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Sustainability Based Public Open Space Planning Strategy for the Kalibesar Area (Coastal Diversion Channel Segment)

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ABSTRACT

Planning public open spaces in historic waterfront areas requires balancing contemporary urban needs with hydrological functions, ecological sustainability, urban connectivity, and cultural heritage conservation. The Kalibesar Area, particularly the Coastal Diversion Channel Segment in Jakarta's Old Town, represents a historic maritime landscape that has undergone continuous transformation from a canal to market land and back into a canal. Despite its historical significance, the area currently faces fragmented spatial conditions, limited public space, inadequate pedestrian connectivity, and environmental challenges associated with the coastal climate. This study aims to formulate a sustainable public open space planning strategy for the Kalibesar Area through an urban architecture and urban design perspective. A qualitative descriptive case study approach was employed using field observations, interviews, visual documentation, historical analysis, spatial analysis, and design strategy development. The analysis focused on three dimensions: urban spatial connectivity, ecological sustainability through blue-green infrastructure, and socio-cultural sustainability. The findings suggest that the area should be developed as an integrated waterfront public space system linking the canal, pedestrian promenades, green infrastructure, historic buildings, and public activity spaces. The proposed "Reviving the Maritime" concept reactivates the area's maritime identity through context-sensitive urban design interventions. This study contributes to sustainable waterfront planning by demonstrating how historic waterfronts can function as integrated public spaces that simultaneously strengthen environmental quality, urban connectivity, cultural heritage preservation, and place identity.

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1. INTRODUCTION

Public open space is a fundamental component of urban architecture and urban design. Its importance extends beyond the provision of undeveloped land between buildings. Public spaces support social interaction, mobility, recreation, cultural activities, local economic practices, and the formation of collective identity. In increasingly dense cities, public open spaces are also important because they mediate the relationship between human activities and urban ecological systems.

A successful public space is not defined solely by its physical form. Its quality is also determined by the relationships between spatial configuration, human activities, accessibility, comfort, social interaction, and the meanings attached to the place. Carr et al. (1992) argue that public spaces should respond to people's needs, provide freedom of use, and generate meaningful experiences. Similarly, Gehl (2010) emphasizes the importance of walking, staying, sitting, and social interaction as essential dimensions of urban life.

These issues become more complex in waterfront areas. A waterfront is located at the intersection of land and water and therefore potentially combines hydrological infrastructure, ecological systems, public space, mobility, recreation, local economic activity, and urban identity. Consequently, waterfront planning cannot be reduced to the technical management of water or the development of tourism facilities. A waterfront should be understood as an urban spatial system that reconnects the city with water.

Recent waterfront studies have increasingly emphasized the need to move beyond a narrow understanding of the waterfront as a physical boundary. Dal Cin et al. (2021) argue that waterfront transformation should be understood as a process that connects infrastructure, public space, environmental adaptation, and urban transformation. In this perspective, the waterfront becomes a network of spaces and functions that can strengthen the relationship between urban areas and natural systems.

This issue becomes particularly significant when the waterfront is located within a historic urban landscape. Historic urban areas are not composed exclusively of monumental buildings. They also include spatial patterns, streets, canals, open spaces, infrastructures, visual relationships, social practices, and collective memories. The UNESCO Recommendation on the Historic Urban Landscape (HUL) explicitly expands the understanding of urban heritage by incorporating topography, hydrology, open space, infrastructure, land-use patterns, visual relationships, and social, cultural, and economic values (UNESCO, 2011).

This perspective is highly relevant to Jakarta's Old Town. The historical development of Batavia was strongly associated with canals, port infrastructure, warehouses, trade, defense systems, and maritime activities. The historic urban landscape of the area therefore cannot be fully understood through individual buildings alone. Water systems and their relationships with urban activities constitute an important component of the historical structure of the city.

The KalibesarArea, particularly the Coastal diversion channel segment, forms part of this historic urban context. The area is situated in proximity to several historically significant sites, including the Maritime Museum, Pasar Ikan, Pasar Hexagon, Menara Syahbandar, and former VOC warehouse areas. The site has undergone significant spatial transformation. Historically, the area was associated with canal systems; at a later stage, portions of the area were converted into land and used for market activities, before subsequently being restored as a canal system.

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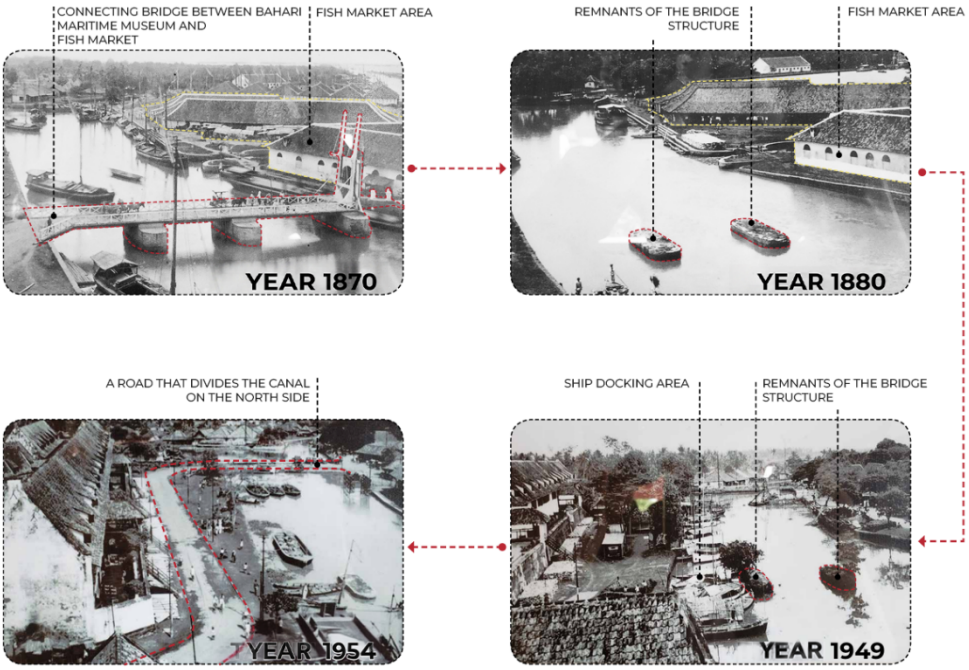

