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Journal of Civil Engineering and Planning

Journal homepage: https://journal.uib.ac.id/index.php/jce

Research Journal

Between Culture, Space, and Urban Identity: A Sustainable Cultural Approach for Revitalizing *Dang Anom* Park in Batam City

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ARTICLE INFO

Keywords:

Sustainable Culture, Urban Identity, Public Space Revitalization, Dang Anom Park

ABSTRACT

This study explores the revitalization of Dang Anom Park in Batam City through a sustainable cultural approach that integrates local identity, ecological sensitivity, and inclusive urban design. Rapid infrastructure-driven development in Batam has led to the neglect of public spaces, raising concerns over the loss of urban identity and diminished community interaction. The research aims to address this gap by developing a design strategy that reconnects cultural values with spatial functionality. Employing a qualitative descriptive method, the study includes literature review, field observations, and a SWOT analysis to assess the site's conditions and potential. The proposed design is guided by three principles: sustainable nature, interactive public space, and accessibility for the elderly and disabled. Design interventions include strategic vegetation to mitigate pollution, cultural elements to enhance identity, and inclusive facilities to support diverse community engagement. The masterplan reimagines the park as an environmentally responsive and socially vibrant public space. The findings demonstrate that culturally grounded design can restore vitality to underused spaces while reinforcing urban identity. While the study offers a valuable conceptual framework, it is limited by its qualitative scope and single-site focus. Future research should incorporate community participation, implementation trials, and broader comparative studies across similar urban contexts. This research contributes to the discourse on sustainable urban development by offering a replicable model for culturally responsive park revitalization in rapidly urbanizing cities.

1. Introduction

The rapid urban development in Batam City over the past few decades has significantly transformed its spatial and infrastructural landscape. As one of Indonesia's leading industrial and trade zones, Batam has prioritized infrastructure expansion to support mobility and economic growth [1] [2]. A notable example of this development is the major road-widening project connecting the Hang Nadim International Airport and key ports to Batam's central area, particularly Batam Center. This axis has become a critical backbone of the city's circulation system [3].

One of the strategic nodes within this corridor is the area near the Flyover Laluan Madani (close to the Awal Bros Hospital), where multiple zones intersect. At this location lies a public park, situated adjacent to the iconic flyover that features Batam's city slogan, "Laluan Madani." While the slogan serves as a symbol of Batam's progressive vision, the park itself remains underutilized and lacks vibrancy.

Despite its prominent location, the park appears "lifeless"—frequented by few visitors and lacking in community activities, making it a missed opportunity for urban interaction and placemaking.

Batam City's focus on physical infrastructure has inadvertently overshadowed the importance of cultural and social infrastructure, particularly the role of public spaces in fostering community well-being and urban identity [4]. As the city continues to modernize, there is a growing urgency to balance infrastructure growth with the preservation and integration of cultural values. Revitalizing public spaces such as this park through a sustainable culture approach is essential not only to reanimate underused areas, but also to reinforce cultural identity amidst urban transformation. Public parks, as part of the city's open space network, should serve as active social platforms that reflect the spirit of place and respond to the community's evolving needs [5].

Numerous studies have addressed the revitalization of public spaces through cultural and sustainable approaches, particularly in urban contexts experiencing rapid modernization. Research by Gehl [6] emphasized the importance of designing cities for people, focusing on human-scale spaces that support social interaction. Meanwhile, studies such as those by Carmona [7] highlighted how public spaces serve not only as functional areas but also as arenas of cultural expression and community identity. In the Southeast Asian context, efforts to integrate local culture into urban design have gained traction, as seen in the works of Nasution & Zahrah [8], who examined how culturally responsive design strengthens social cohesion in Indonesian cities.

Despite these contributions, the application of a sustainable culture approach—a design perspective that merges cultural continuity with ecological and social sustainability—remains limited, particularly in mid-sized, fast-growing cities like Batam. While previous studies have explored cultural narratives in placemaking and the ecological dimension of sustainability, few have explicitly bridged the two within the context of underutilized urban parks located in high-mobility zones. Moreover, no known research has specifically examined how the identity of Batam, as symbolized by the "Laluan Madani" slogan, can be spatially interpreted and reinforced through culturally grounded public space revitalization.

