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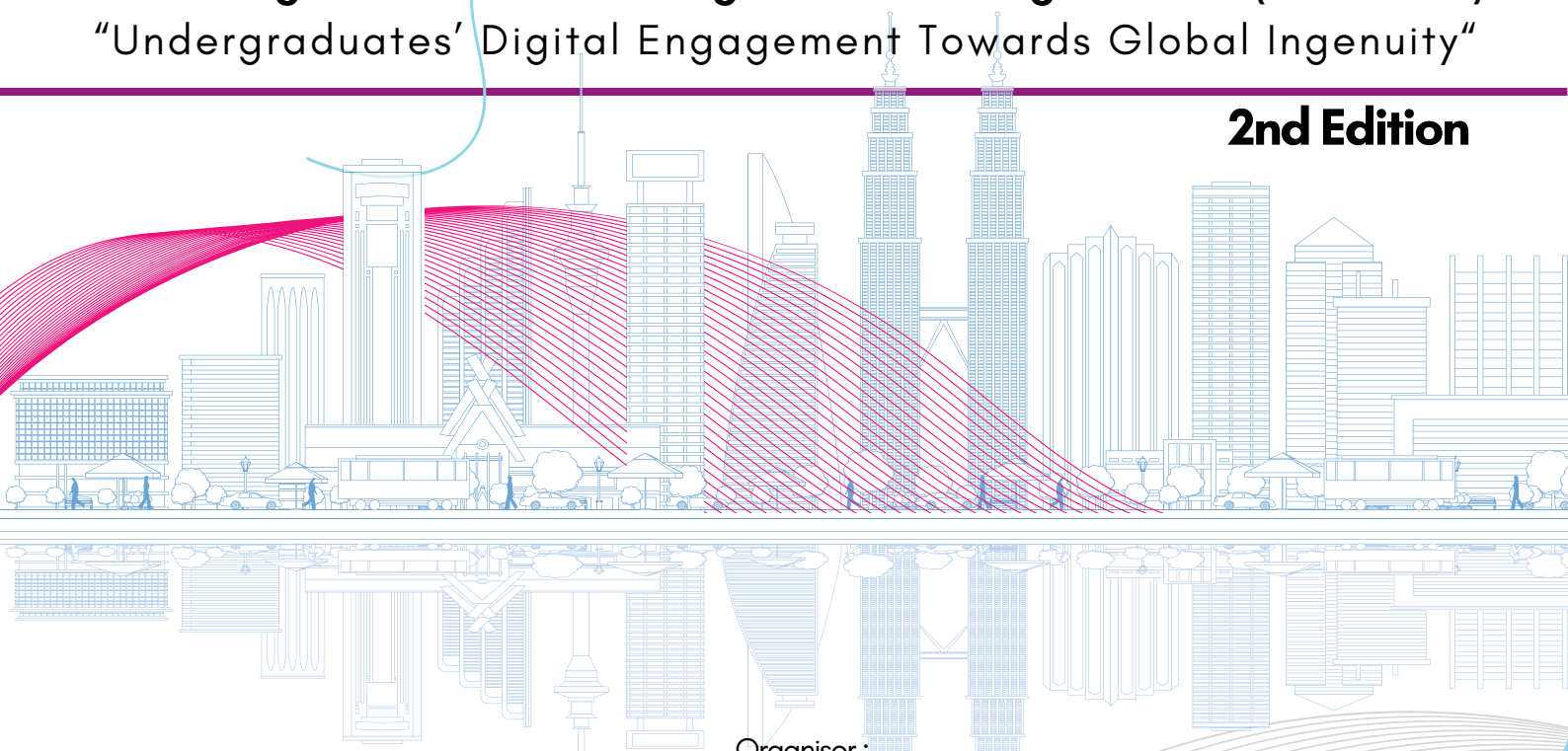
"Undergraduates' Digital Engagement Towards Global Ingenuity"

**2nd Edition**

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**Bauchemic (Malaysia) Sdn Bhd**

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# FROM BLIGHT TO BRIGHT: CRAFTING SUSTAINABLE FEASIBILITY FOR BROWNFIELD SITE