Figure 1. Historical Timeline of the Coastal 1 Diversion Channel
Source: PT Kind Indonesia (2023)

This transformation demonstrates that the area represents a layered urban landscape shaped by changing relationships between water, land, economic activity, and urban development.

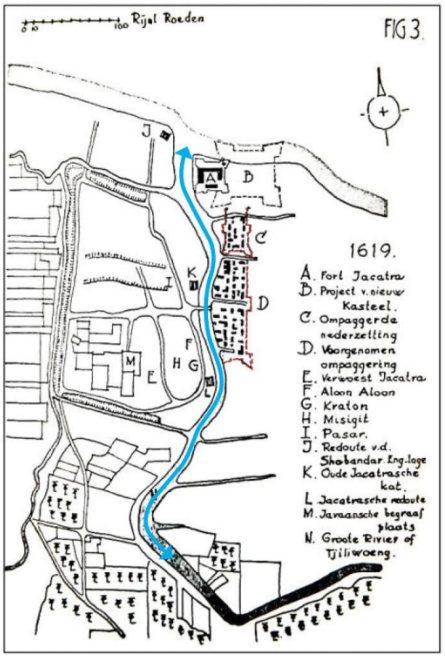

Figure 2. Canal configuration at Kalibesar in 1619
Source: Historical Sites in Jakarta. A. Heuken SJ

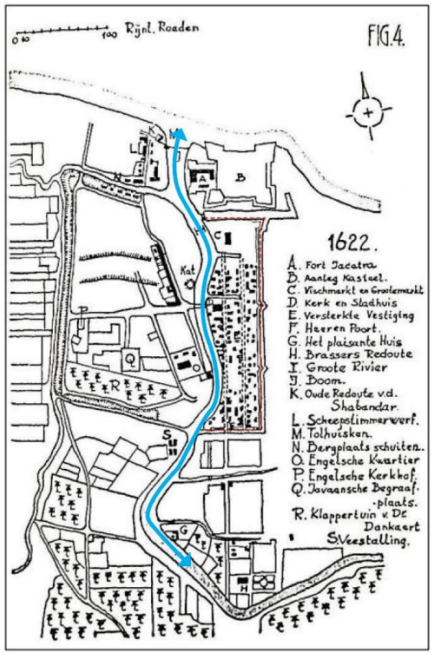

Figure 3. Canal configuration at Kalibesar in 1622
Source: Historical Sites in Jakarta. A. Heuken SJ

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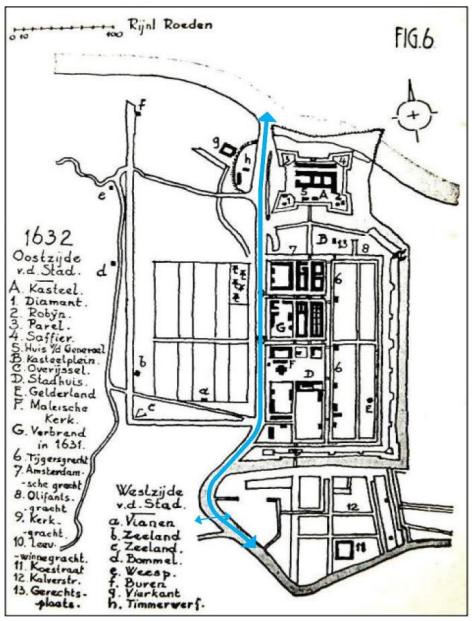

Figure 4. Canal configuration at Kalibesar in 1632
Source: Historical Sites in Jakarta. A. Heuken SJ

The transformation of the site also illustrates that historic waterfront areas are not static environments. They are continuously reconfigured through changes in infrastructure, land use, economic activity, environmental conditions, and urban policy. Therefore, planning strategies should not merely preserve the existing physical condition. They should also recognize and interpret the historical layers that have shaped the area.

Figure 5. The North Canal Today
Source: PT Kind Indonesia (2023)

The current spatial condition of the area presents several challenges. The waterfront is not yet fully integrated with a continuous public space network. Connections between the canal, pedestrian routes, historic buildings, and public activities remain limited. The area also faces the challenges of a hot coastal urban climate and insufficiently structured public space provision. Although the canal has an important hydrological function, its presence does not automatically produce a comfortable, accessible, and active public waterfront.