This gap indicates the absence of integrated design research that connects sustainable cultural values with spatial interventions in Batam's overlooked public spaces. Therefore, this study aims to explore and formulate a design strategy for revitalizing Dang Anom Park using a sustainable culture approach, to restore its role as an active urban space while strengthening the cultural identity of the city. The expected contribution of this research lies in offering a contextual design framework that may inform similar revitalization efforts in cities facing comparable tensions between infrastructure growth and cultural preservation.

2. Literature Study

2.1 Revitalization in Urban and Spatial Design

Revitalization is a strategic design and planning process aimed at restoring the function, value, and relevance of urban areas, buildings, or public spaces that have experienced physical decline, social neglect, or underutilization. In architectural and urban contexts, revitalization does not solely imply preservation or reconstruction, but rather an adaptive response to the evolving needs of the community while respecting the historical, cultural, and spatial characteristics of a place [9]. The concept of revitalization emerged as a response to urban decay and the loss of social vibrancy in cities, especially during periods of industrial decline or uncontrolled urban expansion. It often involves reactivating spaces to support social, economic, environmental, and cultural functions [10]. Unlike redevelopment, which can result in total transformation or replacement, revitalization emphasizes continuity—preserving meaningful elements while integrating new functions and uses to respond to contemporary urban life.

Key characteristics of revitalization include context sensitivity, stakeholder engagement, and multifunctionality. A successful revitalization effort should respond to the specific character and needs of its environment, include the participation of the local community, and support diverse activities [7].

This approach allows the space to regain its identity while adapting to modern demands. The main objectives of revitalization are to restore vibrancy, enhance spatial quality, preserve cultural heritage, and strengthen community engagement. In the context of urban and spatial design, this involves improving physical conditions (e.g., infrastructure, landscape, accessibility), fostering inclusive public use, and generating a renewed sense of place. Revitalization also often aims to reestablish connections—both physically and socially—between previously fragmented urban elements [7]. To achieve this, several actions must be considered: thorough site analysis, identification of spatial and social potentials, integration of local identity, and implementation of sustainable strategies. These efforts are commonly supported by design tools such as placemaking, adaptive reuse, and environmental design.

In urban areas, revitalization can target neighborhoods, districts, or city centers that suffer from social fragmentation or economic stagnation. It becomes essential in fast-developing cities where growth is focused on infrastructure, often at the expense of cultural continuity and social interaction. Revitalizing public spaces, such as parks, squares, or waterfronts, plays a pivotal role in restoring urban vitality [11]. These spaces function as everyday gathering places, cultural stages, and nodes of collective memory. In architecture, revitalization may involve the transformation of buildings or structures to serve new purposes while maintaining their cultural or historical essence. Adaptive reuse is a common strategy, allowing buildings to evolve in function without erasing their identity [12]. The architectural approach to revitalization must therefore balance innovation and conservation. In conclusion, revitalization in urban and spatial design is a multidimensional process that seeks to regenerate the physical, social, and symbolic aspects of a place. It requires an integrated vision that embraces sustainability, cultural relevance, and community needs—principles that are central to the revitalization of Dang Anom Park in Batam City through a sustainable cultural approach.

2.2 Public Open Spaces and Urban Identity

Public open spaces are defined as accessible, unbuilt areas within urban environments that serve as shared grounds for recreation, interaction, cultural expression, and environmental balance. These spaces include parks, plazas, greenways, waterfronts, and streetscapes—each functioning as physical and social connectors in the fabric of the city [7]. The concept of open space goes beyond greenery or emptiness; it emphasizes openness in use, public ownership or access, and the potential for collective experience.

