



DESIGN IDEALS

Volume 7 | Issue 2 | 2025

PREFACE

Assalamu'alaikum wrt. wbt.

Dear worthy readers.

Wholehearted welcome and thanks to all for taking the time to read and review our second issue of the year 2025, the Design Ideals Journal (DIJ). In the previous issue 1 of Volume 7, 2025, the publication presented eight (8) papers pertaining to the built environments. As for this issue, twelve (12) papers from our faculty and students that focus on the fields of Architecture, Planning, Landscape Architecture, Quantity Surveying, Building Technology Engineering, and Applied Arts and Design are presented for your construing. As pledged, it is our commitment to constantly creating a journal unambiguously dedicated to a well-thought of KAED community. As such, the principal aim of the Design Ideals Journalist to provide a platform for the students, lecturers and practitioners to extend their practical trust for nurturing the readers, be it general, students or professionals alike.

The journal offers an opportunity for researchers, research students and practitioners to share their views on either theoretical or empirical research findings and readers, especially academics and students to indulge and value its contents. We welcome the research reports and academic papers, short practice notes, design reviews and abstracts from portfolios and design theses on any aspects within the areas related to the built environment. With the production of this issue, we accomplish to publish the two issues as our pledge for a biannual production in the year 2025. We hope to publish more issues in 2026. As usual, we humbly anticipate getting inspiring feedback from readers.

Lastly, I would like to thank the entire publication team, KAED and IIUM in general who had supported and give their commitment in completing the publication for this issue. To all the readers, I wish all a joyful reading and indefatigable support in our publication efforts. Thankyou.

Editor-in-Chief

EDITORIAL

Assalamu'alaikumwarahmatullahiwabarakatuh

As in the previous issue 1 of Volume 7, 2025, the publication presented eight (8) papers addressing numerous subjects, challenges and solutions in the form of design concepts pertaining to the built environments. In this second issue of Volume 7, 2025, the publication presented twelve (12) papers dedicated to case studies comprising academicians, final year studio projects and the design thesis of the students guided and supervised by the lecturers.

The first paper, Semai Forest Cultural Village: Cultural Ecotourism Centre for *Orang Asal Semai* in Cameron Highland, Pahang by Ahmad Izzuddin Ahmad Kamal and Zeenat Begam Yusof. The loss of ancestral land to development and negligence of indigenous culture in the education system are the few issues of this study. The study aims to promote ecotourism while promoting and preserving the Orang Asal Semai's culture. An immersive cultural ecotourism centre is proposed to serve as the main hub for community development and growth, cultural preservation, and environmental conservation. The centre offers cross-cultural exchange between the visitors and the Semai community which improves the preservation of the Semai culture while serves as a model for Orang Asal led ecotourism.

The second paper entitled Reviving Islamic Civilisation Park at Pulau Wan Man, Terengganu by Basyirah Izzati Malek Ridzuan, Mazlina Mansor and Haza Hanurhaza Md Jani. The paper explores the idea and concept of Islamic civilisation and the Islamic Garden and their implementation in landscape architectural design in the Malaysian context. This project explores how the Islamic Garden design concept can be integrated within landscape design for a diverse society without neglecting the local culture, values, and place identity. The study identified modern landscape practices often overlook Islamic Garden traditional elements. This project investigates how Islamic Garden principles can be revitalised and implemented in contemporary landscape design, particularly in public park and spaces in Pulau Wan Man, Terengganu.

As for the third paper by Abdul Naqiunaim Azman, Mazlina Mansor and Khalilah Zakariya entitled Sustainable Waterfront Landscape to Revitalise The Coastal Heritage of Teluk Sengat, Kota Tinggi, Johor. The study examines Teluk Sengat's coastal heritage, highlighting its blend of natural, cultural and settlement elements and the pressures it faces from climate change, urbanisation and unsustainable development. This study analyses the landscape character, environmental vulnerabilities, and socio-economic challenges of the area to propose a holistic, resilient design solution. Qualitative methods including site inventory, stakeholder interviews and literature review were used to inform the design strategies. The final proposal envisions a sustainable waterfront landscape that enhances cultural continuity, ecological resilience and economic viability.

The fourth paper by Nik Farhana Nik Aminuddin, Nayeem Asif, Nur Ulfah Awatif Umairah and Zuraini Denan entitled Women Recharge: Training and Economic Sanctuary for Single Mothers in Tumpat, Kelantan. The paper study on the role of helping single mothers to grow not only emotionally but also in economic aspect. This study explores the architectural aspect which envisioned "training and economic sanctuary" in order to help single mother grow and give them a better chance to sustain their life. The study highlights the rise of women in micro-businesses in Kelantan, especially in Batik and tailoring and proposes integrating modern entrepreneurial and digital training. The initiative aims to empower single mothers while enhancing Tumpat's role as a key Batik production hub.

EDITORIAL

The fifth paper entitled Asian Trade and Cultural Village: Building Unity Through Heritage, Trade and Culture by Md Tausif Evan, Nayeem Asif and Zuraini Denan. The study demonstrates Asian architecture through the integration of shared components from ASEAN (Association of Southeast Asian Nations) and SAARC (South Asian Association for Regional Cooperation) countries. such as water, local vegetation, open spaces and courtyards, combined with contemporary facilities such as exhibition halls, an auditorium and craft showcase spaces. Transforming an abandoned site into an active urban space, the study shows that embedding shared architectural components creates an authentic Asian atmosphere while meeting functional needs. The study concludes that architecture should reflect both physical elements and cultural practices, demonstrating how architectural intervention can strengthen Asia identity and shared values across the region.

The sixth paper by Arif Salihin Muhammad Aminuddin, Amar Firdaus Shofyan, Julaila Abdul Rahman, Roziha Che Haron, Sufian Hamat, Raja Intan Suhaylah, Masidah Abdul Majid, Asiah Abdul Rahim, Fairullazi Ayob, Siti Noorfairus Che Abdullah and Nur Ulfah Awatif Umairah Alias entitled Arunika: The Enhancement of KAED Courtyards Through Multi-Motion Design for Wellness and Leisure. The study highlighted the underutilised of Kulliyyah of Architecture and Environmental Design (KAED) courtyard at International Islamic University Malaysia (IIUM). The study aims to transform the KAED Courtyard (Gallery) and KAED Courtyard (Café) into vibrant, climate-responsive and multifunctional hubs that reflect the faculty's creative spirit and foster community engagement. Using a multidisciplinary approach, the "Multi-Motion" concept is introduced to create a diverse seating, interactive gathering zones, greenery and water features while maintaining cost-effective solutions. The proposal aims to upgrade the KAED Courtyards into dynamic, sustainable and financially feasible community spaces.

The seventh paper entitled A Space of Engagement: Proposing Enhancement of Courtyards in Kulliyyah of Architecture and Environmental Design, IIUM by Hidayatul Husna Huzailing, A'isyah Mursyidah Mohamad Nafis, Asiah Abdul Rahim, Mohd. Fairullazi Ayob, Roziha Che Haron, Masidah Abdul Majid, Sufian Hamat, Nur Ulfah Awatif Umairah Alias, Raja Intan Suhaylah Raja Abdul Rahman, Siti Noorfairus Che Abdullah and Julaila Abdul Rahman. The study proposed to enhance the two underutilised courtyards at the Kulliyyah of Architecture and Environmental Design (KAED) into a meaningful and engaging spaces for the campus community. The objectives are to strengthen the identity of KAED, create inclusive gathering spaces, maximize the use of open areas and promote environmentally responsive design. Designed to support academic, social and cultural activities, the proposal promotes sustainability and community engagement. It also serves as a learning platform, allowing students to apply sustainable and community-oriented design approaches in line with IIUM's mission to integrate knowledge, faith and practice within the built environment.

The eighth paper entitled Sociological Impact in Public Toilet Design: Case Study of KAED Malay Heritage Living Lab by Wan Nur Aisyah Dzulkiflee, Julaila Abdul Rahman, Fadzidah Abdullah, Mohd Fairullazi Ayob, Nur Ulfah Awatif Umairah Alias, Roziha Che Haron, Nur Affah Mohyin and Sharifah Tahirah Syed Kamarulzaman. The study highlighted how human interaction in public spaces is influenced by both environment and culture especially in the Malay "Adat" and the poor public toilet facilities and amenities. This project explores the sociological and cultural dimensions of public toilet design with a focus on human factors through literature review, case studies, and site observations within the KAED Malay Heritage Living Lab, IIUM. The objectives are to identify design criteria for public toilets, to examine contextual impacts on user behaviour and to develop a 3D model for restroom of Rumah Kutai. The study aims to show how traditional cultural values can be integrated with functional needs to create inclusive, responsive and sustainable public toilet facilities.

EDITORIAL

The ninth paper by Muhamad Irphan Fazeree, Srazali Aripin and Asiah Abdul Rahim entitled Healing Independent Elderly Village in Kota Kinabalu, Sabah. The study highlighted many elderly individuals particularly in Kota Kinabalu face challenges such as loneliness, declining health and inadequate care environments. The thesis proposes a new architectural response through the design of *Walai Healing Elderly Village*, inspired by traditional Sabahan house typologies such as the Rumah Bajau, Rumah Dusun Lotud, and Rumah Panjang Rungus. By integrating universal design, passive environmental strategies and healing landscapes, the project aims to enhance autonomy, cultural connection and overall well-being for the elderly.

The tenth paper by Muhammad Alif Mohd Hisham, Raja Intan Suhaylah Raja Abdul Rahman, Julaila Abdul Rahman, Roziha Che Haron, Sufian Hamat, Masidah Abdul Majid, Asiah Abdul Rahim, Fairullazi Ayob, Siti Noorfairus Che Abdullah and Nur Ulfah Awatif Umairah Alias entitled Reviving Souls: Enhancing Laman KAED as Communal Public Spaces in University. The KAED courtyard is currently underutilised, uninvibrant, uninclusive and lack of character. This project aims to revive and transform Laman KAED into a multifunctional, sustainable and Shariah-compliant environment that reflect the faculty's identity and fosters community engagement. Using a collaborative design process, the proposal introduces improved circulation, income-generating kiosks, and a stage for academic and social activities. Emphasising sustainability, biophilic design and passive systems, the intervention aims to create an inclusive, adaptable environment grounded in Islamic values. The outcome positions Laman KAED as a meaningful, dynamic landmark that enhances community interaction, creativity, and well-being.

The eleventh paper entitled Hot Spring Landscape Design for Sustainable Wellness Tourism at Felda Residence Sungkai, Perak by Nor Maziatul Afiqah Mazlan, Putri Haryati Ibrahim and Mazlina Mansor. The study explores the potentials and proposes hot spring landscapes as community-based oriented areas for rehabilitation and enjoyment. The project explores the potential of hot spring landscapes as community-oriented spaces for rehabilitation, recreation, and sustainable tourism. Using site observations, surveys, and precedent studies, it evaluates the site's conditions and identifies the site possesses strong potential to function as a rehabilitation and therapeutic centre, enriched by its natural surroundings. The design proposal emphasises not only the therapeutic effects of mineral-rich waters but also the creation of diverse public healing spaces that harmonise conservation goals with community well-being. The study demonstrates how sustainable design can position hot springs as destinations that support both environmental protection and health-focused tourism.

The twelfth paper entitled Abadi: Safeguarding The Rich Fabrics of Malay Architectural Heritage Through A Ceremonial Entrance of IIUM Malay Enclave by Leslous Wafa, Fadzidah Abdullah, Ulfah Awatif Umairah Alias, Abang Nurazizan Abg Azahari, Aida Kesuma Azmin and Sharina Farihah Hasan. The study proposes a "ceremonial entrance" for the Malay Heritage Living Lab at IIUM, featuring a lookout platform, entrance archway, bridge guardrails, and landscaping. The main objective of this inventive design proposal is to elevate the Malay Heritage Living Lab, infusing it with captivating elements that are not only safeguarding the rich fabric of traditional Malay architectural heritage but also function as a guiding light to both local and international audiences. Named Abadi (meaning eternal), the design celebrates traditional Malay architecture and village elements while guiding visitors and preserving cultural heritage. Through detailed research on materials, installation techniques and thoughtful choice of hues, the project integrates structural, spatial, and visual components, with inspiration from Rumah Kutai. The initiative aims to create an extraordinary blend of knowledge, creativity, and appreciation for Malay heritage in the contemporary context.

Prof. Dato' Sri Ar. Dr. Asiah Abdul Rahim
Editor-in-Chief
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01

SEMAI FOREST CULTURAL VILLAGE: CULTURAL ECOTOURISM CENTRE FOR ORANG ASAL SEMAI IN CAMERON HIGHLAND, PAHANG

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ABSTRACT

This study presents research on the development of a cultural ecotourism centre for *Orang Asal Semai* located in Cameron Highland, Pahang, Malaysia. The study aims to promote ecotourism while promoting and preserving the Orang Asal Semai's culture. The Semai clan, is a native indigenous group in Peninsular Malaysia. The proposed cultural ecotourism centre will serve as the main hub for community development and growth, cultural preservation, and environmental conservation. In return, the centre offers visitors immersive and unforgettable experience such as building traditional crafts, storytelling, trekking, medicine and herbs making, and educational workshops. It is a place for visitors to dwell themselves in the Semai way of life. This initiative is supported by the participation of the Semai people in Cameron Highlands, ensuring the community hands on involvement, leading to the planning, management, and the operation of the cultural centre. By nurturing this cross-cultural exchange, this project improves the preservation of the Semai culture while serves as a model for Orang Asal led ecotourism.

Keywords: *Orang Asal Semai, Cultural Ecotourism Centre, Community, Cameroon Highland.*

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INTRODUCTION

Ecotourism comprises several distinguishing features, making it an experience for visitors. Firstly, it is crucial for the conservation of culture and heritage. Besides that, the key factor to ecotourism is the reinvestment of income to maintain a consistent quality of resources and conservation. Furthermore, ecotourism must be ecologically, economically and socio-culturally sustainable. Lastly, ethical education on biodiversity, habitats and cultures is the guideline to successful ecotourism.

Ecotourism is a collaboration between the government, the private sector and local communities in managing tourism sustainably. These collaborations must adhere to these guidelines. Firstly, is to maintain the utmost respect for nature. Secondly, it contributes to conservation and rehabilitation. Thirdly, is to be beneficial to the local communities. Lastly, is to be sustainable and ethically managed.

"TO PRESERVE THE SEMAI SPIRIT IS TO PROTECT THE PULSE OF THE LAND. FOR EACH AND EVERY OF ITS TRADITION, EVERY STORY, EVERY KINDERED SPIRIT ECHOES THEIR BOND WITH THE LAND."
-AUTHOR

The Semai tribe in Cameron Highlands is part of the largest ethnic group and one of the most prominent Orang Asli communities in Peninsular Malaysia. Many have adapted by engaging in eco-tourism, selling handicrafts, and participating in community-based tourism ventures.