These conditions indicate the need for an integrated urban design strategy. Such a strategy should address at least three interconnected dimensions. First, the area requires a

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spatial structure that connects the canal, historic buildings, pedestrian routes, and public activities. Second, the area requires an ecological strategy that integrates blue and green infrastructure. Third, the area's historical and maritime values need to be translated into contemporary public space experiences.

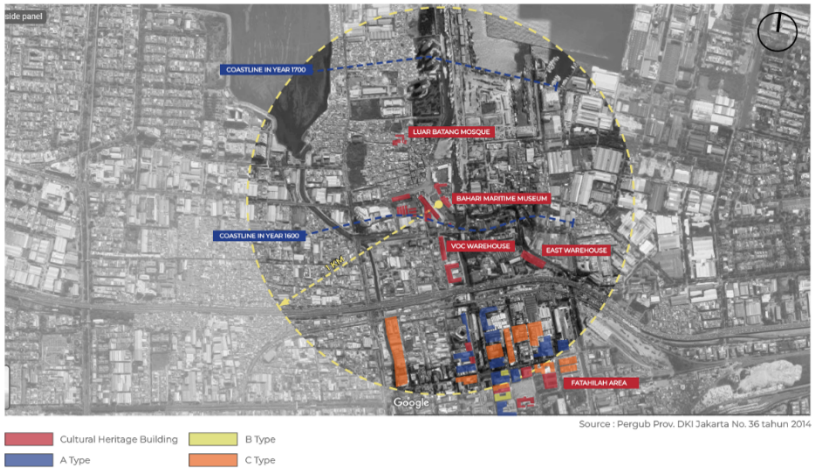

Figure 6. Cultural Heritage Buildings Surrounding the Area
Source: PT Kind Indonesia (2023)

The concept of blue green infrastructure is relevant to this context. Blue green infrastructure combines water systems and vegetation as multifunctional urban infrastructure. It can potentially support stormwater management, ecological functions, microclimatic improvement, biodiversity, recreation, and social interaction (Kimic & Ostrysz, 2021; Perrelet et al., 2024; Siehr et al., 2022). However, blue green infrastructure should not be treated solely as a technical environmental solution. Its effectiveness also depends on its ability to support urban life and public use.

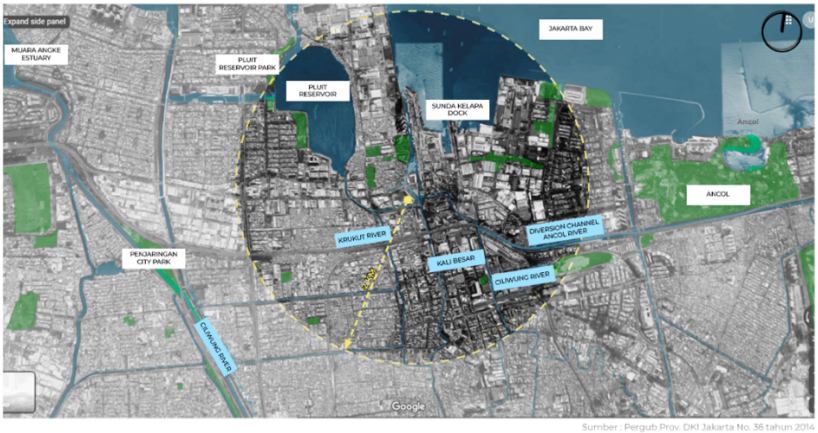

Figure 7. Mezzo Context – Green and Blue Areas
Source: PT Kind Indonesia (2023)

The Kalibesarcoastal diversion channel segment area therefore possesses the potential to become a public waterfront that integrates historical, ecological, social, and spatial functions. Based on this potential, this study develops the concept of Reviving the Maritime. The concept is intended to reactivate the maritime identity of the area by reconnecting water, history, public activities, and contemporary urban design.

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The concept does not seek to reconstruct the past literally. Rather, Reviving the Maritime is understood as an urban design strategy that interprets the historical relationship between the city and water through contemporary public space interventions. The strategy includes waterfront promenades, pedestrian routes, green spaces, historical interpretation, public activity spaces, viewing platforms, and floating decks.

Research Problem

The research problem is formulated through four interrelated issues. First, the canal has not yet been fully integrated into the public space structure of the area. Its function remains predominantly associated with water infrastructure, while its potential as a public, social, ecological, and cultural space has not been fully developed. Second, the area contains substantial historical and maritime values, but these values have not been fully translated into an accessible and coherent public space experience. Third, the area requires an ecological strategy capable of integrating blue and green infrastructure in order to improve the quality and sustainability of the waterfront environment. Fourth, pedestrian connectivity and the distribution of public activities need to be strengthened so that the area can function as part of a wider historic urban landscape and public space network.

Research Gap

Public space studies have developed extensive knowledge concerning accessibility, activity, comfort, safety, place identity, and social interaction. Waterfront studies have also examined urban regeneration, public-space development, climate adaptation, ecological resilience, and the relationship between cities and water. Nevertheless, several gaps remain.