A well-designed open space is characterized by several core qualities: accessibility, safety, inclusivity, adaptability, and a clear spatial identity. According to Project for Public Spaces (PPS), a successful public space is one where people feel welcome, where a mix of activities can occur, and where the environment supports both planned and spontaneous interactions [13]. Open spaces must also provide visual and spatial continuity with their surroundings, offering physical comfort (e.g., shading, seating, visibility) and emotional attachment.

Urban identity refers to the unique character and sense of place that distinguishes one city from another. It is shaped by physical elements such as architecture, street layout, and landmarks, as well as by intangible factors like history, culture, local narratives, and daily practices [14]. In rapidly modernizing cities, urban identity can become diluted or disconnected if new developments disregard the spatial and cultural patterns that form the foundation of local life. The relationship between public open spaces and urban identity is profound. Public spaces act as “urban stages” where the identity of the city is performed and experienced. Parks and squares often become symbolic landmarks, embedded with memory and meaning, while their design and use reflect prevailing cultural values [15]. In this context, the shaping of identity is not only visual but also experiential—through rituals, festivals, and everyday social encounters.

Parks, in particular, are essential components of urban open space networks. As landscaped environments, they provide ecological services and leisure opportunities, but also serve as places of gathering, reflection, and civic pride [16]. Well-designed park landscapes integrate natural features (like vegetation and water elements) with cultural elements (such as monuments, art, and local motifs) to

create a balanced spatial narrative. Landscape design plays a critical role in translating environmental and cultural considerations into tangible form. The social function of public spaces further amplifies their contribution to urban identity. They support informal and formal interactions, enable inclusive participation, and promote social equity. When open spaces reflect the history and values of a community, they reinforce a sense of belonging and continuity. Conversely, neglected or generic spaces may feel alienating, reducing civic engagement and weakening identity [17].

In the case of cities undergoing infrastructure-focused development, revitalizing public open spaces is key to restoring balance between growth and meaning. Incorporating local culture, community needs, and symbolic elements into the design of open spaces ensures that urban identity evolves without erasure. Thus, public open spaces are not only containers of activity but also conveyors of memory and identity—essential to the livability and uniqueness of a city [18].

2.3 Cultural Approaches in Sustainable Design

Sustainable design is an integrative approach to architecture, urban planning, and spatial development that prioritizes long-term environmental health, social well-being, and economic viability. It aims to minimize negative impacts on the environment while enhancing quality of life for present and future generations. As defined by the World Commission on Environment and Development [19], sustainability involves meeting the needs of the present without compromising the ability of future generations to meet theirs. In design practice, this principle is translated into strategies that promote energy efficiency, material responsibility, ecological balance, and social inclusivity.

Key principles of sustainable design include resource efficiency (energy, water, and materials), ecological sensitivity (preserving biodiversity and natural systems), human health and comfort (air quality, thermal regulation, safety), and cultural continuity. While environmental and technical aspects are often emphasized, the cultural dimension is equally vital—especially in urban contexts where identity, memory, and tradition shape the collective experience of space [20]. Cultural approaches in sustainable design focus on integrating local values, traditions, narratives, and aesthetic expressions into planning and architectural strategies. This approach recognizes that sustainability is not only a technical challenge but also a cultural one. Design solutions must resonate with the social and historical context of a place to be truly meaningful and accepted by the community. Incorporating cultural values into sustainable design helps to preserve heritage, foster local pride, and promote social cohesion.

Examples of cultural integration in sustainable design include the use of vernacular architecture principles (such as passive cooling or traditional spatial arrangements), the reinterpretation of local art and symbols in public spaces, and the involvement of communities in participatory design processes. These strategies do not only enrich the design aesthetically but also increase its social sustainability by reinforcing belonging and identity [21]. In the context of public space revitalization, a sustainable cultural approach ensures that spaces are not only ecologically responsive but also culturally expressive. Parks and public areas designed with cultural sensitivity tend to be more inclusive, functional, and emotionally resonant. They serve as living platforms for the continuation of local customs and narratives, while adapting to the demands of contemporary urban life [22].