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**Abstract**

Urban regeneration strategies often involve redeveloping brownfields, which differ significantly from greenfields due to the presence of existing structures. The abandonment of these properties has resulted in wasted land resources and adverse effects on the economy, society, and the environment. This study aims to assess the redevelopment potential of a specific brownfield site and propose an appropriate building layout. A comprehensive desktop analysis was conducted, which included demographic and population studies to gather relevant information for the redevelopment proposal. Additionally, a SWOT analysis was employed to evaluate the strengths, weaknesses, opportunities, and threats associated with the site. The research identified the Pandan Safari Lagoon Waterpark as an optimal site for redevelopment into sports and recreational facilities. The findings suggest that redeveloping this brownfield site can significantly enhance economic viability, improve societal well-being, and promote environmental sustainability. The proposed layout demonstrates considerable potential for successful implementation and commercial viability. By transforming the brownfield site into a hub for sports and recreation, the redevelopment plan promises to revitalise the area, providing numerous benefits to the local community and environment. This study highlights the importance of strategic planning in the redevelopment of brownfields to maximise their potential and mitigate associated challenges.

**Keywords:** *urban regeneration, sustainable urban planning, brownfield development, SWOT analysis, economic viability*

## 1. INTRODUCTION TO BROWNFIELD SITE DEVELOPMENT

Brownfield development is one option for redevelopment. Unlike greenfield development, which involves construction on previously undeveloped sites, brownfield development occurs on sites that have already been developed. The brownfield development approach refers to the process of redeveloping previously used industrial or commercial lands that may be contaminated with hazardous substances. The United States Environmental Protection Agency (EPA) (1995) defines a brownfield as a property in which its expansion, redevelopment, or reuse may be complicated due to the presence or potential presence of a hazardous substance, pollutant, or contaminant. Over the past few decades, this type of development is increasingly relevant in Malaysia due to the nation's rapid industrialisation and urbanisation. The strategic redevelopment of brownfield sites presents opportunities for sustainable urban growth, environmental rehabilitation, and economic revitalisation. According to Ali et al. (2014), the development of brownfield sites gained attention during the economic crisis of the late 1900s, resulting in numerous abandoned commercial, residential, and industrial developments.

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1.1 The Redevelopment Strategies in Selangor and the Significance of Redevelopment of Brownfield Sites

The booming of Malaysia's industry has resulted in various underutilised or abandoned sites, often due to contamination concerns. The reclamation of these sites is consistent with the global trend towards sustainable development, which prioritises using land resources to reduce urban sprawl and protect greenfield areas. In line with the 11th Malaysia Plan (RMK 11) and Sustainable Development Goals (SDG), brownfield areas aim to create sustainable communities and liveable cities. Bernama (2023) reported that the significance of redevelopment lies in revitalising old cities and unused buildings by attracting new investments to reactivate the structures and their functionalities. This approach helps reduce development pressure and slow physical changes in areas with distinct social, environmental, and historical values. To ensure the success of redevelopment projects, detailed urban reconstruction plans are essential, requiring precise building design to create a more integrated, inclusive, and low-carbon built environment. Table 1 shows the categories of brownfield development in Malaysia.

**Table 1. Brownfield categories in Malaysia**

| Types of Brownfield | Categories |
|---|---|
| Former mining or quarrying. | **A** |
| The former landfill site that is full or no longer used permanently. | **B** |
| Factory/business/residential/institution area that has been abandoned for more than 10 years. | **C** |
| Abandoned development projects that are not completed within the construction exceeding 10 years. | **D** |
| Building or row of lots of buildings that have been completed but abandoned over 10 years. | **E** |
| The former depot or public transport station, infrastructure, and utilities. | **F** |

*Source: Town and Country Planning Department, Ministry of Housing and Local Government (2012)*

## 2. THE CASE STUDY AND SITE SELECTION

Although physical progress may be rapid, some developments are abandoned for various reasons. Such abandonment can impact the economy, society, and environment. Additionally, the persistent issue of building abandonment can significantly affect market prices and property values (Ariffin et al., 2018).

