



PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 20 ISSUE 3 (2022), Page 50 – 62

ASSESSING CRITICAL RISK FACTORS FOR HERITAGE CONSERVATION PROJECTS IN COMPLIANCE WITH NATIONAL HERITAGE ACT 2005 (ACT 645)

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Abstract

The Malaysian government has consistently highlighted the significant value of historical buildings as one of the goals of sustainability initiatives. The heritage sites, locals, culture even assets are well preserved, highly valued, and renowned globally. However, significant risks and uncertainties have created challenges to heritage conservation projects. This paper aims to establish a Critical Risk Factors for Heritage Conservation Project in Malaysia and its relationship with National Heritage Act 2005. A quantitative research approach is used to achieve the two objectives towards attaining this aim. First, a systematic literature review is used to determine the critical risk factors for a heritage conservation project in a way to identify a significant risk involved in a heritage conservation project and finally to establish critical risk factors for a heritage conservation project in compliance with National Heritage Act 2005 (Act 645). For this paper, the only second objective was discussed. Based on the analysis, it can be concluded that fifteen (15) most critical risk factors could enhance heritage conservation projects at every stage in building a conservation framework. Usually, most of the critical risk factors can be mitigated prudently with the compliance of Section 40 (1) – (6), National Heritage Act 2005 (Act 645), focusing on the planning permission for Heritage sites.

Keywords: Critical Risk Factor; Heritage Conservation Project; National Heritage Act 2005 (Act 645); Planning Permission

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INTRODUCTION

Building conservation is relatively known as a process of understanding, protecting and as essential to maintaining, repairing, restoring and adapting the historic property to preserve its cultural significance on architectural and cultural values. In Malaysia, extensive guidelines and provisions are developed by various parties in a way to protect valuable heritage property, such as National Heritage Act, Town and Country Planning Act and Local Government Act. National Heritage Department takes the responsibility to ensure the accomplished project meets the needs of conservation ethics for preliminaries, during and post conservation stage by introducing the Historical Architectural Building Survey (HABS) to document all the conservation project activities (Harun, 2020). Meanwhile, Town and Country Planning 1976 (Act 172) state the provisions regarding retaining the value of heritage property, while Local Government Act 1976 (Act 191) empowers local authorities to maintain or contribute to the maintenance of historical building or sites. Heritage conservation is defined as a process of upkeep and caring for a significant value of historical or architectural or aesthetic, or cultural significance, including the maintenance, preservation, restoration, reconstruction and adoption or combination of more than one of them, Nawī (2020); Roy and Kalidindi (2017); Hisham and Hassan (2015). Generally, building conservation works are dissimilar and riskier than a new project Nawī (2020). The nature of conservation work is the characteristic of heritage conservation projects usually are the non-standard scope of works, special approaches based on project type and unusual project management experience since it deals with technical skills and 'special' building material in order to maintain the authenticity and characteristic of the building Nawī (2020).

Consequently, it has been a significant risk and uncertainty creating challenges to building conservation projects, especially if the building has undergone several interventions such as building an extension or physical alteration (Harun, 2020). Risk is defined as an undefined event or condition that has negatively impacted the project performance's success (Zolkafli et al., 2012). Hence, identifying a risk throughout the heritage conservation project is crucial to ensure all the risks are successfully managed and treated properly. Zolkafli et al. (2012) listed pivotal points in common risks in conservation projects such as practical experience and expertise in such project, the minimum statutory requirement that affect the quality of specification, incomplete design information and solve by assumption, missing and lack of related document, and reliance or dependency to the specialist or craftsmanship. According to Mui et al., 2016, the experience and matureness of practitioners in a conservation project are the key elements that ensure the project is delivered within the time, cost, and quality of the project outcome. In addition, conservation work description depending on the existing condition of the building and unknown conditions due

to layers of previous construction methods make it more challenging. In terms of work documentation, a lack of information before the execution of works can affect the tendering process due to undefined costs. The conservation approach as consideration to achieve the conservation project outcome in Malaysia is by practising a charter from Burra Charter Australia. Eight (8) approaches are listed: preservation, restoration, replication, relocation, adaptive reuse, reconstruction, prevention, and consolidation. The study will begin by revealing significant risks contributing to barriers to efficacious heritage conservation projects.