They also rely on hunting, gathering, and forest resources for food and medicinal purposes. They live in houses on stilts with a strong horizontal emphasis. Modernisation and land development in Cameron Highlands have posed significant threats to the Semai's traditional way of life. Deforestation and commercial agricultural expansion have reduced access to their ancestral lands, affecting both their livelihoods and cultural practices. Therefore, the aim of this study is to preserve the cultural heritage of Orang Asal Semai in Cameron Highland by designing the Cultural SEMAI Forest Cultural Village: Cultural Ecotourism Centre For Orang Asal Semai In Cameron Highland, Pahang.

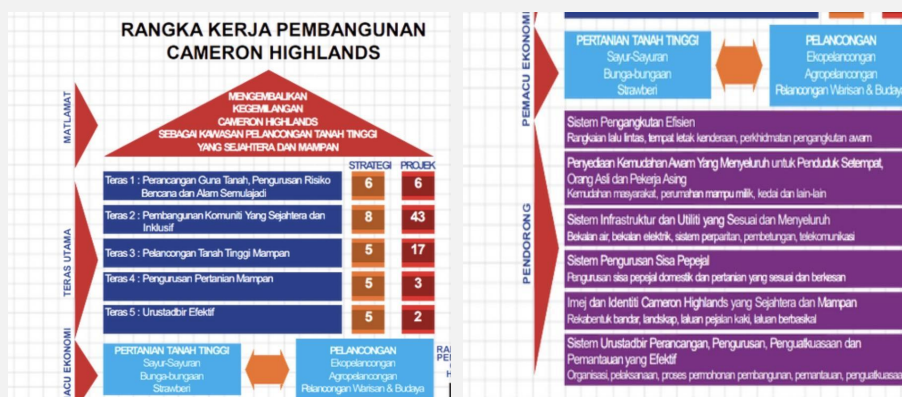


Figure 1: show the framework of Cameron Highlands development in 2024 indicating *Teras 2: Pembangunan komuniti yang Sejahtera and inklusif (Jilid 2)*

ISLAMIC PERSPECTIVE

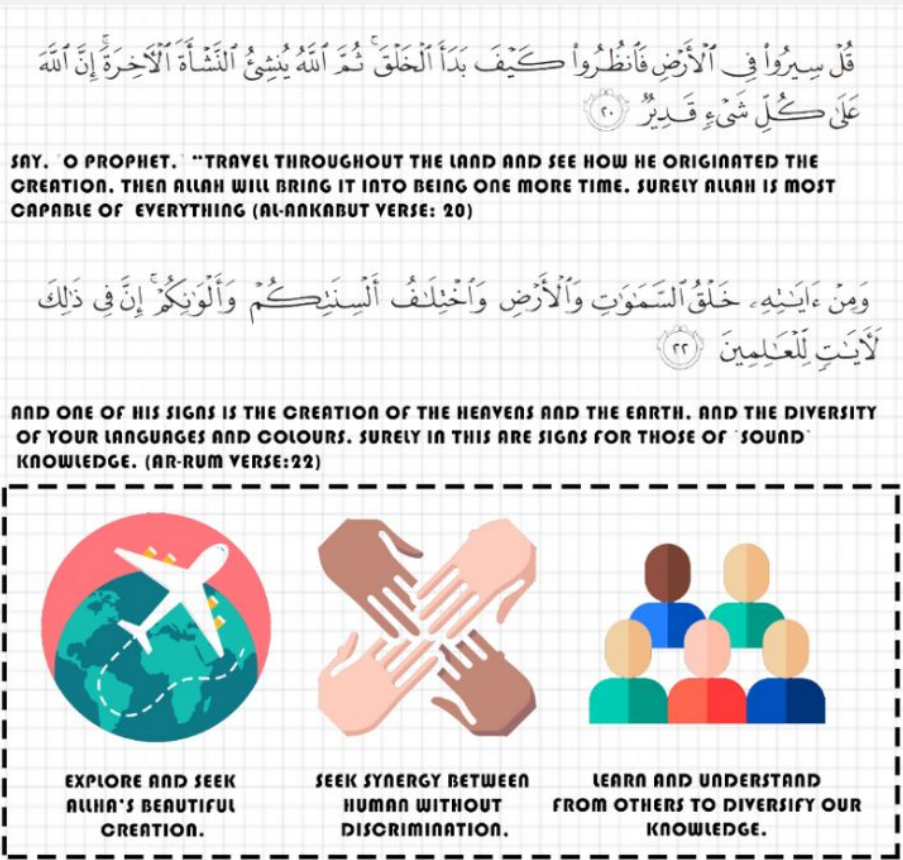
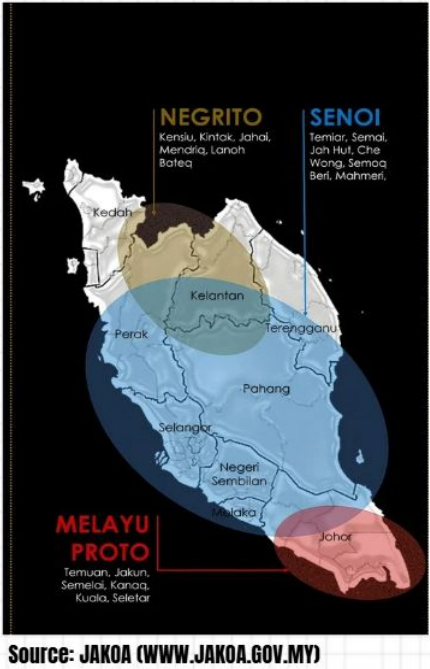


Figure 2: Shows the Islamic Perspective taken from the Quran

BACKGROUND STUDY

Figure 1 shows the distribution of Orang Asli in Malaysia (www.jakoa.gov.my).



Source: JAKOA (WWW.JAKOA.GOV.MY)

Figure 3: Shows the Orang Asli tribes in Malaysia (JAKOA)

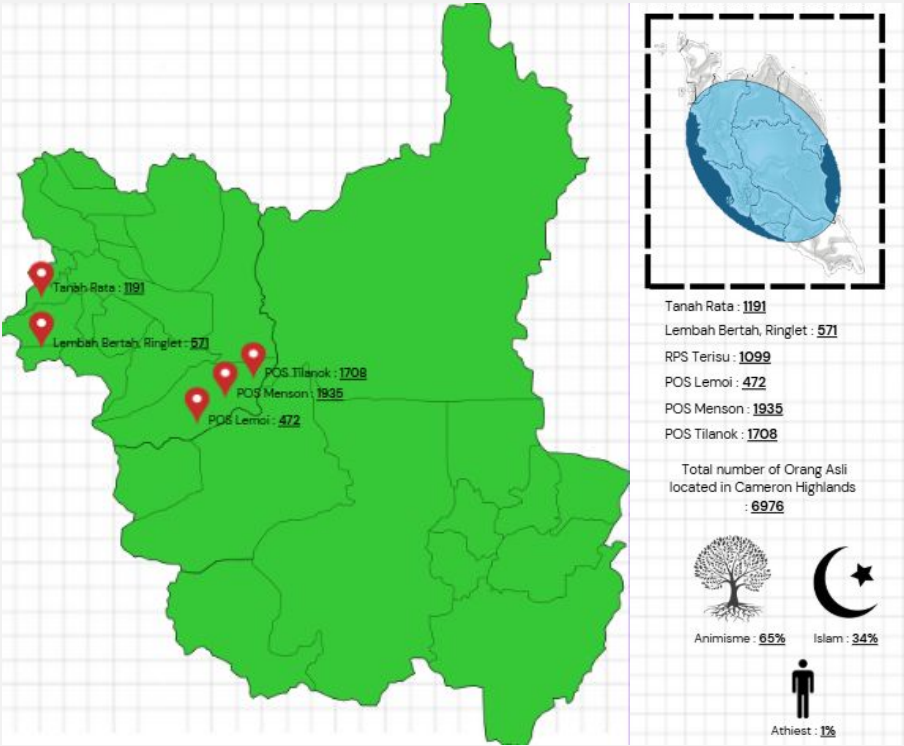


Figure 4: Shows the number of orang Asal Semai in Cameron Highlands (JAKOA)

There are six major tribe groups for the Orang Asli people of Senoi which are Che Wong, Mahmeri, Jahut, Semaq Beri, Semai and temiar. These tribe groups are located on the Mountain Ranges of Titiwangsa (Banjaran Titiwangsa) (Denten, 1975).

SUKU SEMAI IN CAMERON HIGHLANDS



Figure 5: Shows the people of orang asal Semai in Malaysia (Ronnie Bahari)

The Semai tribe in Cameron Highlands is part of Malaysia's largest ethnic group and the most prominent Orang Asal community in Peninsular Malaysia (Benjamin, 1989). The Orang Asal Semai in Cameron Highland have adapted by pursuing and engaging in eco-tourism, selling, making and promoting handicrafts from roadside shops to proper shops to visitors (Rambo, 1988). They also participate in community-based tourism ventures, as it is their nature to uphold their community.

The Semai people are known for their instilled and deep-rooted connection and their belief in animism (Gianno, 2023). They practice spiritual practice that involves praying and honouring natural elements like the river, trees and animals. The community's main shaman is crucial in maintaining the balance between the spirit realm and the physical realm. When it comes to day-to-day trades, the Semai people have mastered traditionally practised agriculture, such as slash-and-burn agriculture (Gianno, 2023). They grow crops such as tubers, rice and vegetables and herbs (JAKOA). Besides agriculture, the Semai people rely on gathering and hunting from the forest to survive. Furthermore, it is also for them to collect crops for traditional medical purposes.

Currently, land development and modernisation in Cameron Highlands has posed threats to the cultural and heritage significance of the orang Asal Semai (Ramli, 2018). Due to commercial growth and deforestation, the Semai people have limited access to their ancestral land, which in turn affects livelihoods and the Semai way of life.

MAKLUMAT PERKAMPUNGAN ORANG ASLI DAERAH CAMERON HIGHLANDS									
BIL	KAMPUNG	NAMA BATIN	SUKU KAUM	AGAMA	JUMLAH KELUARGA	JUMLAH PENDUDUK	JARAK DARI TANAH RATA (PERGI DAN BALIK (KM))	NO. TELEFON	KATEGORI KAMPUNG
TANAH RATA									
1	KOA SUNGAI RUII	KADIR A/L AH SAN	SEMAI	ANIMISME	211	813	8	017-4779815	PINGGIR BANDAR
2	KOA SUNGAI UBI	OSMAN BIN B.BUN	SEMAI	ANIMISME	76	378	14	012-4375785	PINGGIR BANDAR
LEMBAH BERTAM , RINGLET									
3	KOA SUNGAI TIANG	BAH CHOI A/L BUSU	SEMAI	ANIMISME	73	327	36	011-40202705	PINGGIR BANDAR
4	KOA SUNGAI TIANG	KOSONG	SEMAI	ANIMISME	34	137	36	TIADA	PINGGIR BANDAR
5	KOA SUNGAI KABUK	BARBORANAK SINGA	SEMAI	ANIMISME	30	107	36	TIADA	PINGGIR BANDAR
RANCANGAN PENGUMPULAN SEMULA (RPS TERISU)									
6	KOA SUNGAI GETAN	AHMAD BIN NANGGONG	SEMAI	ISLAM	45	186	38	014-7457166	PINGGIR BANDAR
7	KOA TERLIMAU	YUSOF BIN HAMID	SEMAI	ISLAM	73	295	42	014-7457166	PINGGIR BANDAR
8	KOA TERISU	JAAFAR BIN TIMOR	SEMAI	ANIMISME	87	367	44	014-2469550	PINGGIR BANDAR
9	KOA SUNGAI JERIK	JOHARIBIN ALONG	SEMAI	ISLAM	61	251	46	017-5606630	PINGGIR BANDAR
PUSAT PENTADBIRAN KECIL (POS LEMOI)									
10	KOA LEMOI	ZAINAL BIN BAH SIAPA	SEMAI	ANISMISME	38	192	90	TIADA	PENDALAMAN
11	KOA TERLIMAU	SALMAN BAH MANANG	SEMAI	ANISMISME	36	158	80	TIADA	PENDALAMAN
12	KOA CHENAN CHERAH	KOSONG	SEMAI	TIADA	19	122	102	TIADA	PENDALAMAN
PUSAT PENTADBIRAN KECIL (POS MENSON)									
13	KOA PANGGEN	KAMARUDIN A/L BAH KUMAN	SEMAI	ANISMISME	61	324	54	016-5679793	PENDALAMAN
14	KOA MENSON	ZAMANI BIN BAH TUIN	SEMAI	ANISMISME	28	119	60	014-7422890	PINGGIR BANDAR
15	KOA KUALA BOH	NORDIN BIN PANJANG	SEMAI	ISLAM	150	625	64		PENDALAMAN
16	KOA LERYER	BAH KAPAS BIN PANCHING	SEMAI	ISLAM	81	336	62	010-2067301	PINGGIR BANDAR
17	KOA SUNGAI RELONG	BAH RAHIM BIN ARKOM	SEMAI	ANISMISME	129	531	72	017-4625393	PENDALAMAN
PUSAT PENTADBIRAN KECIL (POS TELANUK)									
18	KOA SISU	SAMSUL BIN ALI	SEMAI	ISLAM	57	248	94		PENDALAMAN
19	KOA TEJI	ALIN BIN ESAH	SEMAI	ISLAM	44	178	90		PENDALAMAN
20	KOA ABU	JOHARIBIN SENDONG	SEMAI	ISLAM	58	224	92	0113-6413455	PENDALAMAN

21	KOA TIAT	ANGAH BIN BATIN RAHMAN	SEMAI	ISLAM	27	101	106		PENDALAMAN
22	KOA CHEROS	MAHMUD BIN BIYAH	SEMAI	ANISMISME	40	192	104	013-4798809	PENDALAMAN
23	KOA TERAKIT	ALANG A/L ITAM	SEMAI	ANISMISME	23	77	130	019-5515036	PENDALAMAN
24	KOA RENING	ABDUL BIN BUSU	SEMAI	ANISMISME	40	171	134	013-4314206	PENDALAMAN
25	KOA SUNGAI LOON	RASMAN BIN PADANG	SEMAI	ANISMISME	32	141	96	019-5511820	PENDALAMAN
26	KOA RENGLAS	BAH KABOT BIN BAH TENGOK	SEMAI	ANISMISME	65	275	126	019-4425980	PENDALAMAN
27	KOA SUNGAI PINANG	KOSONG	SEMAI	TIADA	19	101	108		PENDALAMAN

Figure 6: Shows the personal and cultural details of individual Orang Asal Semai tribes residing in Cameron Highlands. (JAKOA)

The data contains personal and cultural details of individual Orang Asal Semai tribes residing in Cameron Highlands. Sensitive data is handled with care and cultural consideration to protect community dignity.

STUDY ISSUES AND PROBLEMS

There are several issues related to this study. Firstly, it is due to the loss of ancestral land to development (Benjamin, 1989). Besides, there is a decline in the use of mother language of the Semai people. The younger generation of Semai people are now increasingly utilise English and Malay as their main language. As such, the beautiful Semai language is getting lost in time, even though the language tells histories, ritual knowledge and folklore that keep the spirit of Semai alive (Yusoh, 2010). This happens because of intergenerational transmission of the language is diminishing.

