Professional to carry out a visual inspection, infrared thermographic test, hammer tapping test, and cover meter survey to identify possible defects. Innovative technologies, such as unmanned aircraft systems (UASs), 3D scanning, etc., can be adopted to assist in inspecting structural elements for both exterior and interior if the site condition is acceptable. Consultant should ensure that site condition meets the statutory requirements before commencing the use of UASs. When visible defects such as cracks are observed, crack width measurement and/or open-up survey may be required.</p> <p>Depending on the condition of the structural elements of the building, further detailed investigation, such as a carbonation test, may be necessary to identify the level of deterioration of concrete and/or reinforcement.</p> <p>During inspection, the Qualified Professional should pay attention to cantilevered structures projecting over street and areas with high risks of spalling as identified in Part 3-1 A4. It may also be necessary to demount some fixtures that obstruct the inspection of the structural elements. Examples are large external signboards or false ceilings, etc.</p> <p>The following defects are considered having safety concerns and should, therefore, be identified in the inspection report:</p> <p>(a) dampness, (b) rust stains or corrosion of reinforcement, (c) cracks or signs of distress, (d) spalling, (e) delamination, (f) exposed reinforcement, (g) voids and honeycombing, (h) deformation or displacement and (i) abnormal separation of the building from adjoining buildings.</p>	AP/RI/RSE	10 Years
(ii) Mandatory Building Inspection Scheme (MBIS), regulated under the BO		
<p><u>Prescribed Inspection</u></p> <p>Buildings aged 30 years or above (except domestic buildings not exceeding 3 storeys) are required to carry out prescribed</p>	RI/PRC	10 Years

Part 2.2 – PERIODIC MAINTENANCE

(a) Structural Elements

<p>inspections under MBIS once every 10 years. The prescribed inspection by RI should cover:</p> <ul style="list-style-type: none">• External elements and other physical elements• Structural elements• Fire Safety elements• Drainage system and• Identification of unauthorised building works (UBWs) in common areas and the exterior of the building <p><u>Prescribed Repair</u></p> <p>Engage PRC to carry out the prescribed repair works identified by the prescribed inspection. The repair works should be carried out under the supervision of an RI.</p> <p><u>Voluntary Inspection and Repair</u></p> <p>Apart from complying with statutory notice served by the BD, owners are encouraged to arrange for voluntary inspections and repairs of their buildings in accordance with the standards and procedures of the MBIS at least every 10 years. This would help identify minor defects at an early stage with a view to avoiding further deterioration and saving costs in the long run.</p>		
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Part 2.2 – PERIODIC MAINTENANCE

(b) External Wall Finishes

Please refer to discussions in Part 2.1 (b) under External Wall Finishes.

Periodic maintenance tasks and actions	Concerned Party	Suggested Frequency
<p><u>Inspection</u></p> <p>Visual inspection of external walls to</p> <ul style="list-style-type: none"> • Ensure no UBWs have appeared on the external wall <p>All fixtures to external walls</p> <ul style="list-style-type: none"> • All fixings to external walls are intact with no rusting or loose parts <p>For external wall finishing including paint and tiles</p> <ul style="list-style-type: none"> • Carry out visual inspection or non-destructive tests to check for debonding, bulging, cracks, paint peeling off, signs of seepage, etc. An infrared test may be adopted to identify the detachment of tile finish from external walls. For a more comprehensive inspection at high levels, the use of UAS may also be considered. <p>Please refer to Part 2.3 Corrective Maintenance for repairs and actions when defects are identified.</p>	<p>AP/RI</p>	<p>10 Years</p>
<p><u>Complete Retiling</u></p> <p>Subject to the extent of defects identified in external tile finish, building professionals may recommend complete retiling at the external wall as a more economical and aesthetically acceptable alternative to localized repairs.</p> <p>In carrying out retiling works, care must be taken to ensure all old renderings are removed and the substrate – concrete external wall – is exposed to receive the new finishing. Also, careful selection of materials, including rendering, tile adhesive, and tile grout, is necessary to ensure that they are compatible with each other and will not cause effluorescence.</p>	<p>AP/RI/PRC</p>	<p>30 Years</p>

Part 2.2 – PERIODIC MAINTENANCE

(c) Internal Finishes

Please refer to discussions in Part 2.1 (c) under Internal Finishes.

Periodic maintenance tasks and actions	Concerned Party	Suggested Frequency
<p><u>Inspection</u> Visual inspection of defects, such as peeling, blistering, chalking, wrinkling, fading, sagging or abrasion for paint finishing, or missing tiles, loose tiles, cracks, bulging, debonding, discolouring or stain for tile finishing.</p>	AP/RI	10 Years
<p>Inspections of the condition of fixings to concrete soffits that are concealed from view for heavy internal fixtures are to be carried out regularly.</p>	AP/RI	10 Years
<p>Please refer to Part 2.3 Corrective Maintenance for repairs and actions when defects are identified.</p>		

Part 2.2 – PERIODIC MAINTENANCE

(d) Curtain Walls, Windows, Glass Doors and Glass Features

Periodic maintenance tasks and actions	Concerned Party	Suggested Frequency
(i) <u>Curtain walls, skylights, glass doors, glass walls, windows</u>		
<p><u>Inspection</u></p> <p>Visual inspection of any defects, such as</p> <ul style="list-style-type: none"> • Defects at supporting frames, mullions and transoms • Defects at glass panes including coloring (or de-coloring), delamination, moisture in IGU, cracks, etc. • Deformation of gaskets or gaskets detached from glass and supporting frames • Deterioration of sealant, including peeling off or detachment • Corrosion or loosening of screws, rivets, fasteners, etc. • Other cracks, loose parts, and deformation, including misalignment of window or door panes, etc. • Water seepage or moisture behind curtain wall 	AP/RI/RSE	10 Years
<p><u>Mandatory Window Inspection</u></p> <p>Under the Mandatory Window Inspection Scheme (MWIS) regulated by the BO, owners of buildings aged 10 years or above (except domestic buildings not exceeding 3 storeys) are required to appoint a QP to carry out the prescribed inspection and supervise the prescribed repair works found necessary of all windows of the building once every 5 years.</p> <p><u>Prescribed Inspection</u></p> <p>Mandatory window inspection by a QP covers all windows and glass louvers in individual premises and common parts of the building, including window walls.</p> <p><u>Prescribed Repair</u></p> <p>Upon completion of the inspection, prescribed repair is required to be carried out to make good all the deficiencies and defects identified in the inspection.</p> <p>A registered contractor should be appointed to carry out the prescribed repair works under the supervision of a QP.</p> <p><u>Voluntary Inspection and Repair</u></p> <p>Apart from complying with statutory notice served by the BD, owners are encouraged to arrange for voluntary inspections and repairs of their windows in accordance with the standards and procedures of the MWIS at least every 5 years.</p>	QP/PRC	5 Years

Part 2.2 – PERIODIC MAINTENANCE

(e) Doors and Metal Gates

Periodic maintenance tasks and actions	Concerned Party	Suggested Frequency
(i) Timber Doors		
<p><u>Inspection</u></p> <p>Visual inspection of all timber doors (including doors that are seldomly accessed) to identify defects such as</p> <ul style="list-style-type: none"> • Damaged or broken glass panel • Missing screws • Cracks in timber door panels • Deformed or damaged frames and panes • Misalignment of door panes • Difficulties in opening and closing • Defective hinge and closer <p>Please refer to Part 2.3 Corrective Maintenance for repairs and actions when defects are identified.</p> <p>For maintenance tasks and actions for fire-rated doors, please refer to section (g).</p>	PMC	5 Years
(ii) Metal Doors and Metal Gates		
<p><u>Inspection</u></p> <p>Follow Buildings Department’s circular letter dated 19 August 2022, Regular Inspection and Maintenance of Large Metal Gates, to carry out necessary inspections.</p>	AP/RI/RSE	5 Years

Part 2.2 – PERIODIC MAINTENANCE

(f) Waterproofing

Periodic maintenance tasks and actions	Concerned Party	Suggested Frequency
(i) Roofs, top roofs and flat roofs		
<p><u>Inspection</u></p> <p>Visual inspection of the opposite face of the waterproofed area for water seepage or damp spots annually, or after extreme weather and typhoons.</p> <p>Any other maintenance actions or tasks required for prevention of flooding according to Section A4.</p> <p>Non-destructive tests such as infrared thermography test, moisture content test, microwave tomography test and colour water ponding test, etc., should be applied as appropriate to identify the source and defect details before maintenance works to ensure the defective areas' size.</p> <p>Please refer to Part 2.3 Corrective Maintenance for repairs and actions when defects are identified.</p>	RI	10 Years
<p><u>Re-roofing</u></p> <p>Depending on the condition of the existing waterproofing construction, it may be more cost-effective to replace the existing waterproofing with a new one.</p> <p>Re-roofing works require clearance for the entire area to be re-roofed. All existing roof finishing, including tiles, screeding etc., should be removed until the roof slab is exposed. The building professionals should ensure that any structural defects at the exposed slab must be repaired. He / she should recommend the most suitable type of waterproofing to be adopted. The design of the waterproofing works should include an upstand and key, and incorporate insulation layers to reduce heat gain at the top floor.</p> <p>10 or 15-year warranty for the waterproofing works should be provided by the contractor. However, PMC and owners must take note of the conditions for the warranty.</p> <p>If, for any reason, the new waterproofing layer is applied on top of old roof finishing and waterproofing construction, the building professional must ensure that the resulting protective barrier height is still more than 1.1m high from the future finished roof level with the lowest 150mm built solid.</p>	RI/PRC	20 Years

Part 2.2 – PERIODIC MAINTENANCE

(g) Fire Resisting Materials

Periodic maintenance tasks and actions	Concerned Party	Suggested Frequency
<p>v. Fire-rated Doors Inspection and Actions Visual inspection and checking for</p> <ul style="list-style-type: none"> • Door can be self-closing • Fire seals and smoke seals at the top and sides of the door leaves are intact • Fire-rated glazing at the doors is not delaminated or becomes obscure / milky • Proper functioning of all ironmongeries • Deformation and damage to the door frame • Lubricate all moving parts to prevent wear and tear <p>vi. Fire Dampers</p> <p>Visual inspection and checking for defective fire dampers and associated parts.</p> <p>vii. Fire-rated Enclosures</p> <p>Visual inspection that the enclosures are not compromised, and that no building services, wiring, gas pipes, or water pipes are exposed inside escape staircases or fireman’s lift lobby annually, and always after works have been carried out within these areas.</p> <p>viii. Fire Retardant Paint/ Coatings</p> <p>When new works are carried out on fireman’s lift lobbies and protected exits, check that the finishing materials adopted comply with the fire performance requirements.</p>	<p>RI</p>	<p>10 Years</p>
<p>(i) Fire Safety Direction (For composite or residential building)</p>		
<p>Effective from 1 July 2007, any composite or domestic building (more than 3 storeys) that was constructed and for which the building plan was first submitted to the Building Authority for approval on or before 1 March 1987, or where no plans of the building works of the building were submitted on or before that date to the Building Authority for approval, shall be upgraded to provide better protection to the occupants in case of fire. The two enforcement authorities, BD and FSD, will issue respective Fire Safety Directions under their purview[#], requiring owners to improve the fire safety standard of their building/premises in accordance with the fire safety improvement measures under the FS(B)O. The OC and/or owners of a composite or domestic building are required to comply with all or any of the fire safety measures in the Fire Safety Direction.</p> <p>[#] BD is the enforcement authority in relation to the planning, design and construction of a building, while FSD is the one in relation to any fire service installation or equipment.</p>		

Part 2.2 – PERIODIC MAINTENANCE**(h) Mechanical Ventilation and Air-conditioning System**

Periodic maintenance tasks and actions	Concerned Party	Suggested Frequency
It is recommended to perform maintenance on various brands of air-conditioning systems in accordance with the operation and maintenance manual provided by the respective air-conditioning system manufacturer.		
(i) Window Type Air-conditioner		
Replace the air-conditioner	PMC	6 Years
(ii) Split Type Air-conditioner / Variable Refrigerant Volume (VRV) System		
Replace the split type air-conditioner / VRV system after considering the frequency of incidents and the repair record.	MVACC	6 Years
(iii) Air Handling Unit (AHU) / Primary Air Handling Unit (PAU) / Fan Coil Unit (FCU)		
Replace the AHU / PAU / FCU after considering the frequency of incidents, repair records, and the source of available parts in the market.	MVACC	15 Years
(iv) Chiller		
<p>Replace, if necessary, the critical parts of the chiller, such as the electrical sensor, compressor, evaporator, filter, condenser, filter, etc., or replace the whole chiller according to the coefficient of performance (CoP).</p> <p>CoP of a chiller is crucial to the overall energy consumption, which depends on many factors and the condition of chiller is a major factor. Therefore, MVACC should review the CoP with the Building Energy Code of the EMSD, which sets out the corresponding minimum CoP at full load for different types of chillers, to advise its replacement schedule.</p> <p>If there is more than 1 chiller in the building, a detailed replacement planning is recommended to ensure sufficient provision of services.</p>	MVACC	15 Years
(v) Mechanical Ventilation System		
Replace the ventilation fan and associated parts	PMC/MVACC	10 Years

Part 2.2 – PERIODIC MAINTENANCE

(i) Fire Services Installation

Periodic maintenance tasks and actions	Concerned Party	Suggested Frequency
<p>Pursuant to Regulation 8(b) of the Fire Service (Installations and Equipment) Regulations (Cap. 95B), the owner of any fire service installation or equipment (FSI) installed in the premises shall have such FSI inspected by a RFSIC at least once in every 12 months. So, all defective parts and components should be repaired and replaced annually.</p> <p>The following are 2 items to be replaced with suggested frequency.</p>		
<p>a. Automatic Fire Alarm (AFA) panel</p>		
<p>Replace the AFA panel and associated parts after considering the frequency of incidents, repair records, and the source of available parts in the market.</p>	<p>RFSIC</p>	<p>15 Years</p>
<p>b. Pump for Fire Services Installation</p>		
<p>Replace pump and associated parts.</p>	<p>RFSIC</p>	<p>20 Years</p>

Part 2.2 – PERIODIC MAINTENANCE

(j) Plumbing and Drainage System

Periodic maintenance tasks and actions	Concerned Party	Suggested Frequency
(i) Fresh Water / Flush Water Supply System / Cleansing Water Supply System / Irrigation System [Applied to the system including pump, water tank, piping, etc.]		
<p>Before the replacement of a pump, it is recommended to review the detailed information of the pump, such as its brand, frequency of incidents and repair records. If necessary, performance tests according to the requirement of BS EN ISO 9906 should be carried out.</p>		
a) <u>Water Pump Replacement</u>		
i) Fresh water pump <ul style="list-style-type: none"> • Replace the duty pump and associated parts • Replace the standby pump and associated parts 	PDC PDC	7 Years 12 Years
ii) Flush water pump <ul style="list-style-type: none"> • Replace the duty pump and associated parts • Replace the standby pump and associated parts 	PDC PDC	7 Years 12 Years
b) <u>Pipe and Valve Fittings Replacement</u>		
i) Replace fresh water pipe and fittings, including hanger	PDC	30 Years
ii) Replace flush water pipe and fittings, including hanger	PDC	30 Years
iii) Replace ball float valves of fresh water tanks and pressure reducing valves	PDC	10 Years
iv) Replace ball float valves of flush water tanks and pressure reducing valves	PDC	7 Years
(ii) Swimming Pool Filtration System		
a) <u>Water Pump Replacement</u> <ul style="list-style-type: none"> • Replace the water pump and associated parts 	PDC	7 Years
b) <u>Pipe and Valve Fittings Replacement</u> <ul style="list-style-type: none"> • Replace all water pipes and fittings • Replace ball float valves of water tanks 	PDC PDC	30 Years 10 Years
(iii) Drainage System (including Soil, Waste & Vent System, Rain Water System)		
a) <u>Water Pump Replacement</u>		
i) Replace the water pump and associated parts for the rainwater harvesting system / water recycling system	PDC	7 Years

Part 2.2 – PERIODIC MAINTENANCE

(j) Plumbing and Drainage System

Periodic maintenance tasks and actions	Concerned Party	Suggested Frequency
ii) Replace the submersible pump for the sump pit	PDC	7 Years
b) <u>Pipe Replacement</u>		
i) Replace all rainwater pipes, including vent pipes, with associated parts.	PDC/PRC	20 Years
ii) Replace all soil & waste pipes, including vent pipes, with associated parts.	PDC/PRC	20 Years
iii) Replace all pipes for the rainwater harvesting system / water recycling system	PDC/PRC	20 Years
(iv) Grease Trap / Petrol Interceptor		
<p><u>Inspection</u> Visual inspection to check any defects for concrete water tank / grease trap / petrol interceptor such as</p> <ul style="list-style-type: none"> • Crack • Concrete spalling • Rust stain <p>Please refer to Part 2.3 Corrective Maintenance for repairs and actions when defects are identified.</p>	PRC	10 Years

Part 2.2 – PERIODIC MAINTENANCE

(k) Electrical Installation

Periodic maintenance tasks and actions	Concerned Party	Suggested Frequency
(i) Periodic inspection, testing, and certification for fixed Electrical Installation (PITC)		
<p><u>Statutory Inspection</u> Carry out inspection, testing, and certification of electrical installations which exceeded 100 amperes at least once every 5 years under Electricity (Wiring) Regulations.</p> <p>After completion of the testing, inspection and overhaul of switchboards, the Periodic Test Certificate (Form WR2) should be completed, signed by REWs and RECs and submitted to the EMSD for endorsement together with the associated wiring schematic and test reports. After that, the certificate should be properly retained for future inspection by the EMSD.</p> <p>Once irregularity is found during inspection, necessary repairs should be carried out by a registered electrical contractor.</p>	REC	5 Years
(ii) Photovoltaic (PV) System		
<p>Replacement of the PV panels</p> <p>Replacement of the PV inverter and associated parts</p> <p>Please refer to Periodic Maintenance Part 2.2 (a) for the inspection and maintenance of the supporting structure of a PV system.</p>	REC REC	25 Years 25 Years

Part 2.2 – PERIODIC MAINTENANCE

(I) ELV and Security System

Please refer to Part 2.1 (I) for statutory criteria regarding Permit and License requirements for carrying out maintenance and repairs on security systems.