RESEARCH BACKGROUND

Harun (2011) defined conservation as a technical action taken by a historic building to prevent decay and prolong the building's lifespan. On the other hand, Rashid & Ahmad (2011) defined historic building conservation as a maintenance approach to preserve the authenticity of structures and fabric. Burra Charter (2013) also outlines the definition of conservation means all the processes of looking after a place to retain its cultural significance. In Malaysia, a systematic approach as a conservation framework was prepared by Ahmad (2006a; 2006b) for reference by practitioners in the heritage conservation project. It consists of a holistic approach comprising all conservation activities to ensure the projects are well planned and managed for the whole life cycle, as summarised in Figure 1. Building conservation is always aligned with risk management in conservation projects. The exemplary implementation will assist in managing risk and uncertainty in every stage of conservation works.

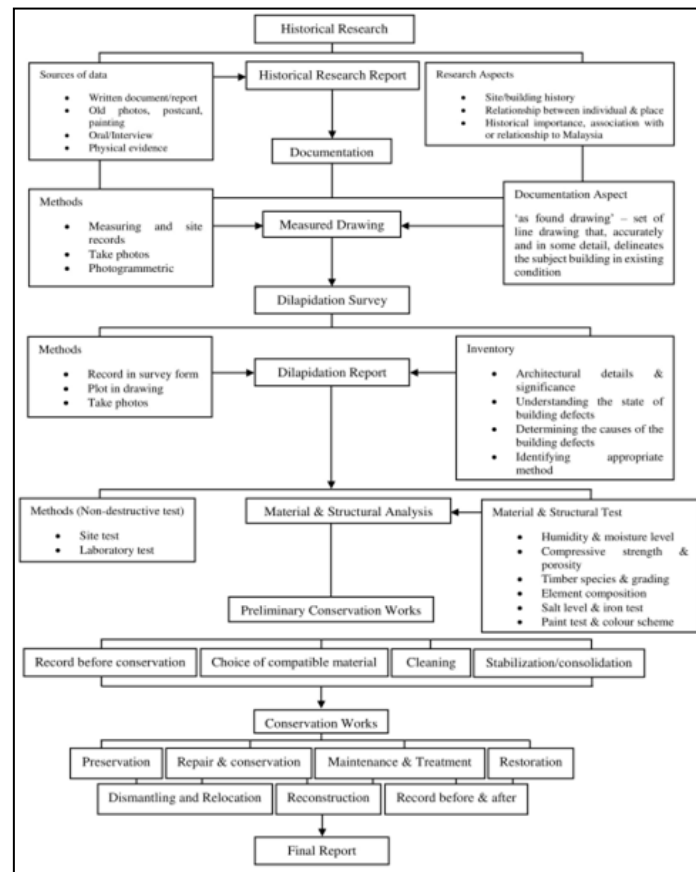


Figure 1: Heritage Conservation Framework in Malaysia
Source: Harun (2011)

Preliminary Investigation

The preliminary investigation is to identify related data on building history, architectural and social background. The objective and purpose are clearly defined before different approaches are taken. Harun (2011) state preliminary investigation is an important document that could help in the conservation work, comprised of original design drawings, drawing from a previous investigation, old photographs, old maps, old painting, or any previous historical report. All data shall be compiled and well documented for conservation as evidence and reference for the parties involved. In heritage conservation, issues in difficulties identifying the scope of heritage building projects frequently arise as on a lack of information on the existing structure, drawings and preliminary investigation (Perovic et al, 2016). In addition, incomplete design information may lead to the

consultant's assumption, which can lead to risk in the conservation projects (Reyers John & John, 2001).

Dilapidation Survey

The dilapidation survey started once the client received the preliminary survey report. Dilapidation survey is a practice of understanding the state of building defects, determining the causes of building defects, determining the methods and techniques that can be applied and turning into a reference for a client, consultant, or contractor, mainly to assist quantity surveyor and will become an additional item in document tender (Harun,2011). The outcome of the data shall be presented in photographic and digital documentation, including the proposed work method statement for rectification purposes (Kamal & Wahab, 2014).

Preparation of Tender Document

Based on a dilapidation survey report prepared by the appointed consultant, a quantity surveyor will prepare an estimated cost by referring to the level of building defect recorded, suitability of method and techniques proposed for remedial works (Kamal & Wahab, 2014). The collaboration between architect and conservator with quantity surveyor is crucial to determine the scope of work, specification of work and suitable conservation approach. The conservation cost must be aligned within the client budget to prevent overrun costs that may lead to project delay or leave it abandoned. Then, the client will appoint an experienced contractor for conservation works. The current practices in Malaysia were using the Public Works Department (PWD) and (Pertubuhan Arkitek Malaysia (PAM) contracts are determined not suitable for the nature of the conservation work because specific clauses are not relevant to the nature of building conservation (Lee & Lim, 2009).

