



## Risk Management Challenges in Malaysia's Landscape Architecture Project

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### Abstract

This study aims to review current risk management challenges in Malaysia landscape architecture projects. This subject found to be lacking and yet essential to strategies for effective application. The data collection conducted through a semi-structured interview with twenty-four landscape architect professional based in the Klang Valley region. Then analysed using content and thematic analysis method. The research found that multiple challenges factor permits effective risk management application in the project. The study suggests for an extensive strategy to risk management application into the project to be formulated in enabling effective management of risk to improve project performances.

Keywords: managing risk; risk management; risk challenges; landscape architecture project

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### 1.0 Introduction

Landscape architectural practice has been part of environment behaviour to enhance inter-relationship between social and cultural factors and the physical aspects of the landscape environment. Recognising environmental issues such as conservation, pollution, energy conservation, housing, environmental risk, heritage and tourism developments; demand for more socially relevant landscape architecture projects spike over the decades. Landscape architecture projects are viewed as dynamic, with subjective outcomes and varied challenges due to the projects' uncertainty and complexity in nature, leading to multiple risks bound to happen. Consequent to this scenario added with the project processes, environment and stakeholders' factor putting risk in a landscape architecture project. Hence risk being managed earlier before it becomes an issue affecting the project's outcome. Malaysia landscape architecture project is part of the construction industry that recognised with a multitude of risks involved, commonly safety, financial, technical, quality and environmental (Adnan & Rosman, 2018; Ansah, Sorooshian, Mustafa, & Duvvuru, 2016; Fadzil, Noor, & Rahman, 2017; Hasan, Othman, & Ismail, 2018; Ismail, Ahmad, Janipha, & Ismail, 2017; Kurzi & Schroth, 2018; Marmaya & Mahbub, 2018; Maruthaveeran, 2016; Mohit, 2018; Omer, Adeleke, & Chia, 2019; Razi, Ali, & Ramli, 2020; Saaidin, Endut, Samah, Ridzuan, & Razak, 2016; Sani, Sharip, Othman, & Hussain, 2018; Shafie, Omar, & Karuppanan, 2018; Shamsudin & Majid, 2019; Thani, Mohamad, & Abdullah, 2017; Wena, Ismail, Hashim, & Romeli, 2017).

Risk management is a crucial project knowledge area to manage these issues and their challenges beforehand. The primary purpose of risk management is to improve project performance via the systematic process of identifying, analysing and responding to the risk in order to achieve project objectives (APM, 2012; ISO 31000:2018, 2018; Keers & van Fenema, 2018; Olechowski, Oehmen, Seering, & Ben-Daya, 2016; PMI, 2017; Willumsen, Oehmen, Stingl, & Geraldi, 2019). Malaysia risk management practice in a construction project is at the lowest application despite the availability of various risk management standard and guidelines in practice. Risk management still a rhetoric subject and not extensively practice to its full benefit. Reviewed there were enormous challenges that permit effective risk management application in Malaysia construction project, found in (Abdul-Rahman, Wang, & Mohamad, 2015; Adnan & Rosman, 2018;

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Fadzil et al., 2017; Goh & Abdul-Rahman, 2013; Kang, Fazlie, Goh, Song, & Zhang, 2015; Mohamed, Abd-Karim, Roslan, Mohd Danuri, & Zakaria, 2014; Omer et al., 2019; Taofeeq, Adeleke, & Lee, 2020). Understand the current managing risk practice and risk management application essential to project manager to strategies for effective risk management application. Contrarily, study on risk management application challenges directly related to landscape architecture project not extensively discussed in the literature.

Thus, this study aims to review current risk management challenges in Malaysia landscape architecture projects. The objectives to accomplish aims following, 1) to investigate challenges when managing risk, 2) to anticipate risk management application challenges, and 3) to determine ways overcoming the challenges. A review to Malaysia risk management application challenges in construction project conducted to relate with landscape architecture project context due to its closest interchangeable similarity.