Periodic maintenance tasks and actions	Concerned Party	Suggested Frequency
<p><u>Security System and other ELV system</u></p> <p>Upgrade or replace the security system and/or its components such as CCTV camera, monitor, control panel, etc.</p>	REC	10 years
<p><u>Building Management System</u></p> <p>Upgrade or replace the system and the control panel.</p>	REC	10 years

Part 2.2 – PERIODIC MAINTENANCE

(m) Lift and Escalator Installation, and Permanent Suspended Working Platform

Periodic maintenance tasks and actions	Concerned Party	Suggested Frequency
(i) Lift Installation		
<p><u>Mandatory Examination</u></p> <p>Registered Lift Engineer (RLE) shall carry out a thorough examination of the lift and associated equipment or machinery with full load, and Form LE11 shall be submitted to the EMSD for the “Use Permit” of lifts in accordance with the Lifts and Escalators Ordinance (Cap. 618)</p>	RLE	5-yearly
<p><u>Audit and Assessment</u></p> <p>For aged lifts without modern safety devices, it is highly recommended to engage consultants/ contractors/ professionals to regularly carry out third-party audits/ risk assessments to identify potential risks and suggest short-term and long-term solutions. It is recommended that audit/assessment could be carried out during the statutory 5-yearly full load examination mentioned above. A comprehensive report could help with better planning of coming retrofitting and modernisation works.</p>	Independent Consultant/ RLC / Professional	5-yearly
<p><u>Lift Replacement/Modernisation Plan</u></p> <p>The Responsible Persons of the aged lifts, which have operated for over 20 years and/or are not equipped with modern safety devices, are highly encouraged to have a lift replacement/modernisation plan as equipment breakdowns become more frequent, and spare parts are likely to be unavailable or obsolete. The Responsible Persons are recommended to consider full replacement or major modernisation of these lifts depending on the actual situation.</p> <p>For example, if an aged lift has operated for over 30 years and missed all of the first four modern safety devices below, the Responsible Persons were recommended to full replace the lift within years (say, 5 years). If a lift has just operated for less than 20 years and only missed one or two of the first four modern safety devices, the Responsible Persons could consider modernising the lift to equip it with the missed devices for uplifting the lift’s safety.</p> <p>Modern safety devices that shall be equipped after major modernisation:</p> <ol style="list-style-type: none"> 1. Double brake system 2. Unintended car movement protection device 3. Ascending car overspeed protection device 4. Advanced car door mechanical lock and door safety edge 5. An intercom & CCTV system 6. Obstruction switch to protect suspension ropes 7. Automatic rescue devices/ Post-Volt-Dip-Operation Means <p>(Note: First 4 items shall be considered with priority)</p>		
(ii) Escalator Installation		
<p><u>Mandatory Examination</u></p> <p>Registered Escalator Engineer (REE) shall carry out a thorough examination of the escalator and associated equipment or machinery with brake load test, and Form LE12 shall be submitted to the EMSD for the “Use Permit” of escalators according to Lifts and Escalators Ordinance (Cap. 618).</p>	RESC	5-yearly

Part 2.2 – PERIODIC MAINTENANCE

(m) Lift and Escalator Installation, and Permanent Suspended Working Platform

<p><u>Escalator Replacement/Modernisation Plan</u></p> <p>The Responsible Persons of an aged escalator, which has operated for over 20 years and/or is not equipped with modern safety devices, are highly encouraged to have an escalator replacement/modernisation plan as equipment breakdowns become more frequent, and spare parts are likely to be unavailable or obsolete. The Responsible Persons are recommended to consider full replacement or major modernisation of the escalator depending on the actual situation.</p> <p>Modern safety devices that shall be equipped as far as possible:</p> <ol style="list-style-type: none"> 1. Skirt panel safety devices 2. Skirt panel deflector devices 3. Obstruction guards 4. Emergency stop switches 5. Landing floor plate safety devices 6. Auxiliary brake 7. Step sagging safety devices 8. Missing step safety devices 		
(iii) Permanent Suspended Working Platform		
Replace the entire suspended working platform installation or replace parts, e.g., nuts, pins, wire ropes, etc., as necessary. Only spare parts supplied by the manufacturer should be used for replacement.	SWPC/ CP/ CE	20 Years or frequency as suggested by the equipment manufacturer

Part 2.2 – PERIODIC MAINTENANCE

(n) Gas Supply System

Periodic maintenance tasks and actions	Concerned Party	Suggested Frequency
<p>A Registered Gas Contractor (RGC) is required to carry out repair and maintenance of gas installations to ensure the safe operation of the system in accordance with the Gas Safety Ordinance (Cap. 51).</p> <p>Users' instructions and maintenance requirements provided by the appliance manufacturer should be left with the responsible person(s) for the premises in accordance with Regulation 26 of the Gas Safety (Installation and Use) Regulations.</p> <p><u>Inspection</u></p> <p>Regular safety inspection of the gas supply system associated with gas pipework, gas valve, other associated parts, etc. The condition of the vent duct for gas pipes shall also be checked to ensure there is no blockage.</p> <p>Please refer to Part 2.3 Corrective Maintenance for repairs and actions when defects are identified.</p> <div data-bbox="252 994 919 1256" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Useful Tip</p> <p><u>Flexible Gas Tubing</u> The low pressure flexible gas tubing shall be approved by the Gas Authority. The flexible gas tubing must be replaced by RGC before the expiry date or if any defective conditions are found to ensure gas safety.</p> </div>	<p>RGSC/RGC</p>	<p>18 months</p>
<p><u>Replacement of Gas Pipe</u></p> <p>Replace corroded / damaged piping and associated parts and fittings</p> <p>In a building rehabilitation project, it is recommended that the condition of the service risers, gas pipes, and associated gas fittings, etc., be reviewed for consideration of replacement or rectification by RGSC/ RGC as a part of the project.</p> <p>At the chemical cleaning of external finishes in building rehabilitation, the chemical applied, whether acidic or alkaline, should be as mild as possible. The gas ducting and flue of the water heater should be properly protected to avoid damage by corrosive liquids.</p>	<p>RGSC/RGC</p>	<p>30 Years</p>

Part 2.2 – PERIODIC MAINTENANCE

(o) Carpark Control System

A carpark control system may be part of the building’s security system. In such case, please refer to Part 2.1 (l) on statutory criteria about Permit and License requirements for carrying out maintenance and repairs for security systems.

Periodic maintenance tasks and actions	Concerned Party	Suggested Frequency
<p><u>Assessment for Replacement</u></p> <p>New technologies for car park control emerge every year. It is recommended to assess the cost effectiveness of repairing an old control system versus replacing it with a new and modern one.</p>	<p>REC</p>	<p>20 Years</p>

Part 2.2 – PERIODIC MAINTENANCE

(p) Carpark EV Charging System

Periodic maintenance tasks and actions	Concerned Party	Suggested Frequency
<p><u>Statutory Inspection</u></p> <p>Carry out inspection, testing and certification of EV charging system at least once every five years as with other electrical installations under Electricity (Wiring) Regulations</p>	REC	5 Years
<p><u>Assessment for Replacement</u></p> <p>New technologies for EV charging every now and then. The demand for EV chargers will also likely increase over time. It is recommended to assess the cost effectiveness of repairing an old control system versus replacing it with a new and modern one or expanding the provisions in the building.</p>	REC	10 Years

Part 2.2 – PERIODIC MAINTENANCE

(q) Special Equipment and Facilities of Clubhouse

Periodic maintenance tasks and actions	Concerned Party	Suggested Frequency
(i) Clubhouse Equipment		
<p>Manufacturers' recommendations should be followed for the maintenance of all equipment for use by residents, and the maintenance should be carried out by the equipment supplier (ES).</p> <p>For items whose warranties have expired, it is recommended to assess the cost-effectiveness of repairing old defective equipment versus replacing it with a new and modern one.</p>	ES	5 Years
(ii) Swimming Pool		
Please refer to Part 2.2 (j) for Plumbing and Drainage System - Swimming Pool Filtration System	PDC	5 Years

Part 2.2 – PERIODIC MAINTENANCE

(r) External Areas and Landscaping Works

Periodic maintenance tasks and actions	Concerned Party	Suggested Frequency
(iii) External Area, including Paving, Green Roof, Planter, Play Equipment, etc.		
<p><u>Inspection</u></p> <p>Visual inspection of any defects in landscaped areas, such as</p> <ul style="list-style-type: none"> • Cracks on concrete structure due to plant growth or movement or abnormal shrinkage or failure of the structure • Leakage of planter • Defective paving tiles, such as cracks, missing and chipped tiles etc. • Any abnormal condition of the facilities 	PMC/LC	10 Years
(iv) Landscaping		
Follow the recommendations in Part 2.1	PMC	10 Years

Part 2.2 – PERIODIC MAINTENANCE

(s) Man-made Slopes and Retaining Walls

The periodic maintenance of man-made slopes, retaining walls and natural terrain hazard mitigation measures refer to the maintenance inspections by relevant professionals, e.g. RPE(G), according to the requirement in the Guide to Slope Maintenance (2023). The frequency of these inspections may be more frequent than a 10-year cycle, e.g. the frequency of Engineer Inspection should be once every five years for slopes and retaining walls in consequence-to-life Categories 1 and 2 and once every ten years for those in Category 3, unless otherwise specified in the slope feature specific maintenance manual.

Periodic maintenance tasks and actions	Concerned Party	Suggested Frequency
<p><u>Engineer Inspection and Maintenance of Man-made Slopes and Retaining walls</u></p> <p>Carry out engineer inspection for the following purposes:</p> <p>(a) to determine if Stability Assessments have previously been carried out and, if so, to review previous Stability Assessment reports to check whether the engineering approach used, the assumptions and the conclusions made in these reports are reasonable in light of current practice and safety standards,</p> <p>(b) to identify all visible changes and signs of distress, including landslides that have taken place at or in the vicinity of the slope or retaining wall, in particular changes since the previous Stability Assessment if this has been carried out, and any discrepancies between records and site conditions, which could have implications for the stability of the slope or retaining wall, and to judge whether these might be significant,</p> <p>(c) to re-assess the consequence-to-life category of the slope or retaining wall,</p> <p>(d) to check that Routine Maintenance Inspections have been carried out and documented satisfactorily,</p> <p>(e) to assess the adequacy of routine maintenance works and supplement the list of man-made items requiring routine maintenance, as necessary,</p> <p>(f) to re-assess the required frequency of Routine Maintenance Inspections, Engineer Inspections for Maintenance and Regular Checks of Buried Water-carrying Services,</p> <p>(g) to look for and consider the implications of problems that are not explicitly included in the list of man-made items requiring routine maintenance, and bring to the attention of the owner or party required to maintain the land any immediate and obvious danger noted and, if necessary, recommend emergency measures (e.g. repair works or detailed investigations),</p> <p>(h) to identify the presence of exposed and buried water-carrying services on or in the vicinity of the slope or retaining wall (including relevant areas outside the lot boundary), check for signs of leakage of the services, and, in case signs of leakage are identified, alert relevant services' owners, maintenance parties or relevant authorities to take prompt actions (e.g. immediate detailed checks, regular checks, repair or re-routing of the services), as necessary,</p>	<p>RPE(G)</p>	<p>5 Years for man-made slopes and retaining walls with consequence-to-life categories 1 and 2;</p> <p>10 years for man-made slopes and retaining walls with consequence-to-life category 3</p>

Part 2.2 – PERIODIC MAINTENANCE

(s) Man-made Slopes and Retaining Walls

Periodic maintenance tasks and actions	Concerned Party	Suggested Frequency
<p>(i) to check that the Regular Checks of Buried Water-carrying Services and/or Regular Monitoring of Special Measures (if required) have been carried out and documented satisfactorily,</p> <p>(j) to advise whether a Stability Assessment of the slope or retaining wall is necessary,</p> <p>(k) to recommend the necessary preventive maintenance works (Chapter 5), and</p> <p>(l) to prepare or update the Maintenance Manual to include all relevant information extracted from the previous Stability Assessment and the desk study and site inspection(s) from this Engineer Inspection for Maintenance.</p> <p><u>Regular Monitoring of Special Measures</u></p> <p>A monitoring schedule should normally be included in the Maintenance Manual of a slope. If there are special measures but there is no such Monitoring Schedule in the Maintenance Manual, the owner or party required to maintain the slope or retaining wall should commission the engineer undertaking the Engineer Inspection for Maintenance to prepare one.</p> <p>Please refer to the maintenance manuals of the slopes / retaining walls, Section 3.5 of Geoguide 5 and the Maintenance Manual of the slope / retaining wall for details.</p>	RPE(G)	As recommended in the slope specific Maintenance Manual
<p><u>Engineer Inspection and Maintenance for Natural Terrain Hazard Mitigation Works</u></p> <p>Engineer Inspections for Maintenance are not required unless specified otherwise by the designer or in special provisions, e.g. the requirements under the Natural Terrain Clause or delineation of the “Green-hatched-black” area in the lease document. In cases where unusual conditions or problems are observed, e.g. a check dam filled up with a large amount of landslide debris or significant movement observed at boulders supported by buttresses, the owner or the party required to maintain the mitigation measures should seek advice from a professionally-qualified geotechnical engineer.</p> <p><u>Special Follow-up Review for Defence Measures Involving Steel Flexible Barrier</u></p> <p>Where steel flexible barriers are erected as a defence measure, a Special Follow-up Review should be triggered when major defects or anomalies are observed. Please refer to Part 2.3(s) of this Guideline for details.</p>	RPE(G)	As necessary
	RPE(G)	When necessary

Part 2.2 – PERIODIC MAINTENANCE

(t) Signages and Signboards

Please refer to Part 2.1 (t) concerning the Signboard Control System.

Periodic maintenance tasks and actions	Concerned Party	Suggested Frequency
<p><u>For signboards subject to the Signboard Validation Scheme (SVS)</u></p> <p>Inspection, strengthening (if required) and certification of their structural safety as required under SVS</p>	<p>AP / RI / RSE / PRC</p>	<p>5 years</p>
<p><u>For all signboards - Inspection</u></p> <p>Visual inspection of structural safety (e.g. structural integrity of supporting frame)</p>	<p>AP / RI / RSE</p>	<p>10 Years</p>

Part 2.3 – CORRECTIVE MAINTENANCE

2.3 Corrective Maintenance

2.3.1 What is corrective maintenance

Corrective maintenance refers to repairs or replacements when defects are identified so that the defective item or installation can be restored to its original functions.

It is not feasible to provide an exhaustive list of repairs or replacements required for all items, as the nature and extent of defects can vary greatly depending on the specific circumstances. Therefore, the recommended approach for corrective maintenance is outlined in this section as general guidelines for how to address defects when they arise. The consultant responsible for preparing the maintenance manual should leverage their expertise to estimate the costs associated with corrective maintenance, in order to project the overall costs of preventive maintenance over time.

2.3.2 Repair works, Minor Works and works requiring Approval and Consent

In Hong Kong, approval and consent from the Building Authority are required for carrying out building works, except for "minor works" under the simplified requirements of the Minor Works Control System (MWCS) and "exempted works". The Buildings Ordinance provides a comprehensive definition of "building works", explicitly stating that "repair" is included.

When undertaking building repair works that are neither minor nor exempted, the same procedures as those for constructing a new building must be followed. The building owners must engage an Authorized Person (AP), and usually also a Registered Structural Engineer (RSE), to design the repair works and submit a proposal to the Buildings Department for approval and consent. The repair works must then be carried out by a Registered General Building Contractor (RGBC)/Registered Specialist Contractor (RSC) under the supervision of the AP and RSE.

If a repair work falls within the definition of any of the minor works items, it can be carried out under the simplified requirements of the MWCS. A total of 187 items of building works that are minor works are subject to the control under the MWCS. The MWCS also introduced 30 items of designated exempted works (DEW), of which the complexity and risk to safety are lower than that of the minor works. In accordance with the BO, the DEW may be commenced without obtaining prior approval of plans and consent to commencement of works from the BD, and without the need to appoint AP and registered contractors to carry out the works. BD offers a highly user-friendly interactive mobile APP for building owners and professionals to check and understand MWCS. The APP is called "Quick Guide for Minor Works".

If a repair work satisfies all the criteria of an exempted work, a prescribed registered contractor need not be involved. However, it is always advisable to engage experienced and reputable contractors to carry out the repairs.

