

# GLOBAL COMPASSION TOWARDS RESILIENCE ECOSYSTEM

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LEADING THE WAY  
CREATING AMBITION - GROWING SUSTAINABILITY



DEPARTMENT OF LANDSCAPE ARCHITECTURE  
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA | VENUE: KAED BRIEFING ROOM

GLOBAL COMPASSION:  
TOWARDS RESILIENCE ECOSYSTEM



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<b>TABLE OF CONTENT</b>	
<b>COMMITTEE MEMBERS UMRAN 2023</b>	<b>III</b>
<b>PREFACE FROM CHAIRMAN UMRAN 2023</b>	<b>IV</b>
<b>PREFACE FROM EDITORS UMRAN 2023</b>	<b>VI</b>
<b>TABLE OF CONTENTS</b>	<b>IX</b>
<b>1. ECOLOGICAL RESILIENCE</b>	
<b>1.1. Urban Resilience: Nature-Based Solution for Urban Flash Flood Crises</b>	<b>1</b>
Author: Ungku Siti Nurfarhanah U.M Fadli Jalil Co-author: Izawati Tukiman, Putri Haryati Ibrahim	
<b>1.2. Optimising Cultural Ecosystem Services through Eco- tourism and Cultural Conservation in a Mangrove-rich Fisherman Village at Kong Kong Laut, Masal, Johor</b>	<b>7</b>
Author: Siti Nur Hakimah Khairudin Co-author: Khalilah Zakariya, Putri Haryati Ibrahim, Zainul Mukrim Baharuddin	
<b>1.3. Exploring the benefits of microbes for ornamental plant growth habits in landscape industries</b>	<b>15</b>
Author: Kamarul Arshad Zakaria Co-author: Khalilah Zakariya, Putri Haryati Ibrahim, Zainul Mukrim Baharuddin	
<b>1.4. Botanical Oases: Herbal Gardens as Learning Sanctuaries at KKTM Lenggong</b>	<b>21</b>
Author: Mohd Al-Hafiz Abdul Rahman Co-author: Aniza Abu Bakar, Zainul Mukrim Baharuddin	
<b>1.5. Preliminary Study of Tin Mining Reclamation for Heritage Tourism</b>	<b>27</b>
Author: Nur Insyirah Najah Rusli Co-author: Aniza Abu Bakar, Khalilah Zakariya, Putri Haryati Ibrahim	
<b>1.6. Revitalization of Firefly Habitat at riverbank of Johor River towards New Entomotourism Attraction</b>	<b>34</b>
Author: Aliff Haikal Wahab Co-author: Suhaili Suid, Izawati Tukiman, Rashidi Othman	

<b>2. LIVABLE CITIES</b>	
<b>2.1. Transforming Industrial Spaces through Eco-Efficiency Landscape Design Strategies in Jasin Industrial Park</b>	<b>41</b>
Author: Nurizzati Zamri Co-author: Mohd Ramzi Mohd Hussain, Suhaili Suid, Izawati Tukiman	
<b>2.2. Promoting Wellness: Playable City Transformation in Wangsa Maju for Community Well-being</b>	<b>47</b>
Author: Nur Affrina Fahmy Co-author: Aniza Abu Bakar, Haza Hanurhaza Md Jani	
<b>2.3. The Impact Of Urbanisation Towards Pedestrian-Oriented Walkability</b>	<b>54</b>
Author: Nayyef Aqram Nadzri Co-author: Izawati Tukiman, Zainul Mukrim, Suhaili Suid	
<b>2.4. Integrating Urban Green Into The Urban Renewal Of Abandoned Spaces</b>	<b>59</b>
Author: Syafira Shyrim Co-author: Suhaili Suid, Izawati Tukiman, Putri Haryati Ibrahim	
<b>2.5. Cognitive Restoration Attributes For Stress Rehabilitation In Community Park: A Review</b>	<b>66</b>
Author: Dzin Nun Azmi Co-author: Nor Hanisah Mohd Hashim, Sharifah Khalizah Syed Othman Thani	
<b>2.6. Implementation of Sustainable Wellness Oriented Coworking Space as Post-Pandemic Solution for the SMEs</b>	<b>71</b>
Author: Ahmad Khatib Khairuddin Co-author: Norzalifa Zainal Abidin	
<b>2.7. Cultural Imageability On Urban Identity: A Systematic Literature Review</b>	<b>78</b>
Author: Abdullah Hasif Ahmad Patria Co-author: Mohd. Ramzi Mohd. Hussain, Izawati Tukiman	

