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Developing A Conceptual Framework Integrating Risk Process Into Landscape Planning Project Lifecycle

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ABSTRACT

The management of landscape planning projects necessitates a high level of intuition due to their dynamic nature, complexity, and vast context; for this reason, risk management should be incorporated into project management as a unified process. Insufficient evaluations of the integration of risk procedures in landscape planning projects necessitate the development of an integration concept that will allow project practitioners to apply it effectively. This study aims to develop a conceptual framework integrating the risk process into the project lifecycle for the practitioner's benefit in practising the risk process effectively. A literature review is conducted to evaluate the idea, identify a concept incorporating the risk process into the project lifecycle, and formulate the conceptual framework. The concept suggests three risk process aspects for effective integration: completeness, process activity planning, and process activity flow. To improve risk management practices and achieve national sustainable landscape planning, a conceptual framework helps the project to manage project risks as planned, complete, and timely activities specified.

1.0 INTRODUCTION

Risk management is not generally practised and is managed in an unsystematic manner in landscape planning projects in Malaysia due to a lack of understanding and awareness of its benefits (Abdulrahman et al. 2022; Adnan and Rosman 2018; Zhao 2024). This resistance to its adoption is a result of this. Risk management is implemented differently depending on the company's rules, how resources are allocated, and the type of projects (Bahamid et al. 2022; Fadzil, Noor, and Rahman 2017). Instead of managing the project risk as a comprehensive process, the practice typically adopts quick, easy, acceptable, and affordable methods to assess the risk (Adnan and Rosman 2018). Because of a lack of understanding and awareness of its advantages, risk is not fully managed and does not adhere to the recommended process. In contrast to other industries like engineering, which frequently employ an actuarial approach, the risk management application for a landscape project is different (Bahamid et al. 2022).

The creation and implementation of plans, policies, and strategies to create successful urban and rural environments for the benefit of present and future generations is known as landscape planning. Because landscape planning projects involve many ambiguities and uncertainties about ecological, environmental, cultural, and social components, managing project risk requires high intuition (Meijering et al. 2015). Due to stakeholders' beliefs, demands, assumptions, conceptions, and concerns, several approaches are used in landscape planning for risk conceptualisation and management (Capouya et al. 2012). The risk management application should be integrated into landscape project management as a single process because landscape projects are dynamic, complicated, and expedited (Arashpour et al. 2016; S.Muthuveeran et al. 2022). Since they won't have to concentrate on two processes independently, this combination of approaches should make it simple for landscape architects to handle the demanding and accelerated landscape architecture (Ishak et al. 2023; Meijering et al. 2015). The Project Management Institute (PMI) states that to prevent process redundancy, such integration must be used concurrently and throughout the project lifecycle (PMI 2021).

According to S.Muthuveeran et al. (2022), most risk management standards and recommendations guide how to manage risk efficiently, but they do not address how the risk process should be included in the project lifecycle. Most standards and guidelines explicate the concepts, process, strategy, and risk management technique. Nevertheless, the study discovered few reviews regarding the description of this integration. Furthermore, the precise moment at which each risk process phase in the project lifecycle should begin is not explained in detail. A thorough grasp of the type and extent of decision-making involved in project management is necessary to appreciate the possible applications of risk management in projects. The project lifecycle provides a logical framework for analysing these choices. To identify the sources of risk in the project lifecycle and create an adoption action plan, a structured perspective of the risk process integration into the project lifecycle process framework is necessary (BS 6079-1:2010 2010; Kerzner 2009). For landscape planner practitioners to apply the risk process effectively, a framework for doing so in the project lifecycle process is necessary.

Risk management in the extension of landscape planning projects in Malaysia is not widely practised, wherein its risks are managed unsystematically (Kurzi and Schroth 2018; Wang et al. 2024). The dynamic, complex and fast-tracked nature common to landscape planning projects requires its risk management application to be integrated holistically into the project management's structure. There is seldom to no formal risk management applied in landscape planning projects even when there is a risk management standard. Various risk management system guides and standards are provided, and the shortcoming prevails on how and when risk management is adopted into project practice; specifically, there is a lack of special studies on standard structures to integrate risk processes into the project lifecycle. To help project practitioners apply the risk process more effectively in their projects, this study aims to create a conceptual framework for incorporating the risk process into the project lifecycle. The ongoing application will yield the framework that will act as a manual for proactive risk management practice, increased risk awareness, and improved practice experience.

1.1. Risk Management in Landscape Planning Project

Since there are questions regarding its applicability and a lack of understanding, formal risk management is not frequently employed in Malaysian construction projects, particularly in landscape planning initiatives (Abdulrahman et al. 2022; Fadzil et al. 2017; Ishak et al. 2023; Taofeeq, Adeleke, and Lee 2020). Many landscape planners consider formal risk management a risk-measuring instrument and are unfamiliar with it

(S.Muthuveeran et al. 2022). Furthermore, there are a lot of disputes and claims in projects due to the low application of risk management, the absence of standards, and the custom of depending solely on contracts to manage risk.

The scale of the project affects how complicated risk management is. Compared to typical major building projects, the application of risk management in landscape planning projects is different. Small and medium-sized enterprises (SMEs) are landscape planning firms that oversee landscape planning projects (SME 2024). Eh Poon et al. (2022) state that small organisations' documentation sets ought to include the same components as those of large organisations. Nevertheless, they might produce far fewer documents, which would reflect their scale, simplicity, and reduced number of risk process instances. Small organisation project managers frequently lack project management expertise.

Small organisations should not, however, disregard the guiding principles, beginning, middle, and end of the risk process. They require project risk management guidance to be independent and handle project risks with the least amount of time and documentation. If landscape planners are given adequate direction to mitigate risks, they can operate straightforwardly and expeditiously.

1.2. Risk Process

Reviewed of eight risk management standards and guides indicates that there are various risk process terminologies and grouping patterns (APM 2010; AS/NZS 4360:2004 2004; BS 6079-1:2010 2010; BS IEC 62198:2001 2001; CAN/CSA-Q850-97 2002; IEEE Std 1540-2001 2001; PMI 2021). In risk process terminology, establishing the risk context is also known as risk planning or initiation. Risk identification in one standard is termed risk profile or preliminary analysis. At the same time, risk analysis is also termed risk assessment, evaluation, or estimation, and risk treatment in one standard guideline is known as risk response or control in other standards. Meanwhile, some steps are categorised under one group in the risk process grouping. Risk assessment, for instance, includes risk identification, analysis, and evaluation, whereas some groups have included risk recording, reporting, and communication under the monitoring and review process. Figure 1 summarises the phases and stages of the risk process based on the retrieved standards and guidelines. Based on an analysis of the standards and guidelines, it can be inferred that the risk process follows a consistent sequence of phases and may be classified into six main sequential risk processes. The research discovered that none of the documents provides a detailed explanation of the framework for integrating the risk process into the project lifecycle, despite the establishment of numerous standards, guidelines, and supporting guides that provide thorough explanations of the principles, process, strategy, and methodology of the risk management practice.