Part 2.3 – CORRECTIVE MAINTENANCE

2.3.3 Common corrective maintenance and the considerations

The following building elements are covered:

- (a) Structural Elements
- (b) External Wall Finishes
- (c) Internal Finishes
- (d) Curtain walls, Windows, Glass doors and Glass features
- (e) Doors and Metal Gates
- (f) Waterproofing
- (g) Fire Resisting Materials
- (h) Mechanical Ventilation and Air-conditioning System
- (i) Fire Service Installation
- (j) Plumbing and Drainage system
- (k) Electrical Installation
- (l) ELV and Security System
- (m) Lift and Escalator Installation, and Permanent Suspended Working Platform
- (n) Gas Supply System
- (o) Carpark Control System
- (p) Carpark EV Charging System
- (q) Special Equipment and Facilities of Clubhouse
- (r) External Area and Landscaping Works
- (s) Man-made Slopes and Retaining Walls
- (t) Signages and Signboards

Part 2.3 – CORRECTIVE MAINTENANCE

(a) Structural Elements

Corrective maintenance tasks and actions	Concerned Party
<p><u>Remarks</u></p> <p>Structural repair works may be carried out under MWCS and can be undertaken by a Prescribed Registered Contractor. Or, they may require approval and consent from the Building Authority and must be undertaken by a RGBC under the supervision of an AP and RSE. Before starting any repair works, building professionals should be consulted to provide advice on identified defects in structural elements.</p> <p><u>Common Repair Works</u></p> <p>The following are common repair works to spalling at structures:</p> <p>(i) <u>Structural Crack Repair</u></p> <p>The repair methods to be applied depend on the location, width and extent of cracks and include:</p> <ul style="list-style-type: none"> • Brush cement grout • Open up of larger cracks and conducting patch repair • Pour low viscosity polymer resin • Pressurized injection of epoxy resin <p>(ii) <u>Patch Repair</u></p> <ul style="list-style-type: none"> • Chisel the damaged concrete structure until the steel bars are exposed and remove the rust • Replace reinforcement is required if the steel bars are found losing 15% or more of the size of the original steel design. Adequacy of the joint lap between the new and old steel bars should be checked • If primer is proposed to be applied on steel bars, the manufacturer’s specification for the primer should be followed • Apply specified concrete repair mortar to the relevant location <p>(iii) <u>Recasting</u></p> <p>Recasting of concrete and replacing existing defective steel reinforcement for structural elements may be required when the spalling is extensive, or when significant corrosion of existing steel reinforcement is observed. Temporary propping may be required when there is excessive deflection and/or cracking.</p> <p>(iv) Check the quality of work</p> <p>Random hammer tapping should be conducted to check the soundness of the repair material and surface hardness.</p>	<p>PMC/PRC</p>

Part 2.3 – CORRECTIVE MAINTENANCE

(b) External Wall Finishes

Corrective maintenance tasks and actions	Concerned Party
<p><u>Common Repair Work</u></p> <p><u>Repainting and Retiling</u></p> <p>If the external repainting work involves not only adding a new coat of paint but also requires the repair or removal of the rendering layer underneath, the works need to follow the minor work procedures if the height of the repair is more than 3m from the ground. Repairs of external wall tiles that are located above 3m from the ground will also be considered minor works. Laying, repair, or removal of any external rendering, external wall tile, or roof finishes of a building may be carried out under the simplified requirements of MWCS. The works may be carried out by a PRC.</p> <p>When retiling works are carried out, care must be taken to ensure all old renderings are removed and the substrate – the concrete external wall – is exposed to receive the new finishing. Also, a careful selection of materials, including rendering, tile adhesive, and tile grout, is necessary to ensure that they are compatible with each other and will not cause efflorescence.</p> <p><u>Cladding</u></p> <p>Cladding repair works are minor works provided that they are carried out in accordance with the original approved design, construction and materials. The repair must be undertaken by a PRC.</p>	<p>PMC/PRC</p>

Part 2.3 – CORRECTIVE MAINTENANCE

(c) Internal Finishes

Corrective maintenance tasks and actions	Concerned Party
<p><u>Common Repair Works</u></p> <p>Repair works to interior finishes depend on the type and material of existing finishing. Depending on the situation, it might be more cost-effective if the internal finishing is replaced rather than repaired.</p> <p><u>Repair works to internal claddings</u></p> <p>Repair works to internal claddings may be minor works or exempted works depending on the height of the claddings. If the repair works are minor, they must be undertaken by a PRC.</p> <p><u>Repair works to fixings to concrete soffits supporting heavy internal fixtures</u></p> <p>RPE’s structural advice on the design of the fixings must be obtained such that the required structural loading can be provided. If the repair works are minor works, they must be undertaken by a PRC.</p>	<p>PMC/PRC</p>

Part 2.3 – CORRECTIVE MAINTENANCE

(d) Curtain Walls, Windows, Glass Doors and Glass Features

Corrective maintenance tasks and actions	Concerned Party
<p><u>Repair Works to Curtain Wall</u></p> <p>All repair works should be carried out in accordance with the original design. If there are any changes to the material, detailing or dimensions from the original design, the works cannot be considered a repair. New approval and consent under the Buildings Ordinance must be obtained prior to the commencement of any works.</p> <p>Provided that the repair works fall within the description of minor works items, the repair works can be carried out through the simplified requirements of the MWCS. For example, replacing glass panes on the curtain wall is a minor work.</p> <p>For the repair of structural elements of the skylight, if the works are carried out in accordance with the original design, they can be carried out under the MWCS. Otherwise, prior approval of the plans and consent from the BD are required to be obtained before the commencement of the works.</p> <p><u>Repairs to Windows or Window Walls</u></p> <p>Repairs to windows, if falling within the description of minor works items, can be carried out by a PRC.</p> <p>All defective window components which may affect window safety, e.g. defective or corroded screws, rivets and broken or cracked glass panes, should be replaced. Any new components should be of such material and size not inferior to that of the original design. The specified fire resistance capability of windows should also be maintained after rectification.</p> <p>Other defective window components that may not affect window safety, e.g. the ageing of window gaskets affecting the smooth operation of windows or resulting in water leakage, should also be repaired or replaced.</p>	<p>PMC/ PRC</p>

Part 2.3 – CORRECTIVE MAINTENANCE

(e) Doors and Metal Gates

Corrective maintenance tasks and actions	Concerned Party
<p><u>Repair Works to Timber Doors</u></p> <p>Often, the repairs to doors concern ironmongeries of the door rather than the door leaf or door frame. The works should be carried out by reputable or experienced workmen.</p> <p>Whenever a defected door needs to be replaced with a new one, please check whether a fire rating is required for that door. The PMC should check the approved plans.</p> <p><u>Repair Works to Metal Doors and Metal Gates</u></p> <p>Repair works to metal gates of height more than 3.2m requires approval and consent and must be carried out by a RGBC under the supervision of an AP and RSE.</p> <p>Repair works to metal gates of height not more than 3.2m, if falling within the description of minor works items, can be carried out through the simplified requirements of the MWCS by a PRC.</p> <p>Apart from the metal gate, repairs to the parent structures that provide supports to the gate may also be required. Please refer to part (a).</p>	<p>PMC/PRC</p>

Part 2.3 – CORRECTIVE MAINTENANCE

(f) Waterproofing

Corrective maintenance tasks and actions	Concerned Party
<p><u>Repair of waterproofing</u></p> <p>Laying or repair of roof finishes including waterproofing of a building may be carried out under the simplified requirements of the MWCS. The works may be carried out by PRCs.</p> <p><u>Patch repair</u></p> <p>The repair material used should be compatible with the existing one, and the new material applied should be adequate to overlap and bond with the old materials. The manufacturer’s instructions should always be followed for the application.</p> <p><u>Re-roofing</u></p> <p>Please refer to Periodic Maintenance Part 2.2 (f)</p>	<p>PMC/ PRC</p>

Part 2.3 – CORRECTIVE MAINTENANCE

(g) Fire Resisting Materials

The GBP, structural plan, alteration and addition plan approved by the Building Authority, plans and details of minor works commenced or carried out under the simplified requirements of the Minor Works Control System must be referred to when carrying out any repairs or replacement of fire resisting materials including fire-rated doors, fire dampers, fire-rated enclosures, fire retardant paint etc.

Please refer to the descriptions in Part 2.1 (g).

Corrective maintenance tasks and actions	Concerned Party
<p><u>Replacement</u></p> <p>When existing fire-rated material needs to be replaced, the new materials / new construction must</p> <ul style="list-style-type: none"> • meet the required fire rating for structure, integrity and insulation as stated in the approved building plans. • have been tested and certified the certification by an accredited laboratory confirming that the material can meet the above. 	<p>PMC/RI/ AP/RSE/PRC</p>

Part 2.3 – CORRECTIVE MAINTENANCE

(h) Mechanical Ventilation and Air-conditioning System

Corrective maintenance tasks and actions	Concerned Party
<p><u>Common Defects</u></p> <p>The following are common defects of mechanical ventilation and air-conditioning systems:</p> <ul style="list-style-type: none"> • Water dripping • Not cool enough or not warm enough • No air movement • Abnormal sounds of motor • Noisy blowers • Abnormal vibration of machines • Poor indoor air quality • Rust stains on the machine surface or supporting frame <p><u>Possible Repair Works</u></p> <p>The following are possible repair works to be carried out once any defects are found:</p> <ul style="list-style-type: none"> • Clean air filters, evaporator, diffusers, fan blades of the air blower, drain pan with hose and other components • Replace insulation material • Lubricate all moving parts • Repair/replace defective parts and components • Tighten the screws and bolts of each component • Replace the anti-vibration material or parts • Clean the surface corrosion and touch-up paintwork 	<p>PMC/ MVACC</p>

Part 2.3 – CORRECTIVE MAINTENANCE

(i) Fire Service Installation

Corrective maintenance tasks and actions	Concerned Party
<p><u>Common Defects</u></p> <p>The following are common defects of fire service installation:</p> <ul style="list-style-type: none"> • Defective parts and components • False alarm or warning signals • Mal-function of the water pump • Pipe water leakage • Mal-function of the control panel • Non-functioning of equipment <p><u>Possible Repair Works</u></p> <p>The following are possible repair works to be carried out once any defects are found:</p> <ul style="list-style-type: none"> • Repair/replace defective parts and components of pumping system • Fix the electrical wiring problem of the control panel • Replace defective equipment <p><u>Remarks</u></p> <p>After completion of repair work, the RFSIC shall issue the Certificate of Fire Service Installations and Equipment (F.S. 251) <u>within 14 days</u> to the owner for record-keeping and forward a copy to the Director of Fire Services.</p> <p>It is recommended that the maintenance works should follow the FSI manufacturers' instructions and appropriate standards.</p> <p>All FSIs should undergo maintenance works carried out by the RFSIC to ensure their effective and normal functioning, following the requirements outlined in the Codes of Practice for Minimum Fire Service Installations and Equipment and Inspection, Testing and Maintenance of Installations and Equipment.</p> <p>If the FSIs, such as the sprinkler system, fire alarm system, etc., are required to be suspended overnight or more than 24 hours continuously, the RFSIC should notify the FSD and advise the owner/ building manager to take preventative measures to mitigate the risk during the suspended periods.</p>	<p>PMC/ RFSIC</p>

Part 2.3 – CORRECTIVE MAINTENANCE

(j) Plumbing and Drainage System

Corrective maintenance tasks and actions	Concerned Party
<p>(i) Fresh Water / Flush Water Supply System / Cleansing Water Supply System, etc. [Applied to the system including pump, water tank, piping, etc.]</p>	
<p><u>Common Defects</u></p> <p>The following are common defects of plumbing systems:</p> <ul style="list-style-type: none"> • Insufficient water pressure or flows or no water supply • Pipe water leakage • Brownish water / grit and deposit • Noisy water pumps • Poor water quality • Overflow from the water tank • Excess water pressure • Power supply or broadband service for Automatic Meter (AMR) / Advanced Meter Infrastructure (AMI) facilities fails • Rusting of pump surface or supporting frame <p><u>Possible Repair Works</u></p> <p>The following are possible repair works to be carried out once any defects are found:</p> <ul style="list-style-type: none"> • Repair/replace defective parts or components of the pumping system • Cleanse water tanks and other parts • Fix the electrical wiring problem of the pumping control system • Repair/replace defective ball float valves • Repair/replace defective pressure reducing valves • Repair/ reinstate the power supply or broadband service for Automatic Meter Reading (AMR) / Advanced Meter Infrastructure (AMI) facilities • Repaint the pump surface or supporting frame 	<p>PMC/PDC</p>
<p>(ii) Swimming Pool Filtration System</p>	
<p><u>Common Defects</u></p> <p>The following are common defects of swimming pool filtration systems:</p> <ul style="list-style-type: none"> • Insufficient water pressure or flows or no water supply • Poor water quality • Pipe water leakage • Noisy water pumps • Mal-function of the control panel • Rusting of pump surface or supporting frame • Overflow from the water tank <p><u>Possible Repair Works</u></p>	<p>PMC/PDC</p>

Part 2.3 – CORRECTIVE MAINTENANCE

(j) Plumbing and Drainage System

Corrective maintenance tasks and actions	Concerned Party
<p>The following are possible repair works to be carried out once any defects are found:</p> <ul style="list-style-type: none"> • Repair/replace defective parts or components • Adjust the water filtration system • Fix the electrical wiring problem of the pumping control system • Repair/replace defective ball float valves • Repaint the pump surface or supporting frame 	
<p>(iii) Drainage System (including Soil, Waste & Vent System, Rain Water System)</p>	
<p><u>Common Defects</u></p> <p>The following are common defects of drainage systems:</p> <ul style="list-style-type: none"> • Insufficient water pressure or flows • Rusting of pump surface or supporting frame • Corroded pipe • Pipe water leakage • Noisy water pumps • Mal-function of the control panel • Pipe blockage • Deformed or collapsed underground drainage pipe <p><u>Possible Repair Works</u></p> <p>The following are possible repair works to be carried out once any defects are found:</p> <ul style="list-style-type: none"> • Repair/replace defective parts or components of the pumping system • Fix the electrical wiring problem of the pumping system • Repaint the pump surface or supporting frame • Hydro jet cleaning • Repair defective underground drainage sections by using resin drain liner • Replace the underground drainage pipe with excavation methods if the drainage is dislocated, broken, collapsed, or found to have cracks, open-joint, settlements, etc. • The repair/replacement of aboveground and underground drains meeting the requirements of relevant minor works items may be carried out under the MWCS. The works may be carried out by a PRC. 	<p>PMC/PDC</p>
<p>(iv) Grease Trap / Petrol Interceptor</p>	
<p><u>Common Defects</u></p> <p>The following are common defects of grease trap/petrol interceptor:</p> <ul style="list-style-type: none"> • Crack 	<p>PRC</p>

Part 2.3 – CORRECTIVE MAINTENANCE

(j) Plumbing and Drainage System

Corrective maintenance tasks and actions	Concerned Party
<ul style="list-style-type: none"> • Concrete spalling • Exposed reinforcement • Rust stain <p><u>Possible Repair Works</u></p> <p>The following are possible repair works to be carried out once any defects are found:</p> <p>(i) <u>Patch Repair</u></p> <ul style="list-style-type: none"> • Chisel the damaged concrete structure until the steel bars are exposed and remove the rust • Replace reinforcement is required if the steel bars are found losing 15% or more of the size of the original steel design • Apply specified concrete repair mortar to the relevant location <p>(ii) <u>Structural Crack Repair</u></p> <p>The repair methods to be applied depend on the location, width and extent of cracks and include:</p> <ul style="list-style-type: none"> • Brush cement grout • Open up of larger cracks and conducting patch repair • Pour low viscosity polymer resin • Pressurized injection of epoxy resin <p><u>Remarks</u></p> <p>If there are extensive defects, Qualified Professionals should be consulted for further investigation. If there is an imminent danger, statutory departments should be informed immediately.</p>	

Part 2.3 – CORRECTIVE MAINTENANCE

(k) Electrical Installation

Corrective maintenance tasks and actions	Concerned Party
(i) General Electrical Installation (i.e. Main & Sub-main switchgear, MCB Board)	
<p><u>Common Defects</u></p> <p>The following are common defects of electrical installation:</p> <ul style="list-style-type: none"> • System breakdown • Sudden or frequent fuse or circuit breaker cut-off • Heating of switches & wires • Sudden large power consumption • Electric sparks or shocks <p><u>Possible Repair Works</u></p> <p>The following are possible repair works to be carried out once any defects are found:</p> <ul style="list-style-type: none"> • Replace defective parts or components of electrical installation • Tighten the fixing screws of all cable / busbar termination • Tighten cable terminations and earth connections 	PMC/REC
(ii) Emergency Generator	
<p><u>Common Defects</u></p> <p>The following are common defects of emergency generators:</p> <ul style="list-style-type: none"> • Abnormal noise of engines • Oil leakage • Operation failure <p><u>Possible Repair Works</u></p> <p>The following are possible repair works to be carried out once any defects are found:</p> <ul style="list-style-type: none"> • Lubricate engine parts • Fix fuel pipes • Repair/replace defective parts or components • Refill fuel tank 	PMC/REC
(iii) Photovoltaic (PV) System	
<p><u>Common Defects</u></p> <p>The following are common defects of PV systems:</p> <ul style="list-style-type: none"> • System breakdown • Defective PV panel 	PMC/REC

Part 2.3 – CORRECTIVE MAINTENANCE

(k) Electrical Installation

Corrective maintenance tasks and actions	Concerned Party
<p><u>Possible Repair Works</u></p> <p>The following are possible repair works to be carried out once any defects are found:</p> <ul style="list-style-type: none">• Repair/replace defective parts or components of the PV system, including the supporting structures.• Fix the electrical wiring problem• Replace PV panel <p>Please refer to Corrective Maintenance Part 2.3 (a) for the inspection and maintenance of the supporting structure of the PV system.</p>	

Part 2.3 – CORRECTIVE MAINTENANCE

(I) ELV and Security System

Please refer to Part 2.1 (I) on statutory criteria about Permit and License requirements for carrying out maintenance and repairs for security systems.