### 3. SUSTAINABLE INNOVATION

- 3.1. Urban Ecology Transformation: Achieving Carbon Neutrality Within 88  
Elmina Business Park  
Author: Muhammad Afif Abidi Mat Ghazi  
Co-author: Aniza Abu Bakar, Rashidi Othman
- 3.2. Rejoicing Urban Spaces For Interaction Enhancement 96  
Author: Nurnabilah Zulkarnain  
Co-author: Aniza Abu Bakar, Jasasikin Ab Sani

### 4. HERITAGE PRESERVATION

- 4.1. Facade Typology Of Sentanan Sugar Factory's Former Official 105  
Residence As An Effort To Preserve Colonial Buildings In Mojokerto: A  
Review  
Author: Anisah Nur Fajrwati  
Co-author: Zitha Hertina Saraswati, Moses Bior Abraham Pandek,  
Restu Putra Fajar, and Moch. Aril Asyhari Putra
- 4.2. Reviving Kuala Terengganu Waterfront As Cultural Nodes Through 117  
Tourism Corridor Planning  
Author: Zuhadi Firdaus Zulkifli  
Co-author: Suhaili Suid, Izawati Tukiman, Jasasikin Abdul Sani

### 5. REGENERATIVE TOURISM

- 5.1. Cultural Tourism through Paddy Cultivation 124  
Author: Nor 'Aqilah Tarmizi  
Co-author: Khalilah Zakariya, Putri Haryati Ibrahim, Mohd Ramzi Mohd  
Hussain
- 5.2. Analysis Of The Suitability For Ecotourism In Kuala Kedah, Malaysia 131  
Using Geographical Information System  
Author: Nur Zaitun Ain'na Ridzuan & Masbiha Mat Isa  
Co-author: Masbiha Mat Isa
- 5.3. Community Based Tourism: Landscape Strategies To Celebrate The 143  
Heritage And Culture Of The Javanese  
Author: Amina Nadzira Tajol Azhar  
Co-author: Aniza Abu Bakar, Izawati Tukiman, Haza Hanurhaza Md Jani
- Authors, email addresses and affiliations 152

# 1. ECOLOGICAL RESILIENCE

## PRELIMINARY STUDY OF TIN MINING RECLAMATION FOR HERITAGE TOURISM

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**Abstract:** The remnants of tin mining have left abandoned, derelict sites that pose environmental, economic, and cultural challenges. This study focuses on the reclamation of the Sri Banting Tin Dredge site in Dengkil, Selangor, and proposes strategies to transform it into a heritage tourism destination while restoring its ecosystem. The analysis addressed key aspects such as zoning analysis, environmental and spatial conditions, infrastructure development, and suitable programmes. These strategies aim to sustainably reclaim and repurpose the site, ensuring responsible transformation for heritage tourism. The findings reveal that such reclamation strategies not only can restore ecosystems but can also preserve cultural history and stimulate economic growth through tourism. This approach can serve as a model for revitalising other post-mining landscapes, highlighting the importance of balancing environmental restoration, cultural preservation, and economic development. The research provides valuable insights for landscape architects and policymakers on how to transform derelict sites, contributing to heritage tourism.