Furthermore, the tender amount consists of high variance due to the estimated cost, which may affect assessing the contractors' most competitive and reasonable price (Lim & Ahmad, 2015). Other than that, issues with format and variability in tender documents, poor work description, the obscurity of specification clauses, and amendments to the Standard Form of Contract and the Method of Measurement (Lim & Ahmad, 2015). Insufficient information provides to the contractor as their references, such as drawing and specification, cause problems where the actual work on-site is not discovered until the work commences (Lim & Ahmad, 2015).

Conservation Works

The appointed contractor shall appoint a conservator to advise on behalf of the contractor about the technical aspects and assist the contractor with any problem during conservation works. The conservator must always remind and monitor the

projects to ensure they follow the conservation guidelines, ethics, and principles. The most important issue that must be stressed to the contractors is strictly following the specifications as agreed in contracts to retain the authenticity. Contractors are responsible for preparing a Historic Architectural Building Survey, which persistence to record all conservation work before, during and until the completion of the project. Thus, site meetings shall be frequently held to solve all problems that arise, which may prevent disputes between consultants and contractors (Kamal & Wahab, 2014). After handing them over to the client, the contractors will again be responsible for all defects. The inaccurate or inadequate site and survey information can cause risk in the conservation project because the data obtained are not helping much in the project (Zolkafli et al., 2012).

Furthermore, poor communication and interpretation among practitioners in conservation projects can cause different approaches in the scope of work during the conservation works (Azizi et al., 2015). Knowledge in heritage conservation is one of the essential issues, whereas experts and labour do not clearly understand the conservation method or techniques that can be applied (Harun, 2011). In addition, traditional building materials are not more available in the market and need to be duplicated, which can contribute to delays. In some cases, the material needs to be imported to any countries that are still available for production. Such material is needed and not impossible to import the craftsmen from any country, which can lead to higher project costs.

Heritage Management

The maintenance management shall be prepared to ensure that the building can be maintained in the conserved condition to prolong its lifespan. Maintenance begins once the defect liability period ends, and all the defects have already been made good by the contractor (Kamal & Wahab, 2014). The maintenance must follow the planned maintenance to prevent any deterioration that may cause the maintenance cost. The approach in maintenance work for historical buildings must refer to the previous conservation report to identify the appropriate approach taken, such as the method or techniques and material used. The final report on heritage conservation is an important document which comprises all related work processes and data about the building that has been conserved, which can be referred for future maintenance or any conservation activities (Harun, 2011). Maintenance personnel in most heritage buildings need proper guidelines to assist them in carrying out maintenance work which can act as a benchmark, such as preparing a maintenance programme and reference for third-party maintenance personnel (Rashid & Ahmad, 2011). The maintenance manual is a vital document as a reference for the historical building maintenance, which comprises all necessary data which the building had been conserved (Baharuddin et al., 2014).

RESEARCH METHODOLOGY

This paper aims to establish a Critical Risk Factors for Heritage Conservation Project in compliance with National Heritage Act 2005 (Act 645). A quantitative research approach is used to achieve the two objectives towards attaining this aim. First, a systematic literature review is used to determine the critical risk factors for a heritage conservation project in a way to identify a significant risk involved in Heritage Conservation Project and finally to establish a Critical Risk Factors for Heritage Conservation Project in compliance with National Heritage Act 2005 (Act 645). For this paper, the second objective was discussed. The development of critical factors was confined to the literature published from 2015 onwards in academic journals and proceedings. A thorough examination was conducted to develop a depth-understanding of which factors are likely to happen due to the Heritage Conservation Project. A descriptive technique was adopted to validate factors and sub-factors of Critical Risk Factors for the Heritage Conservation Project. The questionnaire was conducted on a sample drawn from a database of G7 contractors listed in the Construction Industry Development Board (CIDB) Malaysia specialized in a heritage conservation project, which is B03 (17 nos), Registered Conservator listed by the National Heritage Department (52 nos) and an academician/researcher (31 nos) that has previous studies on the academic paper are selected to be part of the respondent. 100 copies of the questionnaires were delivered to the potential respondents by email and online survey in the 3rd quarter of 2021, particularly in July. However, only 80 copies and the response to the questionnaire were received. The response rate was 80% and consistent with the 20-30% norm for most survey surveys distributed in the construction industry (Yang et al., 2010).