Moreover, the current education system overlooks the significance of indigenous culture. This is because the current curriculum usually does not highlight Orang Asal culture and history (Ramli, 2018). The younger generations of the Semai people rarely teach their own cultural identity, which leads to cultural disconnection.

ISSUES

DATA FINDINGS FROM 100 RESPONDENTS OF SEMAI TRIBE


JAKOM
 JABATAN KEMAJUAN ORANG ASLI

Table 2 Respondent Profile

a) Education

Education	Percentage
Education Level	
Never schooled	13.0
Informal education	19.2
Primary school	11.5
Secondary school	54.8
University college	1.0
Highest Certificate	
None	13.0
Primary school	11.5
LCE/SRP/PMR	29.8
MCE/SPM/SPMA	15.2
SPM	0.8
SPM/Matriculation	0.8
Skill certificate	19.2
Reason for not furthering studies	
Financial difficulty	25.2
No interest	21.4
Unsatisfied academic performance	9.9
Family pressure	7.6

b) Work Experience

Work Experience	Percentage
Primary Occupation	
Permanent	59.6
Temporary	40.4
Type of Permanent Job	
Private	16.8
Government	9.5
Tourism sector worker	29.0
Self employed	4.6
Estimated Average Salary	
Below 440	40.6*
Help 500	15.9
500-1000	31.3
1001-1500	10.7
1501-2000	1.5

c) Knowledge and Skills

Skills	Highly skilled	Unskilled	Skillful	Skillful	Highly skillful	No of response
Reading and writing	9.9	16.0	9.9	18.1	39.7	94.6
Proficient in Malay language	6.1	5.3	9.2	32.1	46.6	93.1
Proficient in English language	27.5	25.3	21.4	20.6	10.7	100
Proficient in Mandarin language	58.8	7.6	6.1	3.1	16.0	91.6
Proficient in Indonesian language	15.3	3.8	0.0	8.4	66.4	93.9
Art	34.4	3.8	6.9	9.9	19.8	74.8
Craft	36.6	3.8	6.9	9.4	13.0	68.7
Agriculture/Farming	42.0	2.3	13.7	11.5	22.1	91.6
Livestock-rearing	38.1	3.8	12.2	9.2	17.6	90.0
Hunting	53.4	6.9	9.2	5.3	16.8	91.6
Tracking	56.5	5.3	6.1	4.6	16.0	88.5
Technical/vocational (radio, boat, motor repairs)	55.0	7.6	9.2	6.1	9.9	87.8
Traditional medicine	60.3	3.1	4.6	7.6	13	88.6
Entrepreneurship (business)	49.6	5.3	12.2	7.6	12.2	86.9
Tourism related activities (single track, caddy)	46.6	4.6	9.2	6.1	18.3	84.8
Sports/recreational activities	36.6	6.1	9.2	15.3	19.1	86.3
Cooking skill	20.0	4.6	7.6	16.8	27.5	82.5

Figure 7: Shows data of 100 people of the Semai tribe. (JAKOA)

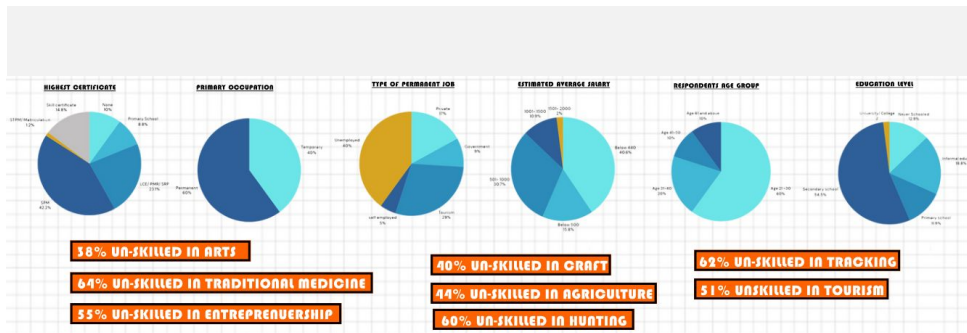


Figure 8: Shows results from respondents from 100 people of the semai tribe. (JAKOA)

The data shows that the Orang Asal Semai faces a decline in skilled practices such as arts and crafts, farming/agriculture, livestock rearing, hunting, trekking, production of traditional medicine, entrepreneurship and ecotourism-related matters (Ismail et al, 2021). The younger generation of the Orang Asal Semai are facing this decline, with 60% of them being 21-30 years old. Besides that, the average salary for semi-skilled people is only around RM440 to RM2000 and only 14.8% are equipped with a skill certificate. Lastly, 40% of the Semai people do not have secure jobs, and 40% of them are unemployed.

ISSUES RELATED TO LITERATURE REVIEW

LACK OF CULTURAL AND HERITAGE PRESERVATION

- ORANG ASAL IN MALAYSIA FACE DISCRIMINATION THROUGH LAND RIGHTS DENIAL, INADEQUATE REPRESENTATION, LIMITED ACCESS TO EDUCATION, HEALTHCARE, AND DEVELOPMENT OPPORTUNITIES, AND SOCIO-ECONOMIC MARGINALIZATION.

ECOTOURISM IN CAMERON HIGHLANDS, WHILE BENEFICIAL FOR PROMOTING ENVIRONMENTAL AWARENESS AND PROVIDING INCOME FOR LOCAL COMMUNITIES, FACES SEVERAL CHALLENGES THAT THREATEN ITS SUSTAINABILITY AND THE WELL-BEING OF THE ENVIRONMENT AND INDIGENOUS GROUPS LIKE THE SEMAI TRIBE.

OVERCROWDING AND OVERDEVELOPMENT

- THE RAPID EXPANSION OF AGRICULTURE (PARTICULARLY TEA PLANTATIONS, VEGETABLE FARMING, AND FLOWER FARMS) AND UNCONTROLLED DEVELOPMENT.
- DISPLACES INDIGENOUS COMMUNITIES LIKE THE SEMAI, WHO RELY ON THE FORESTS FOR THEIR LIVELIHOODS AND SPIRITUAL PRACTICES.



Lack of cultural and heritage preservation

Poverty, Inequality and the Lack of Basic Rights Experienced by the Orang Asli in Malaysia
Submission on Malaysia in advance of country visit of the Special Rapporteur on Extreme Poverty and Human Rights OnChRt
By Ooi Kah Hui (oghui@malaysiancarl.org)
Focal person for Orang Asli land rights
Senior Director, Policy, Advocacy & Research, Malaysian CARL

The Orang Asli population of 217,000 (Nicholas, 2015) in Peninsular Malaysia comprises 18 tribes, each a distinct people group with their unique culture, language and social norms. They are the poorest and most marginalised group in Malaysia, with over 50% categorised as poor and 33% living in hard-core poverty (comparing to 0.7% hard-core poor of the national average (Economic Planning Unit, 2010; Department of Statistics, 2010). Many villages are even located along steep hillsides without paved roads, no electricity, no direct clean water supply nor sanitation services. The situation of the Orang Asli in our model today exemplifies the clearest links between poverty, inequality and the deficiency of human rights in Malaysia.

Diminishing customary land and decreasing economic independence

During each year, the Orang Asli were for generations an independent people group. They provided for themselves and their families sufficiently through forest resources and subsistence farming. However, the increasing encroachment of native customary land has led to severe violation of almost all sectors of their basic rights: rights to clean water, to food, to health, to shelter, to security and to life. The infringement of customary land rights is the most conspicuous sign of the extent of the marginalisation and inequality.

Orang Asli customary lands are being aggressively targeted for economic activities: agriculture, development, logging, hydro-electric dams and tourism. Incidents reported through major local news portals in the past 3 months gave an indication of the situation but those reported are only a small fraction.

Malaysia's indigenous tribes fight for ancestral land and rights in a modern world

The Orang Asli Customary Land: Issues and Challenges

ABSTRACT

This paper briefly explains the unique relationships of Orang Asli with the customary land. It further demonstrates the common views that there is a collision between the Orang Asli notion of land ownership and that of the state. In particular the discussion highlights the interpretation of customary tenure under section 112 (c) of the National Land Code, 1960 and its implications with the Orang Asli customary land. The paper also discusses the application of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) to the new Orang Asli Land Policy and how it is reflected therein.

Keywords: Indigenous peoples, Orang Asli, land law and customary tenure

Introduction

Customary land is the term used to refer to a defined area which an indigenous people identify as their traditional area of occupancy. The territory is considered as customary by virtue for its long occupation, utilization and settlement by indigenous community in accordance with their customary laws and practices, since time immemorial. It includes, but is not limited to, the land used for shelter and residence, agriculture and subsistence, and for other traditional purposes. It also includes the water and all other natural resources found on the surface and underneath these lands.

Over the years, a customary or traditional land refers to a specific human-made environment as a particular community of indigenous people have adapted to its specific conditions and made it their own. In Malawi context, this is best illustrated in the Chaga area. The Chaga have traditionally identified themselves in relation to specific territories where they are occupied by generations. They identified themselves by their specific vernacular names:

The Orang Asli, like other indigenous peoples view customary land as a cornerstone of their life.¹⁷ They regard customary land has a sacred quality that contains their history and sources of identity and ensures their survival in the subsistence economy. Mohdawi expressed the importance of customary land to indigenous peoples can be summarised as follow;

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PROBLEMS FACING THE ORANG ASLI

This section will look at the problems facing the Orang Asli in their various aspects and contexts. It will assess programmes, activities and achievement rates of the Government against that for the mainstream population, and

As required by Sukaman in the Terms of Reference for this report, the emphasis will be on 'problems' faced by the Orang Asli community. This is not to suggest there have been no improvement in the lives of the Orang Asli as a result of Government intervention. On the contrary, many are quick to attribute marked improvements in the condition of the Orang Asli compared to, say, at the time of Independence. Nevertheless, as the evidence below reveal, when compared with the wider mainstream population, the achievement rate for the Orang Asli community on all counts has been largely dismal and in need of urgent redress.

This section is organised along the following broad categories of Orang Asli rights:



Why Orang Asli reforms are so urgent

Rachael Oking-Hewson
 Published: Aug 10, 2019 9:46 am | Updated: 10:19 am



No end to legal woes for Orang Asli

Source: New Strait Times and The Star, malaysia care, suhakam, malaysia straits, malaysiakini

Figure 9: Shows article reviews relating to issues faced by the orang asal semai in Cameron Highlands.

There are not many initiatives that continuously and actively protect the Semai cultural heritage. Government supports are the main catalyst to the recognition of the Semai land as a cultural right. However, this is yet to be seen. It can be said that many developments, growth and loss of the Semai land is happening. More often, these initiatives treat Orang Asal and their place as tourist attraction rather than a tradition that needs to be preserved and sustained. Therefore, a cultural centre is required to maintain their cultural beliefs, the social belief, and provide jobs for them for sustenance.

STUDY AIM

This study aims to preserve and protect the cultural significance of the Orang Asal Semai in Cameron Highlands while helping them improve their social welfare.



Figure 10: Shows the research aim. (Author)

RESEARCH QUESTION

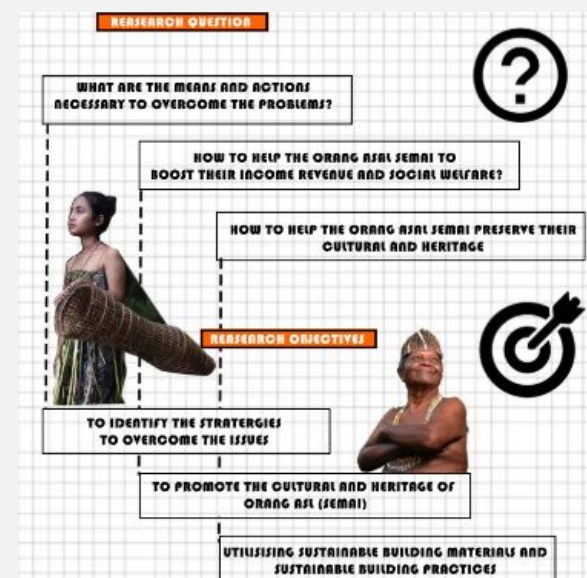


Figure 11: Shows the thesis research questions. (Author)

STUDY THEORETICAL FRAMEWORK

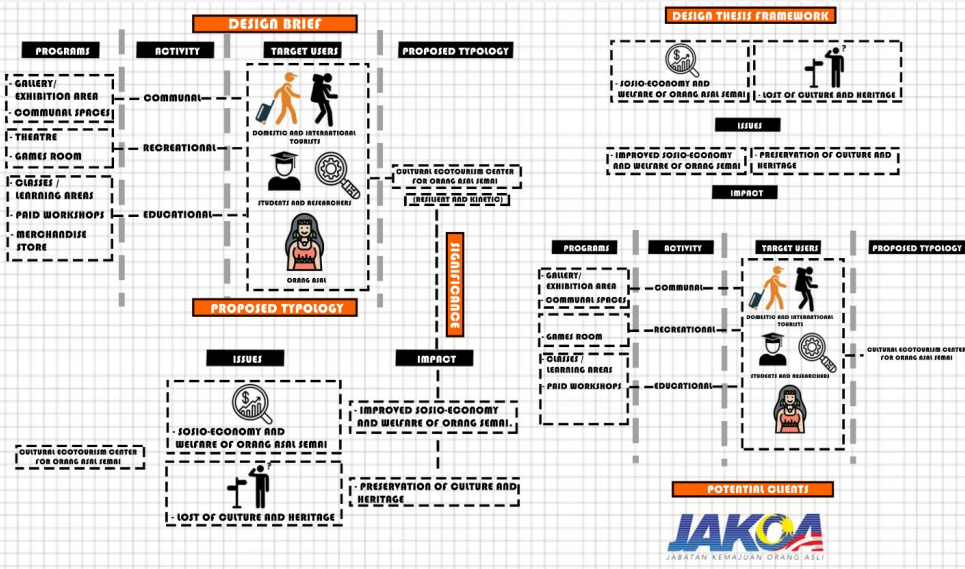


Figure 12: Shows the theoretical framework of the project (Author)

METHODOLOGY

The primary data was gathered through a series of site visits, interviews with locals, the authorities, and experts' points of view. The literature review serves as a fundamental guidelines on how the research is being carried out. Several site visits were conducted to the proposed site to analyse and to do some documentation of the synthesis outcome. Both qualitative and quantitative data are utilised.