## 2.0 Challenges and Limitations of Risk Management Application in Malaysia

Risk management has been practised in various construction projects worldwide, since the 80s (Flanagan, 2003) and proven to influence project performance. He further added that there no shortage of risk management system and project manager willing to use it. However, it has not been broadly practised in the Malaysian construction industry (Omer et al., 2019), and the industry seems to have a poor image in managing risk (Adnan & Rosman, 2018). Several authors (Abdul-Rahman et al., 2015; Adnan & Rosman, 2018; Fadzil et al., 2017; Goh & Abdul-Rahman, 2013; Jusoff, Yusuwan, Adnan, & Omar, 2008; Kang et al., 2015; Mohamed et al., 2014; Omer et al., 2019; Taofeeq et al., 2020) have attempted to provide an insight into the challenges and limitations of implementing risk management and the reasons for them in Malaysia's construction projects. Table 1 summarises the challenges and limitations of the risk management application in Malaysia.

Table 1. Challenges and limitations of the risk management application in Malaysia

Challenges and Limitations		Author
Risk management system	Application is mostly ill-structured, and no proper techniques are adopted.	Abdul-Rahman et al. (2015), Adnan & Rosman (2018), Goh & Abdul-Rahman (2013), Kang et al. (2015), Omer et al. (2019)
	Ineffective reporting, reviewing and monitoring risk management.	Jusoff et al. (2008), Mohamed et al. (2014)
	Lack of/ no standard procedures and guidelines.	Jusoff et al. (2008), Mohamed et al. (2014)
	Not frequently practised despite the availability.	Abdul-Rahman et al. (2015), Kang et al. (2015)
Managing risk practice	Manages risk informally, incomplete and unstructured.	Adnan & Rosman (2018), Kang et al. (2015), Omer et al. (2019), Taofeeq et al. (2020)
	Applies straightforward, fast and inexpensive methods.	Adnan & Rosman (2018), Fadzil et al. (2017), Omer et al. (2019)
	Identifies risk not managed and left redundant.	Adnan & Rosman (2018), Mohamed et al. (2014)
	Risk only managed when it occurs and realised.	Abdul-Rahman et al. (2015); Goh & Abdul-Rahman (2013), Mohamed et al. (2014), Omer et al. (2019)
	Relies on the project manager's experience and justification.	Fadzil et al. (2017), Kang et al. (2015), Omer et al. (2019)
Risk knowledge	Limited skills in developing risk strategy and mitigation.	Abdul-Rahman et al. (2015), Adnan & Rosman (2018), Taofeeq et al. (2020)
	Lack of knowledge in risk management causes restriction of use.	Abdul-Rahman et al. (2015), Adnan & Rosman (2018), Fadzil et al. (2017), Goh & Abdul-Rahman (2013), Mohamed et al. (2014), Taofeeq et al. (2020)
Exposure and experience	No expertise to lead.	Jusoff et al. (2008) Mohamed et al. (2014)
	Low-risk practice exposure.	Abdul-Rahman et al. (2015), Goh & Abdul-Rahman (2013), Taofeeq et al. (2020)
	Lack of competency in identifying risk at an early stage.	Mohamed et al. (2014)
	Still a new concept.	Jusoff et al. (2008) Kang et al. (2015), Omer et al. (2019) Taofeeq et al. (2020)
Awareness	Comfortable with traditional culture and reluctant to change.	Abdul-Rahman et al. (2015), Adnan & Rosman (2018), Fadzil et al. (2017), Goh & Abdul-Rahman (2013), Kang et al. (2015), Taofeeq et al. (2020)
	Resistance and unsupportive top management and other industry personnel.	Jusoff et al. (2008), Kang et al. (2015), Mohamed et al. (2014), Taofeeq et al. (2020)
	Lack of positive attitude - associated with time and cost consuming.	Abdul-Rahman et al. (2015), Fadzil et al. (2017), Goh & Abdul-Rahman (2013), Kang et al. (2015), Taofeeq et al. (2020)
	Low awareness of its benefits and hardly justified objective value.	Abdul-Rahman et al. (2015), Fadzil et al. (2017), Goh & Abdul-Rahman (2013), Kang et al. (2015), Mohamed et al. (2014), Omer et al. (2019) Taofeeq et al. (2020)

Risk management is still a rhetorical subject in the Malaysian construction industry due to the lack of knowledge and awareness of its benefits, leading to reluctance to adopt it (Adnan & Rosman, 2018; Jusoff et al., 2008; Siang & Ali, 2012). In the Malaysian construction industry, risk management is adapted differently and based on company policies, allocation of resources, and nature of projects (Jusoff et al., 2008; Taofeeq et al., 2020). They generally adopt simple, quick, reasonable, and inexpensive methods to identify risk instead of managing it as a whole process (Adnan & Rosman, 2018; Siang & Ali, 2012).

