

## **Maintenance Approaches of Historical Buildings in Malaysia**

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### **Abstract**

The conservation of historic buildings is an established method to preserve a heritage structure through restoration and maintenance works. Maintenance has been identified as a key intervention in protecting historic structure by prolonging the lifespan of building. The importance of carrying out a systematic and routine maintenance works as part of the conservation programme is often neglected due to a misunderstanding on the needs of the works subsequent to the conservation works carried out. Note that without a systematic and proper maintenance approach, historic buildings will deteriorate and will not be able to function as it is. This paper intends to highlight the current practice of maintenance approaches that are being implemented in historic buildings in Kuala Lumpur. As the capital city of Malaysia, Kuala Lumpur has a vast number of unique historic buildings. Each building has its own unique character and significance, be it cultural, historical or architectural. The findings for this research are summarized from the responses obtained directly from the respondents employed for the maintenance management of the historical buildings. Twenty historical buildings (of which some are already categorized under national heritage) were involved in case studies that were carried out. The methodology used for this research is through personal interviews and distribution of self-developed questionnaires focusing on the current approach taken for the implementation of maintenance works on these buildings. The outcome of this paper will be used as a basis for the formation of the best maintenance programme for historical buildings in Malaysia.

### **Keywords**

Conservation, Maintenance, Historical buildings, Maintenance approach

### **1. Introduction**

A building is a major asset where its value, both in financial terms and in the satisfaction it brings to its users, is affected by its condition. Sometimes a building can sustain sudden and immediate damage. However, they may suffer instead from the sort of damage that goes unnoticed for years with each small fault triggering a whole chain of consequences. The changes are so gradual that they do not attract attention until they become quite advanced. Some owners will take notice at this stage; others will turn a blind eye because they are unsure what to do, and will only become concerned enough to seek help once major damage reveals itself.

Given that the nature of historical buildings can have some avoidable degree of degradation and decay, maintenance is the single most significant approach that can ensure the prolongation of the building's lifespan. Hamilton and Wan Salleh (2001) stated that systematic management and continuous maintenance works are necessary for mitigating the decaying process that will lead to unsafe conditions. In addition to the benefit of prolonging a building's lifespan, the execution of the maintenance works on a building and its services system when it is continuously and progressively undertaken, will be profitable to the organization in the long run.

According to Malaysia's Prime Minister, Datuk Seri Abdullah Ahmad Badawi, billions of ringgit have been spent and wasted in repairing public buildings due to Malaysia's poor maintenance culture (Abdullah Ahmad Badawi 2007). This is such a waste because if the defects were spotted earlier and rectified, it will not develop into big problems or costs more.

Based on the List of Heritage Sites to be gazetted under the National Heritage Act 2005 (Act 645) as compiled by Jabatan Warisan Negara (2007); It was recorded that there were about 181 heritage sites in total, consisting of buildings, forts, stones, caves, wells, cemeteries and other pre-war structures sporadically located within the thirteen states in Malaysia. Out of this, only 91 are buildings. Undoubtedly, these buildings are important in portraying the historical past of the nation but given the age of the buildings at present, these structures will not be standing for too long unless proper maintenance works are carried out. The lack of proper maintenance works and identification of historical buildings may contribute to the decay of buildings thus resulting in the decrease in the number of historical buildings. Rapid urbanization process is the main threat for historical buildings (see for example Bok House which was demolished in 14th December 2006 (Phang and Puah 2006).

Acknowledging the need for systematic maintenance of historical buildings, this research is therefore seen as a vital approach to highlight and assist in the improvement on the maintenance for historical buildings within the local context. This research intends to highlight the current practice of maintenance approaches that are being implemented in historic buildings in Kuala Lumpur. The main focus of this research will be concentrated on the historical buildings which have undergone conservation works be it major or minor.