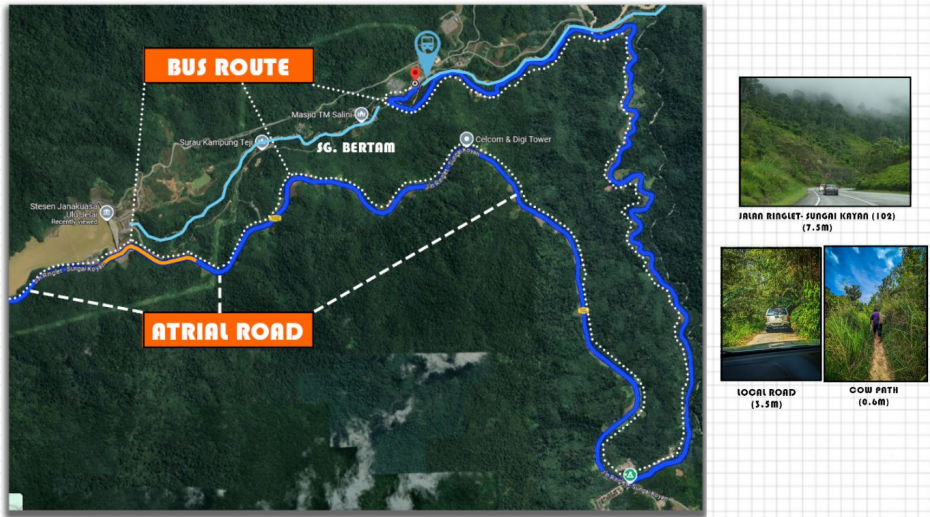
Interviews are conducted to gain in-depth insight on the challenges faced by the orang Asal Semai located in Cameron Highland, to understand further on the issues faced by them to preserve their culture and heritage while ensuring their social welfare is preserved.

Secondary data refers to the literature review conducted on the subject matter (Orang Asal Semai) in Cameron Highlands, Pahang. This step involves examining and synthesising data from a plethora of sources, including academic writings, journals, articles, newspapers and magazines. These sources play an important role in providing insights and context necessary to aid the research, offering an overview of relevant precedents and case studies.

A key focus to highlight is on identifying and analysing information related to the orang asal semai in Cameron Highlands, Pahang, Malaysia. This is to identify issues on how to accommodate the Orang Asal Semai on preserving their culture and heritage while improving their economy.

PRIMARY DATA

PRIMARY DATA
SITE SURVEY (ANALYSIS)



PRIMARY DATA
SITE SURVEY (SYNTHESIS)

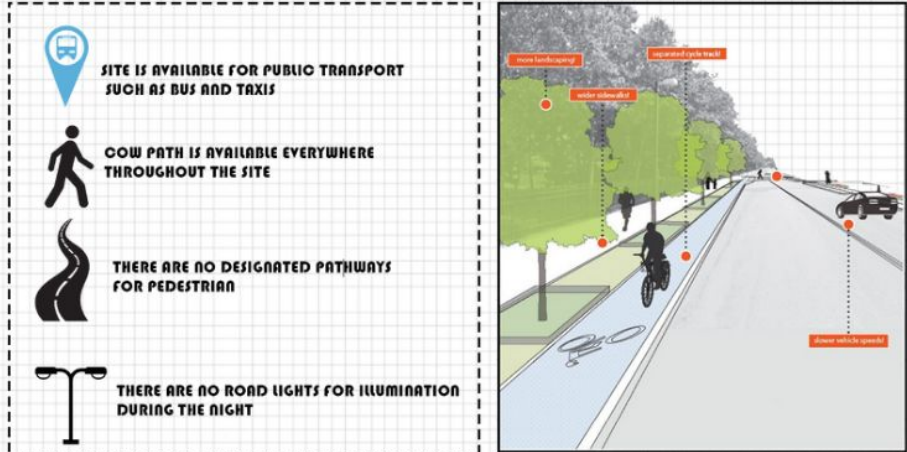


Figure 13: Shows the primary data (Accessibility) towards the site. (Source: Google Earth)

SITE SURVEY

ENTRANCE AND INTERNAL CIRCULATION



Figure 14: Shows the primary data (Site Survey) towards the site. (Author)

The proposed site is located next to an Orang Asal Semai village (Kampung Susu). Kampung Susu is located southeast of the site. Kampung Susu is a flourishing Orang Asal Semai village filled with cheerful and lovely people. They hold strong oral traditions and are very proud of their culture and heritage. The site is used for the village people to indulge in leisure activities such as playing football and *sepak takraw*. Most of the time, the site is used as a communal ground for the village people and the nearby school (SK Telanok) located on the west side of the site.

The site faces Sungai Bertam towards the south. It is endowed with a beautiful panoramic view of the surrounding nature, the luscious greenery and hills surrounding the site. Sungai Bertam serves as a fishing spot for the people of Kampung Susu. In conclusion, the internal circulation of the site is highly accessible as it is a clear field with some degree of elevation. It is a common ground and a recreational space for the surrounding users.

SITE SURVEY

INTERNAL ENVIRONMENT



Figure 15: Shows the primary data (Site Survey) towards the site. (Author)

Pos Telanok is a suitable environment for the Orang Asal Semai in Cameron Highlands due to its vibrant and fertile land. Its rich natural surroundings and strong community-driven development is being kept alive by the Semai people there. It preserves whatever ancestral land they have left and preserves cultural traditions while adhering to sustainable initiatives governed by locals. The people hold strong communal bonds with one another. Kampung Susu, where the site is located, is a luscious greenery-filled surrounding filled with deep-rooted Semai people preserving their cultural identity.

SK TELANOK

WATER AND ENERGY PROXIMITY



Figure 16: Shows the primary data (Site Survey) towards the site. (Author)

The presence of Sekolah Kebangsaan Telanok, a primary school, enables kids they receive formal education while preserving their cultural roots. Besides that, the site is located nearby with the Ulu Jelai Dam. In return, the surrounding area benefits from close-proximity of infrastructure development.



Figure 17: Shows the primary data (Site Survey) towards the site. (Author)

The service area within the site is being shared with SK Telanok. It is located on the west side of the site. This is because there is already an existing service area located in SK Telanok. Therefore, a service road is proposed there. For easy access, the path is shared.

INTERVIEWS

Local Authorities

Interviews with the local authorities give significant insights into the concerns in Kampung Susu. Most of the concerns are regarding the need for the improvement of infrastructure. There is no place where the Semai people can easily be in order to sell their goods. They will resort to selling on roadside stalls. The prominent leader in the area, Tok Batin Cheros Rizad, mentioned that the improvement of infrastructure must be aligned with the support of economic growth and education. This, in return, will empower and conserve the Semai people.

Locals

The people of Kampung Susu raises deep concerns in the adversity happening in the surrounding area like natural disasters, which pose infrastructure limitations. They want a place where the Semai people can have full control without other organisation budding in. The Semai people are highly capable people of managing their economy and social growth.

Visitors

Interviews highlighted that isolation of the Orang Asal Semai is felt since they do not seem to flourish, even though they make up a big percentage of the people living in Cameron Highlands.

SITE SELECTION CRITERIA AND JUSTIFICATION

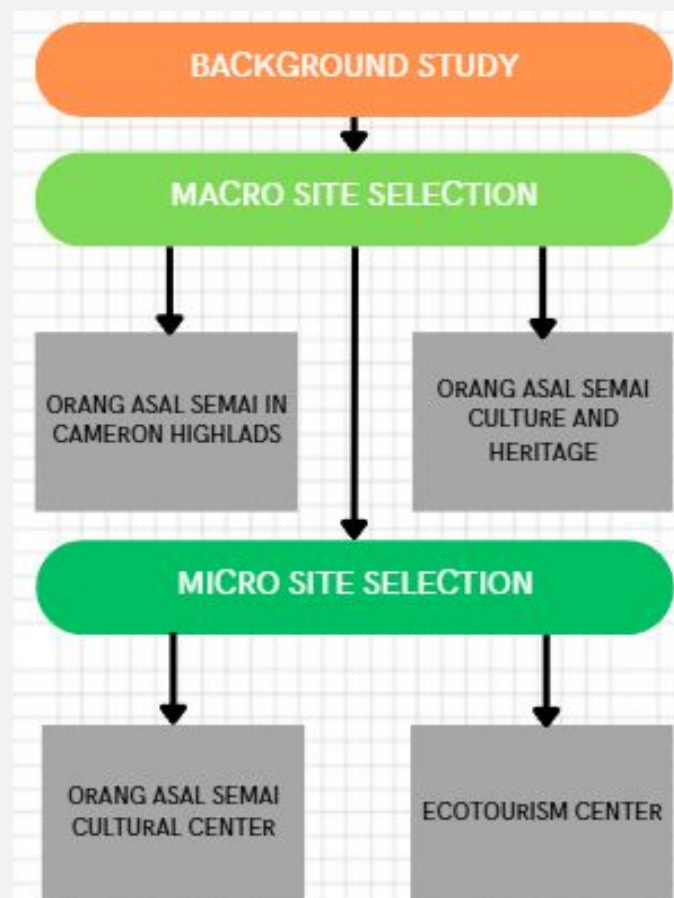


Figure 18: Shows the site selection criteria and justification framework. (Author)

MACRO SELECTION



Figure 19: Shows surrounding environment of Kampung Susu. (Author)

Why Cameron Highlands?

With its rich, lush natural environment, rich biodiversity and strong indigenous heritage. The Semai tribe in Cameron Highlands is part of Malaysia's largest ethnic group and the most prominent Orang Asal community in Peninsular Malaysia. The Orang Asal Semai in Cameron Highland has adapted themselves by pursuing and engaging in eco-tourism, selling, making and promoting handicrafts from roadside shops to proper shops to visitors (Salleh, 2013). They also participate in community-based tourism ventures, as it is their nature to uphold their community.

The region provides authentic Semai villagers with people who some still living the Semai way of life. Because of the scenic landscapes and the Semai's beautiful culture and way of life, tourism infrastructures with sustainable development are an initiative to showcase their culture and heritage. This multicultural surrounding promotes cross-cultural exchange to appreciate the Semai traditions (Salleh, 2013; Weng, 2010). This is because tourists are attracted to the inclusive atmosphere, which makes them feel welcomed, enhancing opportunities for the Semai people to spread the Semai way of life.

MICRO SELECTION



Figure 20: Shows the demographics of Kampung Susu. (JAKOA, Cameron Highlands)

Why Pos Telanok?

Pos Telanok has a highly dense population of Orang Asal Semai, precisely Kampung Susu, which houses more than 150 homes. Because of the close-knit community, the Semai people in Kg. Susu preserves its cultural heritage, offering an authentic and unique cultural experience. Kampung Susu is also a place where the Semai people have lived for many generations. This shows the bond and deep-rooted connection that the Semai people have with the land.

LAND USE

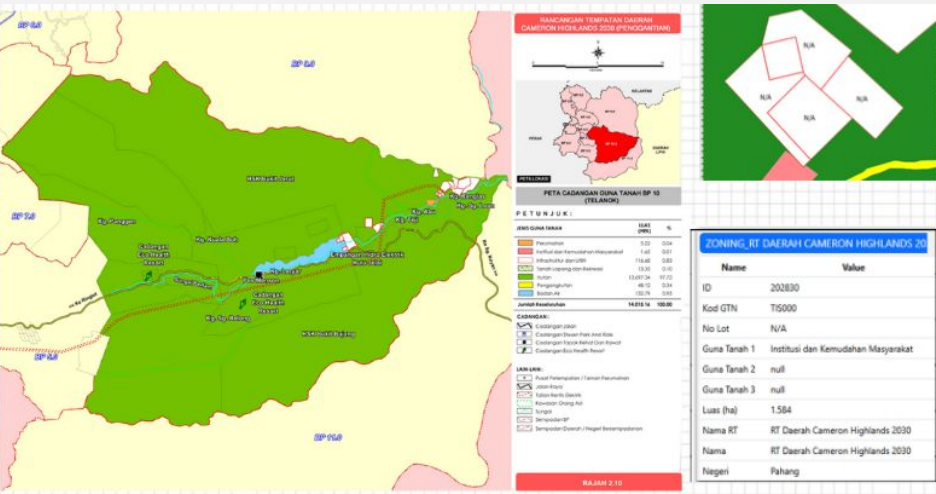


Figure 21: Shows the land use of Pos Telanok and the proposed site. (Rancangan Tempataan Daerah Cameron Highland 2030, Jilid II)

The site designated for Semai Cultural Forest Village is classified for community institution and facilities, which is aligned with the current and proposed building functions. This zone is concentrated in a community filled area. The strategic placement of residing in between SK Telanok and Kampung Susu further supports the need of a cultural center.

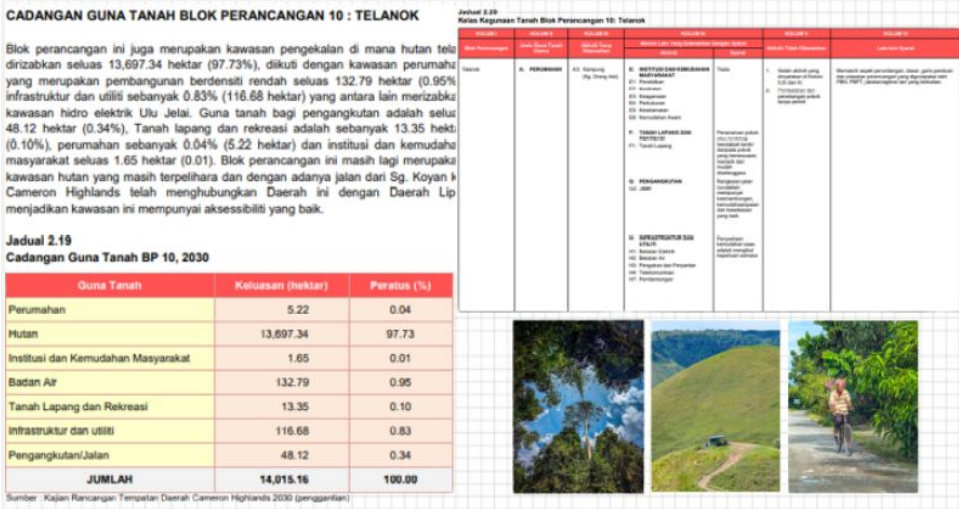


Figure 22: Shows the land use of Pos Telanok and the proposed site. (Rancangan Tempataan Daerah Cameron Highland 2030, Jilid II)

It is also mentioned that the site is included in a reserve area only for the local Orang Asal Semai. This supports the thesis aim for wanting an Orang Asal-led ecotourism and community-led development.