**Keywords:** Tin Mining, Heritage Tourism, Environmental Reclamation, Ecosystem Restoration, Cultural Preservation

### INTRODUCTION

The legacy of tin mining in Malaysia has left behind a significant number of abandoned sites, with the Sri Banting Tin Dredge in Dengkil, Selangor, serving as a poignant example. Once a bustling hub of industrial activity, this site now stands as a testament to both human ingenuity and environmental change. The lakes formed by past mining operations have become reminders of the ecological disruption caused by extensive dredging practices. As urban areas continue to develop around this site, the challenge of addressing its dereliction becomes increasingly urgent. This research aims to explore the reclamation and restoration of the Sri Banting Tin Dredge site, focusing on strategies to transform it into a vibrant heritage tourism destination. The objectives include assessing the environmental and spatial challenges posed by the site, analysing the potential for heritage tourism, and developing strategies that promote

both cultural preservation and sustainable development. By doing so, this study seeks to highlight the opportunities that exist in repurposing industrial remnants into valuable community assets that foster economic growth and environmental stewardship.

### LITERATURE REVIEW

The history of tin mining in Malaysia unfolds as a narrative of economic progress and transformation, shaping the country's development since the onset of British rule in 1874. Tin, a pivotal export and valuable metal used for various purposes, has significantly contributed to economic growth while fostering the creation and prosperity of numerous Malaysian towns. The early twentieth century witnessed substantial advancements in mining methods, particularly through dredging and gravel pumping, introduced by Western experts. These innovations, owned by both European firms and Chinese miners, revolutionised tin ore extraction and greatly boosted production [1].

However, this economic success has come at a considerable environmental cost. The use of dredging machines and gravel pumps has left a lasting impact on Malaysia's environment, resulting in environmental instability, pollution, compromised water quality, and disruptions to biodiversity [2]. Recognizing these challenges, the industry is increasingly focused on adopting sustainable practices to mitigate the environmental consequences of tin mining. This shift toward sustainability aligns with broader global efforts to promote responsible resource management.

In the context of reclamation efforts, there is a pressing need to rectify the environmental damages caused by mining activities. Cleaning contaminated sites is essential, and various approaches are explored. Advanced techniques such as phytoremediation and bioremediation leverage the natural power of plants and microorganisms to detoxify and restore the soil, offering eco-friendly and cost-effective solutions for environmental restoration [3]. This reclamation process not only aims to remediate immediate environmental impacts but also to ensure the long-term ecological health of mining sites for future generations.

The preservation of heritage features, such as the iconic tin dredge, adds another critical layer to the reclamation efforts. Heritage tourism emerges as a significant avenue for this preservation, as it can promote cultural awareness and economic revitalization. By transforming sites like the Sri Banting Tin Dredge into heritage tourism destinations, communities can celebrate their industrial legacy while generating economic opportunities. This dual approach

not only safeguards historical and cultural significance but also fosters community engagement and pride [4].

As a cultural asset, the tin dredge tells the story of Malaysia's mining history, enhancing the overall value of reclaimed land. Reclamation efforts can demonstrate how economic development can harmoniously coexist with historical heritage, promoting a sense of identity and belonging within local communities [5]. Integrating heritage tourism into reclamation strategies can thus play a vital role in ensuring that these sites are not merely abandoned relics but vibrant spaces that reflect both the past and the potential for sustainable futures.

### RESEARCH METHODOLOGY

The research methodology employs a mixed-method approach, combining qualitative and quantitative methods to explore the Sri Banting Tin Dredge site's potential for heritage tourism and ecosystem enhancement. This includes primary data collection techniques such as document analysis of relevant literature and previous studies on derelict site reclamation, site observation for on-the-ground assessments of environmental conditions and spatial qualities, and semi-structured interviews with experts, local authorities, and community members to gather insights into the transformation process. On the secondary side, the research analyses existing information from scholarly articles, government reports, and guidelines on sustainable tourism and reclamation practices. This blend of data allows for a comprehensive examination of reclamation criteria, effective heritage tourism practices, and the economic benefits for the local community. The methodology also addresses challenges related to the long-term maintenance and sustainability of reclaimed sites. Ultimately, this approach aims to provide valuable insights into repurposing historical sites for heritage tourism while promoting ecosystem enhancement, prioritising both environmental integrity and community well-being.