FINDINGS AND ANALYSIS

Critical Risk Factor Analysis based on Ranking

As shown in Table 1, a significant difference in dependencies between fifteen (15) numbers of essential factors was found. Discussing the result, from the perspective of heritage conservation project stakeholders, most respondents highlight that (F13: Lack of knowledge in continuous maintenance programme) is the most significant factor which could lead to the enhancement of heritage conservation projects at every stage in building conservation framework. Continued with (F1: Lack of an essential document for preliminary work), (F15: Lack of knowledge in maintenance manual), (F12: Lack of requirement for new construction and conservation), (F3: Lack of historical background information by the consultant and contractor), (F9: Incomplete drawing and specification cause assumption Conservation Project), (F8: Incomplete drawing and specification cause high variance in provisional and contingency cost), (F6: Lack of scientific and laboratory testing in terms of solution for restoration works),

(F4: Lack of scientific and laboratory testing in terms of dilapidation survey information), (F5: Lack of scientific and laboratory testing in terms of preparation of conservation cost), (F7: Incomplete drawing and specification cause high variance in provisional and contingency cost), (F14: Lack of knowledge by maintenance personnel), (F11: Poor consultant and contractor performance), (F10: Lack of guideline by National Heritage Department) and (F2: Lack of an important document for preliminary work).

Table 1: Critical Risk Factors Overall Ranking

Source: Author (2022)

Factor	Critical Risk Factors in Heritage Conservation Project	Mean	Overall Ranking
F1	Lack of an important document for preliminary work	4.78	2
F2	Inadequate and ambiguous information	2.80	15
F3	Lack of historical background information	4.64	5
F4	Lack of scientific and laboratory testing in terms of dilapidation survey information	4.40	9
F5	Lack of scientific and laboratory testing in terms of preparation of conservation cost	4.09	10
F6	Lack of scientific and laboratory testing in terms of solutions for restoration works	4.43	8
F7	Incomplete drawing and specifications cause incomplete preparation for the scope of work	4.00	11
F8	Incomplete drawing and specification cause high variance in provisional and contingency cost	4.53	7
F9	Incomplete drawings and specifications cause assumptions by the consultant and contractor	4.60	6
F10	Lack of guidelines by the National Heritage Department	3.35	14
F11	Poor consultant and contractor performance	3.45	13
F12	Lack of requirement for new construction and conservation	4.75	4
F13	Lack of knowledge in the continuous maintenance programme	4.82	1
F14	Lack of knowledge by maintenance personnel	3.68	12
F15	Lack of knowledge in the maintenance manual	4.76	3

Compliance with National Heritage Act 2005 (Act 645)

The entire critical risk factors found in this study should be mitigated wisely, especially during planning permission, to avoid project failure. Therefore, a holistic mechanism is crucial to identify a potential risk that can happen at the overall stage of a conservation project. Referring to Section 40 (Application for Planning Permission for Heritage Site), National Heritage Act 2005 (Act 645), all the applications regarding heritage sites shall get permission from National Heritage Department (NHD) before the project commences. Details of Section 40 are described below:

- 1) Section 40 (1) stipulates that the commissioner shall coordinate and advise the local planning authority before any planning permission or development order is granted involving a heritage site.
- 2) Section 40 (2) stipulates, Where the local planning authority refers any application by any person for planning permission or development order to the Commissioner, such application shall contain:
 - a) sufficient particulars to identify the monument to which the application relates, including its layout plan, measured building plan and photographs of its every angle, including the exterior and interior of such monument;
 - b) such other plans and drawings as are necessary to describe the work which is the subject of the application;
 - c) measures that have been taken to secure the safety of the heritage site and the neighbouring land; and
 - d) such other particulars as may be required by the Commissioner.
- 3) Section 40 (3) stipulates, for paragraph 2(c), neighbouring land means:
 - a) any land adjoining within a distance of two hundred meters from the boundary of the land to which an application under this section relates;
 - b) any land separated from the land to which an application made under this section relates by any road, lane, drain or reserved land, the width of which does not exceed twenty meters and which would be adjoining the land to which the application relates had they not been separated by such road, lane, drain or reserved land; or
 - c) any land located within a distance of two hundred meters from the land boundary to which an application under this section relates.
- 4) Section 40 (4) stipulates that the Commissioner shall advise the local planning authority to impose conditions when approving planning permission or a development order involving a heritage site.
 - a) Requiring compliance with any conservation guidelines and procedures issued by the Minister.