CLIMATE

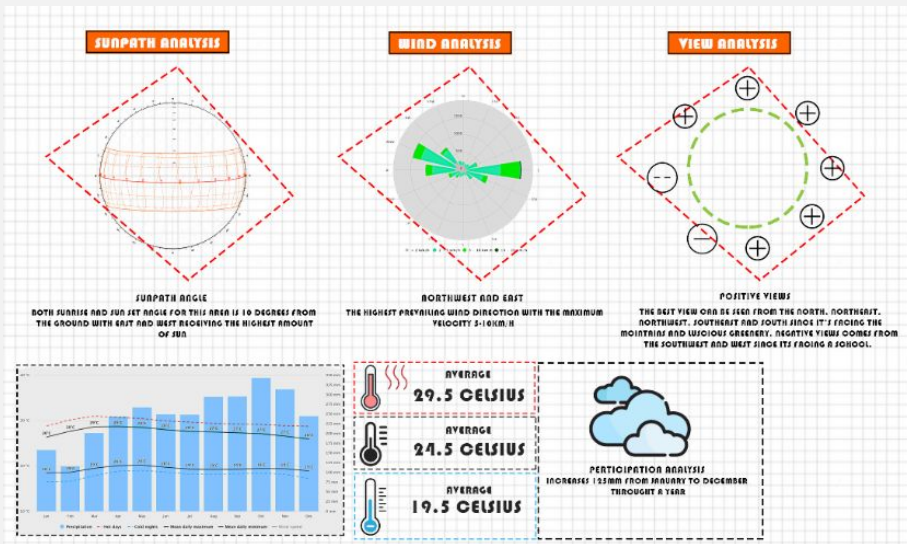
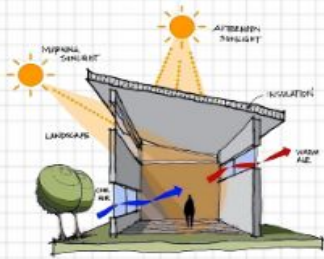


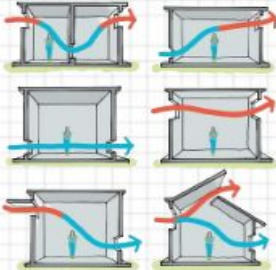
Figure 23: Shows the climate analysis at the proposed site. (www.Meteoblu.com)

SITE SYNTHESIS

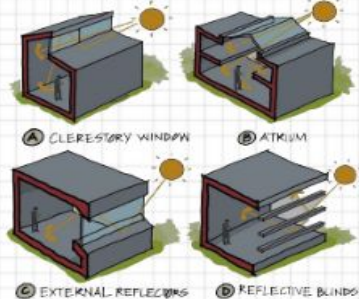


TUNNEL EFFECT

CREATE SMALLER BUILDING OPENINGS ON THE NORTHWEST WHILE HAVING A BIGGER OPENING ON THE EAST SIDE TO CREATE A TUNNEL EFFECT. ALLOW MORE OPENINGS ON THE NORTH WEST AND EAST SIDE OF THE BUILDING TO ALLOW CROSS VENTILATION.



DIFFERENT SHADING DEVICES



DAYLIGHTING STRATEGIES

EXPLORE BUILDING'S OPENINGS TOWARDS THE NORTH AND SOUTH WITH FILTRATION WHILE MINIMIZING FOR BOTH EAST AND WEST. ADD VERTICAL SHADING DEVICES (VSD) AND HORIZONTAL SHADING DEVICES (HSD). THE WEST AND EAST SIDE NEEDS TO SHADED.

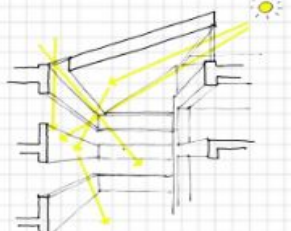


Figure 24: Shows the climate site synthesis at the proposed site. (Author)

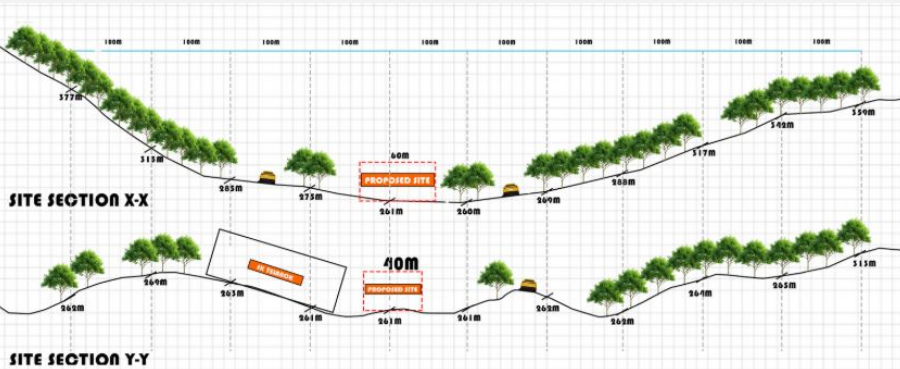


Figure 25: Shows the site section at the proposed site. (Author)

ACCESSIBILITY

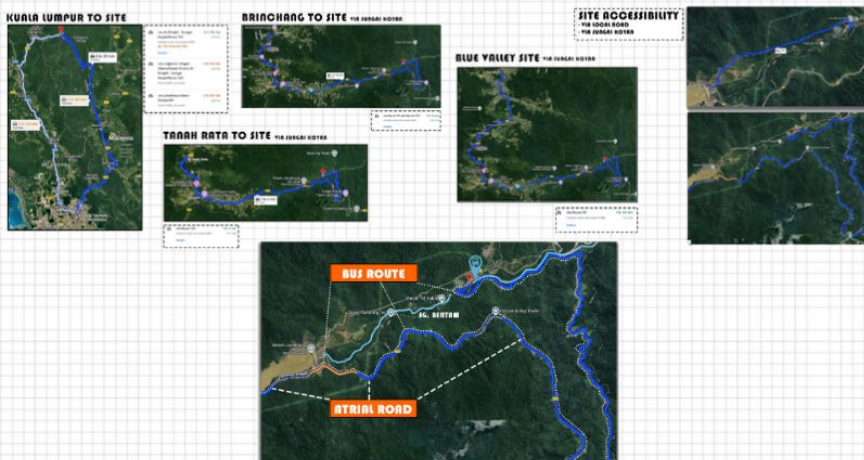


Figure 26: Shows the site Accessibility at the proposed site. (Google earth)

SITE SURVEY (MASTERPLAN)

1. KAMPUNG ORANG BAKU
ORANG BAKU VISIT (2-3 DAYS)



2. KAMPUNG TELAROK
ORANG BAKU VISIT (2-3 DAYS)



3. KAMPUNG FUFU
ORANG BAKU VISIT (2-3 DAYS)



Figure 27: Shows the site masterplan at the proposed site. (Google earth) (Author)

DESIGN CONCEPT

DESIGN CONCEPT



CULTURAL CONTINUITY & IDENTITY

The spatial layout reflects ancestral wisdom, passed down through generations via oral traditions and lived experience. The spine acts as a narrative thread, connecting daily life with ceremonial practices, reinforcing Semai identity

COMMUNITY RESILIENCE

Spatial proximity and shared communal zones foster trust, cooperation, and mutual aid. The spine facilitates intergenerational interaction, from elders sharing stories to youth learning traditional crafts.

ECOLOGICAL HARMONY

Using the spine as a design principle allows for modular, expandable layouts that mirror traditional settlement growth. It provides a clear organizational framework for zoning: arrival, learning, dwelling, ritual, and nature immersion.



Figure 28: Shows the design concept. (Author)

DESIGN ASPIRATIONS

DESIGN ASPIRATION



Figure 29: Shows the design aspirations for pusat kebudayaan rimba semai. (Author)

Ecological harmony, communal life and ancestral wisdom are what a Semai building structure needs to be. It takes aspirations from a generic Semai structure with its elevation on stilts. It breathes with the surrounding context of luscious greenery. Besides that, it utilises the same building construction material such as bertam leaves, bertam woven walls and bertam roofs. Rattan is used throughout the structure for details and ornamentations. It shows resilience, adaptability and connection to the land and nature's spirit.

RESEARCH / PROJECT FINDINGS

DESIGN DEVELOPMENT

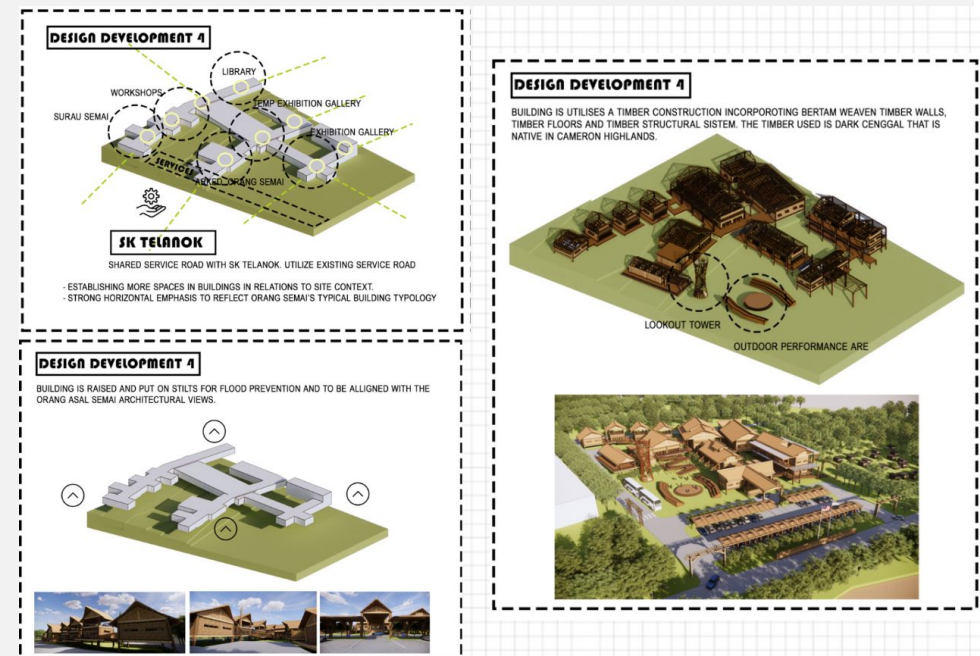
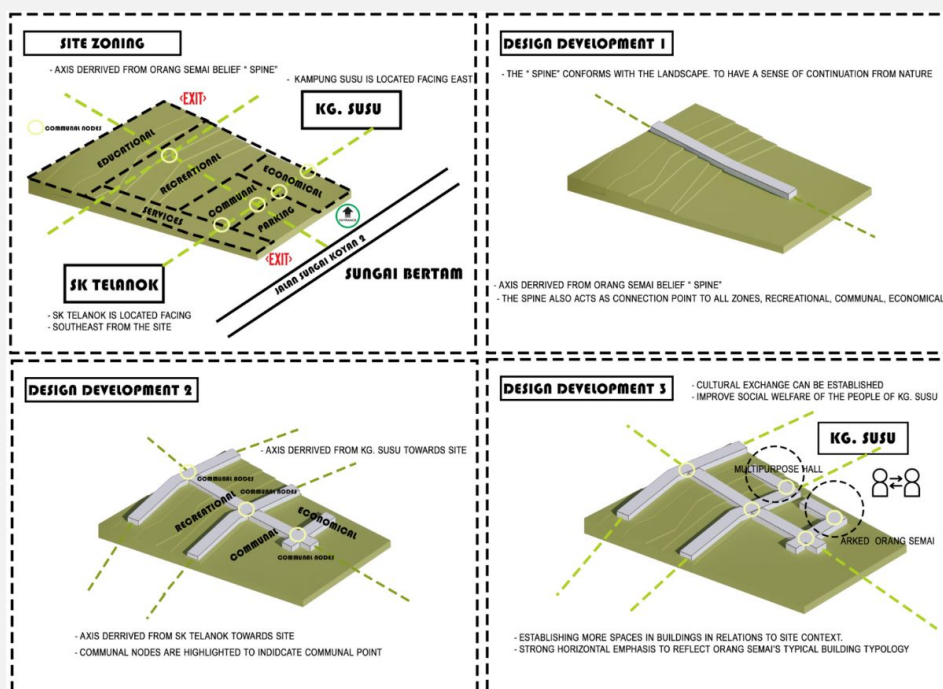


Figure 30: Shows the design development for pusat kebudayaan rimba semai. (Author)



Figure 31: Shows the site plan and aerial views for pusat kebudayaan rimba semai. (Author)



Figure 32: Shows the aerial view for pusat kebudayaan rimba semai. (Author)



Figure 33: Shows the ground floor plan for pusat kebudayaan rimba semai.

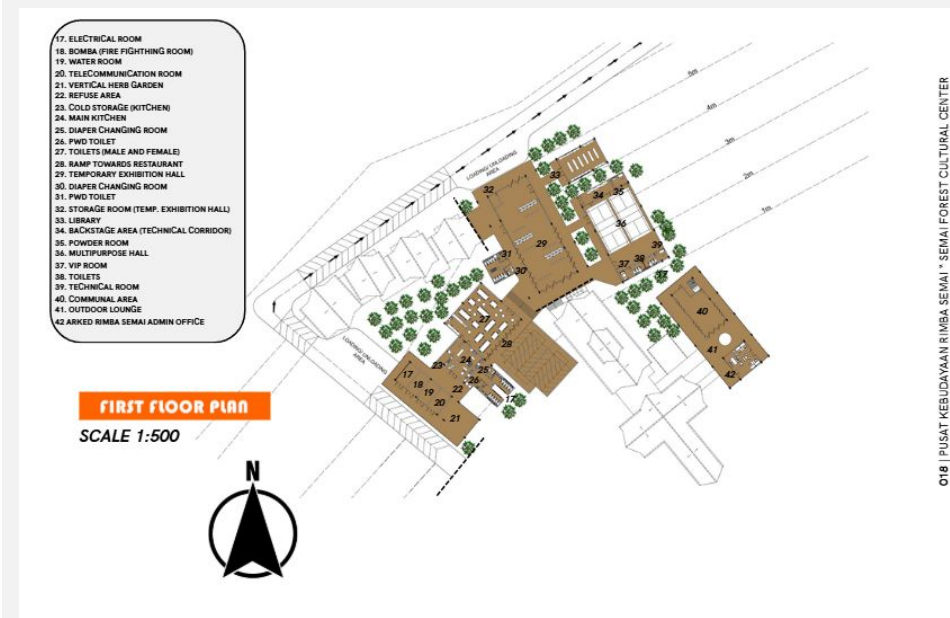


Figure 34: Shows the first floor plan for pusat kebudayaan rimba semai.



Figure 35: Shows the perspectives for pusat kebudayaan rimba semai.