## **2. Literature Review**

Fielden (2003) stated that historical buildings are indeed valuable and should be appreciated for its cultural significance. The significance of these buildings is present in the forms of their aesthetical characteristics, historical value, social value, spiritual value and symbolical value. For their significance, these historical buildings should be preserved to be shared and cherished by all.

Dunn (2000) highlighted that maintenance is one of the primary principles for conservation of historical buildings. It is a method or an approach to preserve the existing fabric of the historical buildings. He also expressed that proper maintenance will upgrade the status and value of the historical buildings. In addition, systematic implementation of the maintenance works will raise the interests amongst the public and may become a political issue. Presently, there is a positive change in the public's perspectives on the issue of maintenance. Maintenance is now being largely accepted and recognized as the best approach in ensuring the prolongation of the buildings' lifespans, a strategy for slow renewal and decay prevention; and, maintaining utility and economic return (Dunn 2000).

Fielden and Jokilehto (1993) described that maintenance includes all practical and technical approaches which are deemed necessary to ensure that the condition of the building or the site of where it is located is maintained true to its original and that the works undertaken will not degrade the building's value and significance. This process should be progressive and continually undertaken to ensure that the lifespan of the building can be prolonged.

Ghafar (1994) further stated that, the importance of maintenance to a historical building is closely related to the value and the importance of the buildings themselves as heritage evidences. Marks (1996) and Pickard (1996) strongly expressed their opinions by stating that the rationale of maintaining the historical buildings relates to their historical development and value, authenticity of their architectural styles, age, functions and the importance of the buildings as source of income.

Abdul Hakim (2002) stated that it is impossible for historical buildings to be free from maintenance. This relates to the decaying state of the buildings. In general, the building materials of the historical buildings are prone to decay and defect but these however can be prevented if maintenance works are performed. This statement is also supported by Kindred (2004) stated that maintenance is the best strategy to prevent the loss of the historical building's fabric.

From a historical perspective, the historical buildings in Malaysia should be conserved, preserved and maintained true to their original forms and structures. Noted, maintenance is seen as the best approach in ensuring the prolongation of the building lifespan. Historical buildings are different from modern buildings due to their authenticity, originality of the fabric and the condition of the buildings which are categorized as artifacts (Dunn 2000; Fielden 2003). Maintenance is widely thought to reduce long-term costs by maximizing the operating capacities of equipment, minimizing downtime, and avoiding damages that would otherwise lead to higher costs later and it has been shown to save energy and reduce repair costs (Office of The Legislative Auditor 2000).

Taylor (2007) stated that the degradation of the historical structure is different compared to new modern buildings. He also highlighted that all repair works should be undertaken by skilled workers who are knowledgeable in the aspect of conservation and maintenance. Robiah and Amir Fasha (2007) concluded that the key elements to be considered in the maintenance management of the historical buildings consist:

- Documentation and exacting records prior to the conservation and maintenance works undertaken;
- Respect on the exacting originality of the building fabric during the maintenance works;
- Optimum renewal on the building fabric;
- The maintenance frequency and cycle.

Ahmad (2002) then highlighted that maintenance is often not being prioritized by the owners of the historical buildings, resulting in the badly decaying state of the buildings. The lack of understanding and appreciation on the historical value of the buildings is the main factor on why the owners neglect the need of carrying out a proper and systematic maintenance works on their properties.

### **3. Research Methodology**

A total of 20 historical buildings located within the Kuala Lumpur area were selected from the list of historical buildings obtained from the Malaysia Heritage Department , and also other buildings which can be considered as historical depending on their historical, architectural and aesthetical value.

#### **3.1 Research Instrument**

The first step taken for this research involves the compilation of data from published and unpublished information obtained from books, journals, articles, reports, thesis and websites. In addition, a set of self-developed structured questionnaire consisting of nine questions was prepared to assist in the interview sessions with the maintenance management staff of historical buildings, authorities and other responsible parties. The purpose of this instrument is to obtain information from primary sources directly from the respondents for accuracy of information. In addition, observations were also made to identify external factors such as structure of organisation, financial allocation and prepared maintenance programme .