Overall, embedding cultural values into sustainable design is not merely an aesthetic choice, but a critical strategy for creating places that are environmentally sound, socially engaging, and culturally enduring. In fast-developing cities like Batam, where infrastructure often overshadows identity, a sustainable cultural approach can act as a bridge—preserving heritage while guiding future-oriented development.

3. Method

This research uses a descriptive qualitative method guided by a design process framework (Figure 1). Data collection involved literature review and on-site observation, supported by documentation to capture the existing conditions of the design location. The collected data was then critically analyzed to serve as a basis for the subsequent park design proposal. To enhance the depth of

analysis, a SWOT assessment was conducted to identify the site's strengths, weaknesses, opportunities, and threats, , focusing on various aspects including physical conditions, environmental potential, socio-cultural values, accessibility, infrastructure, and existing land use. This analysis aims to understand both the tangible and intangible characteristics of Dang Anom Park that influence its current performance and future potential. By examining the internal and external factors affecting the site, the SWOT framework provides a comprehensive foundation for formulating strategic interventions that align with sustainable and culturally responsive revitalization goals. Following the completion of data collection and analysis, the design process was undertaken using a Sustainable Culture approach, which was considered effective in addressing the core issues of the study.

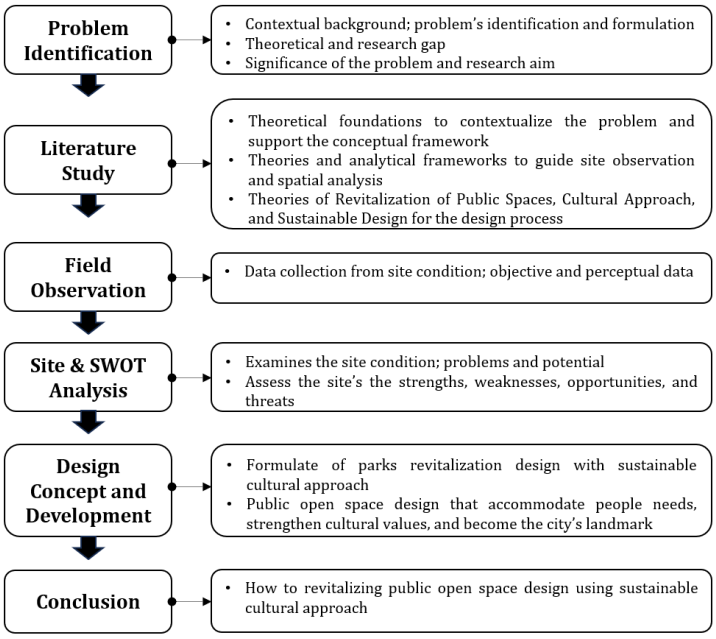

Figure 1. The Research Process
Source: Author, 2025

4. Result and Discussion

4.1 Site Inventory and SWOT Analysis

The site selected for this study is Dang Anom Park, located in Taman Baloi, Batam Kota District, Batam City, Riau Islands Province. The site is situated along Sudirman Road, near the Laluan Madani flyover—an arterial road in Batam that connects the city center (Batam Center) with commercial zones (Nagoya) and the port area (Sekupang). This location is considered strategic due to its proximity to public facilities, offices, and residential areas such as Awal Bros Hospital, Batam and Provincial Government Offices, the PLN building, and residential areas like Baloi and Orchid Park. In addition to its strategic position, the site benefits from dual access points on both the west and east sides, facilitating smooth user circulation. Further site visual can be seen in figure 2.

Figure 2. Site Location
Source: Author, 2025

The site covers an area of approximately 200 square meters and has an elongated shape stretching from north to south. The western access point faces a major five-lane road approximately 15 meters wide, while the eastern access connects to a smaller road with a width of about 6 meters. The site's primary weakness is the noise and air pollution caused by the adjacent main road. The heavy traffic flow—particularly from large cargo trucks—generates significant noise levels. This also contributes to dust and vehicle emissions on the site. The lack of vegetation exacerbates these issues, as there is insufficient natural buffering to block pollution from the roadway. Batam, being a coastal city, experiences high temperatures and humidity. The absence of adequate greenery further discourages public use of the area, especially during daytime hours. For a more detailed evaluation, please refer to the SWOT analysis in Table 1.