First, ecological and social dimensions are frequently examined separately. Water infrastructure is often treated as a technical issue, while public space is treated as a social and architectural issue. In reality, waterfront areas represent a direct intersection between these dimensions. Second, studies of historic urban environments frequently emphasize monumental buildings and heritage structures. The relationship between water infrastructure, open space, pedestrian systems, and the historic urban landscape is not always sufficiently integrated into urban design strategies. Third, blue green infrastructure has become an important sustainability approach, but its application within historic waterfront contexts requires further development. Recent systematic reviews have identified the continuing challenge of integrating blue green infrastructure with existing urban infrastructure, governance systems, and broader urban development frameworks (Gupta & De, 2024). Fourth, the Historic Urban Landscape approach provides a comprehensive framework for integrating heritage conservation and sustainable development. However, its translation into specific urban design strategies for public open spaces in historic waterfront environments remains highly context dependent.

Based on these conditions, the research gap can be formulated as follows: There remains a need for an integrated urban architectural framework that simultaneously connects historic waterfront structure, public open space, blue green infrastructure, pedestrian connectivity, and public activity within the context of Jakarta's historic urban landscape.

Research Novelty

The novelty of this study is expressed through three contributions. The study develops an integrated relationship between Historic Waterfront, Blue green Infrastructure, Public Space, Urban Connectivity. These components are conceptualized as mutually reinforcing elements within a single urban design system. The framework is applied to the Kalibesar Area,

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coastal diversion channel segment, as part of Jakarta's historic maritime landscape. The study translates the framework into urban design strategies involving waterfront promenades, pedestrian routes, green corridors, shaded public spaces, seating areas, bridges, floating decks, historical interpretation spaces, community activities, cultural programs, sustainable material and environmental strategies.

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Public Open Space as Urban Social Infrastructure

Public open space is an essential component of urban life. It supports a variety of activities, including movement, recreation, social interaction, cultural expression, and informal economic activity. Carr et al. (1992) identify several fundamental dimensions of public space quality, including the ability to respond to user needs, provide freedom of choice, and support meaningful experiences. Gehl (2010) emphasizes that urban spaces become more socially active when they provide opportunities for walking, staying, sitting, observing, and interacting. From an urban architectural perspective, public space is therefore not merely a physical void. It is a spatial framework that mediates relationships between people, activities, buildings, infrastructure, and the environment. For the purpose of this study, public open space is defined as a publicly accessible spatial system that supports social activity, provides opportunities for movement and interaction, has adequate physical and environmental qualities, is connected to ecological systems and contributes to the identity and meaning of place.

Waterfront as a Transitional Urban Space

A waterfront represents a transition between land and water. Its spatial character is influenced by hydrological processes, ecological conditions, human activity, mobility, and visual relationships. Dal Cin et al. (2021) argue that waterfront transformation should be approached as an integrated process connecting infrastructure and public space design. The waterfront should therefore be understood as a system capable of linking natural and urban environments. This theoretical perspective is relevant to the coastal diversion channel segment because the canal performs a technical function while simultaneously possessing the potential to become an important public-space element. The planning challenge is therefore not to choose between water as infrastructure and water as public space, but to design a relationship in which both functions can coexist.

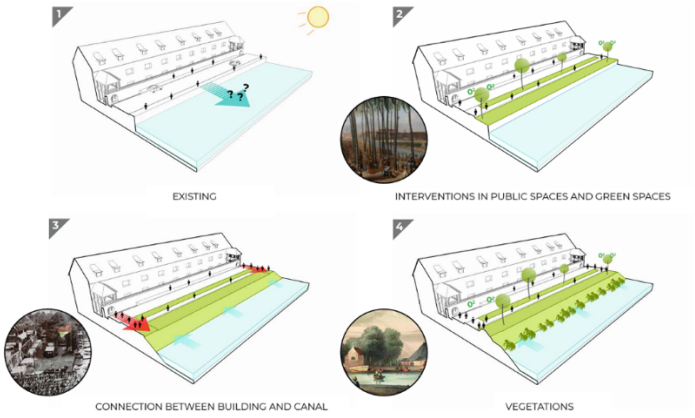

Figure 8. Bahari Diversion Channel – Canal-side Concept
Source: PT Kind Indonesia (2023)

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Historic Urban Landscape (HUL)

The Historic Urban Landscape approach constitutes an important theoretical framework for this study. UNESCO (2011) defines the historic urban landscape as an area resulting from the historical layering of cultural and natural values. The concept extends beyond the conservation of individual monuments and includes topography, hydrology, open spaces, infrastructure, land-use patterns, visual relationships, social practices, and cultural values. The HUL approach has three implications for the Kalibesarcoastal diversion channel segment context.

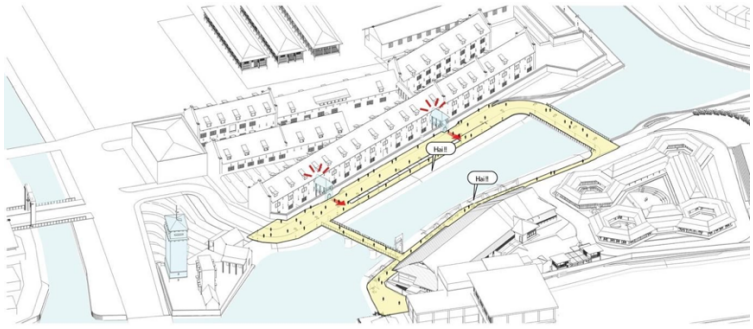

Figure 9. Design Concept – Historical Reflection Space
Source: PT Kind Indonesia (2023)

First, the canal should be understood as part of the historical landscape rather than merely as technical infrastructure. Second, public open space should be considered part of the historic spatial structure. Third, contemporary interventions may be introduced provided that they are compatible with the character and values of the historic environment. Conservation, therefore, does not necessarily mean preventing change. Instead, the HUL approach promotes the integration of heritage conservation with social, economic, environmental, and urban development.