Corrective maintenance tasks and actions	Concerned Party
(i) Security, CABD systems and Other ELV systems	
<p><u>Common Defects</u></p> <p>The following are common defects of security, CABD systems and other ELV systems:</p> <ul style="list-style-type: none"> • System breakdown • Equipment failures such as cameras, monitors, control panels, etc. • Poor image or signal <p><u>Possible Repair Works</u></p> <p>The following are possible repair works to be carried out once any defects are found:</p> <ul style="list-style-type: none"> • Repair/replace defective parts or components • Fix electrical wiring problems or loose connections • Replace defective equipment • Clean the equipment 	PMC/REC
(ii) Building Management System	
<p><u>Common Defects</u></p> <p>The following are common defects of building management systems:</p> <ul style="list-style-type: none"> • System breakdown • Equipment failures <p><u>Possible Repair Works</u></p> <p>The following are possible repair works to be carried out once any defects are found:</p> <ul style="list-style-type: none"> • Repair/replace defective parts or components • Fix electrical wiring problems or loose connections • Replace defective equipment 	PMC/REC

Part 2.3 – CORRECTIVE MAINTENANCE

(m) Lift and Escalator Installation, and Permanent Suspended Working Platform

Corrective maintenance tasks and actions	Concerned Party
(i) Lift Installation	
<p>Registered Lift Contractor (RLC) shall be engaged to undertake the lift maintenance works in accordance with the Lifts and Escalators Ordinance (Cap. 618).</p> <p><u>Common Defects</u></p> <p>The following are common defects of lift installation:</p> <ul style="list-style-type: none"> • Breakdown or trapping • Abnormal vibration • Excessive noise during operation • Unstable operation (controller / electronic faults) • Poor condition or performance of parts/components due to rust / dirt / wear & tear • Poor car levelling • Defective door safety edges • Extensive oil leakage of gearbox • Doors not closing properly (mechanical faults) • Risk items found in the regular inspection, examination, audit or assessment <p><u>Possible Repair Works</u></p> <p>The following are possible repair works to be carried out once any defects are found:</p> <ul style="list-style-type: none"> • Repair/replace/overhaul the defective parts or components • Check and clean the contacts of switches and other electronic devices • Re-condition and lubricate the moving and rotating parts such as ropes, bearings, rollers, pulleys, moving arms, etc. • Adjust all affected parts as required to ensure function of lift to be resumed normally • Tighten all electrical connections • Clean accumulated dirt at bottom door guides and lift pit • Check to ensure the tightness and stability of structural screws and nuts • Install new devices and equipment (may be new I&T solutions) as risk reduction measures <p><u>Remarks</u></p> <p>Separate lift work orders for fault repair in the past years (say, 3 years) shall be studied in order to have reasonable estimation.</p> <p>If replacement work of lift doors is required, check both the integrity and insulation criteria for the fire resistance requirement of the actual site conditions.</p>	<p>RLC</p>

Part 2.3 – CORRECTIVE MAINTENANCE

(m) Lift and Escalator Installation, and Permanent Suspended Working Platform

(ii) Escalator Installation	
<p>Registered Escalator Contractor (RESC) shall be engaged to undertake the escalator maintenance works in accordance with the Lifts and Escalators Ordinance (Cap. 618).</p> <p><u>Common Defects</u></p> <p>The following are common defects of escalator installation:</p> <ul style="list-style-type: none"> • Breakdown and stoppage • Poor condition or performance of parts/components due to rust / dirt / wear & tear • Abnormal vibration • Ageing and damaged handrails • Handrail speed fail to synchronise with the steps • Damaged steps and comb plates • Excessive noise during operation (poor condition of chain and rollers) • Failure of safety devices • Risk items found in the regular inspection, examination, audit or assessment <p><u>Possible Repair Works</u></p> <p>The following are possible repair works to be carried out once any defects are found:</p> <ul style="list-style-type: none"> • Repair/replace/overhaul the defective parts or components • Check and clean the contacts of switches and other electronic devices • Re-condition and lubricate the moving and rotating parts such as chain, bearings, rollers, pulleys, moving arms, etc. • Adjust all affected parts as required to ensure the function of the escalator can resume normally • Replace the damaged handrails / steps /comb plates • Clean accumulated dirt at the escalator truss • Check to ensure the tightness and stability of structural screws and nuts • Install new devices and equipment (may be new I&T solutions) as risk reduction measures <p><u>Remarks</u></p> <p>Separate escalator work orders for fault repair in the past years (say, 3 years) shall be studied in order to have a reasonable estimation.</p>	<p>RESC</p>

Part 2.3 – CORRECTIVE MAINTENANCE

(m) Lift and Escalator Installation, and Permanent Suspended Working Platform

(iii) Permanent Suspended Working Platform	
<p><u>Common Defects</u></p> <p>The following are common defects of suspended working platforms:</p> <ul style="list-style-type: none"> • Out of function • Bad contact or malfunction of the switch and control • Switches or electrical devices are broken / damaged • Ropes noted wear, distortion, kinks, corrosion, etc. • Poor conditions, such as cracks, broken members, deformation, corrosion, or excessive wear, were noted on the parts of the suspended working platform • Abnormal vibration • Excessive noise during operation • Loosening, corrosion, or deformation was noted on the anchor for independent safety rope • Risk items found in the regular inspection, examination, or testing <p><u>Possible Repair Works</u></p> <p>The following are possible repair works to be carried out once any defects are found:</p> <ul style="list-style-type: none"> • Repair/replace/overhaul the defective parts or components • Check and clean the contacts of switches and other electronic devices • Re-condition and lubricate the moving and rotating parts, such as ropes, pulleys, moving arms, etc. • Tighten all electrical connections • Clean accumulated debris in the platform • Check to ensure the tightness and stability of the anchor for independent safety rope <p>Remarks:</p> <p>Pursuant to Regulation 20(1 and 2) of the Factories and Industrial Undertaking (Suspended Working Platforms) Regulations, Cap. 59 section 7, suspended working platforms are subject to inspections before use. Please refer to Part 2.1 (m) (iii) for details.</p>	<p>SWPC</p>

Part 2.3 – CORRECTIVE MAINTENANCE

(n) Gas Supply System

Corrective maintenance tasks and actions	Concerned Party
<p><u>Common Defects</u></p> <p>The following are common defects of gas supply systems:</p> <ul style="list-style-type: none"> • Unusual odors due to gas leakage • Defective or corroded service risers, gas pipes, and associated gas fittings • Defective gas appliances • Defective gas installation or equipment in LPG compound and cylinder stores <p><u>Possible Repair Works</u></p> <p>The following are possible repair works to be carried out once any defects are found:</p> <ul style="list-style-type: none"> • Repair corroded parts • Replace defective parts and components • Replace defective equipment <p><u>Remarks</u></p> <p>If imminent danger is identified, registered gas supply company and statutory departments should be informed immediately.</p> <div style="border: 1px solid black; padding: 10px; margin-top: 20px;"> <p>Useful Tip</p> <p><u>Domestic Gas Appliances</u></p> <p>All models of domestic gas appliances shall have the written approval of the Gas Authority (i.e. the Director of Electrical and Mechanical Services) and bear a “GU” mark in accordance with the Gas Safety (Miscellaneous) Regulations (Cap. 51F).</p> </div>	<p>PMC/ RGSC/RGC</p>

Part 2.3 – CORRECTIVE MAINTENANCE

(o) Carpark Control System

A carpark control system may be part of the building's security system. In such case, please refer to Part 2.1 (l) on statutory criteria about Permit and License requirements for carrying out maintenance and repairs for security systems.

Corrective maintenance tasks and actions	Concerned Party
The required repair depends on the type of car park control system and the defects involved.	PMC/REC

Part 2.3 – CORRECTIVE MAINTENANCE

(p) Carpark EV Charging System

Corrective maintenance tasks and actions	Concerned Party
The required repair depends on the type of EV charging system and the defects involved.	PMC/REC

Part 2.3 – CORRECTIVE MAINTENANCE

(q) Special Equipment and Facilities of Clubhouse

Corrective maintenance tasks and actions	Concerned Party
(i) Equipment	
<p>The required repair depends on the type of equipment and the defects involved.</p> <p>If the warranty of an equipment has expired, it is recommended to assess the cost-effectiveness of repairing the equipment versus replacing it with a new, modern one.</p>	PMC/ES
(ii) Swimming Pool	
<p>Please refer to Part 2.3 (j) for Plumbing and Drainage System - Swimming pool filtration system.</p>	PMC/PDC

Part 2.3 – CORRECTIVE MAINTENANCE

(r) External Area and Landscaping Works

Corrective maintenance tasks and actions	Concerned Party
<p>(i) External Area, including Paving, Green Roof, Planter, Play Equipment etc.</p>	
<p>The following are repair works likely to be required for external areas:</p> <ul style="list-style-type: none"> • Repair cracks on concrete structures • Repair/replace defective finishes • Repair/replace defective facilities • Clear drainage blockage • Repair/replace fencing <p><u>Play Equipment</u></p> <p>The following are repair works likely to be required for play equipment:</p> <ul style="list-style-type: none"> • Replace defective floor mats • Replace or tighten bolts, screws, or nails of play equipment • Remove rust and repaint the play equipment • Repair/replace defective play equipment <p>If there are extensive defects of play equipment, a qualified safety inspector should be arranged to conduct further detailed inspection and proper repair.</p>	<p>PMC/ PRC/LC</p>

Part 2.3 – CORRECTIVE MAINTENANCE

(s) Man-made Slopes and Retaining Walls

According to the BO, slope repair works (including ground investigation in the scheduled areas), except works that are exempted in accordance with section 41(3) of the BO or minor works that may be carried out under the simplified requirements of the Minor Works Control System, are building works requiring approval and consent from the Buildings Department, and they must be carried out by a RGBC/ Registered Specialist Contractor (Site Formation)/ Registered Specialist Contractor (Ground Investigation Field Works) under the supervision of an AP, RSE, and RGE. For repair works under the Minor Works Control System, including repairing pointing in a masonry wall, repairing the hard cover of a manmade slope, or repairing a surface channel or catchpit etc., they may be carried out by PRCs under MWCS. Building professionals’ advice should always be sought for any repair works involving slopes or retaining structures.

Corrective maintenance tasks and actions	Concerned Party
<p><u>For Man-made Slopes and Retaining Walls</u></p> <p><u>Need for Immediate Engineer Inspections for Maintenance</u></p> <p>During Routine Maintenance Inspections, particular note should be taken of anything considered to be unusual or abnormal, such as signs of leakage, spillage or overflow of drainage channels, widening of cracks, settling ground, bulging or distortion of masonry walls, or settlement of the crest platforms. These defects or observations must be reported promptly to the owner or the party required to maintain the land, who should then appoint a professionally qualified geotechnical engineer without delay to undertake an immediate Engineer Inspection for Maintenance and recommend any necessary actions.</p> <p>Where a change in the land use in the vicinity of a slope or retaining wall is noted in a Routine Maintenance Inspection, the inspection personnel should report it to the owner of the party required to maintain the land. The responsible party should then review whether this would result in any change in the consequence-to-life category of the slope or retaining wall and the required frequency of maintenance inspections. Advice should be sought from a professionally qualified geotechnical engineer when needed.</p>	<p>PMC/RPE(G)/ PRC</p>
<p><u>For Natural Terrain Hazard Mitigation Measures</u></p> <p><u>Need for Special Follow-up Review for Defence Measures Involving Steel Flexible Barrier</u></p> <p>Where steel flexible barriers are erected as Defence Measures, a Special Follow-up Review should be triggered when major defects or anomalies are observed (e.g., barriers severely damaged by landslide, hill fire, super typhoon, overturning of posts upslope due to wind or other factors, slackening of upslope wire ropes, reduction of post, main components severely rusted, etc.).</p> <p>The review should examine the causes and assess the implications of the observed anomalies or defects. Where required, recommendations to rectify the defects or anomalies concerned should be made in order to restore the retaining function of the flexible barrier. The review should be undertaken by a professionally qualified geotechnical engineer in Hong Kong. Where considered necessary, specialist advice from professionally qualified engineers of other appropriate disciplines, barrier manufacturers or suppliers should be sought.</p> <p>Please refer to Section 6.6 of Geoguide 5 – Guide to Slope Maintenance for details of Special Follow-up Reviews.</p>	<p>PMC/RPE(G)/ PRC</p>

Part 2.3 – CORRECTIVE MAINTENANCE

(t) Signages and Signboards

Please refer to Part 2.1 (t) concerning the Signboard Control System.

Corrective maintenance tasks and actions	Concerned Party
<p>Erection, alteration, and removal of signboards when meeting the requirements of relevant minor works items could be carried out under the MWCS, and such works must be carried out by a PRC.</p> <p><u>Repair Works</u></p> <p>The following are repair works that are likely to be required for signages and signboards.</p> <ul style="list-style-type: none"> • Replace defective sub-frames or fixing • Replace signage letters • Readjust signage letters • Replace defective lighting or electrical components 	<p>PMC/PRC</p>

Part 2.4 – SERVICE LIFE OF TYPICAL BUILDING ELEMENTS

2.4 Service Life of Typical Building Elements

The service life of building elements refers to the expected period of time during which these elements are likely to remain functional and operational before requiring a major overhaul or replacement. The service life of a building element can vary depending on a range of factors, including the quality of its components, the materials used in its construction, its level of usage, the maintenance and care provided throughout its life, and the environmental conditions in which it is located. Projection of the service life of building elements is necessary for building owners and property managers, as it allows them to estimate how long these elements can be used before repairing them becomes more expensive than replacing them. In the formulation of maintenance plans, consultants should be aware of the service life of the building elements and allow the costs for their replacements.

The following tables provide a list of recommended or estimated service life for various building elements, including components and equipment, based on available references. Consultants tasked with preparing maintenance manuals for buildings are advised to refer to this information and project the service life of the building elements in question to estimate the costs of periodic maintenance in Part 3.

The following aspects are covered in this section:

2.4.1	Recommended or estimated service life of works and installations for building exterior
2.4.2	Recommended or estimated service life of works and installations for building interior
2.4.3	Recommended or estimated service life of works and installations for MEP systems

Part 2.4 – SERVICE LIFE OF TYPICAL BUILDING ELEMENTS

2.4.1 Recommended or estimated service life of works and installations for building exterior

Element:	No. of years:	References:
Façade of Building (a) Brick (b) Concrete poured in place (c) Precast panels (d) Aluminium siding	50 years 50 Years 50 Years 40 Years	APP-37 BS EN 12372: 1999 BS 8118: Part 2: 1991 BS 3921: 1985 BOMA Preventive Maintenance Guidebook
Roofing Works (a) 2-Ply Modified Bitumen (b) Single Ply Thermoplastic	20 Years 20 Years (depending on various material types)	BOMA Preventive Maintenance Guidebook
Curtain Walls	50 Years	BOMA Preventive Maintenance Guidebook
Windows	30 Years	BOMA Preventive Maintenance Guidebook

Part 2.4 – SERVICE LIFE OF TYPICAL BUILDING ELEMENTS

2.4.2 Recommended or estimated service life of works and installations for building interior and fire resisting material

Element:	No. of years:	References:
Steel Structure	>50 Years.	Code of Practice for the Structural Use of Steel 2011 (2023 Edition) 2.3.3.4 a
Concrete Structure	>50 Years	Code of Practice for the Structural Use of Concrete 2013 (2020 Edition) 2.1.6
Internal Finishes (i) Floor vinyl tile (ii) Floor epoxy coating (two part) (iii) Floor stone (iv) Floor hardwood finish (v) Wall painting (vi) Wall epoxy coating (two part) (vii) Vinyl wall covering (viii) Suspended ceilings	12 Years 10 Years >50 Years 10 Years 5 Years 15 Years 10 Years >13 Years (depend on various materials type)	BOMA Preventive Maintenance Guidebook
Fire Resisting Material (i) Fire resisting door	15 Years	CIBSE Guide M

Part 2.4 – SERVICE LIFE OF TYPICAL BUILDING ELEMENTS

2.4.3 Recommended or estimated service life of works and installations for MEP systems

(a) Fire Service Installations and Equipment

Element:	No. of years:	References:
(i) Fire service installations and equipment		
<p>Fire detection and alarm system (a) Fire detection and alarm system (e.g. break glass box, exit detectors, control panel etc.)</p> <p>Firefighting System (a) Fire hose reels including hose reel and pressure booster sets: i. Hose reel (pressure boost sets) ii. Hose reel (Static or swinging) (b) Distribution pipelines and ancillaries (c) Self-contained battery lighting (d) Fire service pump (e) Fire extinguishers</p>	<p>15 Years</p> <p>20 Years</p> <p>15 Years</p> <p>20 Years</p> <p>25 Years</p> <p>25 Years</p> <p>5 Years (depending on the condition and annual examination result)</p>	<p>CIBSE Guide M</p> <p>CIBSE Guide M</p> <p>CIBSE Guide M CIBSE Guide M</p> <p>CIBSE Guide M CIBSE Guide M</p> <p>For details, please refer to Hong Kong Fire Services Department's guidelines</p>

Part 2.4 – SERVICE LIFE OF TYPICAL BUILDING ELEMENTS

(b) Plumbing and Drainage Equipment

Element:	No. of years:	References:
<p>(a) Pipelines and pipeline fittings:</p> <ul style="list-style-type: none"> i. Copper ii. Steel (galvanised) iii. Plastic or non-metallic 	<p>45 Years 35 Years 20 Years</p>	<p>CIBSE Guide M CIBSE Guide M CIBSE Guide M</p>
<p>(b) Pump</p> <ul style="list-style-type: none"> i. Centrifugal pumps ii. Pressurization pumps iii. Submersible iv. Sewage pumps v. Water booster pumps 	<p>20 Years 15 Years 15 Years 10 Years 10 – 20 Years</p>	<p>CIBSE Guide M CIBSE Guide M CIBSE Guide M CIBSE Guide M CIBSE Guide M</p>
<p>(c) Interceptors (petrol and oil)</p>	<p>20 Years</p>	<p>CIBSE Guide M</p>