All the authors agreed that the biggest challenge in implementing risk management is that there is no formal risk management guidelines and standards to be applied in Malaysia's construction sector. Risk is being managed by only specific organisations and on certain project scale sizes. It is not managed comprehensively and does not follow the suggested process due to the lack of knowledge of risk management implementation and lack of awareness of its benefits. Hence, construction project practitioners are reluctant to

implement risk management in their projects. Similar to construction projects, there is no substantial evidence that formal risk management applied in landscape architecture projects.

### 3.0 Methodology

The study methodology engaged an exploratory case study (Yin, 2016). The study takes a four-stage procedure, namely, preliminary study, data collection, data analysis, and interpretation, as depicted in Figure 2. Firstly, a preliminary study reviewing study background, the need, identify the gap and develop aim and objectives. Data collected through a semi-structured interview with twenty-four landscape architect professional based in the Klang Valley region. The interview audios and project documents recorded; transcribed into the text; documented and organised in ATLAS.ti 8 research software. Then, the data analysis employed a content analysis for describing and interpreting deductive codes, categorising and finalising the themes (Mayring, 2014). Further, a thematic analysis was then employed to synthesise and draw thematic map between the themes while seeking inductive codes. The analysis includes exploring the relationship between the studied subject categories and seeks pattern (Maguire & Delahunt, 2017). Finally, finding interpretation mapped and reported to discuss risk management practice, application challenges and improvement. The conclusion draws to answer study objectives. This study could become a prominent point for discussion and a priority in future. This study limited by, 1) landscape architecture project management, 2) case project focused on preference on urban landscape architecture, and 3) challenges scope bound to landscape architectural practitioner's perspective.

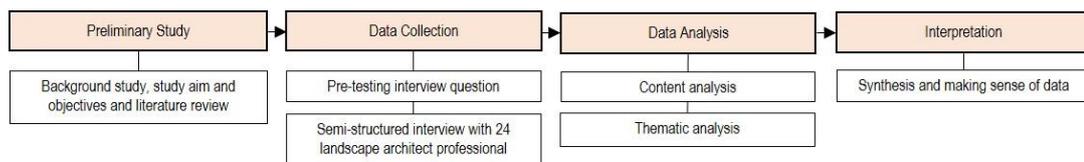


Fig 1. Study procedure

### 4.0 Findings

Interviewees asked of their opinions regarding risk management application challenges. Their responses discussed in three aspects, namely, challenges when managing risk, anticipated risk management application challenges, and suggestions for overcoming the challenges.

#### 4.1 Managing Risk Challenges

The study identified several challenges faced by the interviewees when managing the project risks. The challenges are grouped into six areas, as shown in Table 2 below.

Table 2. Managing risk challenges

Interviewees	Interviewees' Feedback	Challenges
L02, L03, L04, L05, L12, L13, L17, L20, L22 L02, L13 L02, L20 L03, L12, L17, L20 L04, L05, L12, L20, L22	Client not responsive to identified risk. Lack of mandate and commitment by the client over the risk. No contingencies or additional resources allowed to treat the identified risk. Stakeholder pushing away risk ownership - one party dealt with it. Difficulty in convincing client to agree with risk treatment.	Lack of stakeholder support
L01, L03, L05, L08, L19, L23 L01, L23 L12, L20, L23 L03, L07, L19, L20	Inexperienced project manager handling project risk - risk unattended. Incompetency to identified risk at early project lifecycle. Poor risk treatment strategy. Challenging to manage - Landscape scope uncertainties and subjective.	Lack of managing risk experience
L01, L03, L06, L08, L10, L11, L16, L21 L03, L10, L11, L16 L11, L16 L21 L01	No specific formal standard procedures and guidelines practised. Heavy reliance on the project manager's experience and thinking process. Absent of structured risk process. None enforcement of risk management policy. Risk management guideline deemed generic - not suitable for the landscape architecture context.	No formal risk management guideline
L01, L02, L07, L15, L20, L24 L02, L15, L24 L15, L20, L24 L01, L07	Miscommunication causing ineffective risk process. Identified risk not recorded and not retrievable for treatment at later phases of the project. Project manager not informed of potential risk by others - unknown site condition, utilities underneath the ground, and changes of the significant scope. Poor integration between project parties - miscommunication and information sharing.	Communication & information barrier
L01, L03, L08, L22, L23 L08, L23 L01, L22	No attempt to foresee the risk earlier and only managing it when it materialised. Unavailability of cost and time allocation to treat the surprise risk. Poor anticipation and forecasting risk beforehand – inexperienced.	Risk managed reactively
L08, L20 L10, L14, L20	The limited risk treatment strategy option towards risks caused by others. Small content of landscape architecture scope compared to architecture or engineering - forced to accept risk rather than avoiding, mitigating, or transferring it.	Limited scope of managing risk