Placemaking and Place Identity

The concept of placemaking is used to understand how physical spaces become meaningful places. Relph (1976) argues that place is closely associated with human experience and environmental character. Stedman (2003) further emphasizes that place meaning emerges through the relationship between the physical environment, human behavior, and social-psychological processes. In the context of this study, placemaking is supported through : public activity, historical interpretation, visual relationships with water, seating and staying spaces, cultural programs, pedestrian movement, collective experience. The waterfront promenade is therefore not simply a circulation route. It is a place-making device that can connect historical narratives, environmental experience, and public life.

Blue Green Infrastructure

Blue green infrastructure refers to the integration of water based and vegetated systems as multifunctional urban infrastructure. Siehr et al. (2022) explain that blue green infrastructure can contribute to climate resilience, flood management, ecological improvement, and urban multifunctionality. Perrelet et al. (2024) identify potential benefits including stormwater management, water purification, heat mitigation, and habitat provision. Kimic and Ostrysz (2021) emphasize that blue green infrastructure has spatial functional, environmental, and social dimensions. It should therefore be designed not merely as ecological infrastructure but as a system that also contributes to the quality of urban public

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space. In this study, blue green infrastructure is translated into canals, vegetated corridors, shaded areas, infiltration spaces, ecological transition zones, landscape elements, water management strategies. However, the proposed design strategies should not be interpreted as quantitative evidence of hydrological or climatic performance. Claims regarding reductions in temperature, increased infiltration, reduced flood discharge, or improved water quality require future measurement and technical verification.

Sustainability in Urban Architecture

Sustainability is understood in this study through the interaction of environmental, social, economic, and cultural dimensions. For historic urban environments, cultural sustainability is particularly important. A development strategy may be environmentally efficient but culturally unsustainable if it erases the identity and historical memory of the place. Accordingly, sustainability in this research is conceptualized as: Environmental Sustainability + Social Sustainability + Economic Sustainability + Cultural Sustainability This integrated perspective is consistent with recent heritage research emphasizing the role of historic urban landscapes as resources for sustainable urban development when managed through holistic and community-oriented approaches (Ripp et al., 2025).

2. METHODS

This study employs a qualitative descriptive case study approach within the field of urban architecture and urban design. The case study approach was selected because the research focuses on a specific urban site: the Kalibesar Area, coastal diversion channel segment. The objective is not statistical generalization but an in-depth understanding of the relationship between historical context, spatial structure, ecological conditions, public activities, pedestrian connectivity, public space needs. The study is oriented toward the formulation of a contextual planning strategy based on the interpretation of existing spatial and historical conditions.

Study Area

The study area is located within the Kalibesar coastal diversion channel waterfront context in Jakarta's Old Town. The area is associated with several historically significant urban elements, including, the Maritime Museum, Pasar Ikan, Pasar Hexagon, Menara Syahbandar, former VOC warehouse areas, Kali Besar, canal systems, the broader historic-tourism network of Jakarta's Old Town. The spatial position of the study area between these historic elements provides the potential to develop a connected public space system rather than an isolated waterfront intervention.

Figure 10. Location of the Kalibesar Bahari Diversion Channel
Source: PT Kind Indonesia (2023)

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Analytical Framework

The analysis was conducted through five stages.

Stage 1: Historical Context Analysis

This stage examined the historical development of Batavia like canal systems, maritime activities, port related functions, trade, historical transformations of the study area.

Stage 2: Existing Spatial Analysis

The analysis examined spatial patterns, relationships between the canal and surrounding areas, pedestrian networks, vehicular circulation, open spaces, vegetation, historic buildings, public activities.

Stage 3: Identification of Issues and Potentials

The issues and potentials were organized as follows :

Table 1. The issues and potentials were organized as follows

Dimension	Key Issue	Potential
Historical	Maritime values are not fully legible in contemporary spatial experience	Historical interpretation
Spatial	Weak connectivity between waterfront and surrounding heritage sites	Promenade and pedestrian network
Ecological	Heat exposure and limited vegetation	Blue green infrastructure
Social	Limited public activity spaces	Community and cultural spaces
Waterfront	Canal is not fully integrated as public space	Waterfront public realm
Mobility	Vehicular movement reduces pedestrian experience	Pedestrian oriented circulation

Stage 4: Strategy Formulation

The planning strategy was developed through the sequence:

Existing Condition → Issue → Potential → Strategy → Urban Design Element

Stage 5: Design Elaboration

The strategy was translated into spatial planning, waterfront promenade, pedestrian routes, green corridors, seating spaces, bridges, floating decks, historical interpretation spaces, public activity zones.

3. RESULTS

The Study Area as a Historic Waterfront Landscape

The findings indicate that the Kali Besar, coastal diversion channel segment area possesses the characteristics of a historic waterfront landscape formed through the relationship between canals, historic buildings, maritime activity, and urban networks.

The strategic location of the study area between several historic sites creates an opportunity to develop a public space network that connects existing heritage assets.

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The historical transformation of the area from a canal related landscape to land used for market activities and subsequently back into a canal system demonstrates the layered nature of the site.