Part 2.4 – SERVICE LIFE OF TYPICAL BUILDING ELEMENTS**(c) Mechanical Ventilation and Air-conditioning System**

Element:	No. of years:	References:
(i) Central air-conditioning system		
(a) Variable air volume (VAV) and constant air volume conditioning system	15 Years	CIBSE Guide M
(b) Variable refrigerant volume (VRV) system	15 Years	CIBSE Guide M
(c) Air handling units (AHUs)	15 Years	CIBSE Guide M
(d) Chillers and packaged chillers		
i. Packaged chillers units (air / water cooled / absorption)	20 Years	CIBSE Guide M
ii. Condensers (water / air cooled)	20 Years	CIBSE Guide M
(ii) Ventilation system		
(a) Central Ventilation system		
i. Air supply and extract system	20 Years	CIBSE Guide M
ii. Extract units / terminal units		
iii. Fan units	40 Years	CIBSE Guide M
iv. Grilles, fans, filters and other ancillary components	15 Years	CIBSE Guide M
v. Distribution pipelines and fittings	10 Years	CIBSE Guide M
	20 – 45 Years (depending on material)	CIBSE Guide M
(b) Carpark ventilation ducted fan extract	30 Years	CIBSE Guide M

Part 2.4 – SERVICE LIFE OF TYPICAL BUILDING ELEMENTS

(d) Electrical Components and Equipment

Element:	No. of years:	References:
(a) Distribution of Low Voltage (LV) electricity from the main switchgear to the area distribution boards	20 Years	CIBSE Guide M
(b) High Voltage (HV) switchgear	30 Years	CIBSE Guide M
(c) HV cables and wiring		
i. Mineral insulated	35 Years	CIBSE Guide M
ii. Thermoplastic	30 Years	CIBSE Guide M
iii. Thermosetting (fire performance)	35 Years	CIBSE Guide M
(d) General Low Voltage (LV) power installation	25 Years	CIBSE Guide M
(e) Extra Low Voltage (ELV) supply installation	25 Years	CIBSE Guide M
(f) LV switchgear and distribution boards:		
i. Distribution boards	20 Years	CIBSE Guide M
ii. LV main switchgear	35 Years	CIBSE Guide M
(g) Cables and Wiring, including supports	30 Years	CIBSE Guide M
(h) Local generation equipment / electrical systems	25 Years	CIBSE Guide M
(i) Standby power generation equipment	30 Years	CIBSE Guide M
(j) Earthing and bonding system (Including cable and components)	30 Years	CIBSE Guide M
(k) Photovoltaic (PV) devices	25 Years	CIBSE Guide M

Part 2.4 – SERVICE LIFE OF TYPICAL BUILDING ELEMENTS

(e) Security System and Building Management System

Element:	No. of years:	References:
(i) Security system		
Security system:		
(a) Surveillance equipment (e.g. CCTV)	15 Years	CIBSE Guide M
(b) Security detection system		
i. Intruder alarm	15 Years	CIBSE Guide M
ii. Occupancy and light sensors	15 Years	CIBSE Guide M
iii. Active infrared	10 Years	CIBSE Guide M
(c) Security alarm equipment		
i. Personal attack alarm systems	15 Years	CIBSE Guide M
ii. Passive infrared systems	10 Years	CIBSE Guide M
(d) Door entry system (e.g. intercom system)	10 Years	CIBSE Guide M
(ii) Building management system (BMS)		
(a) Building management system	10 Years	CIBSE Guide M
(b) Central operating station	10 Years	CIBSE Guide M

Part 2.4 – SERVICE LIFE OF TYPICAL BUILDING ELEMENTS

(f) Lift and Escalator Installation

Element:	No. of years:	References:
Lift Installation (a) Passenger lifts (electric traction) (b) Goods Lift (Complete Lift Installation)	20 Years 20 Years	CIBSE Guide M CIBSE Guide M
Escalator Installation (a) Escalator	30 Years	CIBSE Guide M

Part 2.4 – SERVICE LIFE OF TYPICAL BUILDING ELEMENTS

(g) Gas Supply System

Element:	No. of years:	References:
Gas Supply System (a) Gas Pipeline	30 Years	CIBSE Guide M

Part 3: Maintenance Manual Templates

The Maintenance Manual Templates are tools to facilitate consultants to prepare the maintenance manual for any specific buildings, and to calculate the estimated budgets for building maintenance that should be allowed in the building's general fund and special fund.

There are TWO Templates:

Template for building information and schedules

This is in WORD format. Explanatory notes are provided in Part 3-1.

Template for maintenance costs calculation

This is in EXCEL format. Explanatory notes are provided in Part 3-2.

**PART 3-1 – EXPLANATORY NOTES for
Templates for Building Information and Schedules**

Part 3-1

EXPLANATORY NOTES for Templates for Building Information and Schedules

Before any building professional can advise on the maintenance needs of a building, they must obtain basic information, including building plans, construction drawings, schedules of building components, equipment lists of building service systems installed in the building, etc. To advise on the tasks and actions required for maintenance and to estimate their frequencies for calculating the necessary costs, they would also need to know the maintenance history of the building and the expiry dates of warranties or spare parts materials that are already available.

The WORD templates serve as a catalogue or index of information that is essential for maintaining a building. For new buildings, it is recommended that developers include all the information listed in the index in the maintenance manual, which is required under the Deed of Mutual Covenant (DMC). For older buildings that have not previously had a maintenance manual, the building owners and property management company (PMC) should compile as much of the required information as possible. This will enable their consultant to determine when and what maintenance tasks and actions need to be performed.

There are various methods to store building information, ranging from hard copies in box files and digital documents on a computer's hard disk to embedding all the data in a building's Building Information Modelling (BIM).

BIM is a process used to generate and manage building data throughout the design, construction, and operational stages of a building's lifecycle. The goal of adopting BIM for maintenance is to enhance the visualization of assets and facilities in 3D, by creating a data-rich environment that improves maintenance performance efficiency.

When a building incorporates a BIM system, the PMC should use the Construction Operations Building Information Exchange format (COBie), an open data standard spreadsheet designed for BIM, to capture, exchange, and record important facility data changes during both corrective and routine maintenance activities.

Additionally, when there is a facility replacement, the PMC should engage a BIM professional to update the Asset Information List (AIS) and the Asset Information Model (AIM) within the BIM system. This ensures that all asset information is current and accurately reflected in the BIM environment. Besides, it is recommended that the PMC uses a Common Data Environment (CDE), a cloud platform for hosting BIM models and other documents, to store information as a single source of truth.

It is the responsibility of the building owners, PMC, and the consultant preparing the maintenance manual to determine the most appropriate way to store the information for easy retrieval and updating.

**PART 3-1 – EXPLANATORY NOTES for
Templates for Building Information and Schedules**

The following building information and schedules are included. Building owners, the PMC and the consultant should try to collect and catalogue the information as much as possible to facilitate proper maintenance of the building.

	Information Category	Remarks
	The following concerns the original building. The information needs to be collected once, and usually, no updating is needed.	
A1	Building Particulars	DMC information, occupation permit, land lease (coloured/dedicated areas maintained by the lessee) information of the building.
A2	Building Professionals for the Original Building	Identities of the original building professionals and contractors responsible for designing and constructing the building.
A3	Lists of Common Areas and Common Facilities	Maintenance responsibilities must be clearly defined. The PMC or the consultant should refer to the DMC and land lease, and clearly identify which are the common parts for which the building's general fund and special fund should serve.
A4	High-Risk Areas for Concrete Spalling and Flooding	The consultant preparing the maintenance manual for the building should identify high-risk areas to facilitate the estimation of maintenance tasks and activities, their frequencies and associated costs.
	The following information requires updating, particularly when works have been carried out in the building, maintenance contracts are renewed or new laws concerning building maintenance are enacted.	
A5	Schedule of Certificates Required by the Law or DMC	Some building elements require regular checking and certification under the law or DMC. Examples are fire service installations, lifts and escalators, or slope inspections. The expiry dates of these certificates should be listed.
A6	Schedule of Other Certificates	If the original building was awarded certificates for its design or performance, it is worth collecting the information so that future maintenance can ensure that those credits can be kept. Examples include the indoor air quality certification scheme and the energy efficiency certification schemes under the EMSD.
A7	Schedule of Warranties	List out all the warranties of the building and their expiry dates.
A8	Schedule of Maintenance / Professional Service Contracts	List out the name of the service provider, fees and contract end dates for all current maintenance contracts serving the building.

**PART 3-1 – EXPLANATORY NOTES for
Templates for Building Information and Schedules**

	Information Category	Remarks
A9	Inventory for Spare Parts	It is common for works contracts, either for the construction of the original building or for major building rehabilitation, to allow for some spare parts under contract for future replacement and repair use. It is necessary to take into account available spare parts in estimating the maintenance costs.
A10	Detailed Information for Works and Installations	For each of the 20 building elements, who were the contractors, what materials or systems were adopted, construction drawings and schedules, warranties, operation and maintenance manuals and spare parts should be found out and recorded.
A11	Emergency Contact List	List of companies and service providers who can provide emergency repairs during breakdowns.

Part 3-2

EXPLANATORY NOTES for Templates for Maintenance Costs Calculation

The EXCEL templates serve two main purposes.

Firstly, it enables the consultant responsible for preparing the maintenance manual to list all the necessary tasks and actions and their frequencies for maintaining all elements in the building. This should be done after the consultant has understood the building conditions, its maintenance histories and risks, and by referring to the best practices recommended in Part 2 of the Guidelines.

Secondly, the EXCEL worksheets are structured in such a way that the costs of maintenance can be automatically summed up based on the maintenance tasks and actions and their frequencies under the Routine Maintenance and Periodic Maintenance categories. This facilitates the calculation of the estimated maintenance budget that should be allocated to the general fund and special fund. Additionally, the EXCEL also contains a function to calculate the funding balance based on the funding contribution amount and pattern scenarios for the special fund. This allows the PMC and building owners to understand the future funding needs and identify the best means to secure the required funds in advance.

Instruction for using the worksheets

1. The consultant should make reference to the recommended best practices for building maintenance in the Guidelines and conduct his own studies and inspections to determine the required maintenance tasks and actions for the building.
2. The consultant preparing the maintenance manual needs to list out the following on the worksheets for each building element:
 - a. Recommended action (the maintenance task and action)
 - b. Number of times per year
 - c. The quantity of each maintenance action or task
 - d. The estimated costs in unit rate for the action or task
3. For the calculation of special fund funding scenarios (worksheets under C2), the consultant should also enter the following:
 - a. Estimated inflation rates
 - b. Number of undivided shares
 - c. Special fund contributions by each share and frequencies

Please also refer to the notes provided on each worksheet.

The EXCEL templates contain the following worksheets, which correspond to different costs centres in the general fund or special fund:

Part B	Routine Maintenance
Worksheet B1.1	Routine Maintenance for Residential Portion
Worksheet B1.2	Routine Maintenance for Commercial Portion
Worksheet B1.3	Routine Maintenance for Clubhouse Portion
Worksheet B1.4	Routine Maintenance for Carpark Portion
Worksheet B2	Costs Summary of Routine Maintenance
Part C	Periodic Maintenance
Worksheet C1.1	Periodic Maintenance for Residential Portion
Worksheet C1.2	Periodic Maintenance for Commercial Portion
Worksheet C1.3	Periodic Maintenance for Clubhouse Portion
Worksheet C1.4	Periodic Maintenance for Carpark Portion
Worksheet C2.1	Costs Summary of Periodic Maintenance for Residential Portion
Worksheet C2.2	Costs Summary of Periodic Maintenance for Commercial Portion
Worksheet C2.3	Costs Summary of Periodic Maintenance for Clubhouse Portion
Worksheet C2.4	Costs Summary of Periodic Maintenance for Carpark Portion

In order to enable building owners to distinguish the estimated maintenance costs for building external, building internal and building services items, these three broad categories are provided in the EXCEL templates. The table below lists out the elements under each of these categories for each costs center.

**PART 3-2 – EXPLANATORY NOTES for
Templates for Maintenance Costs Calculation**

EX = Building External / IN = Building Internal / BS = Building Services

Costs Center: Category		Residential Portion			Commercial Portion			Clubhouse Portion			Carpark Portion		
		EX	IN	BS	EX	IN	BS	Ex	IN	BS	Ex	IN	BS
a)	Structural elements	√	√		√	√		√	√		√	√	
b)	External wall finishes	√			√			√			√		
c)	Internal finishes		√			√			√			√	
d)	Curtain walls, windows, glass doors and glass features	√			√			√			√		
e)	Doors and metal gates	√	√		√	√			√		√	√	
f)	Waterproofing	√			√			√			√		
g)	Fire resisting materials		√			√			√			√	
h)	Mechanical ventilation and air-conditioning system			√			√			√			√
i)	Fire service installation			√			√			√			√
j)	Plumbing and drainage system			√			√			√			√
k)	Electrical installation			√			√			√			√
l)	ELV and security system			√			√			√			√
m)	Lift and escalator installation, and permanent suspended working platform			√			√			√			√
n)	Gas supply system			√			√			√			
o)	Carpark control system												√
p)	Carpark EV charging system												√
q)	Special equipment and facilities of clubhouse								√				
r)	External area and landscaping works	√			√			√			√		
s)	Man-made slopes and retaining walls	√			√			√			√		
t)	Signages and signboards	√	√		√	√		√	√		√	√	

TEMPLATES – Building Information and Schedules

A1 Building Particulars

A1 Building Particulars

	INFORMATION and DATA	Please list
1.	Building Name	
2.	Building Address	
3.	Lot Number	
4.	Date of Certificate of Compliance	
5.	Date of Occupation Permit	
6.	Total Number of Undivided Shares under the DMC	
7.	Number of Undivided Shares Allocated to Common Parts	
8.	Number of Floors Above Ground	
9.	Number of Floors Below Ground	
10.	Total Gross Floor Area (GFA) of the Building	
	Domestic GFA	
	Non-domestic GFA	
11.	Clubhouse Area	
12.	Landscape Area	
13.	Number of Residential Units in the Building	
14.	Residential Parking and Loading Bays	
	Loading Bay	
	Private Car	
	Motor Cycle	
15.	Commercial Parking and Loading Bays	
	Loading Bay	
	Private Car	
	Motor Cycle	
16.	Other Parking and Loading Bays	
	Loading Bay	
	Private Car	
	Motor Cycle	
17.	Special Maintenance Responsibilities under the DMC to Be Undertaken by the Building	
	Open Space for Public Access	
	Maintenance of Slopes	

TEMPLATES – Building Information and Schedules

A1 Building Particulars

	INFORMATION and DATA	Please list
	Others	

	DOCUMENTS and DRAWINGS	Filing location
1.	Lease conditions	
2.	Deed of Mutual Covenant	
3.	Occupation Permit	
4.	Approved Plans of General Building Plans	
5.	Approved Plans of Drainage Plans	

A2 Building Professionals for the Original Building

A2 Building Professionals for the Original Building

This section is applicable for maintenance manuals of new buildings prepared by the developer under the DMC.

		Please list
1.	Authorized Person	
2.	Registered Structural Engineer	
3.	Registered Geotechnical Engineer	
4.	Registered General Building Contractor	
5.	Registered Special Contractor (Foundations)	
6.	Registered Fire Services Contractor	
7.	Licensed Plumber	
8.	Project Team	
a.	Project Architect	
b.	Project Structural Engineer	
c.	Project Building Services Engineer	
d.	Project Landscape Architect	
e.	Project Façade Consultant	
f.	Project Environmental Consultant	
g.	Project Quantity Surveyor	
h.	Other Project Consultants	
9.	Contractors	
a.	Main Contractor	
b.	Curtain Wall Contractor	
c.	Lift and Escalator Contractor	
d.	Building Services Contractors (please list)	

TEMPLATES – Building Information and Schedules

A3 Common Areas and Common Facilities

A3 Common Areas and Common Facilities

Common areas and facilities in a building are defined in the DMC and the BMO. It is recommended that these common areas and facilities be clearly listed and documented in the maintenance manual, accompanied by drawings and preferably with illustrative photos, for better understanding and reference. This is important because funds from the general and special funds should only be used for expenditures related to the common areas of the building. It is noteworthy that Schedule 1 of the BMO specifies the common areas, including columns, beams, and other structural supports. When preparing the building maintenance manual, it is essential to review the necessity of including these structural elements within private units to prevent any omissions during future maintenance activities.

	Location of Common Areas / Facilities	Descriptions
1.		
2.		
3.		

	DOCUMENTS, DRAWINGS, PHOTOS	Filing location
	DMC Plans	

A4 High-Risk Areas for Concrete Spalling and Flooding

A4 High-Risk Areas for Concrete Spalling and Flooding

Concrete spalling is very often caused by water seepage through cracks in the concrete, which can lead to the corrosion of the steel reinforcement inside. As the reinforcement rusts, it expands and causes the concrete to crack and eventually flake away, resulting in spalling. When the concrete slab soffit is covered by false ceilings or other finishing, spalling cannot be detected without intentional inspections. Incidents of loose concrete falling through false ceilings inside buildings are not uncommon, even in well-maintained buildings.

The consultant preparing the maintenance manual should identify areas at high risk of concrete spalling. One example of such high risk areas is the soffit of a concrete slab below areas that are exposed to weather (such as roof, canopy, balcony or other outdoor areas), toilets, kitchens, and sunken slabs for drainage pipes, etc., which are more susceptible to water leakage or seepage.