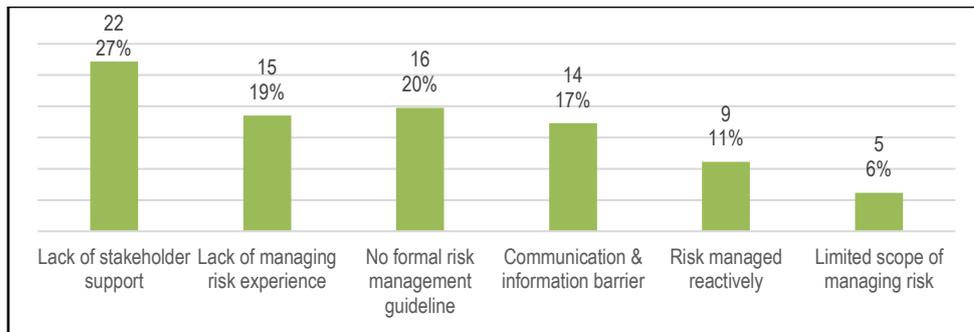


Fig 2. Summary of managing risk challenges

As shown in Figure 2, lack of stakeholder support (27%), lack of experience (19%), and no formal guideline (20%) identified as the most common challenges faced the interviewees when managing risk in a landscape architecture project. The lack of stakeholder support towards the identified risk further affecting risk miscommunication, information sharing barrier, and limited contingencies allocation to treat the risk. These challenges are similar to the challenges faced by Malaysia's construction industry, as highlighted in the literature. No common formal risk management application found to constrain the challenges against effective risk management.

#### 4.2 Anticipated Risk Management Application Challenges

The study identified several anticipated risk management application challenges in landscape architecture projects, as expressed by the interviewees. The study coded 143 anticipated challenges and then grouped them into six areas, as shown in Table 3.

Table 3. Anticipated risk management application challenges

Interviewees	Interviewees' Feedback	Anticipated Challenges	
L03, L06, L22	Possible rejection - associate risk management as another system for scrutinising project performance.	Lack of support and acceptance	
L09, L10, L15, L16, L17, L18, L24 L17, L20, L22, L24	Another redundant management system - impractical to project delivery. The application may disrupt ongoing project progress.		
L05, L09, L11, L13, L15, L16, L19, L20, L22	Local construction culture - work with the minimal system and standard.		
L05, L09, L13, L20	Unsupportive client towards application output.		
L15	Client preference towards objective output and financial tolerance management system like value engineering management and cost management.		
L05, L13, L19, L22	Comfortable with the current operating system.		
L06, L09, L15, L16, L17, L21, L24	Poor motivation and unwilling to learn.		
(L01, L09, L23	Fail to understand the application benefits to project and organisation.		Lack of awareness
L03, L05, L09, L15, L17, L20, L22, L24	Sceptical on the application - may delay decision making and limit creativity.		
L15, L20, L22	May limit project decision making and flexibility due to its rigid structured process.		
L09, L07, L15, L20	May limit business opportunities - too concerned about risk rather than the opportunities ahead.		
L01, L09, L10, L16, L20, L24	Rejection - application rarely or none used in the landscape industry.		
L01, L10, L16, L18, L20, L22	Irrelevant application - landscape scope is small, the risk is insignificant, and risk impact is minor.		
L02, L03, L06, L17, L18, L20, L21, L24	Satisfied with the current project management operation.	Resistance to change	
L09, L16, L20	Current project operation is sufficient to manage risk.		
L16, L21, L23	Rely on the project manager's experience and knowledge.		
L10, L16, L18, L20, L24	Unwilling to allocate time and cost.		
L16	Challenging to attain the internal operation team's mandate and commitment.		
L13, L18	Then the stringent procedure of government client - application disregarded.		
L02, L05, L06, L09, L11, L15, L17, L18, L20	Regarded risk management application as consuming time and efforts - limited budget.		Lack of resources
L06, L09, L10, L11, L17, L18	Project nature that is rushing and time constraint - no time allowance.		
L04, L05, L06, L09, L10, L11, L15, L17, L20, L24	Worried the application requires extensive paperwork and protocol, further delaying the project.		
L06, L16, L17	Increases business cost - to employ a specialist to manage risk.		
L17, L20	Limited staff and time constraint in handling multiple projects - application may be put aside.		
L01, L05, L10, L15, L17, L19, L20, L21	Lack of risk and risk management knowledge.	Lack of knowledge	
L04, L09, L21	Lack of risk management exposure - application is new to the industry.		
L06, L15, L17, L21	Need extensive time to understand the risk process.		
L16, L19	Difficult to transfer the risk management knowledge to the organisation's project team - to junior and non-technical staff.		