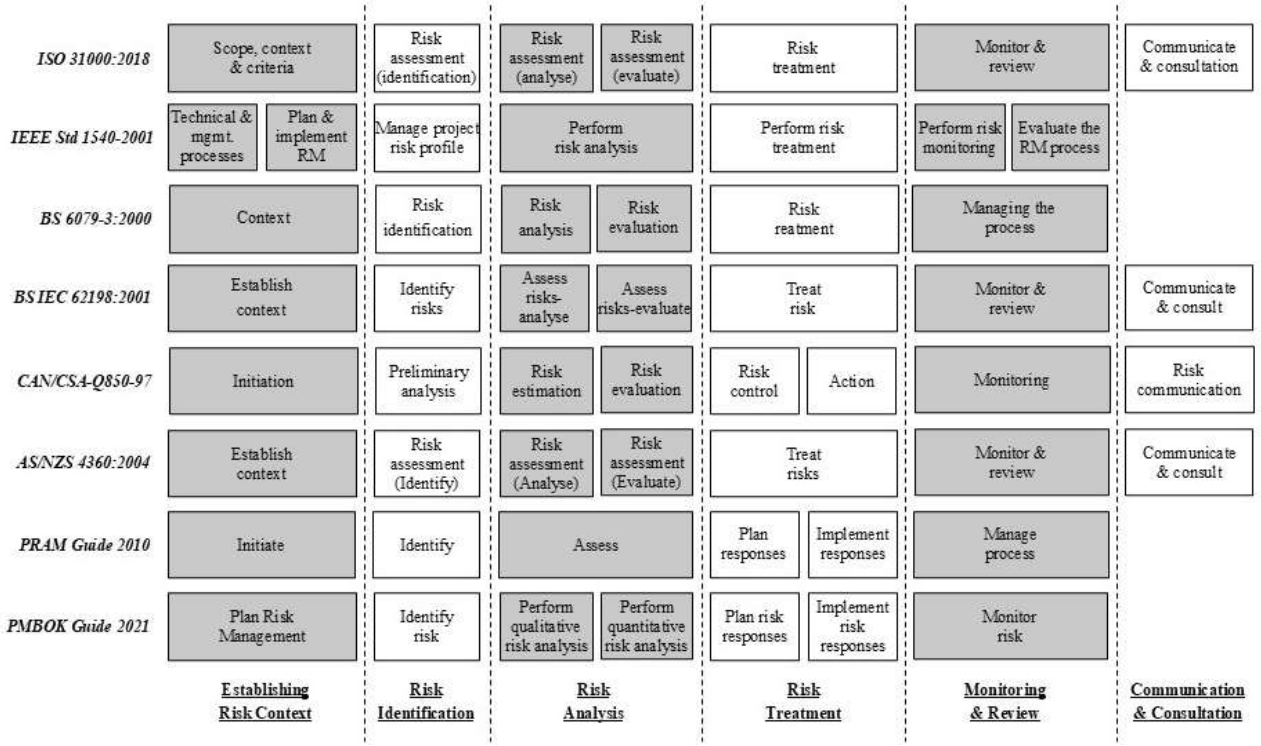

Figure 1. Risk processes from various standards and guidelines.

1.3. Landscape Planning Project Lifecycle

According to the Association for Project Management, the primary needs of the organisations involved in the project dictate the titles and numbers of the generally consecutive, time-based project phases that make up a project lifecycle. Project lifecycle, however, varies between different organisations and industries (APM 2012; BS 6079-1:2010 2010). There is rarely a similar consensus among industries or organisations about the same breadth of lifecycle phases because of these projects' complex and diversified nature (Cevikbas, Okudan, and Işık 2024; Kerzner 2009). The Project Management Institute states that the structure of a typical project lifecycle may be divided into four general phases: initiating the project, planning and organising it, carrying out the work, and concluding it (PMI 2021). The project lifecycle was also split into four phases by APM (2012): concept, definition, development, handover, and closure. The benefits realisation and operation phases were the next two to be added.

The project lifecycle was divided into five phases by BS 6079-1:2010 (2010): conception, feasibility, implementation, operation, and termination. Furthermore, the project lifecycle is divided into five phases by project management author Kerzner (2009): conceptual, planning, testing, implementation, and closing. BS 6079-1:2010 (2010) states that a project's lifecycle typically consists of two to six phases, seldom as many as ten. The research summarises these discourses within the practical context of Malaysia by dividing the project lifecycle into four groups: initiating, planning, executing, and closing. It was then further divided into seven phases, as seen in Figure 2 below.

Figure 2. Landscape planning project lifecycle.

2.0 METHODS

This study endeavours to establish a conceptual framework for integrating risk process into landscape planning project lifecycle. The method depicted in Figure 3 was derived from the conceptual framework's source (Waldt 2020). Preceding risk management in landscape planning initiatives, the risk process, and the project lifecycle, the procedure begins with a review of the research construct. Additionally, a framework for effective risk management application that incorporates a risk process into the landscape project lifecycle was selected from four constructs: 1) comparative study on risk process integration into the project lifecycle, 2) risk management at the organisation versus project level, 3) the risk process starting point in the project lifecycle, and 4) iterative multiple-pass looping risk process practice. Subsequently, the study accomplishes its objective by finalising a conceptual framework that incorporates the risk process throughout the lifecycle of the landscape project.