#### **3.2 Research Samples**

The selection of the research samples is based on the information obtained from related organizations involved with the maintenance management of historical buildings in Malaysia. Each sample selected is

based on the status of the building that is categorized as a historical building that have undergone conservation and preservation works.

### 3.3 Criteria for the Selection of Respondents

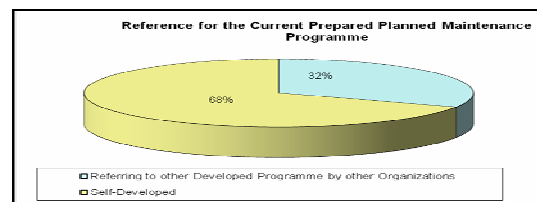
The main criteria used for the selection of respondents is that the respondents must be directly involved with the maintenance works or is responsible for overseeing the execution of maintenance works. The respondents are classified into two categories, namely is at the management level or the technical staff.

## 4. Findings and Discussions

### 4.1 Types of Maintenance Programme

50% of respondents claimed that they adopted a Planned Maintenance Programme for their buildings, while the other 50% confirmed that Unplanned Maintenance Programme is practiced by their organizations. This may due to unavailable standard maintenance programme provided by any authority to historic buildings owner. Some respondents when asked, did not even know about planned maintenance programme and had no idea at all on how the programme can be implemented in their organisations. This confirmed that there is still a lack of expertise in establishing a systematic and standardized maintenance programme.

### 4.2 Basis for Planned Maintenance Approach adopted by Organization



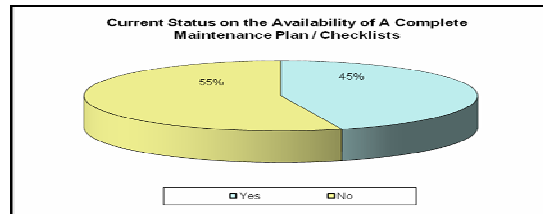
**Figure 1: Reference for the Current Prepared Planned Maintenance Programme**

Figure 1 shows that 68% of the respondents confirmed that the current maintenance approach being put into use is self-developed by their maintenance unit and/or personnel. Whereas, 32% of the respondents clarified that their maintenance approach is modelled based on the maintenance programme of other buildings. However, based on the further interviews and observations, most of the respondents approach are based on the adhoc maintenance. Most of the maintenance works will be carried out when damage occurred in their buildings.

### 4.3 Intricacy of Maintenance Programme for Historical Buildings

Generally, all of the respondents agreed that undertaking a maintenance programme for historical buildings are more complex compared to carrying out maintenance works for a new building. The subject of authenticity, the need to retain the architectural, historical, heritage and cultural values of the building, the difference in the original built materials and technology are some of the intricacies that should be handled properly by the maintenance department and the technical skills appointed when undertaking the maintenance works.

#### 4.4 Preparation of Maintenance Plan

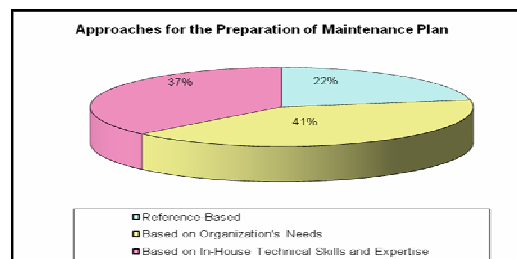


**Figure 2: Availability of Maintenance Plan**

Figure 2 indicates 45% of the respondents claimed that their organizations have established their own maintenance plan specifically for assisting the maintenance works to be carried out. The remaining 55% of the respondents claimed that no such plan is being established by their organizations. The respondents who confirmed the establishment of the maintenance plan are working under the organizations of historical buildings which are owned by the federal government and listed under the 50 National Heritage List. This indicates that certain organizations did have their own maintenance plan. However, the contents and structure of the plan are still at an infancy stage and need to be improved for a betterment of the organizations.