Table 1. SWOT Anlysis

STRENGHT	• Strategically located along a main arterial road • Close to public facilities, offices, and residential areas • Equipped with an existing structured drainage and utility system • Accessible from two sides: a primary road and a tertiary road
WEAKNESS	• Noise and air pollution from heavy traffic • Suboptimal pedestrian access • Hot weather conditions • Lack of public facilities • Insufficient vegetation
OPPORTUNITIES	• The site has the potential to be developed into an open park area that could attract visitors as a local attraction • Its proximity to residential areas makes it suitable as a family gathering destination
THREAT	• Low public interest in open spaces or recreational parks among Batam City people

Sumber : Author, 2025

The SWOT analysis of Dang Anom Park reveals that while the site holds strategic advantages—such as its position along an arterial road and proximity to key urban functions—it also suffers from significant environmental and infrastructural drawbacks. According to Carmona [7], successful public spaces must be context-sensitive and multifunctional; however, the site currently lacks essential

amenities and suffers from pollution, making it underperforming in both comfort and usability. The limited vegetation and noise pollution challenge its potential as a social node. Nevertheless, its location near residential areas and existing access points positions it well for revitalization. This analysis supports the need for intervention that balances environmental restoration and cultural integration, aligning with Heath et al. [10] on revitalization as an adaptive, not purely restorative, urban strategy.

4.2 The Sustainable Culture Approach in the Revitalization Public Open Space

The design concept integrates the cultural values of the Malay heritage, representing Batam City as part of the Malay land, with principles of sustainable design. This cultural–environmental synergy forms the foundation of the project, aiming to celebrate local identity while addressing ecological and social needs.

The design is guided by three core principles as seen in Figure 3:

1) Sustainable Nature – Emphasizing green, ecological solutions through increased vegetation, natural shading, and climate-responsive design to reduce pollution and improve environmental quality.
2) Interactive Public Space – Encouraging community engagement by creating open, inclusive, and dynamic areas where diverse users can interact, socialize, and express themselves through various communal activities.
3) Disability & Elderly-Friendly Access – Ensuring accessibility and comfort for all users regardless of age or physical ability through barrier-free pathways, seating areas, and safe, user-friendly circulation systems.

By applying these principles, the design aims to transform the site into a vibrant, environmentally sustainable, and culturally rooted public space that supports communal well-being and strengthens Batam's urban identity.

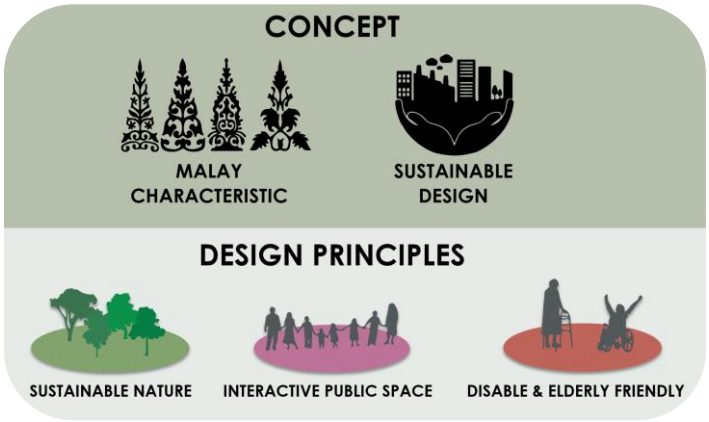

Figure 3. Design Concept and Principle
Source: Author, 2025

The revitalization concept blends sustainable design principles with Malay cultural identity, addressing both ecological and symbolic dimensions of public space. As emphasized by Nasution & Zahrah [8], culturally responsive design reinforces social cohesion. The application of Malay motifs and spatial patterns serves not just aesthetic purposes but strengthens urban identity as the need for place attachment in urban design. Simultaneously, the emphasis on green strategies such as tree canopies, microclimate management, and inclusive facilities reflects the sustainability pillars outlined by Vallero & Braiser [20]. Thus, the concept transcends visual redesign; it becomes a means to reestablish social meaning and environmental resilience.