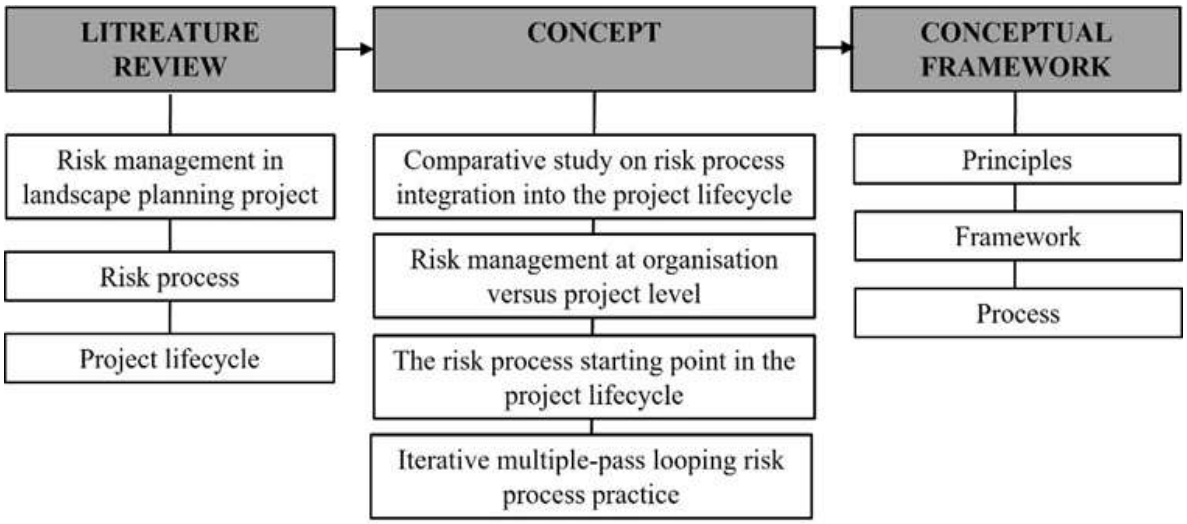

Figure 3. Conceptual framework development procedures.

3.0 CONCEPT INTEGRATING RISK PROCESS INTO PROJECT LIFECYCLE

Risks related to the project's physical characteristics are frequently the centre of attention when evaluating the risks involved in a project. Nonetheless, the project management process is linked to some significant project risks. According to Hammad and Inayat (2018), integrating the risk process with the whole project process is crucial for streamlining project management. The overall project process and risk process should be combined into a single and integrated process to assist the landscape architects in managing their projects. The project organisation can also benefit from this combined process (S.Muthuveeran et al. 2020), as it does not have to focus on two different processes.

3.1. Comparative Study On Risk Process Integration Into The Project Lifecycle

Figure 4 compares the risk process integration framework throughout the project lifecycle, derived from four distinct sources. According to the review, the initiation of the risk context should occur as soon as feasible during the project definition phase. Upon the conclusion of the project planning phase, the risk assessment process (which includes risk identification, evaluation, and analysis) and risk treatment process ensue. According to APM (2010) and Chapman and Ward (2003), it is recommended that the process be concluded within two to three iterative loop cycles following the conclusion of the planning phase. Early in the design phase, risk treatment implementation should commence immediately following the conclusion of each cycle (Cevikbas et al. 2024; S.Muthuveeran et al. 2020). Risk management, communication, and control are conducted throughout the project lifecycle. Under the approach advocated by Chapman and Ward (2003) and APM (2010), this study implemented iterative loop cycles and commenced the risk process implementation at the initial stage of the project lifecycle.

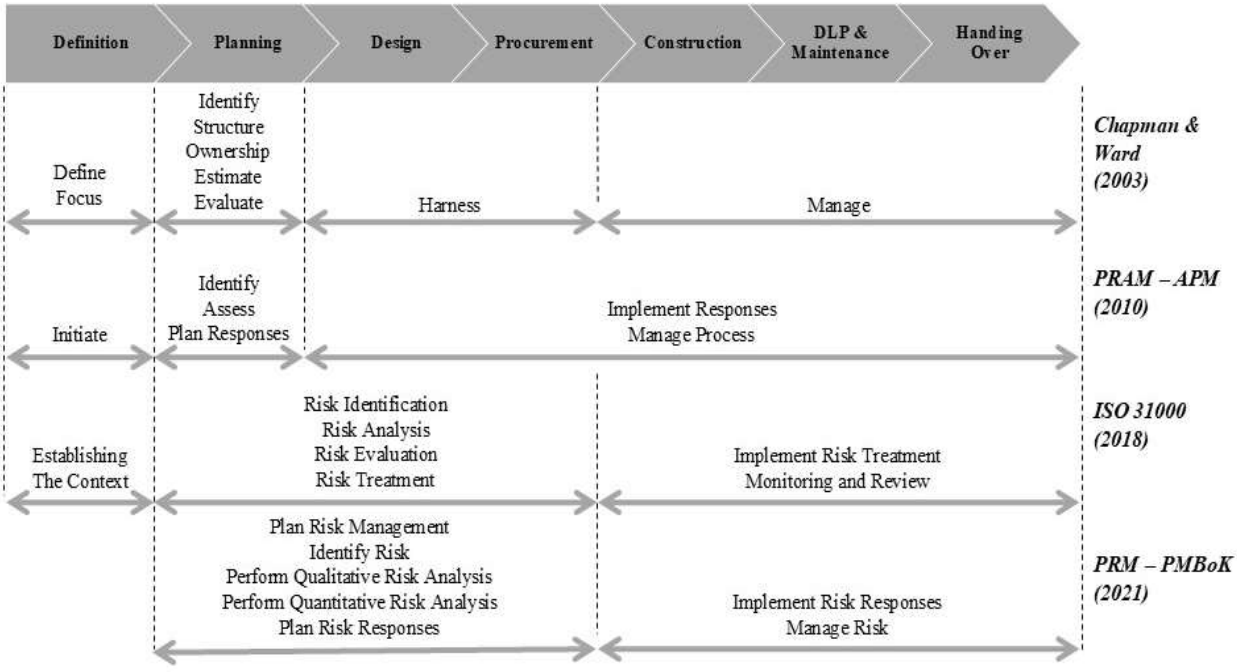

Figure 4. A comparison of the risk process integration into the project lifecycle.

3.2. Risk Management at Organisation versus Project Level

The context of the organisation affects risk management practices. Risk management is a multi-level endeavour that can be implemented across strategic, tactical, and operational domains. Additionally, it can be employed to manage identified risk areas or make specific decisions for particular initiatives (AS/NZS 4360:2004 2004). The three levels of risk management perspective are strategic, change, and operational, respectively, according to ISO 31000:2018 (2018). Each level has corresponding methods, meetings, documents, and scopes. The outlined risk process should be adhered to and interpreted for each level's appropriate application, consistency, and communication across the organisation. Figure 5 shows how ISO

31000:2018 (2018) defines the framework and processes for managing the organisational principles, framework, and project-level risk. Tailor the risk management application in organisations and risk process practices begins with defining the internal and external contexts. The principles should be considered when establishing the organisation's risk management framework and processes at the process level as they form the basis for managing risk at that level. The purpose of the risk management framework is to facilitate the incorporation of risk management practices into critical operations and processes within the organisation. Integration, design, implementation, evaluation, and enhancement of risk management across the organisation are all included in framework development. The execution of the risk process is subsequently conducted at the project level. Systematic application policies, procedures, and practices to the activities constitute the risk process.