L05, L06, L08, L16	No specialised landscape expertise to handle risk management - relying on other industries to study their risk.	Lack of expertise
L05	Landscape architects not trained with project management knowledge, including risk management.	

The results in Figure 3 indicate that the challenges in risk management application vary due to both internal and external factors. The interviewees were most concerned about the lack of support and acceptance towards the risk management application (27%). Poor awareness (21%) of the risk management concept and benefits further inhibits an effective risk management application. Lack of resources (21%), such as limited budget and time allocation, is also a challenge to the risk management practice. Resistance to change, lack of expertise and lack of knowledge are the remaining challenges in adopting a risk management application. The anticipated application challenges are similar to the challenges faced by Malaysia's construction industry, as highlighted in the literature. The anticipated risk management application challenges are also similar to the previously discussed project challenges mentioned which relate to client poor engagement and awareness towards the landscape scope.

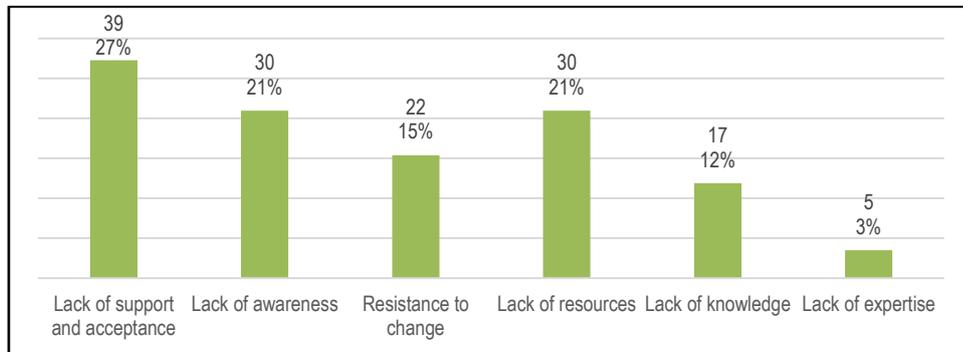


Fig. 3. Summary of anticipated risk management application challenges

### 4.3 Suggestions for Overcoming Challenges

The interviewees asked to suggest measures to overcome the identified challenges. Their suggestions divided into two outcomes, namely the development of a risk management framework and the improvement to risk management practices, as shown in Table 4.