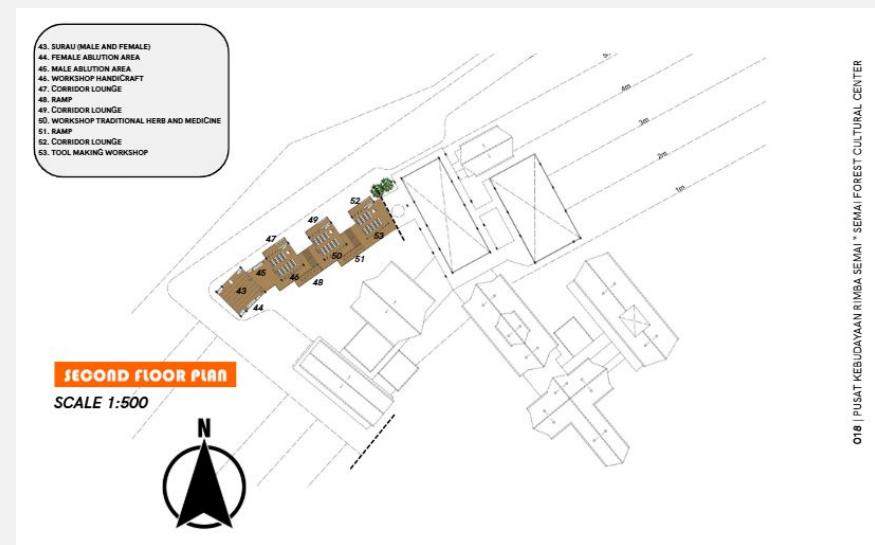


Figure 36: Shows the second floor plan for pusat kebudayaan rimba semai. (Author)

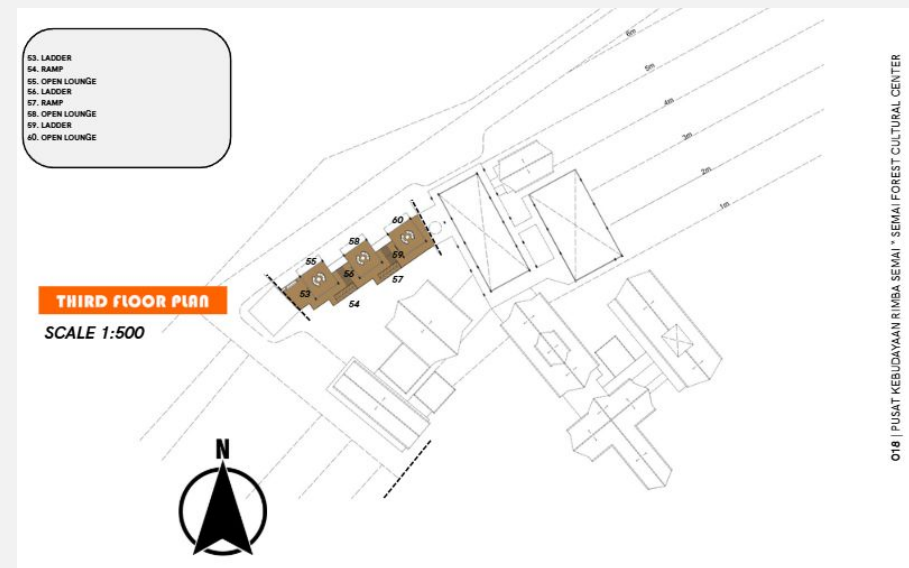
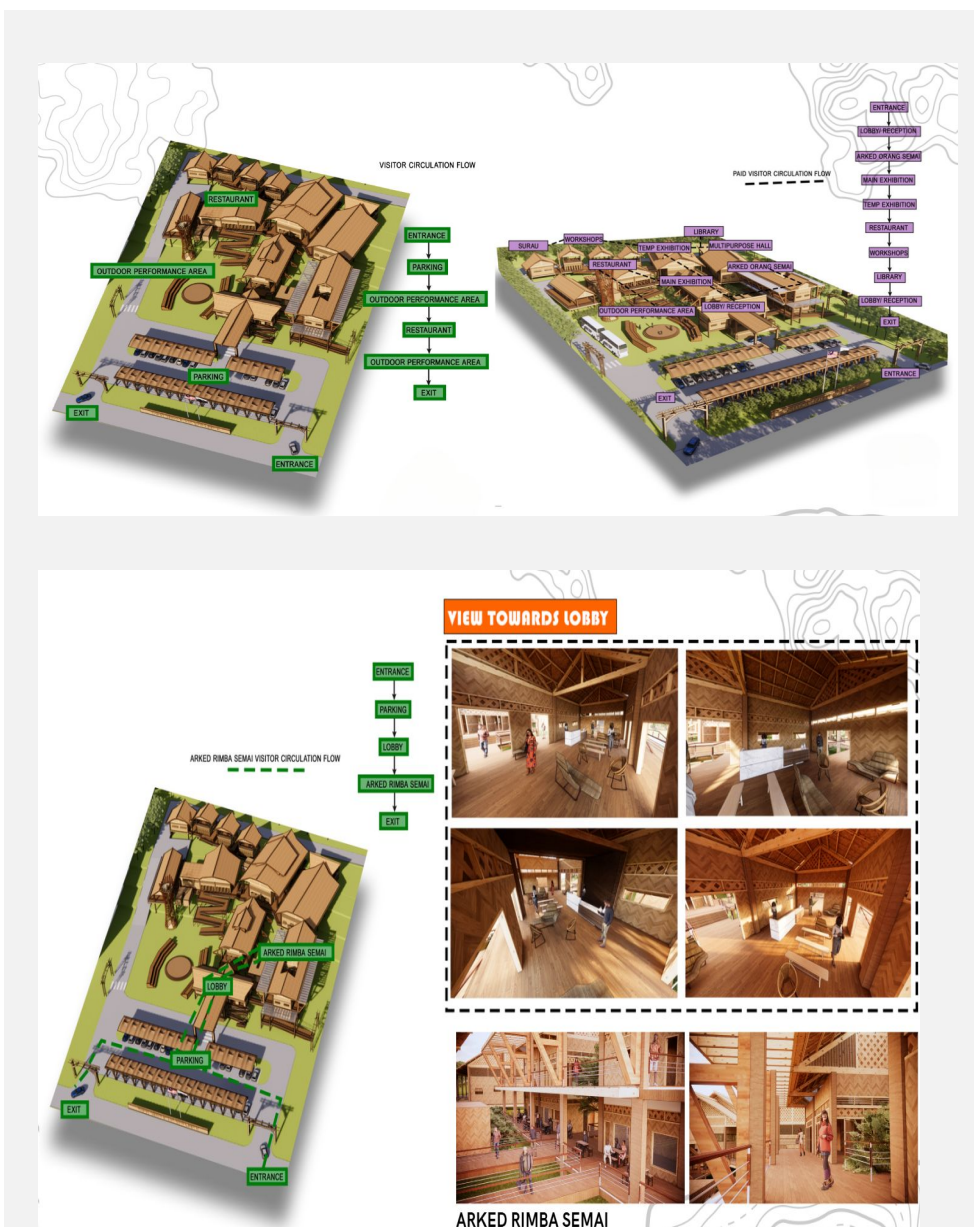
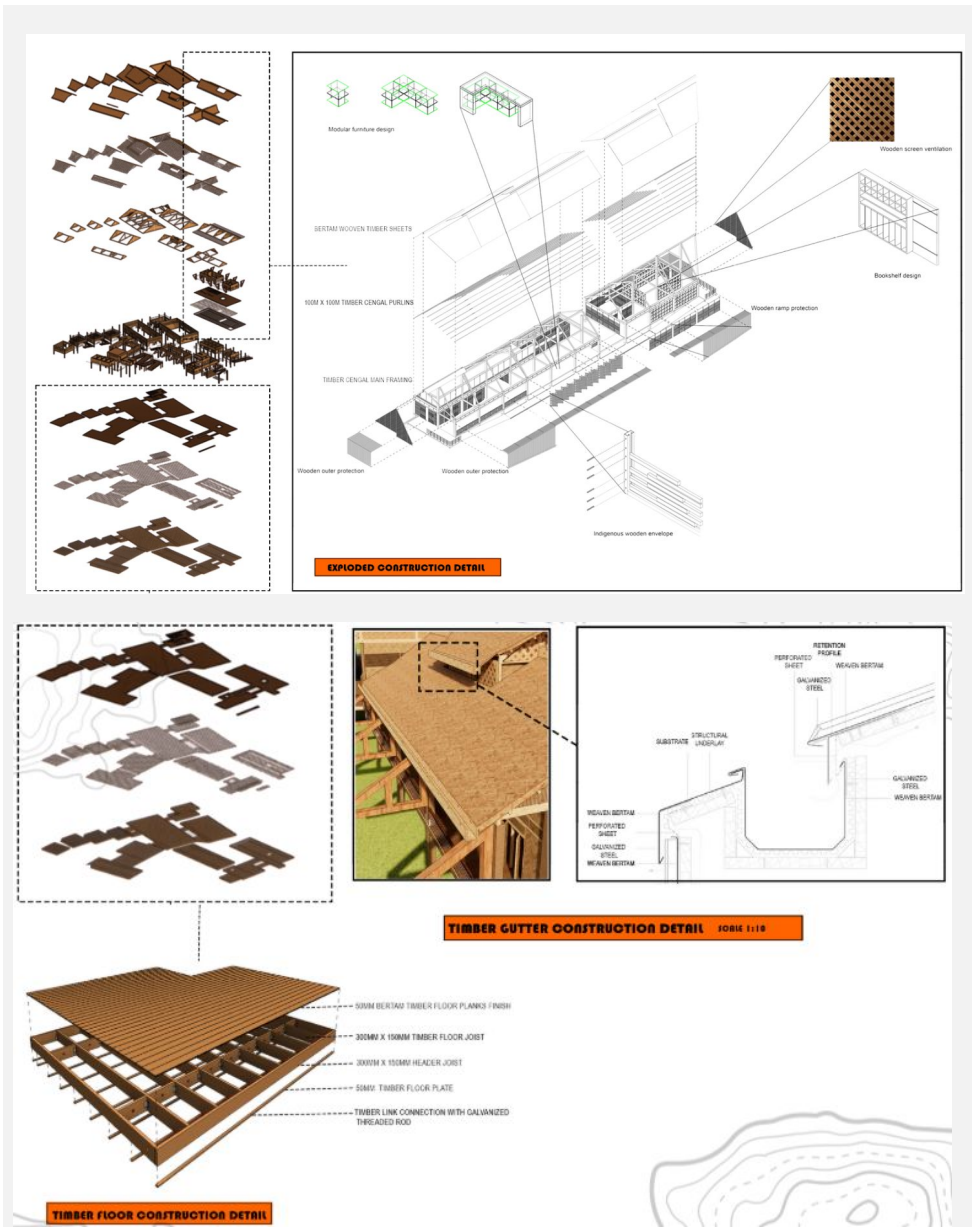


Figure 37: Shows the third floor plan for pusat kebudayaan rimba semai.



Figure 38: Shows the interior perspectives for pusat kebudayaan rimba semai.



SUMMARY

A cultural heritage is crucial for the Orang Asal Semai in Cameron Highlands, not only for a tourist destination but a living archive of resilience and sustainable identity. It acts as a foundation in preserving history and oral traditions that are increasingly threatened by modernisation and environmental development. This cultural centre will serve as a vessel for history, culture, heritage and intergenerational continuity.

ACKNOWLEDGEMENT

It has been a rough and challenging journey for me to complete a Master of Architecture course. But through dua, Allah has made it easy for me. I am truly indebted towards my supervisor, Asst Prof. Dr. Ts. Zeenat Begam Yusof, whose kindness, knowledge, strength, and guidance have made it possible for me to go through my master's design thesis successfully.

REFERENCES

Benjamin, G. (1989). Achievements and Gaps in Orang Asli Research.

Dentan, R. K. (1975). If there were no Malays, who would the Semai be? *Contributions to Asian Studies*, 7, 50-64.

Gianno, R. (2023). Temoq, Semelai, Semaq Beri and Jakun: Using Orang Asli ethnonyms to reconstruct Orang Asli ethnohistory. *Journal of Southeast Asian Studies*, 54(2), 271-297.

Highlands, L. C. (2023). Challenges of Da'wah to The Semai Community in Pos. *Journal of Academic Research in Business and Social Sciences*, 13(9), 1363-1372.

Ismail, S. S., Abd Hamid, Z., Fakri, S. N. S. M., & Ab Aziz, L. H. (2021). Rural tourism development in Cameron Highlands: Indigenous community's perception towards socio-cultural and economic impacts. *International Journal of Academic Research in Business and Social Sciences*, 11(13), 206-221.

Ramli, S. Q., Mustafa, F. B., & Salleh, K. O. (2018). Penilaian indeks keterancaman komuniti orang asli di Lembangan Sungai Telom, Bertam dan Lemoi, Cameron Highlands (Vulnerability index assessment of orang asli in Telom, Bertam and Lemoi River Basins, Cameron Highlands). *Geografia*, 14(3).

Rambo, A. T. (1988). People of the Forest." . *Key environments: Malaysia*, 273-288.

Salleh, N. H. M., Othman, R., Idris, S. H. M., Jaafar, A. H., & Selvaratnam, D. P. (2013). The effects of tourism development towards the livelihood sustainability of the Orang Asli at the Kg. Sg. Ruil, Cameron Highlands. *tourismos*, 8(2), 301-321.

Weng, C. N., & Barrow, C. J. (2010). The Potential For Tourism To Support Sustainable Development In Cameron Highlands. *Tourism Research In Malaysia: What, Which Way And So What?(UUM Press)*, 107.

Yusoh, M. S., Mahmood, M., Mansur, K. A., & Zainuddin, A. (2008). Impak pembangunan ke atas Suku Semai di Tanah Tinggi Cameron. *Proceedings STSS 2008*, 363-372.

02

REVIVING ISLAMIC CIVILISATION PARK AT PULAU WAN MAN, TERENGGANU

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Department of Landscape Architecture, Kulliyyah of Architecture and Environmental Design,
IIUM

ABSTRACT

The paper explores the idea and concept of Islamic civilisation and the Islamic Garden, and their implementation in landscape architectural design in the Malaysian context. This project explores how the Islamic Garden design concept can be integrated within landscape design for a diverse society without neglecting the local culture, values, and place identity. Deeply rooted in the symbolic, cultural, and theological foundations of Islamic civilisation, Islamic Gardens have historically represented more than aesthetic beauty. They embody spiritual meaning, philosophical depth, and a connection to nature and divine creation. With origins dating back to the 7th century through the Persian Garden, Islamic Gardens evolved across regions and cultures, adapting to local environmental and social contexts. However, modern landscape practices often overlook these traditional elements. This project investigates how Islamic Garden principles can be revitalised and implemented in contemporary landscape design, particularly in public park and spaces in Pulau Wan Man, Terengganu. The project embeds cultural identity, religious values, and environmental planning that co-exist in the design of landscape spaces. Ultimately, the study emphasises the importance of preserving Islamic heritage through landscape design that reflects both traditional principles and modern needs, ensuring the enduring relevance of Islamic Gardens in diverse urban and cultural contexts.

Keywords: Islamic civilisation, Islamic Garden, Essence of Islamic Garden, Types of Islamic Garden, Revitalisation

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INTRODUCTION

Pulau Wan Man is one of the smallest islands in Terengganu. Situated in the estuary of the Terengganu River, the island has emerged as a focal point for religious and cultural tourism in the area. It is most recognised for being the site of Taman Tamadun Islam (TTI), a park with an Islamic theme that features 21 scaled-down replicas of famous mosques and monuments from across the Muslim world. Taman Tamadun Islam (TTI) was inaugurated in 2008 as the first Islamic heritage and edutainment park in Southeast Asia. Developed by the Terengganu State Government, TTI was envisioned as a celebration of Islamic architecture, history, and culture, promoting understanding of Islamic civilization. The park's creation reflects Terengganu's commitment to highlighting Islamic heritage as a part of Malaysia's multicultural identity, and it offers both educational and tourism experiences within a picturesque, riverfront setting (Rahiman Bin & Rozaid, 2021).

PROBLEM STATEMENT

Taman Tamadun Islam (TTI) was established as an edutainment park to showcase Islamic architectural heritage through life-size and scaled replicas of global monuments. Yet the park currently faces multiple interrelated problems. While it holds immense cultural and educational value, the park faces several challenges that affect its appeal and visitor experience. Over the years, certain areas have suffered from neglect and aging structures. For instance, some wooden boardwalks are reportedly loose, cracks, and worn out, raising safety concerns for visitors. This is supported by some reviews on TripAdvisor on maintenance problems, including poorly maintained boardwalks with loosen parts and overgrown weeds on pathways (*TripAdvisor*, n.d.). Vendors and businesses operating within the park have also reported in the survey from this study that there was low customer flow due to less visitors coming over the years.