#### 4.5 Approach for the Preparation of Maintenance Plan

The results below is based on the 45% of the respondents who claimed that their organizations have established their own maintenance plan. Figure 3 depicts the approaches undertaken by the organizations in establishing the maintenance programme.



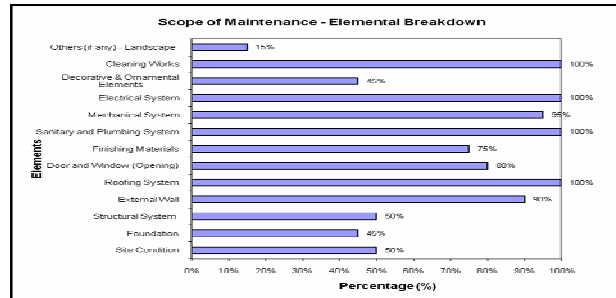
**Figure 3: Approaches for the Preparation of Maintenance Plan**

Comparatively, most of the respondents (approximately 41%) from the total number of respondents confirmed that the main approach to the establishment of the maintenance programme is based on the organization's needs. The maintenance programme is self-designed to fulfill the scope of work of the organization itself. 22% of the responses received from the respondents clarified that their current maintenance programme used referred to the one prepared and used in other buildings. 37% of the responses also received from the respondents on the establishment of the maintenance programme stated that their maintenance plan is based on the in-house technical skills and expertise. In other words, the approach for the maintenance programme is designed to fit the size of the maintenance organization, depending on the number of technical staff and management officers within the maintenance department.

#### 4.6 Elemental Scope of Maintenance Works

Figure 4 depicts the results obtained from the respondents carrying out the maintenance works based on the building elements and the scope of maintenance works itself. Items such as external wall, roofing, sanitary and plumbing, mechanical and electrical system are considered to be important and regarded as

the main components that are required to be maintained. Note that, these are more related to the building function as the services systems are deemed necessary for the functionality of the buildings. Other than this, the urgency of repair works to be carried out on the roof system is to prevent future decay of the roofing components. The maintenance works carried out on the external wall is more on the need to ensure that the physical outlook is maintained to an acceptable standard value. Item 13 describes the maintenance works carried out on the landscape elements such as grass-cutting, tree trimming, etc.



**Figure 4: Elemental Scope of Maintenance Works**

#### 4.7 Frequency of Maintenance Works on Annual Basis

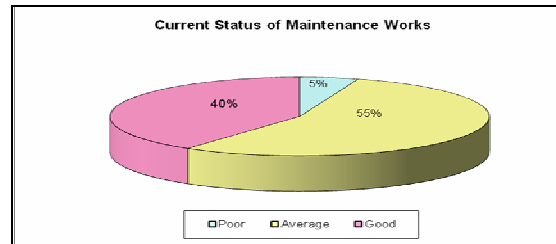
Variable answers are obtained on the frequency of maintenance works carried out on the building elements and the scope of maintenance works. In general, the frequency of maintenance works undertaken on an annual basis can be described as follows:

- Site condition and building foundation is normally inspected only once on an annual basis, depending on the incurrence of defects that can be associated with the soil stabilization or other issues concerning it..
- An average of 2-3 frequency of maintenance works are carried out on the external wall and roofing system and these are more related to the repair works on the falling concrete surface or finishes, painting works and leaking or replacement of decayed roofing structural system.
- Service systems comprising of sanitary and water plumbing system, mechanical system and electrical system are the main components that received continual maintenance works. The maintenance works carried out are more of repair and replacement of defect mechanical components. This hinted that service systems are regarded as the most important element compared to the other building elements. The reason behind this relates to the functionality of the building more than the physical appearance.
- Cleaning work is the most common type of maintenance works that is undertaken on a daily basis. Further interviews with the respondents confirmed that the cleaning work comprises of cleaning the internal and external areas of the buildings (e.g. sweeping, clearing off drains from clogging, etc.).
- For openings and finishing materials, the repair works and replacement of falling finishing materials are the types of maintenance undertaken on the historical buildings. The frequency of the maintenance works carried out for these elements is variable, depending on the budget allowance or urgency of such works to be undertaken.