Pandan Safari Lagoon Waterpark has been chosen as a case study for this research. This property is located at Pandan Perdana, Ampang Jaya, Selangor. In 1998, the Pandan Safari Lagoon Waterpark was the first waterpark to be constructed on the roof of a commercial complex in Klang Valley. This property which lies within the municipality of Ampang Jaya, was operated on 120,000 square footage of the sixth and seventh floor of the building. In addition, Pandan Safari Lagoon Waterpark was also remarked as the third largest theme park in Southeast Asia. As a result, this area became a popular and attractive location for family vacations. However, the glorious era of the theme park ended after the occurrences of multiple mishaps, resulting in its closure in 2007. This site was abandoned for more than 10 years. This

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has led to many problems, especially in economic, social, and environmental dimensions. Pandan Safari Lagoon Waterpark was selected as a case study in this research due to its potential to turn into a new recreational facility. Due to its strategic position and large population, this land has the potential to be developed into a sports and recreational complex. The demographic and target market based on population are indicated in the following tables and figure:

Table 2. Population in Ampang, Selangor (2022)

| Location | Population |
|---|---|
| Ampang | 205,700 |
| Pandan | 228,800 |
| **Total** | **434,500** |

*Source: Pocket Statistics of Selangor Q1 2024*

Table 3. Household Group in Selangor (2022)

| Categories | Income Distribution | Median | Average |
|---|---|---|---|
| **B40** (<RM8,390) | 18.6% | RM5,708 | RM5,673 |
| **M40** (RM8,390 – RM15,729) | 38.0% | RM11,432 | RM11,607 |
| **T20** (>RM15,730) | 43.4% | RM21,410 | RM26,611 |

*Source: Pocket Statistics of Selangor Q1 2024*

Table 4.0: Age Group in Selangor (2022)

| Age | Percentage |
|---|---|
| 0-14 years old | 21.2% |
| 15-64 years old | 71.1% |
| OLD | 7.7% |

*Source: Pocket Statistics of Selangor Q1 2024*

*Table 5.0: Household Group in Selangor (2022)*

| Gender | Number ('000) |
|---|---|
| Male | 16,963 |
| Female | 15,965 |
| **Total** | **32,928** |

*Source: Pocket Statistics of Selangor Q1 2024*

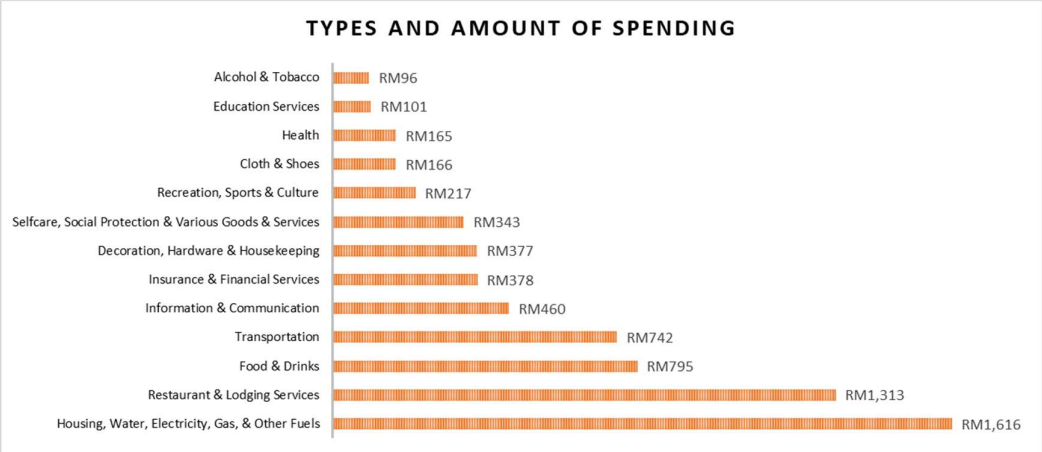


Figure 1. The types and amount of monthly spending for Selangor State in 2022
*Source: Pocket Statistics of Selangor Q1 2024*