### RESEARCH SIGNIFICANCE

The iconic tin dredge, currently in a concerning condition, requires immediate preservation as a cultural asset. By conserving one of the last two dredges in Malaysia, this study acknowledges the dredge as a significant cultural element, providing insight into the region's industrial history and fostering local identity. The incorporation of ecosystem-enhancing measures aligns with sustainable practices, following the global trend in heritage tourism with an ecological focus. The broader reclamation efforts aim not only to enhance the ecosystem, promoting biodiversity and minimising environmental impact but also to address the aftermath of

mining activities, preventing sites from turning into derelict areas. This comprehensive approach ensures a balance between cultural heritage preservation, sustainable tourism, economic growth, community empowerment, and ecosystem enhancement, benefiting both the site and the region at large.

### KEY FINDINGS

The key findings of this research directly support its aim to explore the reclamation and restoration of the Sri Banting Tin Dredge site as a vibrant heritage tourism destination. Through a detailed zoning analysis, the study identified distinct areas based on historical significance, ecological sensitivity, and tourism potential, ensuring that the site's cultural and environmental assets are effectively utilised and preserved. The details of the synthesised attribute can be shown as follows in **Figure 1**.

Figure 1 Synthesis Map



Environmental assessments revealed significant contamination from past mining activities, highlighting the urgent need for remediation strategies such as bioremediation and reforestation. These findings emphasise the environmental challenges that the site faces and underscore the importance of restoring ecological health as a foundational step toward sustainable development. **Figure 2** illustrates the analysis of the soil remediation area and the water-contaminated area on the site to identify the potential area for the reclamation process.

Figure 2 Potential Reclamation Process Area



Moreover, the study identified critical infrastructure needs, including the restoration of historical structures and the creation of visitor centres and guided pathways. These developments are essential for facilitating eco-tourism and enhancing visitor experiences. To promote cultural preservation, the research recommends implementing educational programs and interactive exhibits that engage visitors with the site's historical and ecological narratives. **Figure 3** illustrates heritage tourism development and ecosystem enhancement areas for tourism development.

Figure 3 Tourism Analysis Map



Overall, the integration of these findings supports the study's objectives by demonstrating

the potential for eco-tourism at the Sri Banting Tin Dredge site while promoting sustainable development and cultural preservation.

## RECOMMENDATION

Based on the findings, the following recommendations can be proposed for the site:

1. Implement rehabilitation measures, including soil remediation, water treatment, and ecological restoration, while integrating sustainable design practices to minimise the environmental footprint and promote long-term ecological health.
2. Visitor facilities can be developed, including information centres, rest areas, and pathways that enhance the overall visitor experience.
3. Design interpretive signage and interactive exhibits that effectively communicate the history of mining and the ecological significance of the site in an engaging and accessible manner, catering to diverse learning styles and preferences.

## CONCLUSION

In conclusion, this research illuminates the imperative of reclaiming and transforming derelict mining sites, exemplified by the Sri Banting tin dredge, into sustainable heritage tourism destinations. This research highlights the significance of transforming derelict sites into valuable community assets that foster environmental stewardship and economic growth. By addressing the challenges of contamination, spatial planning, and infrastructure development, the study demonstrates the feasibility of reclaiming the site for sustainable eco-tourism. Moreover, the preservation of the site's industrial heritage through educational programmes and tourism initiatives enhances its cultural value, contributing to community engagement and historical awareness. The findings underscore the potential of such reclamation strategies to restore ecosystems, preserve cultural history, and stimulate local economies, offering a model for revitalising other post-mining landscapes. For landscape architects, urban planners, and policymakers, this research provides actionable insights on integrating sustainable design, ecological restoration, and cultural heritage into the development of heritage tourism destinations.

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