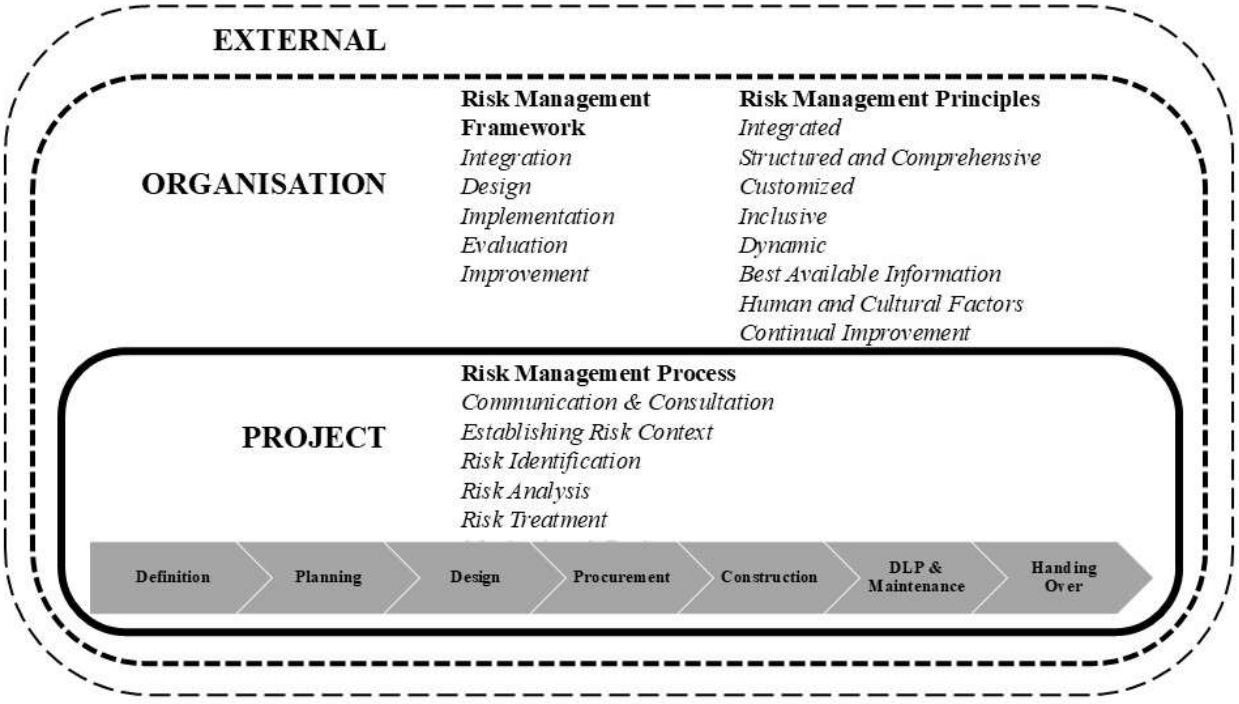

Figure 5. Context, principles, framework, and process in ISO 31000:2018 standard.

3.3. The Risk Process Starting Point in the Project Lifecycle

When in the project lifecycle is the optimal time to initiate the risk process has been the subject of scholarly debate. As a project concludes and acceptance of project delivery occurs throughout its lifecycle, the level of risks and uncertainty associated with the undertaking diminishes, as stated by Kerzner (2009, p. 756). Conversely, as the project nears its conclusion, the expenses of rectifying errors and implementing modifications escalate significantly. This underscores the importance of initiating the risk assessment process as early as feasible during the project lifecycle (Chapman and Ward 2003; Kerzner 2009; PMI 2021). Ideally, the risk process should be implemented promptly during the project's inception before substantial commitments are rendered. It must persist suitably for the project life cycle (APM 2010). Due to the greater availability of funds, time, and scope during the initiation phase of the project lifecycle, project control and decision-making are of utmost importance. In contrast to a subsequent phase, the project can allocate funds and develop contingency plans to mitigate risk.

APM (2010) and Chapman and Ward (2003) state that it is more challenging to commence the risk process before the planning phase when the project is still in its infancy and lacks clear boundaries. The lack of project information may result in unresolvable alternative interpretations. During the initiation phase of the project lifecycle, the risk process typically emphasises the contractual strategies, business case portfolio, and project revenues (APM 2010). Executing the risk process after the project lifecycle planning phase improves the overall effectiveness of the outcomes. Due to the availability of information, it is the most accessible phase of the risk process for novice users (Chapman & Ward, 2003) and the project is now more tangible. Considerable project information can be scrutinised to implement risk management strategies. The project is replete with

strategic planning and design information, which is substantiated by APM (2010). PMI (2021) reports that 24 out of a total of 47 project management processes are implemented during the project lifecycle planning phase alone. This indicates that implementing risk management is more viable in the planning phase. Every stakeholder will be identified during this phase, and their active participation in the project is crucial for formulating the risk management strategy.

Implementing the risk process after the project lifecycle planning phase is typically regarded as belated and presents numerous challenges (Arashpour et al. 2016). The advantages of implementing a formal risk management system could not be fully realised in this particular situation. The constraints on risk treatment and contingency plan decisions arise from finalising project contracts, purchasing equipment, and establishing commitments (Adnan & Rosman, 2018; Chapman & Ward, 2003). According to APM (2010), modifying project decisions is challenging and unsatisfying. Achieving influence over strategic decisions and jeopardising the project's reputation will be a formidable challenge.

Figure 6 compares the benefits and drawbacks of various initial positions for the risk process throughout the project lifecycle. Early in the project lifecycle, during strategic risk management, is the optimal time to initiate the risk process to determine the project's viability concerning business revenue and contractual strategies. It might not be essential if the landscape project adopts the conventional procurement approach in contrast to management procurement or design and construction, in which the project objectives are frequently established in advance. It is recommended that the second cycle of the risk process be executed during the planning phase of the project lifecycle once adequate project information and its scope have been determined. Risk identification, evaluation, and analysis strategies become more apparent and efficient during this phase. The subsequent risk process cycle is an iterative procedure that progresses through each significant project lifecycle stage.