- b) requiring the making good of any damage caused to any heritage site after the works authorized by the planning permission or the development order are completed; or
 - c) requiring the protection and retention of any specified feature of the heritage site
- 5) Section 40 (5) stipulates, Where the planning permission is approved, the Commissioner shall liaise, cooperate, and coordinate with the local planning authority to monitor and supervise that the terms and conditions imposed relating to the conservation of heritage are complied with.
- 6) Section 40 (6) stipulates that any person who contravenes any condition imposed under subsection (4) commits an offence.

Table 2: Matrix Analysis of Section 40, National Heritage Act 2005 (Act 645), Heritage Conservation Process and Critical Factors in Heritage Conservation Project

Process	Heritage Conservation Process (Harun, 2011)	Section 40, National Heritage Act 2005 (Act 645)						Critical Risk Factors in Heritage Conservation Project
		Section 40 (1)	Section 40 (2)	Section 40 (3)	Section 40 (4)	Section 40 (5)	Section 40 (6)	
1	Preliminary Investigation	/	/	/	/	/	/	F1; F2; F3; F10; F11.
2	Dilapidation Survey	/	/	/	/	/	/	F2; F3; F4; F5; F6; F7; F8; F9; F10; F11.
3	Preparation of Tender	/	/	/	/	/	/	F3; F4; F5; F6; F7; F8; F9; F10.
4	Conservation Works	/	/	/	/	/	/	F6; F7; F8; F9; F10; F11; F12.
5	Heritage Management				/	/	/	F13; F14; F15.

Legends:

F1	Lack of an important document for preliminary work	F9	Incomplete drawings and specifications cause assumptions by the consultant and contractor.
F2	Inadequate and ambiguous information	F10	Lack of guidelines by the National Heritage Department
F3	Lack of historical background information	F11	Poor consultant and contractor performance
F4	Lack of scientific and laboratory testing in terms of dilapidation survey information	F12	Lack of requirement for new construction and conservation

F5	Lack of scientific and laboratory testing in terms of preparation of conservation cost	F13	Lack of knowledge in the continuous maintenance programme
F6	Lack of scientific and laboratory testing in terms of solutions for restoration works	F14	Lack of knowledge by maintenance personnel
F7	Incomplete drawings and specifications cause incomplete preparation for the scope of work.	F15	Lack of knowledge in the maintenance manual
F8	Incomplete drawing and specification cause high variance in provisional and contingency costs.		

Source: Author (2022)

Based on the matrix analysis in Table 2, the most critical stage of the heritage conservation project is stage No 2, which is Dilapidation Survey Stage. Ten (10) critical factors that should give serious attention to control that particular risk were recorded. At this stage, a dilapidation survey process known as the condition survey process shall execute prudently to provide a better solution for restoration work and assist the consultant in estimating the cost of the conservation project. Furthermore, due to the tender process timeframe and procedure, defecting nurture and dilapidation reports may not be as relevant as the time to action received. The method of collecting data, either by observation or verbal interview, must be carried out as visiting the archive is considered compulsory for the consultant appointed.

The second highest critical stage was the Preparation of Tender stage, were recorded eight (8) critical factors which are *F3; Lack of historical background information, F4; Lack of scientific and laboratory testing in terms of dilapidation survey information, F5; Lack of scientific and laboratory testing in terms of preparation of conservation cost, F6; Lack of scientific and laboratory testing in terms of solution for restoration works, F7; Incomplete drawing and specification cause incomplete preparation for the scope of work, F8; Incomplete drawing and specification cause high variance in provisional and contingency cost, F9; Incomplete drawing and specification cause assumption by the consultant and contractor, F10; Lack of guideline by National Heritage Department.* The entire critical factor was derived at the previous stage, which is not comprehensively resolved, thus resulting in poor budgeting and repairing scope for heritage conservation projects.

Next, in the Conservation Works stage were recorded seven (7) critical factors fall in this stage. Most of the critical factors are dealing with a poor consultant and contractor performance directly involved in this project. In addition, poor consultants refer to inadequate coordination between sub-consultants, thus resulting in a poor decision for total project cost and performance.

CONCLUSION

In a nutshell, fifteen (15) most critical risk factors could lead to the enhancement of heritage conservation projects at every stage in building a conservation framework. Usually, most of the critical risk factors can be mitigated prudently with the compliance of Section 40 (1) – (6), National Heritage Act 2005 (Act 645), focusing on the planning permission for Heritage sites.

ACKNOWLEDGEMENTS

A special thanks to the Centre for Knowledge & Understanding of Tropical Architecture & Interior (KUTAI) for sponsoring 50% of the PMJ Special Edition 2022 publication fees. May this effort encourage more scholars to publish in Index-Journal in the future.

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Received: 30th June 2022. Accepted: 12th September 2022