	DOCUMENTS and DRAWINGS	Filing location
	High-risks areas for concrete spalling	

Flooding can occur due to malfunctioning drains or when the amount of rainfall exceeds the drainage capacity for which the building or its surroundings were originally designed.

For newly constructed buildings, the developer should assess and provide a list of high-risk failure points. This will enable owners and property management companies to regularly check and implement temporary measures before severe weather strikes. In the case of older buildings, the consultant responsible for preparing the maintenance manual should collaborate with the property management company or owners to ascertain past instances of flooding in the building. Moreover, the consultant should conduct a thorough study of the building's condition and the topography of its surroundings to identify potential failure points. This will enable the property management company to take appropriate action to mitigate the increasing severity of weather conditions.

	DOCUMENTS and DRAWINGS	Filing location
	Assessment of flooding risks and actions before severe weather	

TEMPLATES – Building Information and Schedules

A5 Schedule of Certificates Required by the Law or DMC

A5 Schedule of Certificates Required by the Law or DMC

Some common certificates required by the law or DMC related to building maintenance are listed below. These certificates must be renewed before their expiry or validity date by registered contractors after carrying out inspections.

Item	Description	Department	Expiry Date of Certificate	Name and Contact of Registered Contractors
(a)	Certificate of Fire Service Installation and Equipment (F.S. 251)	FSD		
(b)	Ventilation / Damper “Annual Inspection Certificate”	FSD		
(c)	Periodic Test Certificate (Form WR2) (for electrical installations)	EMSD		
(d)	Lift / Escalator Certificate “Use Permit”	EMSD		
(e)	Inspection, Testing and Certification of EV Charging	EMSD		

Consultants should check whether other certificates with expiry dates are required by law or DMC. These include unauthorized signboard validation, external slope inspection reports, etc.

A6 Schedule of Other Certificates

A6 Schedule of Other Certificates

Buildings are encouraged to participate in other certification schemes for good property management and energy efficiency. Examples are listed below.

Item	Description	Statutory Body	Expiry date if applicable
(a)	Quality Water Supply Scheme for Buildings - Fresh Water (Management System)	WSD	
(b)	Indoor Air Quality Certification Scheme	EPD	
(c)	BEAM Plus Existing Buildings Comprehensive Scheme Certificate	HKGBC	
(d)	Hong Kong Energy Efficiency Registration Certificate	EMSD	
(e)	Voluntary MBIS/MWIS compliance	BD	
(f)	Quality Lift Service Recognition Scheme	EMSD	

A7 Schedule of Warranties

A7 Schedule of Warranties

Warranties are typically provided for various building components when a new building is constructed or major building rehabilitation works are completed. These warranties typically outline specific conditions that must be met, but they generally offer coverage for the costs associated with rectifying defects during the warranty period. This means that the companies providing the warranty may be responsible for covering the costs of repairing any defects that occurred during this time frame.

Item	Description	Expiry Date	Company	FILING LOCATION
(a)	Waterproofing works			
(b)	External wall painting system			
(c)	External wall tile adhesive system			
(d)	Internal wall painting system			
(e)	Curtain wall system			
(f)	Metal cladding system			
(g)	Carpark epoxy flooring system			

A8 Schedule of Maintenance / Professional Service Contracts

A8 Schedule of Maintenance / Professional Service Contracts

Maintenance contractors are usually engaged for various building services systems. Professional services include geotechnical engineering services for slope inspections, or signboard services provided by building professionals. Some of these service agreements should be renewed or procured on time to ensure continued services are available.

	Service scope	Name of service provider	Contract end date	Annual fee
(a)	Fire Service Installation			
(b)	Electrical Installation			
(c)	Lifts and Escalators			
(d)	Others			

TEMPLATES – Building Information and Schedules

A9 Inventory of Spare Parts

A9 Inventory of Spare Parts

When a building is newly completed, it is usual that some spare part materials for finishing or light fittings, etc., will be handed over to the owners’ committee or corporation for future repair or replacement uses of the common areas. The same applies when the building undergoes major rehabilitation.

It is useful to maintain an inventory of spare parts that are under the custody of the PMC for the building.

Category	Descriptions and Quantities	Storage Locations
External Finishing Materials		
Internal Finishing Materials		
Light Fittings		
Ironmongeries		
Glass Panes for Curtain Wall, Window or Window Wall ³		

³ Guidelines on Record Keeping and Use of Spare Glass Panes in Repair/Replacement of Curtain Wall, Window or Window Wall should refer to “PNAP APP-37- Appendix E” and “Technical Guidelines on Minor Works Control System of Buildings Department, HKSAR (2010 or the latest edition)”

A10 Detailed Information for Works and Installations

A10 Detailed Information for Works and Installations

Detailed information on works and installations should be provided by the developer when preparing the maintenance manual for newly completed buildings. However, for existing buildings that were completed a long time ago, it may be challenging to obtain a complete picture. In such cases, consultants preparing a maintenance manual should refer to official records from the Buildings Department's BRAVO system to retrieve available materials as far as possible.

The following building elements are covered:

a)	Structural elements
b)	External wall finishes
c)	Internal finishes
d)	Curtain Walls, windows, glass doors and glass features
e)	Doors and metal gates
f)	Waterproofing
g)	Fire resisting materials
h)	Mechanical ventilation and air-conditioning system
i)	Fire service installation
j)	Plumbing and drainage system
k)	Electrical installation
l)	ELV and security system
m)	Lift and escalator installation, and permanent suspended working platform
n)	Gas supply system
o)	Carpark control system
p)	Carpark EV charging system
q)	Special equipment and facilities of clubhouse
r)	External area and landscaping works
s)	Man-made slopes and retaining walls
t)	Signages and signboards

A10 Detailed Information for Works and Installations

(a) Structural Elements

	DOCUMENTS and DRAWINGS	Filing location
	Approved Plans for Superstructure – Framing Plans	

(b) External Wall Finishes

	DOCUMENTS and DRAWINGS	Filing location
	External finishing schedule	
	Finishing material schedule	
	As-built drawings	
	Finishing material catalogues	

(c) Internal Finishes

	DOCUMENTS and DRAWINGS	Filing location
	Internal finishing schedule	
	Finishing material schedule	
	As-built drawings	
	Finishing material catalogues	

A10 Detailed Information for Works and Installations**(d) Curtain Walls, Windows, Glass Doors and Glass Features**

Curtain walls, claddings, skylights, typhoon-proof ceilings, and large windows are common features in new residential buildings. These items are constructed by registered contractors and approved by the Building Authority. Approved plans for these constructions can be retrieved from the Buildings Department's BRAVO. They show only the location, extent, and typical details of the system. On the other hand, as-built drawings should cover the construction of every part of the system, including dimensions, construction details, and materials used. The building professional (i.e. authorized person/registered structural engineer) is advised, upon completion of the building or the alteration and addition works involving the curtain wall system, window and window wall, to provide a maintenance manual including all construction records and necessary information on the curtain wall system, such as the documents as required in the approval letters and the approval and consent letters with appendices, and a schedule listing the type, thickness, size and quantities of spare glass panes reserved, if any, should be included in the manual facilitating future repair.

	DOCUMENTS and DRAWINGS	Filing location
	Curtain Walls	
	<ul style="list-style-type: none"> Approved plans of Curtain Wall works 	
	<ul style="list-style-type: none"> As-built drawings 	
	<ul style="list-style-type: none"> Ironmongery lists 	
	External Claddings	
	<ul style="list-style-type: none"> Approved plans of Curtain Wall works 	
	<ul style="list-style-type: none"> As-built drawings 	
	Glass Walls	
	<ul style="list-style-type: none"> Approved plans of Curtain Wall works 	
	<ul style="list-style-type: none"> As-built drawings 	
	Skylights	
	<ul style="list-style-type: none"> Approved plans of Curtain Wall works 	
	<ul style="list-style-type: none"> As-built drawings 	
	External Typhoon-Proof Ceilings	
	<ul style="list-style-type: none"> Approved plans of Curtain Wall works 	
	<ul style="list-style-type: none"> As-built drawings 	
	Large Windows (<6m² glass areas)	
	https://www.bd.gov.hk/doc/en/resources/codes-and-references/practice-notes-and-circular-letters/pnap/APP/APP037.pdf	
	<ul style="list-style-type: none"> Approved plans of Curtain Wall works 	
	<ul style="list-style-type: none"> As-built drawings 	
	<ul style="list-style-type: none"> Ironmongery lists 	

A10 Detailed Information for Works and Installations

Smaller-sized windows may not require approval from the Buildings Authority. For small windows, as-built drawings will provide information regarding the location, dimensions and materials employed.

	DOCUMENTS and DRAWINGS	Filing location
	Small Windows and French Doors	
	<ul style="list-style-type: none">• As-built drawings	
	<ul style="list-style-type: none">• Ironmongery lists	

A10 Detailed Information for Works and Installations**(e) Doors and Metal Gates**

The construction of a large metal gate requires approval from the Building Authority, and it must be constructed by registered contractors. On the other hand, smaller metal gates can be constructed by following the minor works control system.

(<https://www.bd.gov.hk/doc/en/resources/codes-and-references/practice-notes-and-circular-letters/pnap/APP/APP146.pdf>)

Approved drawings showing the metal gates' sizes, construction details, and materials should be available from the Buildings Department's BRAVO.

	DOCUMENTS and DRAWINGS	Filing location
	Metal Gates	
	Approved plans of metal gate works	
	As-built drawings	
	Ironmongery lists	
	Inspection and maintenance logs	

Fire-rated doors are crucial in ensuring the safety of a building and its occupants in case of a fire. The location, size, and fire rating of fire rated doors are stated in the General Building Plans, which can be obtained from the Buildings Department's BRAVO.

The door schedule and key plans provided by the project team during the building's design and construction phase provide the location, size, material and design information of all fire rated or ordinary doors in the building.

	DOCUMENTS and DRAWINGS	Filing location
	Fire-rated doors	
	Approved plans of General Building Plans	
	All doors	
	Door schedule and Key Plans	
	Ironmongery schedule	

A10 Detailed Information for Works and Installations

(f) Waterproofing

Information about the waterproofing system is useful for consultants or building professionals to decide whether to repair or replace the system when seepages are detected. In addition to roofs and main structures, waterproofing is also installed in water tanks, kitchen floors, and toilet walls and floors. Different waterproofing systems may be required for various locations within a project.

In the case of newly completed buildings, waterproofing information should be readily available and included in the maintenance manual. However, this information must be collected and documented for older buildings whenever waterproofing repair or replacement works are carried out.

	DOCUMENTS and DRAWINGS	Filing location
	Waterproofing for Main Roofs and Flat Roofs	
	Material catalogues	
	Warranties	
	Waterproofing for Water Tanks	
	Material catalogues	
	Waterproofing for Toilets and Kitchens	
	Material catalogues	
	Waterproofing for Other Locations	
	Material catalogues	

TEMPLATES – Building Information and Schedules

A10 Detailed Information for Works and Installations

(g) Fire Resisting Materials

Fire-resisting materials are materials or components designed to contain a fire and prevent it from spreading to other parts of a building. They can also refer to materials that are non-combustible or fire-resistant, meaning they do not readily catch fire when exposed to flames. Such materials may include coatings applied to wooden or fabric finishes.

As a general rule, everything inside a fireman’s lift lobby or fire escape staircases must be fire-resistant. This means that all building services and ductwork that run through these areas must be contained within fire-rated enclosures, such as fire-rated bulkheads or fire-rated ceilings. Finishing materials used in these areas must also be non-combustible or fire retardant.

	DOCUMENTS and DRAWINGS	Filing location
	Locations and fire rating requirements	
	Approved plans of General Building Plans	
	Fire dampers, fire shutters, drenchers, etc.	Refer to fire service installations
	Fire-rated enclosures	
	Location plan as-built drawings	
	Material catalogues	
	Fire retardant paint/coatings	
	Location of application	
	Material catalogues	

TEMPLATES – Building Information and Schedules

A10 Detailed Information for Works and Installations

Building Services Systems

- (h) Mechanical ventilation and air-conditioning system
- (i) Fire service installations
- (j) Plumbing and drainage system
- (k) Electrical installations
- (l) ELV and security system
- (m) Lift and escalator installation, and permanent suspended working platform
- (n) Gas supply system
- (o) Carpark control system
- (p) Carpark EV charging system

These categories are building services systems involving mechanical and electrical equipment and plants.

For each system, there should be a set of drawings showing the locations, routing, and installations. Also, every equipment or plant should have its own O&M manual and a maintenance log recording its service and repair history.

	INFORMATION and DATA	Please state
	Names and contacts of maintenance contractors	

	DOCUMENTS and DRAWINGS	Filing location
(h)	Mechanical Ventilation and Air-conditioning System (MVAC)	
	MVAC as-built drawings (layout and vertical diagram)	
	Equipment and plant schedules	
	O&M Manuals	
	Maintenance logs	
(i)	Fire Service Installations	
	Fire services as-built drawings	
	Equipment and plant schedules	
	O&M Manuals	
	Maintenance logs	
	314a record for AA&I works, FS251	

TEMPLATES – Building Information and Schedules**A10 Detailed Information for Works and Installations**

(j)	Plumbing and Drainage System	
	Approved plans for drainage works (from the BD's BRAVO)	
	As-built drainage drawings	
	As-built plumbing drawings for potable and flushing water	
	As-built plumbing drawing for FS water	
	Equipment and plant schedules	
	O&M Manuals	
	Maintenance logs	
(k)	Electrical Installation	
	As-built electrical drawings	
	Light fitting schedules	
	Equipment and plant schedules	
	O&M Manuals	
	Maintenance logs	
(l)	ELV and Security System	
	As-built ELV and security system drawings	
	Equipment and plant schedules	
	O&M Manuals	
	Maintenance logs	
(m)	Lift and Escalator Installation, and Permanent Suspended Working Platform	
	As-built lift, escalator and permanent suspended working platform drawings	
	Maintenance logs	
	Equipment and plant schedules	
	O&M manuals	
(n)	Gas Supply System	
	As-built gas supply system drawings	
	Equipment and plant schedules	
	O&M Manuals	

TEMPLATES – Building Information and Schedules

A10 Detailed Information for Works and Installations

	Maintenance logs	
(o)	Carpark Control System	
	As-built drawings	
	Equipment and plant schedules	
	O&M Manuals	
	Maintenance logs	
(p)	Carpark EV Charging System	
	As-built drawings	
	Equipment and plant schedules	
	O&M Manuals	
	Maintenance logs	

A10 Detailed Information for Works and Installations

External Areas and Clubhouse

- (q) Special equipment and facilities of the clubhouse
- (r) External area and landscaping works

A residential building may be equipped with swimming pools and different kinds of fitness or cuisine equipment for the enjoyment of its residents in the clubhouse or its external areas. Similar features may also be provided in the external area.

	INFORMATION and DATA	Please state
	Names and contacts of maintenance contractors	

	DOCUMENTS and DRAWINGS	Filing location
	Swimming pool and water features	
	As-built drawing	
	Equipment schedules	
	O&M Manuals	
	Maintenance logs	
	Other equipment and furniture in the clubhouse and external areas	
	Inventory list	
	O&M Manuals	
	Maintenance logs	

TEMPLATES – Building Information and Schedules

A10 Detailed Information for Works and Installations

(s) Man-made Slopes and Retaining Walls

This category refers to man-made slopes or retaining walls which are under the responsibilities of the building owners to maintain. These slopes or structures may be located within the lot. They may also be located outside the lot if the lease conditions specify that the maintenance responsibility lies with the building owners.

Retaining structures inside the building, including basement walls, are excluded, and should refer to item (a).

There are 3 Consequence-to-life Categories for man-made slopes and retaining walls. These are called Consequence-to-life Category 1, 2 and 3 (ref.: GEO TGN 15). The frequency and qualification requirements for their inspections depend on the category.

	INFORMATION and DATA	Please state
	Names and contacts of Registered Professional Engineer (Geotechnical) who carried out the last inspection	
	Dates of the last inspections	

	DOCUMENTS and DRAWINGS	Filing location
	Man-made slopes and external retaining walls within or outside the lot boundary	
	Lease plan	
	Lease conditions	
	Approved plans of site formation works (from the Buildings Department’s BRAVO)	
	Inspection records	
	Record form of the inspection result for Routine Maintenance Inspection and Engineer Inspection should refer to the slope-specific maintenance manual	

A10 Detailed Information for Works and Installations**(t) Signages and Signboards**

For new buildings, all external signages and signboards must be approved by the Building Authority and constructed by registered contractors.

For older buildings, external signages and signboards may have been added after the original building was completed. Except for the three circumstances listed below, external signage and signboards should not be allowed to remain on the building and must be demolished.

- i. The construction of the signboard was carried out by a registered contractor following a design approved by the Building Authority,
- ii. The minor works control system was followed for the erection of the signage or signboard;
- iii. Signboards that are neither i nor ii above are unauthorized signboards. These signboards must be registered and validated with the Buildings Department's Signboard Validation System. (<https://www.bd.gov.hk/en/building-works/signboards/signboard-validation-scheme/index.html>)

	DOCUMENTS and DRAWINGS	Filing location
	Signboards constructed with the original building	
	Approved plans of General Building Plans (from BD's BRAVO)	
	Approved plans of Structural Drawings for Signboard (from BD's BRAVO)	
	Signboards constructed after the original building was completed	
	Minor works records for signboard works (from BD's BRAVO)	
	For unauthorized signboard	
	Validation records	

	INFORMATION and DATA	Please state
	Safety check for unauthorized signboard	
	Name and contact of the firm (Prescribed Building Professionals or Prescribed Registered Contractors)	
	Date of the last safety check	

A11 Emergency Contacts

A11 Emergency Contacts

Building Element	Consultant/Contractor	Contacts
Structural and Physical Elements		
Mechanical Ventilation and Air-Conditioning System		
Fire Service Installation		
Plumbing and Drainage System		
Electrical Installation		
ELV System		
Lift and Escalator Installation, and Permanent Suspended Working Platform		
Gas Supply System		
Carpark Control System		
Carpark EV Charging System		
Special Equipment and Facilities of Clubhouse		
Others		

Part 3-2: Templates for Maintenance Costs Calculation

Part B. Routine Maintenance and Part C. Periodic Maintenance Plan

Input Guideline:

- Please fill in the building name, relevant dates and year.
- The date and year are included in the auto-calculation of the estimated costs for the maintenance works in the following sections: Section B and Section C.
- Both routine and periodic maintenance costs calculations should include costs for corrective maintenance of particular building elements.