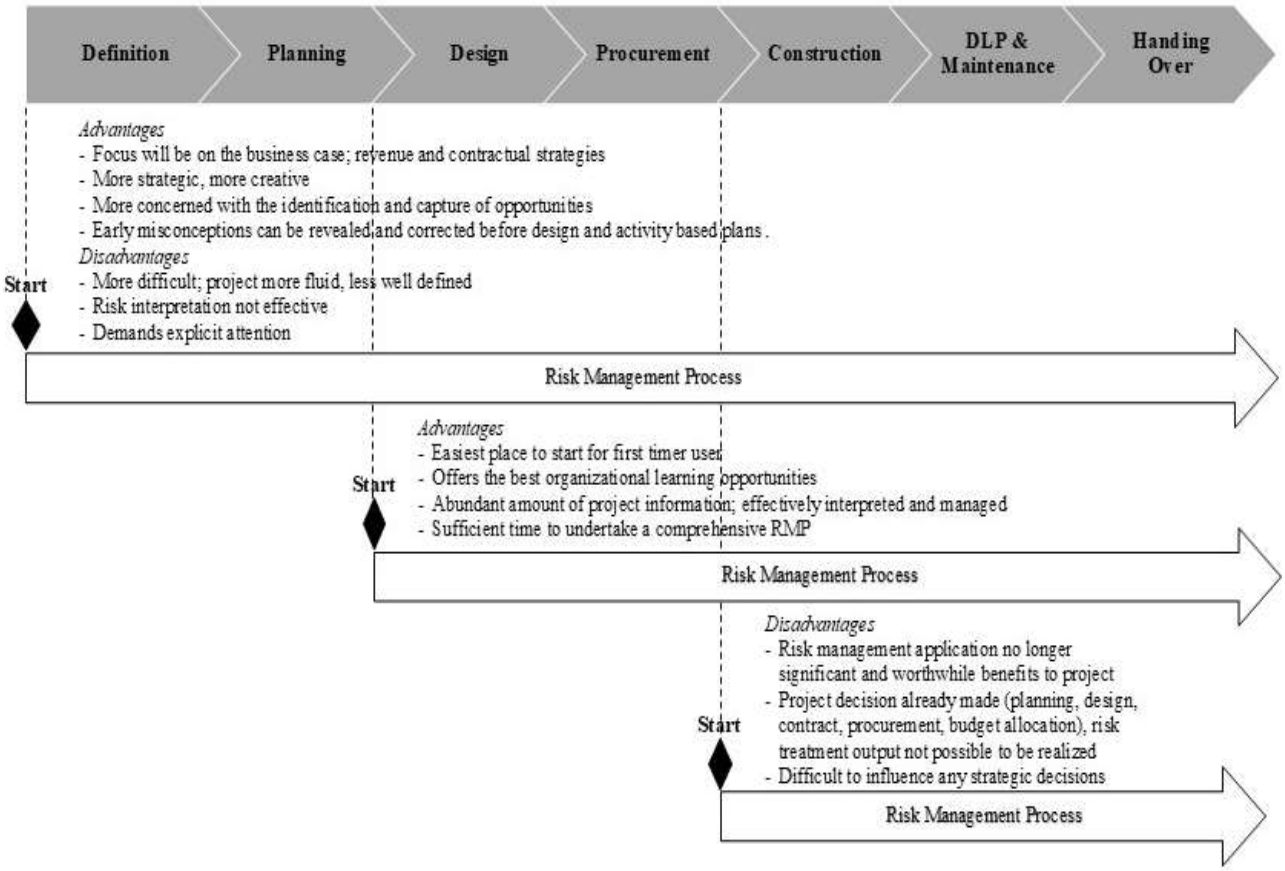

Figure 6. Risk process starting points in the project lifecycle.

3.4. Iterative Multiple-Pass Looping Risk Process Practice

The traditional risk process is practised in a linear single pass, and the complete cycle process is often done

only once. Chapman and Ward (2003) argued that a linear single-pass approach in the risk process practice is inefficient and ineffective. Time is wasted if the risk identified is unimportant, and there is no attempt to revisit the risk process due to this singular process. Furthermore, according to APM (2010), risk profiling is hindered by a lack of information due to inefficient time allocation in a linear, single-path approach. According to ISO 31000:2018 (2018), while the risk process is frequently depicted sequentially, in practice, it is iterative. Therefore, an iterative multiple-pass looping approach is recommended instead of a linear single-pass risk process practice (APM 2010; Chapman and Ward 2003; Hammad and Inayat 2018). Figure 7 depicts the three complete risk process cycles that comprise the strategy. Iteration consists of a process in which elements of the analysis performed to date are developed, refined, or reconsidered by returning to or reverting to earlier phases. As per BS 6079-1:2010 (2010) and PMI (2021), this iterative progression resembles the flow of a project lifecycle, which is predominantly iterative or overlapping rather than strictly linear or sequential at all times. In the meantime, BS IEC 62198:2001 (2001) specifies an iterative process by which risks must be managed at each project phase.

The risk process can be used broadly to identify overarching risk concerns and then, in more detail, to examine specific risks and their potential emergence. The initial iteration should be conducted strategically to identify areas that will necessitate more detailed attention, as stated by APM (2010). Ideally, This should occur before the project definition phase, when the results of the strategic risk process can inform crucial decisions. Subsequent iterations may be conducted periodically or at critical junctures throughout the project lifecycle, the frequency of which is contingent upon the particular demands of the project. It is feasible to finish the iteration in three cycles, contingent upon the requirements and intricacy of the project. It may be suitable to employ a risk process at the tactical level to encompass the remaining phases of the project lifecycle.