#### 4.8 Current Achievement Status on the Maintenance Works Implemented

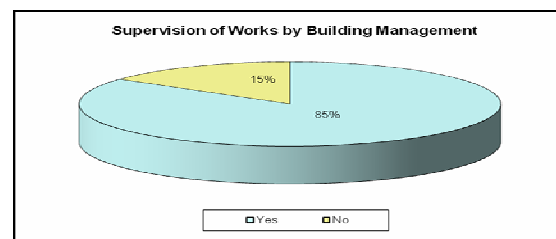
With reference to figure 5, the three scales marked as “poor”, “average” and “good”, symbolizes the current status of the maintenance works implemented on the historical buildings. The overall results is shown in Figure 6. 55% of the respondents (which is equivalent to 11 historical buildings) claimed that they viewed the current status of maintenance works at an average and acceptable level. Respondents

from eight or 40% of historical buildings claimed that the current maintenance works status are deemed as good enough. Their basis for this status level achievement is based on the current condition of the buildings of which the buildings are functional and not much defects occurred on the buildings and the services systems. Another 5% of the respondents (which is equivalent to only one of the historical buildings) viewed that the current maintenance works implemented are considered as poor.



**Figure 5: Current Status of Maintenance Works**

#### 4.9 Supervision of Maintenance Works



**Figure 6: Supervision of Maintenance Work**

85% of the respondents (equalling to 17 of historical buildings) confirmed that in the execution of maintenance works either by the in-house staff or external appointed contractors, these works are normally being supervised by their maintenance officer or building management officer. Only three or 15% of historical buildings confirmed otherwise. Out of the three historical buildings, two had no specific maintenance unit established while another one confirmed that only one building management officer was appointed for the so-called maintenance unit and since the building belongs to the government, all maintenance works and supervision are undertaken by the Maintenance Unit of the Public Works Department.

### 5. Concluding Remarks

This paper summarizes the findings on the current maintenance approach undertaken for historical buildings in Kuala Lumpur. Results of the case studies indicated that the maintenance approach undertaken for historical building in Malaysia is still loosely-based. It can be summarized that some of the organizations of historical buildings did not have a proper maintenance department or unit to carry out this specific work. Most of the organizations preferred to outsource the maintenance works to external contractors. This results in another issue on the quality level of the maintenance works; whether the works undertaken are true to their original or not. As explained earlier, conservation is a new industry and not all contractors are knowledgeable and skillful enough in understanding the intricacy of the maintenance works to be carried out on the historical buildings. The lack of understanding may result in the loss of building value.

The lack of technical skills and expertise to carry out the maintenance works is another issue faced in Malaysia. Undoubtedly, the number of competent technical staff in Malaysia contributed to the questionable level of maintenance works carried out. Maintenance is a new industry in Malaysia and a majority of those involved in the maintenance management organization of historical buildings are lacking in technical knowledge and skills. It is noted that historical buildings are more intricate and delicate compared to contemporary, modern buildings and therefore, there is a need to understand the importance of preserving the significance of the buildings with regards to its architectural, cultural, heritage and aesthetical values as well as to fully understand the conventional or traditional materials and technologies used for the construction of the buildings. In short, the execution of the maintenance works on the historical buildings should not be taken lightly and indeed the works require involvement of experts in order to ensure that certain quality standard is achieved to prevent the loss of heritage value. Finally, the non-existence of specific guidelines and an established maintenance plan as a standard guideline that can assist the maintenance department or unit is another issue that is overlooked in Malaysia.

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