BUILDING NAME:	<u>ABC building</u>
ISSUE DATE OF MAINTENANCE MANUAL (dd / mm / yyyy):	<u>1/5/2024</u>
THE BEGINNING DATE OF ROUTINE MAINTENANCE (dd/mm/yyyy):	<u>1/6/2024</u>
THE BEGINNING YEAR OF PREVENTIVE MAINTENANCE (yyyy):	<u>2024</u>

ABC building

B1.1 Routine Maintenance for Residential Portion

Issue Date : 1/5/2024

Input Guideline

 : Consultant should insert the required actions and relevant information.

 : The auto-calculated annual cost for the respective item.

Consultant should insert rows for additional items or remove unnecessary rows, and check the calculation formulas according to actual needs.

					INFORMATION to be INPUT by CONSULTANT				COSTS (auto-calculated)
Item no.	Category	Element	Reference section in this Guidance	Type of maintenance	Recommended action	No. of times per year	Unit	Cost estimate per no. of time (including preliminaries)	Total cost per year for each item
1	Building Exterior	Structural Elements (External)	2.3a	corrective					\$0
									\$0
									\$0
2	Building Exterior	External Wall Finishes	2.1b	routine					\$0
									\$0
									\$0
3	Building Exterior	External Wall Finishes	2.3b	corrective					\$0
									\$0
									\$0
4	Building Exterior	Curtain Wall , Windows , Glass Wall , Glass Features	2.1d	routine					\$0
									\$0
									\$0
5	Building Exterior	Curtain Wall , Windows , Glass Wall , Glass Features	2.3d	corrective					\$0
									\$0
									\$0
6	Building Exterior	Doors and Metal Gates	2.1e	routine					\$0
									\$0
									\$0
7	Building Exterior	Doors and Metal Gates	2.3e	corrective					\$0
									\$0
									\$0
8	Building Exterior	Waterproofing	2.1f	routine					\$0
									\$0
									\$0
9	Building Exterior	Waterproofing	2.3f	corrective					\$0
									\$0
									\$0
10	Building Exterior	External Area and Landscaping Works	2.1r	routine					\$0
									\$0
									\$0

ABC building

B1.1 Routine Maintenance for Residential Portion

Issue Date : 1/5/2024

Input Guideline

 : Consultant should insert the required actions and relevant information.

 : The auto-calculated annual cost for the respective item.

Consultant should insert rows for additional items or remove unnecessary rows, and check the calculation formulas according to actual needs.

Item no.	Category	Element	Reference section in this Guidance	Type of maintenance	INFORMATION to be INPUT by CONSULTANT				COSTS (auto-calculated)
					Recommended action	No. of times per year	Unit	Cost estimate per no. of time (including preliminaries)	Total cost per year for each item
11	Building Exterior	External Area and Landscaping Works	2.3r	corrective					\$0
									\$0
									\$0
12	Building Exterior	Man-made Slopes & Retaining Walls	2.1s	routine					\$0
									\$0
									\$0
13	Building Exterior	Man-made Slopes & Retaining Walls	2.3s	corrective					\$0
									\$0
									\$0
14	Building Exterior	Signages and Signboards	2.1t	routine					\$0
									\$0
									\$0
15	Building Exterior	Signages and Signboards	2.3t	corrective					\$0
									\$0
									\$0
16	Building Interior	Structural Elements (Internal)	2.3a	corrective					\$0
									\$0
									\$0
17	Building Interior	Internal Finishes	2.3c	corrective					\$0
									\$0
									\$0
18	Building Interior	Doors and Metal Gates	2.1e	routine					\$0
									\$0
									\$0
19	Building Interior	Doors and Metal Gates	2.3e	corrective					\$0
									\$0
									\$0
20	Building Interior	Fire Resisting Materials	2.1g	routine					\$0
									\$0
									\$0
21	Building Interior	Fire Resisting Materials	2.3g	corrective					\$0
									\$0
									\$0
22	Building Interior	Signages and Signboards	2.1t	routine					\$0
									\$0
									\$0
23	Building Interior	Signages and Signboards	2.3t	corrective					\$0
									\$0

ABC building

B1.1 Routine Maintenance for Residential Portion

Issue Date : 1/5/2024

Input Guideline

 : Consultant should insert the required actions and relevant information.

 : The auto-calculated annual cost for the respective item.

Consultant should insert rows for additional items or remove unnecessary rows, and check the calculation formulas according to actual needs.

Item no.	Category	Element	Reference section in this Guidance	Type of maintenance	INFORMATION to be INPUT by CONSULTANT				COSTS (auto-calculated)
					Recommended action	No. of times per year	Unit	Cost estimate per no. of time (including preliminaries)	Total cost per year for each item
									\$0
24	MEP Systems	MVAC	2.1h	routine					\$0
									\$0
									\$0
25	MEP Systems	MVAC	2.3h	corrective					\$0
									\$0
									\$0
26	MEP Systems	F.S. Installation	2.1i	routine					\$0
									\$0
									\$0
27	MEP Systems	F.S. Installation	2.3i	corrective					\$0
									\$0
									\$0
28	MEP Systems	Plumbing & Drainage System	2.1j	routine					\$0
									\$0
									\$0
29	MEP Systems	Plumbing & Drainage System	2.3j	corrective					\$0
									\$0
									\$0
30	MEP Systems	Electrical Installation	2.1k	routine					\$0
									\$0
									\$0
31	MEP Systems	Electrical Installation	2.3k	corrective					\$0
									\$0
									\$0
32	MEP Systems	ELV and Security System	2.1l	routine					\$0
									\$0
									\$0
33	MEP Systems	ELV and Security System	2.3l	corrective					\$0
									\$0
									\$0
34	MEP Systems	Lift and Escalator Installation, and Permanent Suspended Working Platform	2.1m	routine					\$0
									\$0
									\$0

ABC building

B1.1 Routine Maintenance for Residential Portion

Issue Date : 1/5/2024

Input Guideline

 : Consultant should insert the required actions and relevant information.

 : The auto-calculated annual cost for the respective item.

Consultant should insert rows for additional items or remove unnecessary rows, and check the calculation formulas according to actual needs.

					INFORMATION to be INPUT by CONSULTANT				COSTS (auto-calculated)
Item no.	Category	Element	Reference section in this Guidance	Type of maintenance	Recommended action	No. of times per year	Unit	Cost estimate per no. of time (including preliminaries)	Total cost per year for each item
35	MEP Systems	Lift and Escalator Installation, and Permanent Suspended Working Platform	2.3m	corrective					\$0
									\$0
									\$0
36	MEP Systems	Gas Supply System	2.1n	routine					\$0
									\$0
									\$0
37	MEP Systems	Gas Supply System	2.3n	corrective					\$0
									\$0
									\$0

ABC building

B1.2 Routine Maintenance for Commercial Portion

Issue Date : 1/5/2024

Input Guideline

 : Consultant should insert the required actions and relevant information.

 : The auto-calculated annual cost for the respective item.

Consultant should insert rows for additional items or remove unnecessary rows, and check the calculation formulas according to actual needs.

Item no.	Category	Element	Reference section in this Guidance	Type of maintenance	INFORMATION to be INPUT by CONSULTANT				COSTS (auto-calculated)
					Recommended action	No. of times per year	Unit	Cost estimate per no. of time (including preliminaries)	Total cost per year for each item
1	Building Exterior	Structural Elements (External)	2.3a	corrective					\$0
									\$0
									\$0
2	Building Exterior	External Wall Finishes	2.1b	routine					\$0
									\$0
									\$0
3	Building Exterior	External Wall Finishes	2.3b	corrective					\$0
									\$0
									\$0
4	Building Exterior	Curtain Wall , Windows , Glass Wall , Glass Features	2.1d	routine					\$0
									\$0
									\$0
5	Building Exterior	Curtain Wall , Windows , Glass Wall , Glass Features	2.3d	corrective					\$0
									\$0
									\$0
6	Building Exterior	Doors and Metal Gates	2.1e	routine					\$0
									\$0
									\$0
7	Building Exterior	Doors and Metal Gates	2.3e	corrective					\$0
									\$0
									\$0
8	Building Exterior	Waterproofing	2.1f	routine					\$0
									\$0
									\$0
9	Building Exterior	Waterproofing	2.3f	corrective					\$0
									\$0
									\$0
10	Building Exterior	External Area and Landscaping Works	2.1r	routine					\$0
									\$0
									\$0
11	Building Exterior	External Area and Landscaping Works	2.3r	corrective					\$0
									\$0
									\$0
12	Building Exterior	Signages and Signboards	2.1t	routine					\$0
									\$0

ABC building

B1.2 Routine Maintenance for Commercial Portion

Issue Date : 1/5/2024

Input Guideline

 : Consultant should insert the required actions and relevant information.

 : The auto-calculated annual cost for the respective item.

Consultant should insert rows for additional items or remove unnecessary rows, and check the calculation formulas according to actual needs.

Item no.	Category	Element	Reference section in this Guidance	Type of maintenance	INFORMATION to be INPUT by CONSULTANT				COSTS (auto-calculated)
					Recommended action	No. of times per year	Unit	Cost estimate per no. of time (including preliminaries)	Total cost per year for each item
									\$0
13	Building Exterior	Signages and Signboards	2.3t	corrective					\$0
									\$0
									\$0
14	Building Exterior	Man-made Slopes & Retaining Walls	2.1s	routine					\$0
									\$0
									\$0
15	Building Exterior	Man-made Slopes & Retaining Walls	2.3s	corrective					\$0
									\$0
									\$0
16	Building Interior	Structural Elements (Internal)	2.3a	corrective					\$0
									\$0
									\$0
17	Building Interior	Internal Finishes	2.3c	corrective					\$0
									\$0
									\$0
18	Building Interior	Doors and Metal Gates	2.1e	routine					\$0
									\$0
									\$0
19	Building Interior	Doors and Metal Gates	2.3e	corrective					\$0
									\$0
									\$0
20	Building Interior	Fire Resisting Materials	2.1g	routine					\$0
									\$0
									\$0
21	Building Interior	Fire Resisting Materials	2.3g	corrective					\$0
									\$0
									\$0
22	Building Interior	Signages and Signboards	2.1t	routine					\$0
									\$0
									\$0
23	Building Interior	Signages and Signboards	2.3t	corrective					\$0
									\$0
									\$0
24	MEP Systems	MVAC	2.1h	routine					\$0
									\$0
									\$0
25	MEP Systems	MVAC	2.3h	corrective					\$0
									\$0

ABC building

B1.2 Routine Maintenance for Commercial Portion

Issue Date : 1/5/2024

Input Guideline

 : Consultant should insert the required actions and relevant information.

 : The auto-calculated annual cost for the respective item.

Consultant should insert rows for additional items or remove unnecessary rows, and check the calculation formulas according to actual needs.

Item no.	Category	Element	Reference section in this Guidance	Type of maintenance	INFORMATION to be INPUT by CONSULTANT				COSTS (auto-calculated)
					Recommended action	No. of times per year	Unit	Cost estimate per no. of time (including preliminaries)	Total cost per year for each item
									\$0
26	MEP Systems	F.S. Installation	2.1i	routine					\$0
									\$0
									\$0
27	MEP Systems	F.S. Installation	2.3i	corrective					\$0
									\$0
									\$0
28	MEP Systems	Plumbing & Drainage System	2.1j	routine					\$0
									\$0
									\$0
29	MEP Systems	Plumbing & Drainage System	2.3j	corrective					\$0
									\$0
									\$0
30	MEP Systems	Electrical Installation	2.1k	routine					\$0
									\$0
									\$0
31	MEP Systems	Electrical Installation	2.3k	corrective					\$0
									\$0
									\$0
32	MEP Systems	ELV and Security System	2.1l	routine					\$0
									\$0
									\$0
33	MEP Systems	ELV and Security System	2.3l	corrective					\$0
									\$0
									\$0
34	MEP Systems	Lift and Escalator Installation, and Permanent Suspended Working Platform	2.1m	routine					\$0
									\$0
									\$0
35	MEP Systems	Lift and Escalator Installation, and Permanent Suspended Working Platform	2.3m	corrective					\$0
									\$0
									\$0
36	MEP Systems	Gas Supply System	2.1n	routine					\$0
									\$0
									\$0

ABC building

B1.2 Routine Maintenance for Commercial Portion

Issue Date : 1/5/2024

Input Guideline

 : Consultant should insert the required actions and relevant information.

 : The auto-calculated annual cost for the respective item.

Consultant should insert rows for additional items or remove unnecessary rows, and check the calculation formulas according to actual needs.

					INFORMATION to be INPUT by CONSULTANT				COSTS (auto-calculated)
Item no.	Category	Element	Reference section in this Guidance	Type of maintenance	Recommended action	No. of times per year	Unit	Cost estimate per no. of time (including preliminaries)	Total cost per year for each item
37	MEP Systems	Gas Supply System	2.3n	corrective					\$0
									\$0
									\$0

ABC building

B1.3 Routine Maintenance for Clubhouse Portion

Issue Date : 1/5/2024

Input Guideline

 : Consultant should insert the required actions and relevant information.

 : The auto-calculated annual cost for the respective item.

Consultant should insert rows for additional items or remove unnecessary rows, and check the calculation formulas according to actual needs.

Item no.	Category	Element	Reference section in this Guidance	Type of maintenance	INFORMATION to be INPUT by CONSULTANT				COSTS (auto-calculated)
					Recommended action	No. of times per year	Unit	Cost estimate per no. of time (including preliminaries)	Total cost per year for each item
1	Building Exterior	Structural Elements (External)	2.3a	corrective					\$0
									\$0
2	Building Exterior	External Wall Finishes	2.1b	routine					\$0
									\$0
3	Building Exterior	External Wall Finishes	2.3b	corrective					\$0
									\$0
4	Building Exterior	Curtain Wall , Windows , Glass Wall , Glass Features	2.1d	routine					\$0
									\$0
5	Building Exterior	Curtain Wall , Windows , Glass Wall , Glass Features	2.3d	corrective					\$0
									\$0
6	Building Exterior	Waterproofing	2.1f	routine					\$0
									\$0
7	Building Exterior	Waterproofing	2.3f	corrective					\$0
									\$0
8	Building Exterior	External Area and Landscaping Works	2.1r	routine					\$0
									\$0
9	Building Exterior	External Area and Landscaping Works	2.3r	corrective					\$0
									\$0
10	Building Exterior	Signages and Signboards	2.1t	routine					\$0
									\$0
									\$0

ABC building

B1.3 Routine Maintenance for Clubhouse Portion

Issue Date : 1/5/2024

Input Guideline

 : Consultant should insert the required actions and relevant information.

 : The auto-calculated annual cost for the respective item.

Consultant should insert rows for additional items or remove unnecessary rows, and check the calculation formulas according to actual needs.

Item no.	Category	Element	Reference section in this Guidance	Type of maintenance	INFORMATION to be INPUT by CONSULTANT				COSTS (auto-calculated)
					Recommended action	No. of times per year	Unit	Cost estimate per no. of time (including preliminaries)	Total cost per year for each item
11	Building Exterior	Signages and Signboards	2.3t	corrective					\$0
									\$0
									\$0
12	Building Interior	Structural Elements (Internal)	2.3a	corrective					\$0
									\$0
									\$0
13	Building Interior	Internal Finishes	2.3c	corrective					\$0
									\$0
									\$0
14	Building Interior	Doors and Metal Gates	2.1e	routine					\$0
									\$0
									\$0
15	Building Interior	Doors and Metal Gates	2.3e	corrective					\$0
									\$0
									\$0
16	Building Interior	Fire Resisting Materials	2.1g	routine					\$0
									\$0
									\$0
17	Building Interior	Fire Resisting Materials	2.3g	corrective					\$0
									\$0
									\$0
18	Building Interior	Special Equipment and Facilities of Clubhouse	2.1q	routine					\$0
									\$0
									\$0
19	Building Interior	Special Equipment and Facilities of Clubhouse	2.3q	corrective					\$0
									\$0
									\$0
20	Building Interior	Signages and Signboards	2.1t	routine					\$0
									\$0
									\$0
21	Building Interior	Signages and Signboards	2.3t	corrective					\$0
									\$0
									\$0

ABC building

B1.3 Routine Maintenance for Clubhouse Portion

Issue Date : 1/5/2024

Input Guideline

 : Consultant should insert the required actions and relevant information.

 : The auto-calculated annual cost for the respective item.

Consultant should insert rows for additional items or remove unnecessary rows, and check the calculation formulas according to actual needs.