Table 4. Interviewees' suggestions for overcoming challenges

Suggestions To Overcome Challenges		Interviewees
<b><u>Development of a Risk Management Framework</u></b>		
Simplified Process	A more straightforward structure and flow process to minimise the time to apply and ease understanding for all.	L09, L12, L24
	A system that is more streamlined for ease implementation.	L10
	A framework that does not produce massive paperwork and stringent procedure.	L06, L15
Flexibility in Practice	A flexible process that adjusted according to the project scope and context.	L02, L13, L24
	Eliminate the rigid process and documentation as the landscape trait is subjective and vague.	L06, L15
	Risk management methodology should be adjustable to suit varying projects.	L11
	The framework can be amended in time as the organisation matures.	L22
Align with the Organisation's Context	Align with the organisation's context - culture, business operation, and objective.	L08, L18, L20
	Suitable for day-to-day project operation application.	L18
<b><u>Managing Risk Practice Improvement</u></b>		
Mandate and Commitment	Mandate and commitment as part of the organisation's objectives.	L03, L05, L18, L19, L20, L22, L23
	Involve all the project parties and share ownership.	L20, L23
	Assign personnel that is held accountable and responsible within the organisation to monitor risk.	L05, L17, L20, L23
	Periodical review of the risk management application by a competent and knowledgeable manager.	L05, L17, L20, L23
	Regular monitoring of all the project stakeholders and seek their conformity.	L22
Enhance Awareness	Application to start early, progressively and with constant monitoring.	L01, L23
	To be part of the education curriculum and professional courses.	L03, L04, L19, L20
	Continued training and communication to enhance risk management exposure.	L04, L19, L20
Integration to Current Project Process	Integrated into the project process rather than having a standalone management system.	L02, L18
	Best practices approach adopted to suit the organisation's context.	L05
	Refer to other closest industry applications and modify to suit internally.	L02, L19
Communication & Information Management	Documentation and recording of risk management activities - for future project reference.	L06
	All project parties should be well informed of the risk process and outcome to minimise miscommunication.	L13, L20, L23
	Continuous communication - internal and external to the organisation.	L12

The majority of the interviewees suggest for the risk management framework development and risk management practices improvement considered in formulating the best strategy integrating risk management into landscape architecture projects. They agreed

that a particular risk management framework developed to suit the landscape architecture context. The new risk management framework should be flexible, simplified, and aligned with the organisation's context. Besides framework development, improvement in risk management practices can be achieved by enhancing the risk mandate and commitment, creating awareness, integrating to current processes, and initiating communication and information management. These steps will ensure the effectiveness of the developed risk management application. The suggested risk management framework development and risk management practice improvement were considered in developing an effective risk management application, as illustrated in Figure 4.



Fig. 4. Suggestions for an effective risk management application

## 5.0 Discussion

Reviewed lack of stakeholder's support, lack of risk experience, communication barrier and scope definition found to be primary challenges when managing risk. The challenges observed related to human factor reason from project culture, personal perception and poor client-consultant engagement. Meanwhile, the mismanaged project risk further implicate effective risk management application. Lack of support, acceptance, resistance to change, poor risk management awareness, lack of knowledge, resources and expertise constrained effective risk management application. Added up to all identified challenges, the most significant risk management application challenges are there is no formal risk management system applied into landscape architecture project. This similar challenges found in Malaysia construction project where risk-managed reactively, ill-structured process and informal practice manner due to unavailable formal risk management application (Abdul-Rahman et al., 2015; Adnan & Rosman, 2018; Fadzil et al., 2017; Goh & Abdul-Rahman, 2013; Kang et al., 2015; Mohamed et al., 2014; Omer et al., 2019; Taofeeq et al., 2020).

As a result, the mismanaged project risk and ineffective risk management application challenge subsequently impact the project performances. Beyond the project completion, the hidden project risk that project failed to unanticipated will potentially lead to major consequences such as litigation implication, environmental degradation, injury, loss of property and socio-culture. Therefore, there is a need to raise the awareness of landscape architect professionals in Malaysia about the importance of risk management application and employing the appropriate method to manage project risk. Suggestion to overcome managing risk practices and risk management implementation challenges considered in risk management application into landscape architectural project. The improvement of managing risk practice by enhancing risk mandate and commitment, awareness, integration to the current process, communication and information management. An application opted to be flexible, simplified and tailored with organisation context to enhance risk management implementation.

## 6.0 Conclusion & Recommendations

The study surmised that multiple challenges factor permits effective risk management application in landscape architecture project due to no formal risk management applied. Although formal risk management processes introduced, however, most risk management is practised in an ill-structured method and usually implemented informally. This study provides significant and valuable insight into a practical knowledge of current risk management application challenges and improvement in Malaysia landscape architecture project. By identifying actual industry challenges, an extensive strategy to risk management application into landscape architecture project formulated. For effective risk management application, recommended the project organisation to have a formal risk management system about landscape architectural context.

Further study engaged in the formulation of the best strategy to risk management integration into landscape architecture project management. This essential to landscape architecture project manager managing their risk effectively to improve project performances.

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