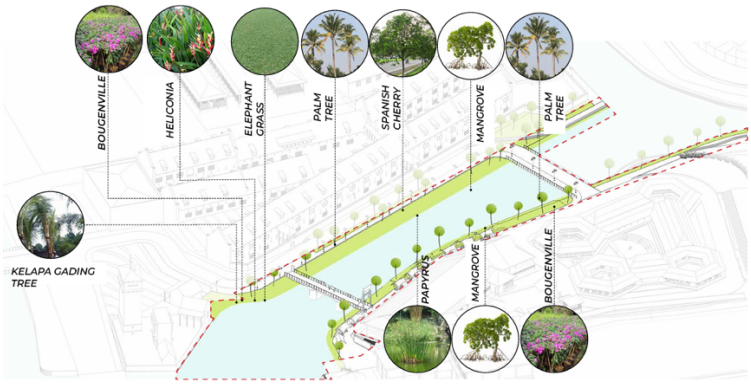

Figure 11. Bahari Diversion Channel – Green Open Space and Vegetation Design Concept
Source: PT Kind Indonesia (2023)

This condition indicates that the planning strategy should not only respond to the present physical condition but should also interpret the historical transformations that have shaped the area.

Figure 12. Infiltration Areas and Green Areas Serving as Green Corridors
Source: PT Kind Indonesia (2023)

Principal Spatial and Urban Issues

Fragmented Distribution of Historic Tourism The public perception of Jakarta's Old Town tourism is often concentrated around the Fatahillah Square area and its immediate surroundings. This creates an opportunity to extend the historic tourism network toward the Kali Besar, coastal diversion channel segment. From an urban design perspective, the issue represents a fragmentation of the historic public-space network. The proposed response includes improving pedestrian connections, connecting historic sites, developing a continuous promenade, introducing cultural activities, providing historical interpretation.

Unstructured Spatial Conditions

The existing spatial condition of portions of the area is not sufficiently organized to support a coherent public-space experience. This issue affects orientation, accessibility, comfort, safety, public activity. The planning response therefore needs to address spatial structure rather than merely improve visual appearance.

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Figure 13. Design Concept Bahari Diversion Channel – Aerial View
Source: PT Kind Indonesia (2023)

Figure 14. The Result of Bahari Diversion Channel – Aerial View
Source: PT Kind Indonesia (2023)

Exposure to Heat

The coastal urban climate of Jakarta creates environmental challenges for outdoor public space use. The planning strategy therefore incorporates green corridors and shaded areas along the waterfront. These interventions should be interpreted as design responses with potential environmental benefits. Their quantitative effectiveness requires future microclimatic measurements.

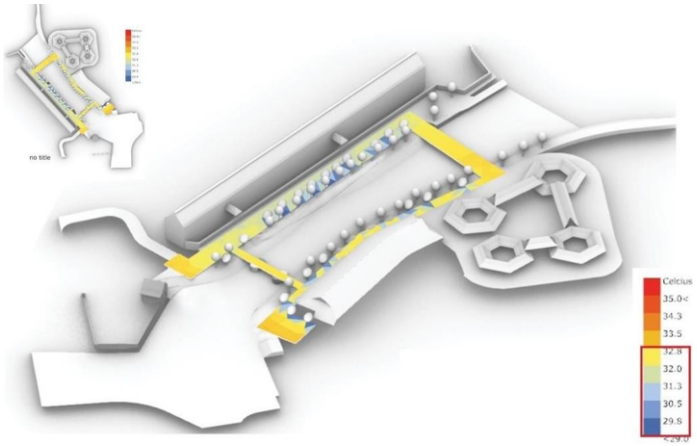

Figure 15. Bahari Diversion Channel – Thermal simulation at the canal edge

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Source: PT Kind Indonesia (2023)

The Reviving The Maritime Strategy

The principal conceptual strategy developed by this study is Reviving the Maritime. The concept has three interconnected meanings. Reinterpreting maritime memory, the historical relationship between canals, ports, trade, and maritime activity becomes part of the contemporary spatial experience. Reconnecting the city with water, the canal is treated not only as a boundary or technical infrastructure but as an urban element that can be viewed, experienced, and integrated into public activity. Integrating historical memory with contemporary urban life, new architecture and urban design interventions are introduced in a contemporary but context sensitive manner. The objective is not to reproduce historical forms literally. Instead, the strategy interprets historical values through contemporary public space design.

Blue Public Open Space Strategy

The canal constitutes a principal structural element of the public space system. It performs several potential functions such as hydrological infrastructure, spatial orientation, visual focus, ecological system, historical element, identity forming landscape. The planning strategy therefore develops the canal edge as a public realm. Proposed elements include, waterfront promenades, seating areas, reflection spaces, pedestrian bridges, floating decks. The canal is consequently reinterpreted as a multifunctional urban element rather than a purely technical water channel.

Green Public Open Space Strategy

Green spaces are integrated into the waterfront public space system. Their intended functions include such as, providing shade, improving visual quality, supporting pedestrian comfort, creating spatial transitions, contributing to ecological performance. Vegetation is therefore not treated merely as decoration. It forms part of a blue green urban infrastructure network. The proposed green strategy should include, tree planting, vegetated corridors, shaded pedestrian areas, landscape buffers, ecological transition spaces.