A decline in visitor numbers is due to competition from other attractions, insufficient marketing efforts, maintenance issues, and pandemic-related impacts. As a government-supported initiative, the park also struggles to balance financial sustainability while maintaining affordable pricing for its audience (Hamid et al., 2016).

Uneven conservation and visible material deterioration under Malaysia's tropical coastal conditions, infrastructural and accessibility constraints on a small island site, and an emphasis on spectacle over interpretive depth limits the attractiveness and value of the TTI. These operational and design gaps are compounded by unclear long-term funding and resilience planning, which reduce the park's ability to deliver strong cultural interpretation, sustainable landscape performance (including water and microclimate management), and meaningful engagement with local communities. Therefore, for the park that have been operated for more than a decade, it requires urgent revitalisation and upgrades to maintain its appeal values and functionality. Addressing these gaps through landscape design requires context-sensitive design solutions that integrates conservation, climate-responsive landscape design, interpretive planning, and sustainable management.

AIM AND OBJECTIVES

This project aims to appraise the concept of Islamic Garden and Islamic civilisation in the context of landscape design proposal for a park at Pulau Wan Man, Terengganu.

The objectives of the project are as follows:

- 1) To identify the concept and attributes of Islamic Garden in response to its relevance and implementation in the contemporary world.
- 2) To revitalise the existing park of Pulau Wan Man by integrating Islamic civilisation garden design and attributes of the Islamic Gardens' visual appeal without neglecting the local culture, values, and place identity.

LITERATURE REVIEW

Definition of islamic civilisation

The term "civilisation" has been defined differently by various schools of thought and points of view, but generally speaking, it refers to a set of values and principles that structure society and are the result of human activity that is reflected in a variety of disciplines, including science, literature, the arts, and the resulting tendencies that allow for this activity (Ihsan, 2021).

DEFINITION OF ISLAMIC GARDEN

A garden has been described as a "paradise" in the Greek version of the Bible. "Eden" in Hebrew refers to an unspecified nation or area. The word "pardis" in Persian literature comes from the word "paridaiza," which translates to "walled garden." (Nazia Nazifi, 2011). Gardens have been characterised as a metaphor for Heaven, Paradise, or El-Jannah (garden) since the rise of Islam in the seventh century when the Persian Gardens were established (Ranguelov et al., n.d.).

Type of islamic gardens

Islamic gardens have evolved across different regions, adapting their core design elements to local social, cultural, and climate conditions. Three major influences of Islamic Gardens are Persian, Mughal, and Andalusian.

Table 1: Type of Islamic Gardens.

Type of Islamic Gardens	Characteristic	Example
Persian Garden	- Chahar Bagh Layout - Axis and Hierarchy: The gardens are ranked according to their importance. - Water as a Central Element - Enclosure and Privacy - Lush Vegetation: Cypress and fruit-bearing plants such as pomegranate and date palms, symbolizing longevity, and abundance.	Bagh-e Fin Garden
Mughal Garden	- Integration of Persian Influence - Water Features and Reflection Pools - Terraced Structure, with cascading water features that move down from one level to the next, symbolizing the flow of paradise. - Symmetry and Axial Layout - Ornamental Plants and Flowers.	Taj Mahal-Agra Shalimar Garden
Andalus Garden	- Patio-Centric Layouts - Use of Light and Shade - Integration of Water - Narrow, long pools and water channels in the Andalusian Garden provide reflective surfaces that reflect the building. - Tilework and Ornamental Detail Mosaic patterns	Alhambra and Generalife

Table 2: Descriptions on Precedent Studies

Precedent Study	About the Place	Essence of Islamic Garden
Quranic Park – Dubai, UAE	The Quranic Park in Dubai is a distinctive public area that incorporates Islamic heritage and Quranic symbols (Sha, 2024). This 64-hectare park in Al Khawaneej were developed with several purposed which are: (1) Seeks to integrate spirituality, education, and aesthetics while providing guests with an immersive experience that examines the relationship between Islamic teachings and nature, (2) To offers an innovative way to explore stories and miracles from the Holy Quran. The park implements the Islamic Garden design concept within their enclosure and open spaces based on Quranic interpretation such as The Botanical Garden, The Split Miracle Lake, The Glass House, and The Cave of Miracles.	- Symbolic Use of Water - Symbolic Use of Plant - Geometric Layout and Symmetry
Miniaturk – Istanbul, Türkiye	Miniaturk is a modern cultural park located in Istanbul, Türkiye, which incorporates Islamic Garden design concepts that honour traditional Islamic aesthetics. It is one of the largest miniature parks in the world, covering an area of approximately 60,000 square meters. It aims to educate both local citizens and international visitors on the significance of Türkiye's historical landmarks.	- Cultural Integration and Historical Symbolism - Water Features and Reflective Pools - Symbolic Use of Water
Moroccan garden, Putrajaya, Malaysia	The Moroccan Garden in Putrajaya, Malaysia, is a distinctive fusion of Moroccan architectural beauty with traditional Islamic Garden design ideas. The Moroccan Garden exhibits the beauty and elegance of Islamic landscaping in a tropical setting and represents Malaysia's cultural ties with Morocco.	- Symmetrical Layout and Geometry - Water Features - Enclosed Spaces and Privacy

Evolution of Islamic Garden

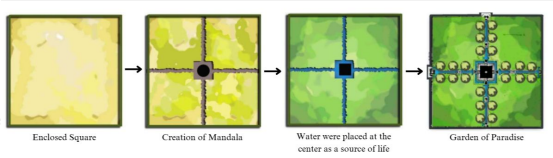


Figure 1: Image shows the evolution of Chahar-bagh system in Islamic Gardens (Source: Nazia Ansari, 2011)

PRECEDENT STUDIES



Inherit essence of islamic garden

The essence of an Islamic Garden lies in its symbolic, aesthetic, and spiritual meanings. Islamic garden designs vary depending on the climate and cultural requirements of the area. Although each form of garden has its own regional context, specific basic characteristics reflect Islamic Gardens

Table 3: Water arrangement within the Islamic Graden. (Md.Jani, H.H., et al., 2018)

Arrangement	Aspect	Variables
Water Arrangement	Layout of	Central axis according to the <i>chaharbagh</i> layout
	Water	Central axis have a channel or broad pool
	Flows	Creates a cross plan section of four divisions
		Occupied the primary and secondary axes
Water Course		Water appears sunken
		Irrigated in a straight line
		Direction depends on the topography
		Followed various angular paths
		Turns 90 degree angle
		Flows in geometrically regular
Colour		Influence plants arrangement and path circular
		The water reflects the colour of the canal bed
		Turquoises and blues ceramic as canal bed
		If the bed has a brighter colour, its reflection becomes secondary

Table 4: Planting arrangement within the Islamic Graden. (Md.Jani, H.H., et al., 2018)

Arrangement	Aspect	Variables
Planting arrangement	Layout of planting design	Follows the watercourse and pathways pattern
		Symmetrical patterns and linear form
		Figure-ground, continuity, closure and similarity
		Planting zone serves a specific purpose
Tree		Orchard in the centre or inner section
		Geometric pattern in rectangular or star-shape
		Plant's boundary made with various materials
		Varied selection of plant at the edge of the plant bed
Shrub		Planted in a row along the main axis
		Arranged in a row, an X or diamond pattern
		Based on height, function and zoning layers
		Straight, rectilinear or bilaterally symmetrical form
Ground-cover		Trees are planted closely to one another
		Shady trees planted beside watercourses and paths
		Massing shrubs as hedges and framing
		Linearity or formally arranged form
Vine		High shrubs to enhance lines and direct view
		Flowering plants close to pathways or building
		Small or low shrubs selected for the courtyard
		Parallel to the water channel
Aquatic		Linear, symmetrical or irregular form
		Vines occupy the pavilion or wall
		Vibrant and colourful flowering vines
		Floating lotus decorate the water bodies
		No specific pattern of aquatic plants

Table 5: Hardscape arrangement within the Islamic Graden. (Md.Jani, H.H., et al., 2018)

Arrangement	Aspect	Variables
Lodgement arrangement	Layout of lodgement design	<i>Chaharbagh</i> influence the lodgement arrangement
		Pavilion is at the centre or at the end
		Pathways are perpendicular to water channel
		At central axis or a distance from the entrance
Entrance		Optional to have secondary buildings
		Location of the Secondary buildings is optional
		Secondary buildings follow geometrical pattern
		Direct/bend entrance at main axis or middle line
Pathways		Bent entrances offer a delayed viewing
		Bent entrances have a porous curtain wall
		Porous curtain wall between garden and entrance
		Clear view between main entrance and building
		One or a few other entrances alongside it
		Secondary entrances are for the other building and services (trash removal)
		Secondary entrance(s) at the side of the garden
		Water channel at the central axis shaped pathway
		Main pathway does not occupy the central axis
		Perpendicular from the wall of the entrance
		Main pathways are cut off by the main building
		Consist of even number (2, 4, 6...)
		Main paths are parallel to each other
		Turn 90 degree angle to change course
		On and around the inner face of the wall
		Stairs and ramps follow the layout of pathways

By examining the essence of Islamic Garden, a clearer understanding of the concept and design principles of Islamic Gardens can be achieved.

METHODOLOGY

The project site

Taman Tamadun Islam (TTI), located on Pulau Wan Man in Terengganu, Malaysia, was inaugurated in 2008 as the first Islamic heritage and edutainment park in Southeast Asia. Developed by the Terengganu State Government, TTI was envisioned as a celebration of Islamic architecture, history, and culture, promoting understanding of Islamic civilisation.

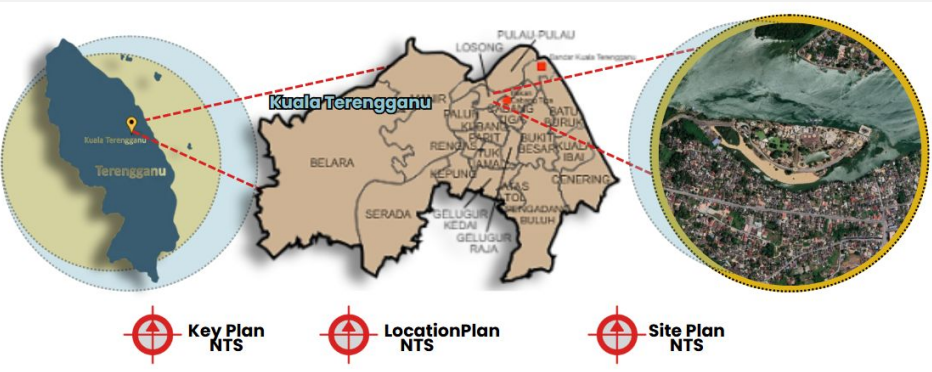


Figure 5: Site location



Figure 6: Aerial view of Taman Tamadun Islam (TTI) Pulau Wan Man (Source: John Smith, R., 2024).

The park’s creation reflects Terengganu’s commitment to highlighting Islamic heritage as a part of Malaysia’s multicultural identity, and it offers both educational and tourism experiences within a picturesque, riverfront setting (Rahiman Bin & Rozaid, 2021). However, currently it falls into deterioration and disrepair due to outdated landscape design and other interrelated limitations.

DATA COLLECTION

The research is based on a qualitative methodology to explore the Islamic Garden concept in the context of revitalising the Islamic Civilisation Park at Pulau Wan Man, Terengganu. It involves primary data collection through observation checklists and interviews with local authorities and the public to assess the site and to gather contextual insights. Secondary data was obtained from academic journals, government sources such as RTD, and relevant articles to provide theoretical and historical context. The combination of these methods supports a comprehensive understanding and informs design strategies rooted in Islamic traditions.

- 1. Site Observation and Inventory:** Checklist was developed to systematically gather firsthand and real-time data on specific behaviours, events, and conditions within the study area. The attributes checklist was made to analyse the current condition of the site. Observation was carried out for a few days and throughout the area to detail up the checklist attributes of land-use, topography, hydrology, accessibility, facilities and infrastructure, flora and fauna, microclimate, socio-cultural, and views and senses.
- 2. Semi-structured Interview:** Questions to local authority’s officers, visitors’ experience, and operational dynamics of TTI (business operator/vendor), and views on Islamic garden characters of the place. The interviews seek to provide a comprehensive evaluation of TTI’s effectiveness in promoting Islamic culture, supporting local businesses, and contributing to tourism in Kuala Terengganu.

Table 6: List of questions to various participants of interview

No	Interviewees	Section	Question
1	Local Authority (TTI Management)	Design Vision and Planning	What were the main goals, vision, and planning considerations behind the design and establishment of TTI, including the objectives, site selection, and conceptual approach?
		Design implementation	How were Islamic design principles incorporated into TTI’s design, what strategies influenced the placement of monuments, and which global Islamic landmarks served as key inspirations?
		Vendor Management and Support	How does TTI manage vendor selection, ensure alignment with its theme and visitor demographics, and support local entrepreneurs through its vendor management strategies?
		Business Operations	Why did you choose to establish your business at TTI, and do you consider it an ideal location for your operations?
2	Vendors	Business Operations and Management	What challenges do you face in running your business at TTI, and how does it compare to other locations in terms of profitability? What support do you receive from TTI management?
		Visitors and Products	What products or services are most popular with your customers, who are your primary customers, and how do customer demands vary based on seasons or events held at TTI?
		Purpose of Visit	Why did you visit TTI, and how did your company (family, group, or alone) affect your experience? Is TTI your main destination in Kuala Terengganu?
		Experience and Impressions	Which areas of TTI helped you appreciate Islamic civilization, and which part best shows Islamic culture?
		Cultural and Educational Value	What monument or feature stood out to you, and did TTI help you learn about Islamic history and culture?

ANALYSIS AND FINDINGS

Land-use evolution

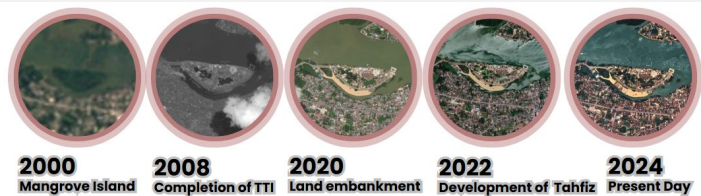


Figure 7: Land-use evolution of the site

SITE INVENTORY AND ANALYSIS

The data collection procedure from observations involved spending time in the study environment for a few days to observe specific locations and collect relevant data based on the checklist attributes. This is the inventory of the site. Observations were made throughout the whole site area focusing on key events, interactions, and features that were important to the study. The list of the attributes is presented in Table 7.

Data from interviews with the local authority officers, visitors and vendors complemented the observation data to obtain synthesis of the study. From the synthesis, landscape design was proposed based on the existing theme of the TTI and new design ideas and solutions are proposed for the site.