Item no.	Category	Element	Reference section in this Guidance	Type of maintenance	INFORMATION to be INPUT by CONSULTANT				COSTS (auto-calculated)
					Recommended action	No. of times per year	Unit	Cost estimate per no. of time (including preliminaries)	Total cost per year for each item
22	MEP Systems	MVAC	2.1h	routine					\$0
									\$0
23	MEP Systems	MVAC	2.3h	corrective					\$0
									\$0
24	MEP Systems	F.S. Installation	2.1i	routine					\$0
									\$0
25	MEP Systems	F.S. Installation	2.3i	corrective					\$0
									\$0
26	MEP Systems	Plumbing & Drainage System	2.1j	routine					\$0
									\$0
27	MEP Systems	Plumbing & Drainage System	2.3j	corrective					\$0
									\$0
28	MEP Systems	Electrical Installation	2.1k	routine					\$0
									\$0
29	MEP Systems	Electrical Installation	2.3k	corrective					\$0
									\$0
30	MEP Systems	ELV and Security System	2.1l	routine					\$0
									\$0
31	MEP Systems	ELV and Security System	2.3l	corrective					\$0
									\$0
32	MEP Systems	Lift and Escalator Installation, and Permanent Suspended Working Platform	2.1m	routine					\$0
									\$0
33	MEP Systems	Lift and Escalator Installation, and Permanent Suspended Working Platform	2.3m	corrective					\$0
									\$0

ABC building

B1.3 Routine Maintenance for Clubhouse Portion

Issue Date : 1/5/2024

Input Guideline

 : Consultant should insert the required actions and relevant information.

 : The auto-calculated annual cost for the respective item.

Consultant should insert rows for additional items or remove unnecessary rows, and check the calculation formulas according to actual needs.

Item no.	Category	Element	Reference section in this Guidance	Type of maintenance	INFORMATION to be INPUT by CONSULTANT				COSTS (auto-calculated)
					Recommended action	No. of times per year	Unit	Cost estimate per no. of time (including preliminaries)	Total cost per year for each item
									\$0
34	MEP Systems	Gas Supply System	2.1n	routine					\$0
									\$0
									\$0
35	MEP Systems	Gas Supply System	2.3n	corrective					\$0
									\$0
									\$0

ABC building

B1.4 Routine Maintenance for Carpark Portion

Issue Date : 1/5/2024

Input Guideline

 : Consultant should insert the required actions and relevant information.

 : The auto-calculated annual cost for the respective item.

Consultant should insert rows for additional items or remove unnecessary rows, and check the calculation formulas according to actual needs.

Item no.	Category	Element	Reference section in this Guidance	Type of maintenance	INFORMATION to be INPUT by CONSULTANT				COSTS (auto-calculated)
					Recommended action	No. of times per year	Unit	Cost estimate per no. of time (including preliminaries)	Total cost per year for each item
1	Building Exterior	Structural Elements (External)	2.3a	corrective					\$0
									\$0
									\$0
2	Building Exterior	External Wall Finishes	2.1b	routine					\$0
									\$0
									\$0
3	Building Exterior	External Wall Finishes	2.3b	corrective					\$0
									\$0
									\$0
4	Building Exterior	Signages and Signboards	2.1t	routine					\$0
									\$0
									\$0
5	Building Exterior	Signages and Signboards	2.3t	corrective					\$0
									\$0
									\$0
6	Building Exterior	Doors and Metal Gates	2.1e	routine					\$0
									\$0
									\$0
7	Building Exterior	Doors and Metal Gates	2.3e	corrective					\$0
									\$0
									\$0
8	Building Interior	Structural Elements (Internal)	2.3a	corrective					\$0
									\$0
									\$0
9	Building Interior	Internal Finishes	2.3c	corrective					\$0
									\$0
									\$0
10	Building Interior	Doors and Metal Gates	2.1e	routine					\$0
									\$0
									\$0
11	Building Interior	Doors and Metal Gates	2.3e	corrective					\$0
									\$0
									\$0
12	Building Interior	Fire Resisting Materials	2.1g	routine					\$0
									\$0
									\$0
13	Building Interior	Fire Resisting Materials	2.3g	corrective					\$0

ABC building

B1.4 Routine Maintenance for Carpark Portion

Issue Date : 1/5/2024

Input Guideline

 : Consultant should insert the required actions and relevant information.

 : The auto-calculated annual cost for the respective item.

Consultant should insert rows for additional items or remove unnecessary rows, and check the calculation formulas according to actual needs.

Item no.	Category	Element	Reference section in this Guidance	Type of maintenance	INFORMATION to be INPUT by CONSULTANT				COSTS (auto-calculated)
					Recommended action	No. of times per year	Unit	Cost estimate per no. of time (including preliminaries)	Total cost per year for each item
									\$0
									\$0
14	Building Interior	Signages and Signboards	2.1t	routine					\$0
									\$0
									\$0
15	Building Interior	Signages and Signboards	2.3t	corrective					\$0
									\$0
									\$0
16	MEP Systems	MVAC	2.1h	routine					\$0
									\$0
									\$0
17	MEP Systems	MVAC	2.3h	corrective					\$0
									\$0
									\$0
18	MEP Systems	F.S. Installation	2.1i	routine					\$0
									\$0
									\$0
19	MEP Systems	F.S. Installation	2.3i	corrective					\$0
									\$0
									\$0
20	MEP Systems	Plumbing & Drainage System	2.1j	routine					\$0
									\$0
									\$0
21	MEP Systems	Plumbing & Drainage System	2.3j	corrective					\$0
									\$0
									\$0
22	MEP Systems	Electrical Installation	2.1k	routine					\$0
									\$0
									\$0
23	MEP Systems	Electrical Installation	2.3k	corrective					\$0
									\$0
									\$0
24	MEP Systems	ELV and Security System	2.1l	routine					\$0
									\$0
									\$0
25	MEP Systems	ELV and Security System	2.3l	corrective					\$0
									\$0

ABC building

B1.4 Routine Maintenance for Carpark Portion

Issue Date : 1/5/2024

Input Guideline

 : Consultant should insert the required actions and relevant information.

 : The auto-calculated annual cost for the respective item.

Consultant should insert rows for additional items or remove unnecessary rows, and check the calculation formulas according to actual needs.

Item no.	Category	Element	Reference section in this Guidance	Type of maintenance	INFORMATION to be INPUT by CONSULTANT				COSTS (auto-calculated)
					Recommended action	No. of times per year	Unit	Cost estimate per no. of time (including preliminaries)	Total cost per year for each item
									\$0
26	MEP Systems	Lift and Escalator Installation, and Permanent Suspended Working Platform	2.1m	routine					\$0
									\$0
									\$0
27	MEP Systems	Lift and Escalator Installation, and Permanent Suspended Working Platform	2.3m	corrective					\$0
									\$0
									\$0
28	MEP Systems	Carpark Control System	2.1o	routine					\$0
									\$0
									\$0
29	MEP Systems	Carpark Control System	2.3o	corrective					\$0
									\$0
									\$0
30	MEP Systems	Carpark EV Charging System	2.1p	routine					\$0
									\$0
									\$0
31	MEP Systems	Carpark EV Charging System	2.3p	corrective					\$0
									\$0
									\$0

ABC building

Issue Date : 1/5/2024

B2. Costs Summary of Routine Maintenance

 : The auto-calculated cost in respective development portions by categories.
No input is required in this sheet.

	Costs for coming 12 months (auto-calculated)			
	Building Exterior	Building Interior	MEP System	Sub-total
Residential Portion	\$0	\$0	\$0	\$0
Commercial Portion	\$0	\$0	\$0	\$0
Clubhouse Portion	\$0	\$0	\$0	\$0
Carpark Portion	\$0	\$0	\$0	\$0
			Total Expenditure:	\$0

Calculation breakdown:

Residential Portion		(auto-calculation)	
Category	Element	Costs of Each Element	Costs of Each Category
Building Exterior	Structural Elements (External)	\$0	\$0
	External Wall Finishes	\$0	
	External Area and Landscaping Works	\$0	
	Man-made Slopes & Retaining Walls	\$0	
	Curtain Wall , Windows , Glass Wall , Glass Features	\$0	
	Waterproofing	\$0	
Building Interior	Structural Elements (Internal)	\$0	\$0
	Internal Finishes	\$0	
	Doors and Metal Gates	\$0	
	Fire Resisting Materials	\$0	
MEP Systems	MVAC	\$0	\$0
	F.S. Installation	\$0	
	Plumbing & Drainage System	\$0	
	Electrical Installation	\$0	
	ELV and Security System	\$0	
	Lift and Escalator Installation, and Permanent Suspended Working Platform	\$0	
	Gas Supply System	\$0	
Total Expenditure:			\$0

Commercial Portion		(auto-calculation)	
Category	Element	Costs of Each Element	Costs of Each Category
Building Exterior	Structural Elements (External)	\$0	\$0
	External Wall Finishes	\$0	
	External Area and Landscaping Works	\$0	
	Signages and Signboards	\$0	
	Man-made Slopes & Retaining Walls	\$0	
	Curtain Wall , Windows , Glass Wall , Glass Features	\$0	
	Waterproofing	\$0	
Building Interior	Structural Elements (Internal)	\$0	\$0
	Internal Finishes	\$0	
	Doors and Metal Gates	\$0	
	Fire Resisting Materials	\$0	
MEP Systems	MVAC	\$0	\$0
	F.S. Installation	\$0	
	Plumbing & Drainage System	\$0	
	Electrical Installation	\$0	
	ELV and Security System	\$0	
	Lift and Escalator Installation, and Permanent Suspended Working Platform	\$0	
	Gas Supply System	\$0	
Total Expenditure:			\$0

Clubhouse Portion		(auto-calculation)	
Category	Element	Costs of Each Element	Costs of Each Category
Building Exterior	Structural Elements (External)	\$0	\$0
	External Wall Finishes	\$0	
	External Area and Landscaping Works	\$0	
	Curtain Wall , Windows , Glass Wall , Glass Features	\$0	
	Waterproofing	\$0	
Building Interior	Structural Elements (Internal)	\$0	\$0
	Internal Finishes	\$0	
	Doors and Metal Gates	\$0	
	Fire Resisting Materials	\$0	
	Special Equipment and Facilities of Clubhouse	\$0	
MEP Systems	MVAC	\$0	\$0
	F.S. Installation	\$0	
	Plumbing & Drainage System	\$0	
	Electrical Installation	\$0	
	ELV and Security System	\$0	
	Lift and Escalator Installation, and Permanent Suspended Working Platform	\$0	
	Gas Supply System	\$0	

Total Expenditure: \$0

Carpark Portion		(auto-calculation)	
Category	Element	Costs of Each Element	Costs of Each Category
Building Exterior	Structural Elements (External)	\$0	\$0
	External Wall Finishes	\$0	
	Carpark Control System	\$0	
	Signages and Signboards	\$0	
Building Interior	Structural Elements (Internal)	\$0	\$0
	Internal Finishes	\$0	
	Doors and Metal Gates	\$0	
	Fire Resisting Materials	\$0	
MEP Systems	MVAC	\$0	\$0
	F.S. Installation	\$0	
	Plumbing & Drainage System	\$0	
	Electrical Installation	\$0	
	ELV and Security System	\$0	
	Lift and Escalator Installation, and Permanent Suspended Working Platform	\$0	
	Carpark Control System	\$0	
	Carpark EV Charging System	\$0	
Total Expenditure:			\$0

ABC building

C1.2 Periodic Maintenance for Commercial Portion

Issue Date : 1/5/2024

Input Guideline

[Red Box] : Consultant should insert the required actions and relevant information.

[Orange Box] : The auto-calculated cost in respective year and total cost in 10 years.

Consultant should insert rows for additional items or remove unnecessary rows, and check the calculation formulas according to actual needs.

Item no.	Category	Element	Reference section in this Guidance	Type of maintenance	INFORMATION to be INPUT by CONSULTANT							COSTS											
					Recommended action	Maintenance cycle (years)	% of Sub-element needing maintenance	Total quantity of sub-element	Unit	Cost estimate for each action (including preliminaries)	Year of last action	Total cost per item	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	
												\$0											
												\$0											
32	MEP Systems	Lift and Escalator Installation, and Permanent Suspended Working Platform	2.2m	periodic								\$0											
												\$0											
												\$0											
33	MEP Systems	Gas Supply System	2.2n	periodic								\$0											
												\$0											
												\$0											

ABC building

Issue Date: 1/5/2024

C2.1 Costs Summary of Periodic Maintenance for Residential Portion

Input Guideline

Red box: Information to be input by consultant to calculate the annual cash flow

Orange box: The auto-calculated cost and cash flow.

This summary can give a better idea of the financial impacts in the long term. Please adjust the input information reference to the below considerations for an achievable outcome:

- "Inflation rate" & "Interest rate" to be projected by consultant.
- "Contribution per year for each share" should be well discussed with owners and aiming for a positive year end balance.
- "Special contribution" can be regular and/or irregular contributions according to the actual needs and owners' preferences.
- "Accumulated cost" should be adjusted in the previous sections (C1.1-1.4) of each building portion, i.e., relevant information on the required actions, including the estimated costs and quantities.

To be input by consultant	
Inflation rate on cost:	
Total Undivided Share:	
Contribution per year for each share:	
Surplus/(deficit) in beginning year:	
Interest rate for balance of contribution:	

No.	Calendar Year	Residential Portion (auto-calculation)						Cash Flow (Residential Portion)				
		Building Exterior	Building Interior	MEP Systems	Total for Building Exterior, Building Interior & MEP Systems	Cost including inflation	Accumulated Cost	Special Contribution	(auto-calculation)			
									Yearly Contribution	Yearly Expenditure	Year end Balance	Interest of Year end Balance
1	2024	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2	2025	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	2026	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	2027	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5	2028	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6	2029	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7	2030	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8	2031	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9	2032	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10	2033	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

C2.2 Costs Summary of Periodic Maintenance for Commercial Portion

Input Guideline

[Red Box]: Information to be input by consultant to calculate the annual cash flow
[Orange Box]: The auto-calculated cost and cash flow.

This summary can give a better idea of the financial impacts in the long term. Please adjust the input information reference to the below considerations for an achievable outcome:

- "Inflation rate" & "Interest rate" to be projected by consultant.
- "Contribution per year for each share" should be well discussed with owners and aiming for a positive year end balance.
- "Special contribution" can be regular and/or irregular contributions according to the actual needs and owners' preferences.
- "Accumulated cost" should be adjusted in the previous sections (C1.1-1.4) of each building portion, i.e., relevant information on the required actions, including the estimated costs and quantities.

To be input by consultant	
Inflation rate on cost:	
Total Undivided Share:	
Contribution per year for each share:	
Surplus/(deficit) in beginning year:	
Interest rate for balance of contribution:	

No.	Calendar Year	Commercial Portion (auto-calculation)						Cash Flow (Commercial Portion)				
		Building Exterior	Building Interior	MEP Systems	Total for Building Exterior, Building Interior & MEP Systems	Cost including inflation	Accumulated Cost	Special Contribution	(auto-calculation)			
									Yearly Contribution	Yearly Expenditure	Year end Balance	Interest of Year end Balance
1	2024	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2	2025	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	2026	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	2027	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5	2028	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6	2029	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7	2030	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8	2031	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9	2032	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10	2033	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

C2.3 Costs Summary of Periodic Maintenance for Clubhouse Portion

Input Guideline

- : Information to be input by consultant to calculate the annual cash flow
- : The auto-calculated cost and cash flow.

This summary can give a better idea of the financial impacts in the long term. Please adjust the input information reference to the below considerations for an achievable outcome:

- "Inflation rate" & "Interest rate" to be projected by consultant.
- "Contribution per year for each share" should be well discussed with owners and aiming for a positive year end balance.
- "Special contribution" can be regular and/or irregular contributions according to the actual needs and owners' preferences.
- "Accumulated cost" should be adjusted in the previous sections (C1.1-1.4) of each building portion, i.e., relevant information on the required actions, including the estimated costs and quantities.

To be input by consultant	
Inflation rate on cost:	
Total Undivided Share:	
Contribution per year for each share:	
Surplus/(deficit) in beginning year:	
Interest rate for balance of contribution:	

No.	Calendar Year	Clubhouse Portion (auto-calculation)						Cash Flow (Clubhouse Portion)				
		Building Exterior	Building Interior	MEP Systems	Total for Building Exterior, Building Interior & MEP Systems	Cost including inflation	Accumulated Cost	Special Contribution	(auto-calculation)			
									Yearly Contribution	Yearly Expenditure	Year end Balance	Interest of Year end Balance
1	2024	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2	2025	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	2026	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	2027	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5	2028	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6	2029	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7	2030	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8	2031	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9	2032	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10	2033	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

C2.4 Costs Summary of Periodic Maintenance for Carpark Portion

Input Guideline

- : Information to be input by consultant to calculate the annual cash flow
- : The auto-calculated cost and cash flow.

This summary can give a better idea of the financial impacts in the long term. Please adjust the input information reference to the below considerations for an achievable outcome:

- "Inflation rate" & "Interest rate" to be projected by consultant.
- "Contribution per year for each share" should be well discussed with owners and aiming for a positive year end balance.
- "Special contribution" can be regular and/or irregular contributions according to the actual needs and owners' preferences.
- "Accumulated cost" should be adjusted in the previous sections (C1.1-1.4) of each building portion, i.e., relevant information on the required actions, including the estimated costs and quantities.

To be input by consultant	
Inflation rate on cost:	
Total Undivided Share:	
Contribution per year for each share:	
Surplus/(deficit) in beginning year:	
Interest rate for balance of contribution:	

No.	Calendar Year	Carpark Portion (auto-calculation)						Special Contribution	Cash Flow (Carpark Portion)			
		Building Exterior	Building Interior	MEP Systems	Total for Building Exterior, Building Interior & MEP Systems	Cost including inflation	Accumulated Cost		(auto-calculation)			
									Yearly Contribution	Yearly Expenditure	Year end Balance	Interest of Year end Balance
1	2024	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2	2025	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	2026	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	2027	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5	2028	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6	2029	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7	2030	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8	2031	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9	2032	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
10	2033	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0