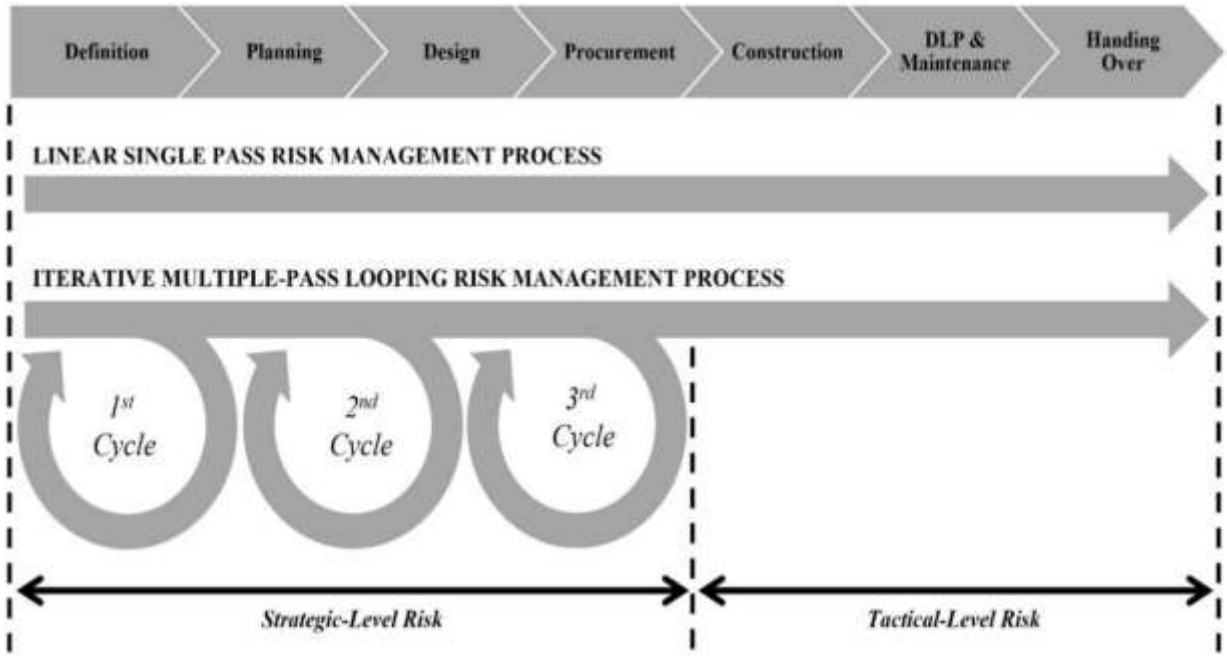

Figure 7. Linear single pass vs. Iterative multiple-pass looping risk process.

The iterative approach is favoured in landscape projects owing to project risks' dynamic and intricate characteristics. According to ISO 31000:2018 (2018), risks can materialise, transform, or vanish as an organisation's external and internal environments change. It is hypothesised that the iterative method will enable one to detect, acknowledge, anticipate, and respond to such changes and events promptly and appropriately. According to APM (2010), the risk process is a continuous undertaking that requires daily consideration by the project team. It is possible to maintain an up-to-date assessment of the project's risk exposure and modify its response accordingly. Additionally, BS 6079-1:2010 (2010) and ISO 31000:2018 (2018) specify that the risk process is an iterative progression comprising stages that facilitate ongoing enhancements in decision-making, project strategy formulation, and project objective attainment.

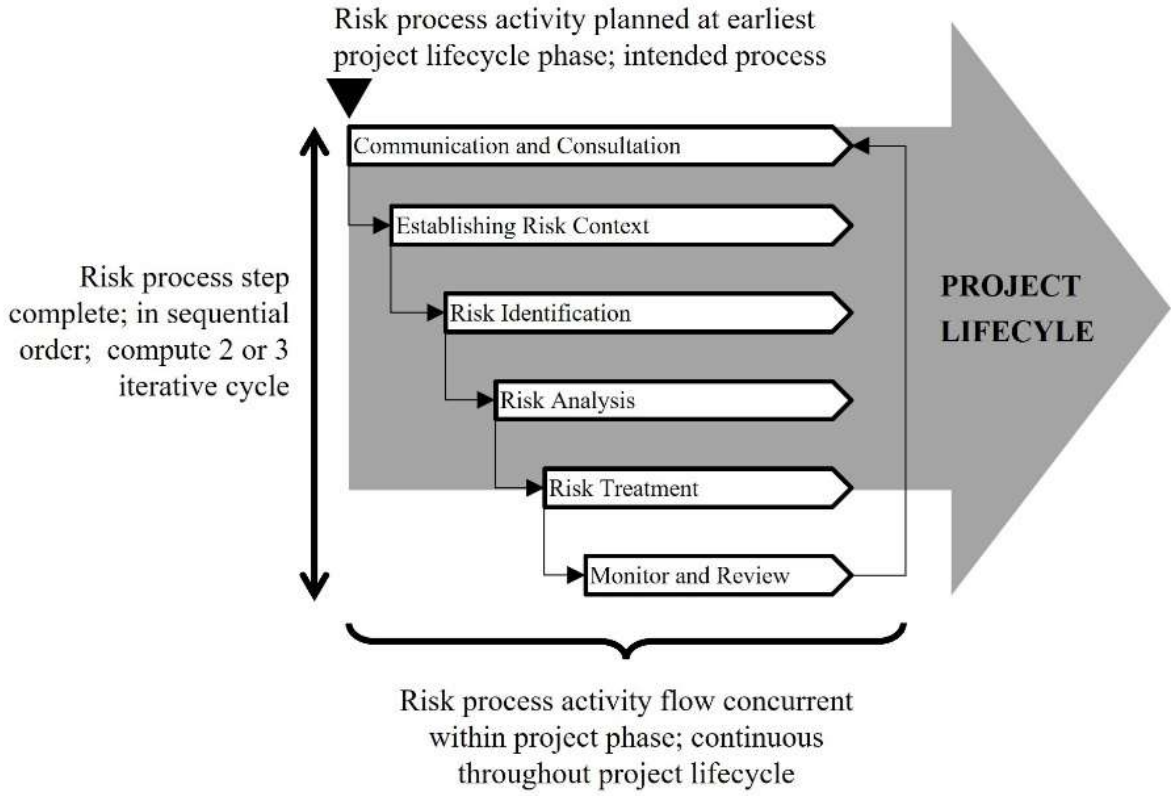

Figure 8. The concept for an effective risk process integration into the project lifecycle.

In summary, for a successful risk process integration into the project lifecycle, it must satisfy the following three requirements: the completion of process stages, the planning of process activities, and the flow of process activities, as depicted in Figure 8. Initially, all six stages of the risk process ought to be executed sequentially and calculated within two to three iterative cycles. Furthermore, the initiation and planning of risk process activities occurs during the initial phase of the project lifecycle. In conclusion, the risk process activities must continue throughout the project lifecycle and concurrently happen during the project phase to ensure its success.