The site zoning is designed to align with the land's natural contours and accommodate a variety of public activities that can be seen in figure 4. The parking lot is placed at the southern end of the site, where the terrain is flat and directly connected to the main road, allowing convenient access for vehicles

from both directions. Just north of the parking area lies the landmark zone, serving as the visual identity of the park. Positioned close to the main arterial road (Jl. Sudirman), the landmark is easily visible to the public and reinforces the site's presence as a community destination. At the center of the site is the facility zone, chosen for its level topography, which simplifies construction and ensures accessibility from all surrounding zones. Adjacent to this, the pond zone is introduced as both an aesthetic and functional element—cooling the area, reducing air and noise pollution, and creating a tranquil atmosphere. The amenity and garden zone occupies the northernmost area, where the land slopes and naturally collects water, making it ideal for vegetation and ecological functions. This area is ideal for landscaping and vegetation, and it also functions as a drainage basin, making it suitable for recreational gardens and ecological water management. This thoughtful zoning layout enhances the park's environmental sustainability, while supporting diverse and inclusive user experiences.

Figure 4. Site Zoning
Source: Author, 2025

The proposed zoning strategy is a direct response to site conditions and user needs, echoing Lynch's [14] theory on the importance of spatial legibility in urban identity. Each zone—parking, landmark, facility, pond, and amenity garden—is placed not just functionally but narratively, contributing to the park's layered use and cultural expression. By placing the landmark zone near high-visibility roads, the design captures the symbolic power of public space. Meanwhile, the central facility zone ensures accessibility for all visitors, consistent with the principles of inclusive urban space design noted by PPS [13]. This zoning ensures that spatial organization supports both ecological flow and cultural engagement.

The presented masterplan in figure 5, illustrates the comprehensive design of Dang Anom Park, developed through a contextual and responsive design process based on site conditions, local culture, and sustainable principles. The masterplan arranges ten programmatic elements in a sequence that follows the site's north-south orientation. Beginning in the north, the therapeutic garden (1) and pond (2) serve as a natural and tranquil zone, ideal for passive recreation while also functioning as a microclimate regulator and pollution buffer. Adjacent to these are the rest area (3) and toilets (4) for user convenience. Moving centrally into the heart of the site are more active facilities: an interactive water area (5) and a playground (6), both designed for children and families. The outdoor gym (7) promotes healthy living for all age groups. Toward the south end lies the landmark (8), an iconic feature expressing Malay aesthetics and acting as a visual anchor. A drop-off point (9) ensures accessibility for elderly and disabled visitors, while the parking lot (10) is strategically placed at the southern edge, directly connected to the main road. The overall spatial arrangement not only enhances the site's ecological performance but also encourages inclusive, multi-generational community engagement.

To enhance user comfort, multiple shelters are strategically placed throughout the park in easily accessible locations across all zones. These shelters serve as shaded spots for protection from sun and

rain, as well as spaces for gathering, relaxing, and social interaction. To improve safety, adequate lighting is installed, allowing the area to remain accessible after dark. Well-lit surroundings help users feel secure while using the space during evening hours.

Figure 5. Design Masterplan
Source: Author, 2025

Figure 6. Park Elements Visualization
Source: Author, 2025

The masterplan transforms the concept and zoning into spatial experience, combining therapeutic, active, and passive programmatic elements. It embodies Larson's [5] emphasis on designing for people, creating a human-scale space where diverse interactions occur. The inclusion of rest areas, water features, play zones, and an outdoor gym creates an interactive ecosystem that encourages spontaneous use and long-term attachment. The landmark's placement reinforces Batam's identity visually and symbolically, fulfilling Antonova et al.'s [15] idea of parks as cultural stages. The spatial layering allows intergenerational and multifunctional use, enhancing the space's vibrancy and social performance.