Pedestrianization Strategy

Pedestrian connectivity constitutes one of the most important components of the proposed urban design strategy. Selected vehicular routes may be transformed into pedestrian oriented spaces with controlled access for operational and emergency vehicles. This strategy is intended to improve, pedestrian accessibility, walking experience, historical interpretation, public interaction, connection between heritage sites. The pedestrian network should function as more than a mobility system. In the context of a historic waterfront, it can function as a cultural infrastructure connecting people with the historical landscape.

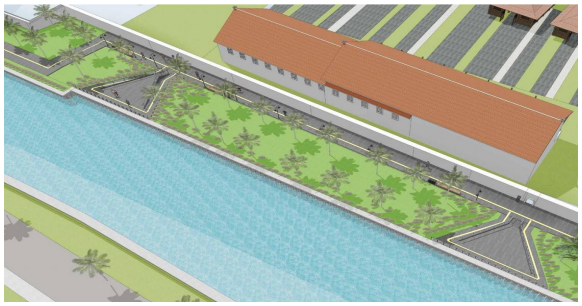

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Figure 16. The concept of the pedestrian path - Aerial View of the North Canal Plaza and Bahari Diversion Channel
Source: PT Kind Indonesia (2023)

Figure 17. The Result of the pedestrian path as a cultural infrastructure
Source: PT Kind Indonesia (2023)

Promenade As a Spatial Connector

The waterfront promenade functions as the primary spatial spine of the proposed public-space system. It connects: Canal → Pedestrian Route → Green Space → Historic Site → Public Activity. The promenade is therefore both a circulation route and a place making device. It allows visitors to , walk, stop, sit, observe the canal, encounter historic structures, participate in cultural activities. The promenade can also function as a historical route that narrates the relationship between the city and water.

Figure 18. Bahari Diversion Channel – Conceptual Site Plan of the East Canal
Source: PT Kind Indonesia (2023)

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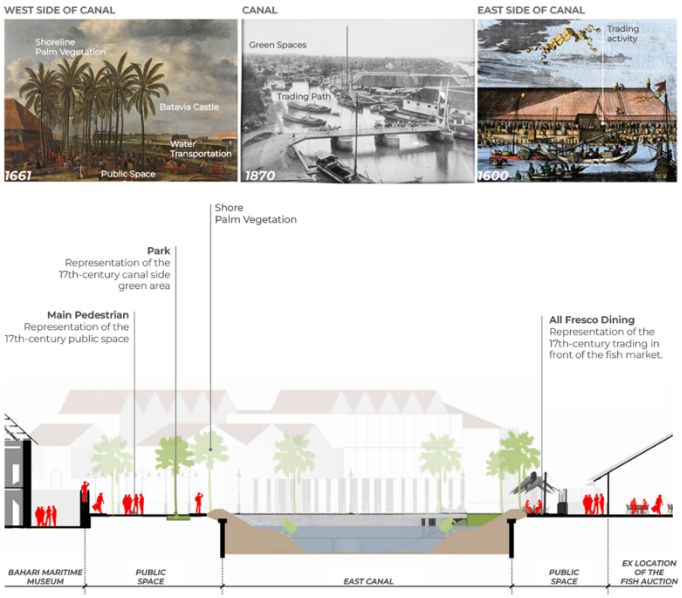

Figure 19. Design Concept – Implementation of the East Canal Waterfront Area
Source: PT Kind Indonesia (2023)

Figure 20. The Result of the East Canal Waterfront Area
Source: PT Kind Indonesia (2023)

Historical Reflection Spaces

Historical reflection spaces are proposed as areas where visitors can experience the relationship between water, history, and the urban landscape. The spatial components may include several thigs like visual orientation toward the canal, seating, interpretive information, historical narratives, relationships with historic buildings. The objective is to enable historical interpretation through spatial experience rather than relying solely on conventional museum displays.

Figure 21. The Result of Historical Reflection Space
Source: PT Kind Indonesia (2023)

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Floating Deck As A Waterfront Experience

The floating deck is proposed as an element that strengthens direct experience of the waterfront. Its potential functions include, viewing platform, resting space, water experience space, historical interpretation platform. The design concept is inspired by the maritime character of the area and can be developed as a contemporary interpretation of traditional water based transport and port-related structures. The floating deck should be designed with careful consideration of safety, water level variation, structural stability, accessibility, maintenance, environmental conditions. These technical aspects require detailed engineering studies during subsequent design development.

Figure 22. Bahari Diversion Channel – View of the East Canal from the southern floating deck
Source: PT Kind Indonesia (2023)

Public And Cultural Activities

A sustainable public space requires diverse activities. The proposed activity program includes, heritage tourism, community activities, cultural festivals, art events, performances, exhibitions, community based interpretation. The introduction of cultural and community activities can help prevent the waterfront from becoming a purely passive tourism space.
The area should therefore support both visitors and local communities. A successful public waterfront should be active across different times of day and should accommodate different user groups.

Conservation And Contemporary Intervention

Because the study area is situated within a historic urban landscape, new interventions should respond to, scale, visual character, historic relationships, materiality, spatial legibility. Contemporary architecture may be introduced provided that it remains context-sensitive. The proposed approach is therefore based on, contemporary intervention without historical erasure. New elements should be distinguishable from historic structures while remaining compatible with the broader urban landscape. This principle is consistent with the HUL approach, which encourages the integration of contemporary development with existing cultural and environmental values.