4.0 CONCEPTUAL FRAMEWORK

Based on a concept integrating the risk process into the lifecycle of a landscape project, the conceptual framework was formulated to facilitate the application of effective risk management to the four constructs discussed previously. Before implementing the risk management process, the risk management framework should be developed at the organisation level, according to ISO 31000:2018 (2018) and ISO/TR 31004:2013(E) (2013). According to ISO 31000:2018 (2018), the organisation's risk management framework guarantees that risk process information is sufficiently reported and utilised as a basis for decision-making and accountability at all pertinent levels. (ISO 31000:2018 2018) The risk management process should be an integral part of the organisation, ingrained in the ethos and practices, and tailored to the business processes. Using landscape projects as the primary business operation portfolio of landscape architecture firms, this study customises the risk process to the organisation's needs.

As depicted in Figure 9, the developed conceptual framework provides exhaustive recommendations for incorporating the risk process throughout the project lifecycle. The framework is divided into two tiers: at the top, where the risk management framework is implemented at the project level, and at the bottom, where the risk management framework procedures are incorporated into the landscape project lifecycle process. Throughout the project's lifecycle, the prominent arrow line depicted in the legend represents the activity flow of the risk process sequence. The dotted arrow symbolises the information flow of the project, which begins in the project lifecycle and proceeds through the risk process activities before returning to the project lifecycle. The information flow of the interchangeable risk process, which consists of communication, consultation, surveillance and review, is represented by the double arrow line.

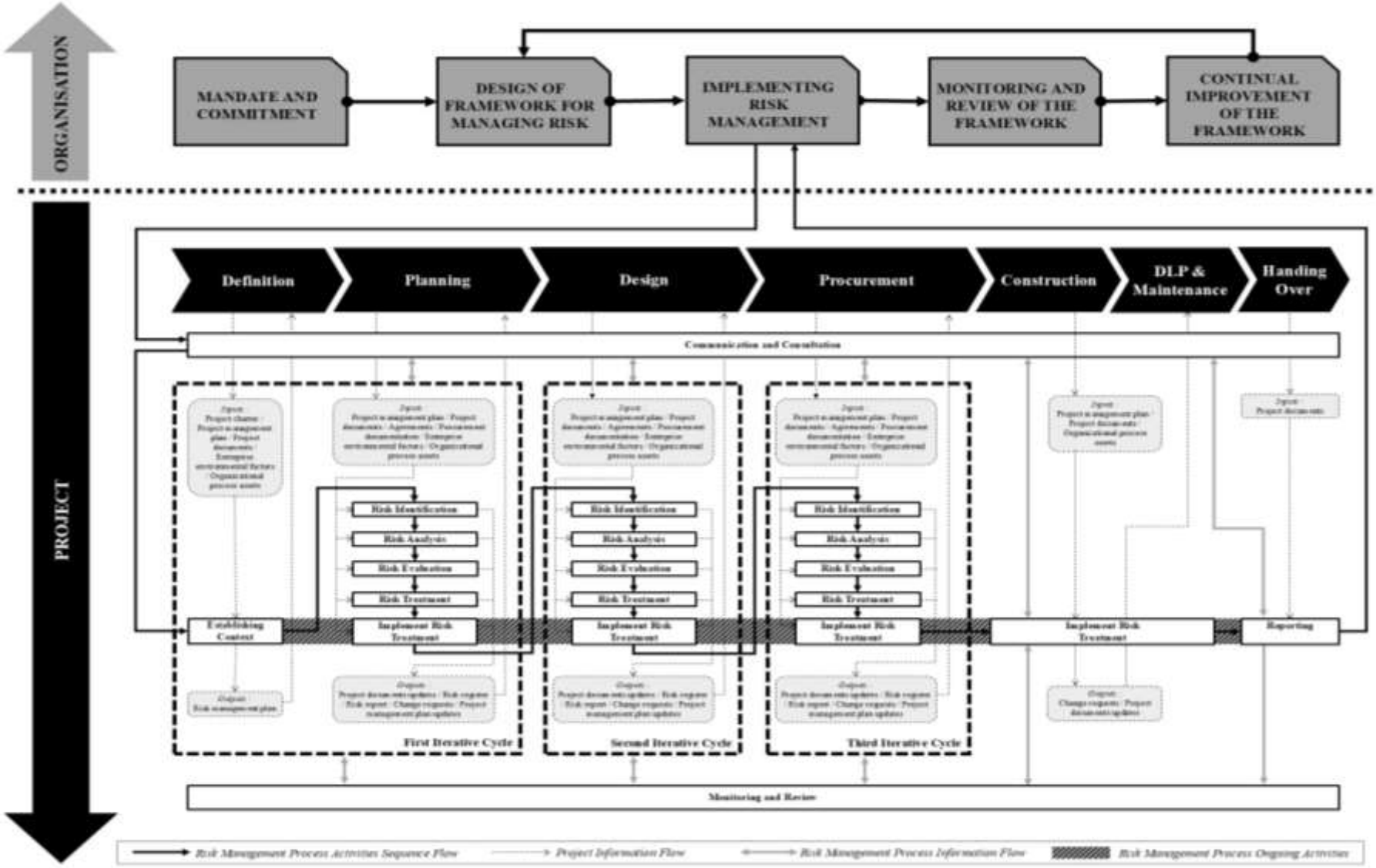

Figure 9. A conceptual framework integrating risk process into the project lifecycle.

The organisation's risk management framework should start at the corporate level, and the framework process will be implemented throughout the organisation's ongoing operations (ISO 31000:2018 2018). To facilitate efficient risk management, the developed framework should consider the existing operational practices, processes, resources, systems, and culture of the organisation (ISO/TR 31004:2013 2013). It comprises the following five components: Integration, Design, Implementation, Evaluation, and Improvement.

The integration of the risk process into the lifecycle of a landscape planning project follows the implementation of an organisation's risk management framework, which constitutes the third component. Three complete cycles of risk process activities pass, each at a distinct project lifecycle stage. These three complete cycles constitute the "iterative (multiple-pass looping) structure of risk process" (APM, 2010; Chapman & Ward, 2003), as opposed to a single linear line risk process adoption. Iteration consists of a process in which elements of the analysis performed to date are developed, refined, or reconsidered by returning to or reverting to earlier phases. In contrast, it rejects the ineffective and inefficient single-pass (linear) approach to risk process activities (Chapman & Ward, 2003). This iterative process resembles the project lifecycle flow, which is primarily iterative or overlapping rather than linear and sequential all the time (PMI, 2021; BS 6079-1:2010). Commencing with the initial occurrence of the project lifecycle definition phase, the initial risk process cycle concludes with the project lifecycle planning phase. The design phase of the project lifecycle initiates the second cycle. The third cycle commences during the procurement phase of the project lifecycle and concludes after that phase at the latest. From the beginning to the end of the project lifecycle, context establishment and risk treatment implementation are carried out. Risk treatment implementation occurs after the conclusion of the three risk process cycles. Tactical risk treatment implementation commences during the project construction phase and continues throughout the project lifecycle (APM 2010).