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The redevelopment proposal to build recreational and sports facilities in the selected area has much potential as there is a large population in Ampang and Pandan areas. The median household income is more than RM5,000 per month, indicating broader purchasing power and willingness to pay for recreation and sports activities. Additionally, 43% of Selangor's population earns an average monthly household income of RM21,410, placing them in the top 20% of the economic category. Meanwhile, 71.1% of the population is aged 15 to 64 years old, demonstrating the demand for sports and recreational activities. Figure 1 illustrates the amount and types of expenditure for the Selangor State population. This data implies that the selected society is willing to spend approximately RM217 per month on recreation, sports, and culture expenses.

## 3. THE SWOT ANALYSIS OF THE PANDAN SAFARI LAGOON WATERPARK REDEVELOPMENT PROPOSAL

According to Abed and Yakhlef (2020), brownfield regeneration demands a thorough grasp of the components that impact evolution and development as well as a transdisciplinary approach to address current concerns. This would clarify brownfield regeneration in a sustainable framework, focusing on development potential and competitiveness. Based on the gathered data, the proposal for Pandan Safari Lagoon Waterpark rehabilitation is based on a SWOT analysis that includes the possible redevelopment project and the strengths of the chosen site. Table 6 shows the SWOT analysis based on desktop search and the explanation.

Table 6. SWOT Analysis of Redevelopment Project of Pandan Safari Lagoon Waterpark, Ampang, Selangor

| SWOT Analysis | Explanation |
|---|---|
| **Strengths** | ● Prime location in Ampang, Selangor, which is well-connected to Kuala Lumpur.<br>● Existing infrastructure may reduce some initial development costs.<br>● Potential to attract tourists and locals; boosting the local economy.<br>● Opportunity to create a modern, eco-friendly development that<br>● aligns with current sustainability trends.<br>● Possibility to leverage the site's history and brand name for marketing purposes. |
| **Weakness** | ● Contamination and environmental concerns typical of brownfield sites, which could increase remediation costs and project timeline.<br>● Potential legal and regulatory challenges related to redevelopment.<br>● Initial negative perception due to the site's previous abandonment and possible safety issues.<br>● Financial risks associated with medium-scale redevelopment projects. |
| **Opportunities** | ● Growing demand for recreational and mixed-use developments in urban areas.<br>● Potential to create a unique and attractive destination that differentiates it from other regional attractions.<br>● Opportunity to implement green technologies and sustainable practices, enhancing the project's appeal and long-term viability.<br>● Possibility of public-private partnerships and government incentives for brownfield redevelopment. |

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| | |
|---|---|
| **Threats** | • Competition from other existing and upcoming leisure and recreational facilities in the region.<br>• Economic fluctuations and changes in tourism trends could affect visitor numbers and project profitability.<br>• Regulatory changes and potential delays in obtaining necessary permits and approvals.<br>• Possible resistance from local communities or stakeholders concerned about environmental impact or disruption during construction. |

*Source: Researchers (2024)*

3.1 The Proposal of Redevelopment Layout Plan for Pandan Safari Lagoon Waterpark Ampang, Pandan Perdana, Wilayah Persekutuan Kuala Lumpur

The site lies at No. 1, Jalan Perdana 6/10A, Pandan Perdana, Ampang 55300, Kuala Lumpur, Wilayah Persekutuan Kuala Lumpur. The property was formerly a shopping complex with a rooftop theme park. Figure 2 depicts the site plan and a photograph of the property during its operational years.


Figure 2. The site plan and photograph of the subject property
*Source: Google Maps and Wikipedia, 2024*

The illustrations for the redevelopment layout plan for Pandan Safari Lagoon Waterpark Ampang are presented in Figure 3 and Figure 4.