One of the main site issues is air and noise pollution originating from the adjacent road, combined with the generally hot climate of Batam City. To address this, a key design strategy involves maximizing vegetation across the entire site, tailored to the unique conditions of each zone. This reflects the principle of ecological sensitivity in sustainable design [20]. In the pond area, aquatic plants such as rumpur payung and jeringau are placed around the water's edge to reduce evaporation and help regulate the microclimate. These water-friendly species also enhance the aesthetic and ecological function of the pond. In the activity zones, large canopy trees like trembesi, tanjung, pulai, and kiara

payung are introduced to provide generous shade, improve thermal comfort, and create a pleasant atmosphere for social interaction and relaxation. Meanwhile, the roadside zone is planted with dense vegetation such as ketapang and pucuk merah, which function as a natural barrier to filter out air and noise pollution from passing vehicles. Such context-specific landscape design aligns with Zhang et al. [16], who argue that green infrastructure must be responsive to urban microclimates and human comfort. This thoughtful vegetation zoning not only improves environmental quality but also enhances the user experience across the park. This ecological approach ensures that the park not only serves social functions but contributes meaningfully to urban resilience.

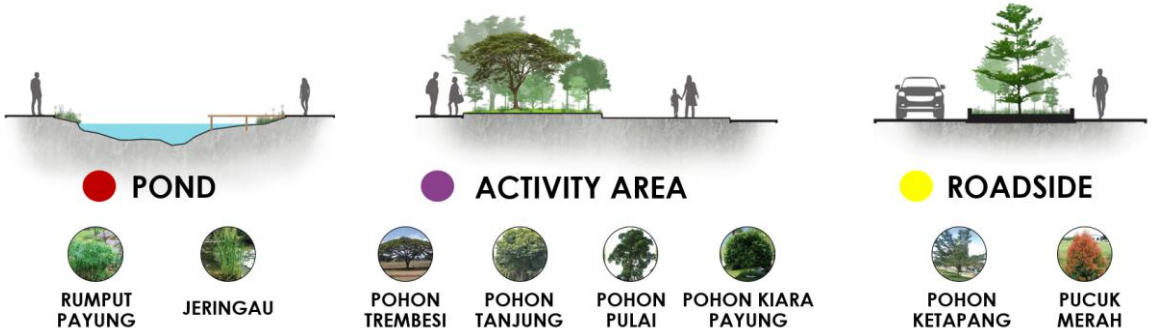

Figure 7. Planting Design Scheme
Source: Author, 2025

5. Conclusion

This study set out to explore how a sustainable cultural approach can revitalize underutilized urban public spaces while reinforcing local identity, using Dang Anom Park in Batam City as a case study. The research was guided by the central question: How can culturally responsive and sustainable design strategies restore the social and spatial vitality of Dang Anom Park? The findings affirm that integrating cultural values—particularly the Malay heritage—with ecological and inclusive design principles can significantly enhance the functionality, identity, and environmental quality of public spaces in rapidly urbanizing contexts. The proposed revitalization design emphasizes ecological restoration, inclusive public use, and the expression of local identity through spatial elements and programming. This includes the use of strategic vegetation to mitigate air and noise pollution, barrier-free design for accessibility, and the incorporation of Malay cultural symbols to create a sense of place. The research contributes to the existing literature by bridging gaps between cultural sustainability, urban identity, and ecological urban design, particularly in mid-sized Southeast Asian cities like Batam. Despite its contributions, the study is limited in scope due to its reliance on qualitative data, conceptual design, and a single-site case study. The absence of quantitative evaluation (e.g., user behavior analysis, post-occupancy assessment) restricts the ability to measure long-term social and environmental impacts of the proposed interventions. Future research should include participatory design methods and involve community stakeholders more directly in the planning process. Additionally, implementing the design and conducting post-implementation assessments would offer valuable insights into the real-world effectiveness of sustainable cultural strategies in public space revitalization. Expanding the study to multiple sites across Batam or similar cities would also allow for broader generalization and comparative analysis.

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