4.1. Communication and Consultation

Before executing the risk process, the risk owner must establish effective communication and consultation channels internally and externally. Additionally, the stakeholders should be duly informed of the rationale underlying the decision-making process. Developing communication and consultation should occur during the definition phase and continue throughout the entire project lifecycle. As stated by PMI (2021), the cost of rectifying errors and implementing modifications after a risk escalates significantly throughout the project's lifecycle, culminating in its completion, with the intensity of risks greatest during the project's definition phase. Therefore, initiating the risk process as soon as possible is advisable and maintaining it for the duration of the project's lifecycle (APM 2012; Hillson 2012; PMI 2021; Ward and Chapman 2003).

4.2. Establishing the Context

The process of Establishing The Context occurs during the project lifecycle definition stage. Its purpose is to clarify the project risk objectives, establish the internal and external parameters of responsibility for project risk oversight, and establish the degree and risk criteria for the subsequent procedures. This stage is particularly important in determining the extent of the specific project (ISO/TR 31004:2013 2013; ISO 31000:2018 2018). During the phase of project registration, common activities are to be inserted to establish the project scope for client review and approval (APM, 2010; Chapman & Ward, 2003). Establishing the risk context will be facilitated by the data input from the project mandate, project management plan, project documents, enterprise environmental factors, and process assets. The risk management plan's deliverable delineates the structure and execution of risk management activities throughout the project lifecycle (PMI 2021)

4.3. Risk Assessment (Risk Identification, Analysis, and Evaluation) and Risk Treatment

Most project management tasks in landscape projects occur during the project lifecycle planning phase. It comprises procurement, project planning, conceptual design, schematic design, and detailed design development. During this phase, the project manages information, information organisation, quality, time, scope, risk resource allocation, and decision-making (APM 2012; PMI 2021). Thus, it is ideal to incorporate the Risk Assessment and Risk Treatment process at this juncture. During the planning phase of the project lifecycle, risk planning, identification, assessment, and treatment should occur, as stated by APM (2010), Chapman and Ward (2003), and PMI (2021). A thorough inventory of risks that could impede, accelerate, corrupt, or postpone the achievement of objectives is produced during the Risk Identification phase. Subsequently, quantitative and qualitative analyses (if necessary) comprise the Risk Analysis phase. These analyses should identify the origins and causes of risks, their favourable and unfavourable consequences, and the likelihood that each of these outcomes will occur. It contributes to the subsequent stage, Risk Evaluation,

which entails comparing the risks identified during the investigation processes to the predetermined risk criteria considered during the setting assessment.

A choice is made regarding one or more alternatives to modify the risk occurrences or consequences throughout the Risk Treatment process. Risk treatment implementation occurs throughout the project lifecycle following the completion of the risk treatment plan. The primary objective is to ensure that strategic plans are updated to incorporate the outcomes of all preceding risk management stages. This is reflected in all project sanction processes and associated agreements (APM 2010). This phase commences following the conclusion of the initial full cycle, during which modifications are promptly implemented to the strategic plans and associated arrangements once the necessary actions are identified and the requisite authorisations are obtained (APM 2010).

Project information from the organisation lifecycle phase includes a project management plan, project documents, agreements, procurement documentation, enterprise environmental factors, and organisational process assets. It will be incorporated into risk assessment, risk treatment, and risk treatment implementation. The desired results include updated project documents, risk registers, risk reports, change requests, and project management plans. These deliverables are integrated into the planning phase of the project lifecycle.

4.4. Monitoring and Review

Monitoring and review entail periodic or ad hoc surveillance or ongoing monitoring. Effective and efficient risk management control is an integral part of this process. It involves continuously improving risk assessment procedures, analysing risk events to derive lessons, detecting changes in both internal and external contexts, and identifying emergent risks. Additionally, it entails keeping track of residual risks, which remain even after the risk treatment process has been completed. All residual risks that emerge must be managed similarly through the risk process; thus, the process is ongoing until the conclusion of the project lifecycle.

To provide current information on the risk process to stakeholders (both internal and external), reporting serves as a means of communication. Traceability should be maintained throughout the risk process, and its records should serve as the basis for enhancing processes, tools, and methods. The documented input must be disclosed during the transfer phase of the project lifecycle to facilitate the audit of the organisation's risk management framework upon the completion of each project (ISO 31000:2018, 2018).

5.0 CONCLUSION

The integration of the risk process into a landscape planning project lifecycle follows an organization’s risk management framework. This approach involves three iterative risk process cycles corresponding to distinct project lifecycle stages: the definition/planning phase, the design phase, and the procurement phase. Unlike a linear approach, the iterative method allows continuous refinement by revisiting earlier stages, aligning with the overlapping nature of project lifecycles. Utilising the best available project information, the framework enables projects to exercise the risk process in a structured, timely, and iterative fashion, with a complete cycle in each project lifecycle phase. This is accomplished from the earliest stages of the project. The framework considers the industry's culture and the scope of the landscape. It is intended to consider several factors, including various organisational and risk management levels, the intricacy of the risk process procedure, the optimal time to begin the risk lifecycle design and integration with the ongoing risk lifecycle operation activities. Due to the fast-paced and dynamic nature of landscape projects, the risk process is integrated into project operations; therefore, a separate process would be both time-consuming and impractical. The framework aims to promote proactive management, strengthen commitment, and exemplify effective leadership. The projects will be risk-aware through the implementation of the developed framework. Ongoing education and practical expertise acquired via consistent implementation of strategies.

This framework will provide a potential solution to bridge the absence of the strategy integrating risk process into the project lifecycle between the current project management and risk management application. The developed framework will be guidelines for landscape organisations to manage risk systematically and efficiently overseeing project risks to ensure the timely completion of planned activities. Thus, project issues will be managed to enhance project performance. The framework is designed to accommodate the landscape industry's scope by providing a specialised method for integrating the risk process throughout the project lifecycle, considering the application's importance. Implementing the framework is anticipated to enhance risk management procedures, thereby averting significant challenges that could impede the successful completion

of projects and their intended goals. Although the framework has not yet undergone external testing throughout the entirety of a project lifecycle, it is suggested that further investigation be undertaken regarding implementing the developed framework as the standard procedure for project professionals.

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