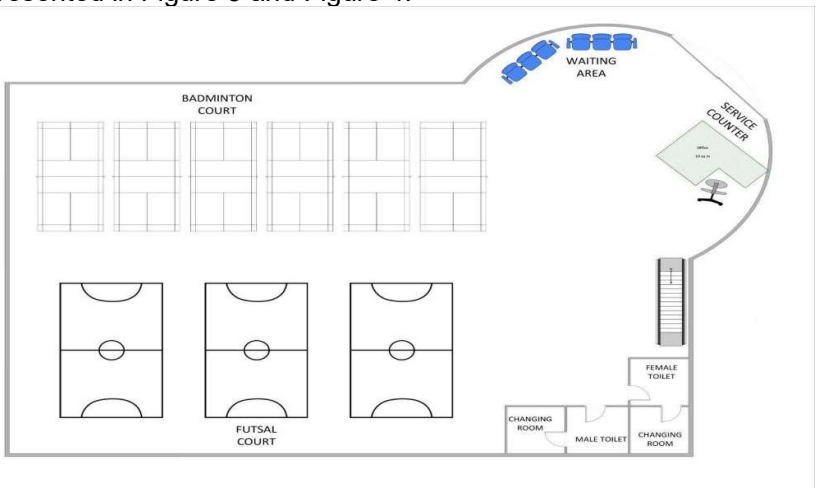


Figure 3. The proposed floor plan (6th floor) of Pandan Safari Lagoon Waterpark
*Source: Researchers (2024)*

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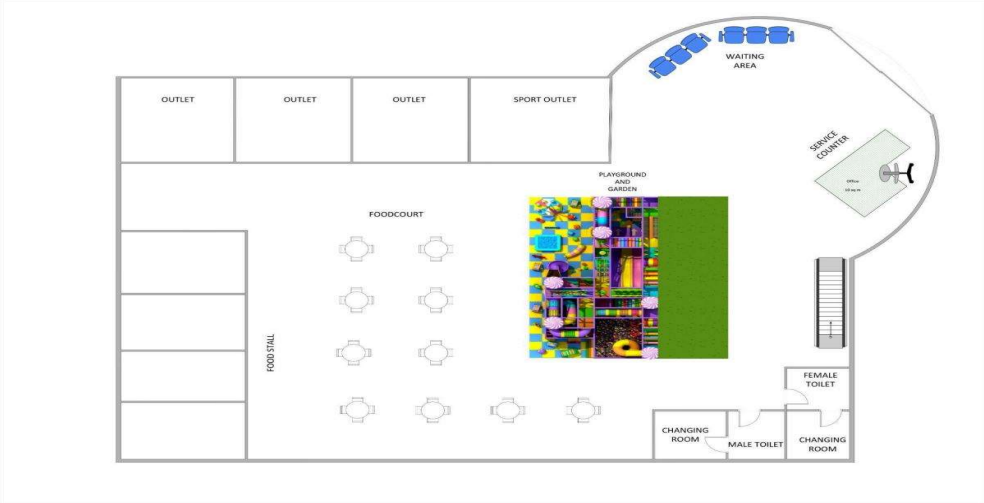


Figure 4. The proposed floor plan (7th Floor) of Pandan Safari Lagoon Waterpark
*Source: Researchers (2024)*

Figure 3 illustrates the planned layout plan for the building's sixth floor, which includes a sports arena comprising six badminton courts and three futsal courts. The floor will also be equipped with changing rooms, toilets, a service counter and a waiting area. Figure 4 illustrates the proposed layout plan for the seventh floor of the building including four units of food stalls, four units of sports outlets, a food court, a playground, a garden, two units of changing rooms and washrooms, a waiting area, and a service counter. This sports area is proposed to address the demand for recreational and sports facilities within the community. According to Yong and Mohammad (2021), brownfield rehabilitation can boost economic growth by creating new job opportunities, upgrading infrastructure, raising property values, and spreading positive externalities within the vicinity.

## 4. CONCLUSION

Brownfield site development in Malaysia represents a critical intersection of environmental stewardship, economic growth, and sustainable urban planning. While challenges remain, the concerted efforts of the government, private sector, and local communities can pave the way for successful redevelopment projects. By prioritising the reclamation and reuse of contaminated lands, Malaysia can continue to grow in a manner that is both economically vibrant and environmentally responsible.

## 5. ACKNOWLEDGMENT

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