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Figure 23. The Result of The Area Bahari Diversion Channel – Aerial View
Source: PT Kind Indonesia (2023)

4. DISCUSSION

4.1. From Water Infrastructure to Urban Spatial Structure

One of the principal findings of this study is that the canal has the potential to function beyond its technical role. It can become, a spatial orientation element, a visual focus, an ecological system, a historical landscape, a social space. This finding reinforces the argument that the presence of water alone does not automatically produce a successful public waterfront. A public waterfront requires, accessibility, connectivity, activities, comfort, safety identity. The proposed strategy therefore reframes the canal as a spatial structure that organizes urban experience.

4.2. Integrating Historic Urban Landscape and Urban Design

The HUL framework is useful because it prevents the historic area from being reduced to a collection of monuments. In the Kalibesarcoastal diversion channel segment context, historical values are also embedded in canal systems, spatial relationships, maritime activities, urban networks, relationships between water and land. The urban design strategy therefore translates the HUL perspective into a spatial sequence: Canal → Promenade → Pedestrian Network → Public Activity → Historical Interpretation. This sequence provides a practical mechanism for connecting heritage conservation and contemporary public space planning.

4.3. Blue Green Infrastructure as Multifunctional Urban Infrastructure

The study supports the understanding that sustainability cannot be achieved merely through the addition of vegetation. Blue green infrastructure should be designed as ecological infrastructure, public space infrastructure, environmental comfort infrastructure, identity forming infrastructure. The integration of water and vegetation therefore provides a framework for combining environmental performance with public life. However, a critical distinction must be maintained between, proposed design potential and measured environmental performance.

4.4. Pedestrian Routes as Cultural Infrastructure

A major contribution of the study is the interpretation of pedestrian routes as cultural infrastructure. A pedestrian route becomes cultural infrastructure when it connects historic sites, water systems, interpretive spaces, public activities, collective experience.

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Walking then becomes a method of experiencing and understanding the historic urban landscape. This perspective expands the role of pedestrian planning beyond transportation and accessibility.

4.5. Public Space as Historical Interpretation

Historic interpretation does not need to depend exclusively on museum buildings. Historical meaning can be communicated through, spatial sequences, visual corridors, materiality, water,landscape, public activities, interpretive installations, digital media.

The waterfront promenade, reflection spaces, and floating deck can therefore operate as components of a distributed historical interpretation system.

4.6. Cultural Sustainability

The sustainability of a historic waterfront is not limited to environmental performance; A waterfront may become physically improved but culturally unsustainable if its historical identity is erased or disconnected from contemporary experience.

The strategy recognizes that the long-term vitality of a historic waterfront depends on the simultaneous maintenance of environmental quality, social use, cultural memory, and economic activity.

5. CONCLUSION

This study formulated a sustainable based public open space planning strategy for the Kalibesararea coastal diversion channel segment, through an urban architectural and urban design perspective.

The findings demonstrate that the area possesses significant potential as a historic public waterfront because of the relationship between canals, historic buildings, maritime history, public activities, and its position within Jakarta's Old Town urban network. However, this potential cannot be fully realized if the canal is treated solely as hydrological infrastructure. The canal should be integrated with pedestrian routes, green spaces, public activities, and historical interpretation. The proposed strategy consists of five principal components.

- First, blue public space functions as a hydrological, ecological, visual, historical, and identity-forming structure.
- Second, green public space forms part of the blue-green infrastructure system and contributes to outdoor environmental quality.
- Third, pedestrian routes and promenades connect canals, historic buildings, public spaces, and tourism networks.
- Fourth, multifunctional public spaces provide opportunities for social, cultural, recreational, and community activities.
- Fifth, historical interpretation strengthens the identity and cultural meaning of the area.

The concept of Reviving the Maritime provides the conceptual framework for reconnecting water, history, and contemporary urban life through context-sensitive urban design. The principal contribution of this research is the integration of : Historic Waterfront + Blue Green Infrastructure + Public Space + Urban Connectivity into a single sustainable urban design framework.

The study also has limitations. It does not provide quantitative measurements of microclimate, hydrological performance, water quality, infiltration capacity, or changes in visitor numbers. These aspects should therefore be addressed in future research through

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environmental monitoring, hydrological modelling, thermal comfort analysis, and post-occupancy evaluation.

Future research should also investigate the governance and implementation dimensions of the proposed strategy. The sustainability of the Kalibesararea coastal diversion channel segment waterfront will depend not only on physical design but also on cooperation between government institutions, heritage authorities, local communities, cultural organizations, tourism stakeholders, and technical experts.

Ultimately, the sustainable transformation of the area requires a shift from viewing the waterfront as a technical water corridor toward understanding it as a multifunctional historic urban landscape in which ecological systems, public life, cultural memory, and contemporary urban design are mutually integrated.

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7. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors further confirm that this manuscript is an original work and has been prepared in accordance with academic integrity standards. To the best of the authors' knowledge, the manuscript is free from plagiarism and does not contain any unauthorized reproduction of the work of others. All sources, ideas, data, and materials derived from previous scholarly works have been appropriately acknowledged and cited in accordance with accepted academic conventions. The authors also acknowledge the professional involvement of PT Kind Indonesia in the planning process of the Kalibesar Bahari project. In particular, Mr. Yonav Partana, Principal Architect of PT Kind Indonesia, contributed professional insights and contextual perspectives related to the architectural and spatial planning of the project. This professional involvement does not constitute a conflict of interest in relation to the research, analysis, interpretation, or publication of this article.

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