Table 7: Checklist attributes			
N	Attributes	Description	Elements
1	Landscape Evolution	The evolution of the site and its development throughout the years.	
2	Land Use	Focus on understanding how different areas and spaces are utilised for accommodation, commercial, religious, or recreational purposes.	• Space Zoning • Build Form and monument
3	Accessibilities	Accessibility examines the ease people can reach and move within a specific area. It is essential for assessing the functionality of spaces and ensuring inclusivity for all.	• Roadway- Primary; Secondary; Tertiary; Waterway • Walking radius and pedestrian movement
4	Infrastructure	Infrastructure is pivotal for assessing the developmental status of an area and ensuring that its services are adequate.	• Transportation • Facilities; Amenities • Utilities
5	Flora And Fauna	Flora and fauna studies explore the biodiversity within a landscape environment.	• Significant plant species • Native plants; Aquatic species
6	Microclimate	Microclimate studies focus on localised climatic conditions to understand how environmental factors influence comfort, vegetation, and building sustainability	• Sun Exposure; Temperature • Wind Velocity • Monsoon Season • Rain Precipitation
7	Topography	Topography involves studying the land's physical features and provides insights into the natural form and structure of the land	• Erosion prone area • Elevation • Slopes
8	Hydrology	This attribute is essential for managing water resources, mitigating flooding risks, analyse water flow of the site and how it interacts during rainy or monsoon season	• Existing Water bodies • Flood Prone Area • Water Quality
9	Socio-Cultural	This attribute discovers the interactions between the community and inclusive spaces that cater to the cultural and social needs of the community	• Social Group; Religion • Site Users • Socio-Cultural Activities
10	View And Senses	Contributes to creating environments that are both functional and pleasant for human interaction.	• Visibility and imageability; Visual Quality; Scenic viewpoint • Noise and Odor

SITE ANALYSIS

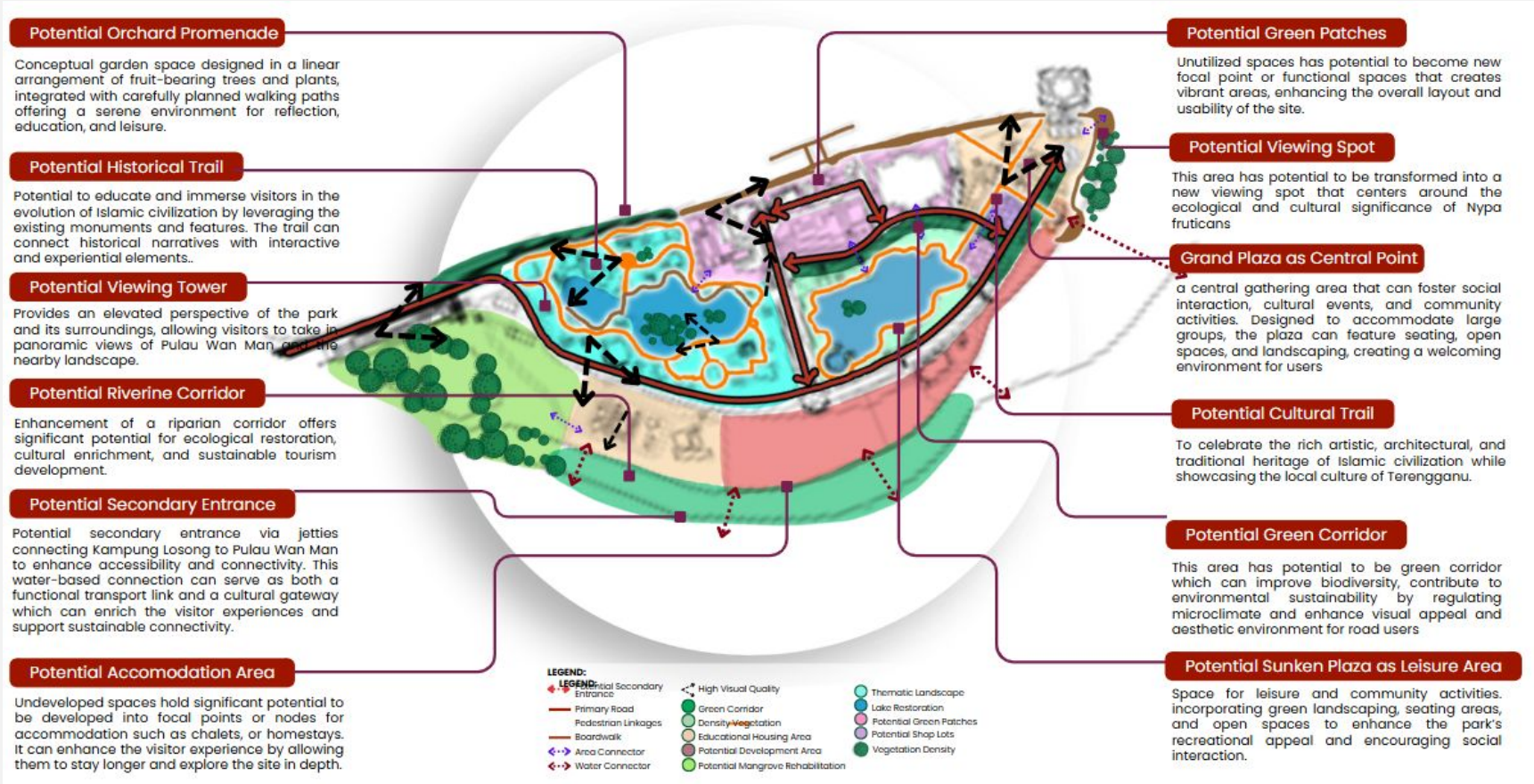


Figure 8: Site Analysis

SITE SYNTHESIS

The site synthesis was generated based on primary data collection and analysis of the data from observation (inventory of the site based on checklist attributes) and the interview data. Based on the analysis, site constraints and potentials were determined according to several categories as shown in Figure 9. They are in terms of space zoning, accessibility and connectivity, flora and fauna, microclimate, hydrology, topography, views and senses, and infrastructures.

Based on the synthesis, the landscape design proposals consisting of various design concepts, master plan, detailed development area plan with details of landscape elements and sectional elevations, and innovative design ideas were produced to give vision to the site's potentials in the future.

Site Potential

- The Warrior Lake and Taman Ibnu Al-Baytar hold significant potential to become central hubs within the circulation routes of the site.
- By transforming these areas into gathering spaces, such as plazas or squares, it could enhance visitor engagement and improve the overall flow of movement within the park

- Potential to maximise the utilisation of water route link from nearby boat station and jetty
- Proposed designed route for transportation services includes shuttle services and bicycle could ensure safety and boost number of visitors.
- The roads and walkways should be leveraged, to ensure easy access for both pedestrians and vehicles.

- Strategic planting selection of trees and shrubs to enhance characteristics of the Islamic Garden
- Enhance the Nipah mangrove ecosystem by creating a floating observation deck and incorporating interactive displays about its ecological and cultural significance, offering visitors a dynamic learning experience while preserving the natural habitat.

- The lakes within the island acts as water catchment basin and have a strong potential for water activities but need to enhance the infrastructures and water quality to ensure the safety and overall experience of the visitors.
- Use native tree species to reduce heat, and create cool, shaded areas for relaxation.
- Potential to create terraced gardens, amphitheatres, or sunken plazas that can enhance the visual and functional appeal of the site.

- Leverage the scenic waterfront location of Pulau Wan Man to create elevated viewing platforms, allowing visitors to enjoy stunning vistas of the surrounding river and mangroves.
- Potential to have new view point with decking which offers a view toward lakes, perfect for sightseeing and enjoying serene landscapes.
- Incorporate fragrant plants like jasmine, frangipani and pandan in the landscaping to evoke a calming and culturally resonant sensory and aromatic experience.

- Investing in modern and user-friendly infrastructure. Introducing apps for booking facilities, locating amenities, and providing real-time updates on park events to improve visitor experience.

Site Constraint

- Weak concept and lack of cultural characteristics of Islamic and edutainment themes diminish the site's appeal, reducing its ability to attract visitors effectively.
- Expansive space for parking with no shaded plants and paving area exposed to direct sun exposure during hot weather.
- Undeveloped and unutilized spaces within TTI poses lack of socializing activities, limiting opportunities for community engagement and interaction.

- Slow traffic near the main attractions, due to closure of Cul de sacs in front of Masjid Kristal and presence of vendors in between parking area and Taman Ibnu Al-Baytar.
- Ending routes without connectivity to other areas cause frustration for visitors who need to backtrack
- Shared lane without clear boundaries increase the risk of accidents and discourage walking as a primary mode of transportation within the park.

- Mangrove Degradation due to land embankment for development of Taman Tamadun Islam. There are only a few mangrove clumps spotted alongside the riverbanks
- Lack of functional plant species which do not reflect the identity of Islamic Garden design concept.
- Tree roots of existing plant species infiltrating sewage and drainage systems causing blockages and structural damage which lead to waterlogging.

- The stagnant water on paving area may exposed to slip hazards. Wet and algae-covered paving surfaces become slippery, increasing the likelihood of accidents and injuries
- The polluted lakes creates ideal conditions for mosquito larvae to thrive, turning the lake into a significant mosquito breeding ground.
- Lack of street planting alongside the Persiaran Al-khwarizmi and Persiaran Masjid Kristal which makes the space exposed to hot weather.
- During the monsoon season, heavy rainfall and strong winds may limit accessibility and activities, affecting visitor numbers and revenue.
- The proximity to the river and its flat terrain, make the area susceptible to waterlogging, particularly during heavy rains or seasonal floods.

- Obstructed or limited sightlines due to the natural landscape, built structures, or overgrown vegetation, reducing the quality of views and visual access to key landmarks.
- Organic material such as leaves, algae, and plant debris can accumulate in the lake, leading to anaerobic conditions and the release of unpleasant odors
- Noise and odors coming from the food stalls and lakes, may disrupt the tranquil atmosphere of the park

- Lack of integration between permeable and impermeable areas can lead to water pooling
- The absence of interactive elements or modern technologies in certain areas limits the park's potential to captivate younger audiences and meet contemporary expectations
- Inadequate and aging infrastructures, such as insufficient signage, shaded seating areas, reduce visitor satisfaction and engagement.

Space Zoning

Accessibility and Connectivity

Flora and Fauna

Microclimate Hydrology Topography and Soil

View and Senses

Built Form and Monument Infrastructure

Figure 9: Site Synthesis

LANDSCAPE MASTER PLAN DEVELOPMENT

Site issues

1 Landscape Neglect

- Discourage community engagement and activities
- Fail to reflect the cultural and historical significances



2 Lack of Functional Plant Species

- Impact on climate and human comfort
- Do not reflect Islamic Garden concept



3 Segregation of Spaces

- Led to abandoned and neglected spaces

4 Mangrove Degradation

- Due to land embankment and development
- Negative impact on natural habitat



5 Unutilized Facilities

- Impact on safety and security of site users

Design Goal

Aim

Revitalization of heritage and edutainment park that serve as a living archive of Islamic civilization that are accessible to all, vibrant and sustainable.

Objectives

1 Cultural & Historical Legacy

To preserve and showcase the rich heritage, knowledge, and intellectual achievements of Islamic civilization.

2 Harmonious Environment

To create a tranquil, nature-integrated space that embodies the essence of an oasis and paradise.

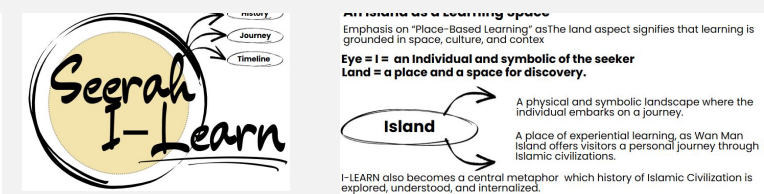
3 Seamless Connectivity

To establish a dynamic link between past, present, and future while ensuring fluid spatial connections.

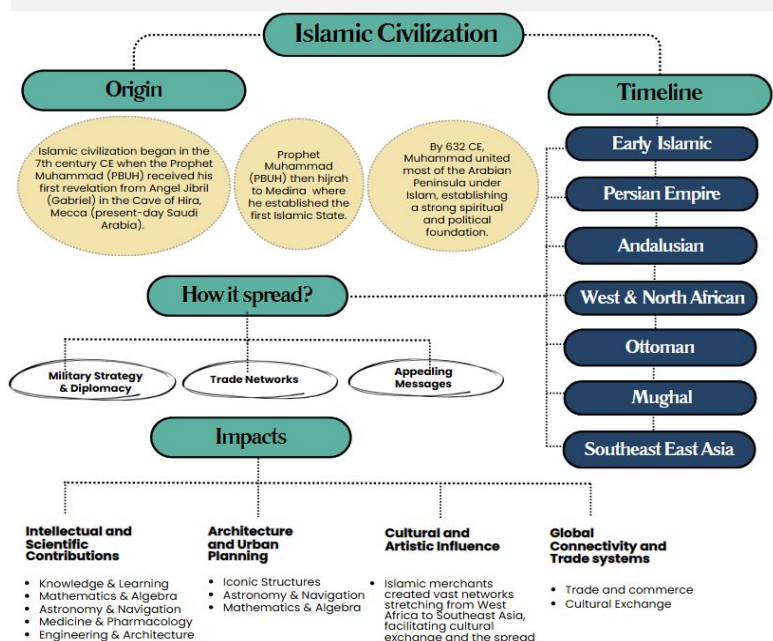
DESIGN STRATEGIES



DESIGN CONCEPT



CONCEPTUAL AND IDEA DEVELOPMENT



SPACE PROGRAMMING

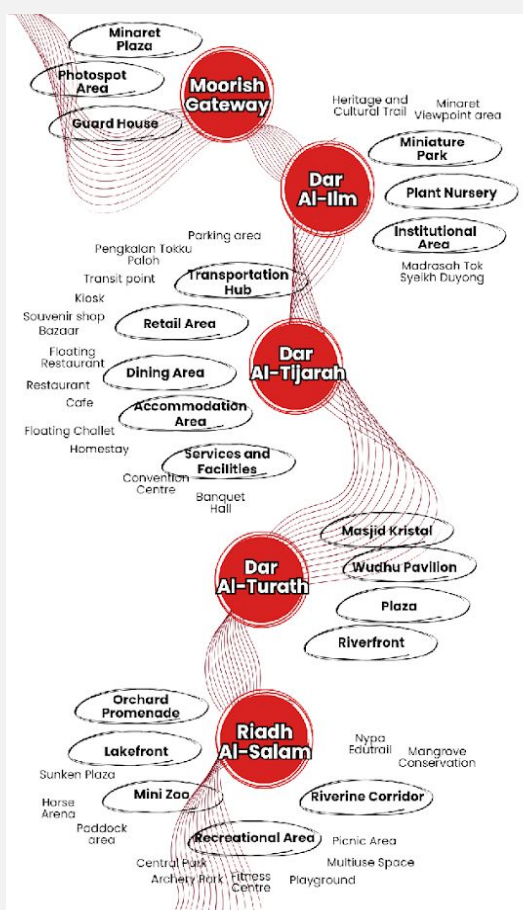


Figure 11 : Space Programming

FUNCTIONAL DIAGRAMS

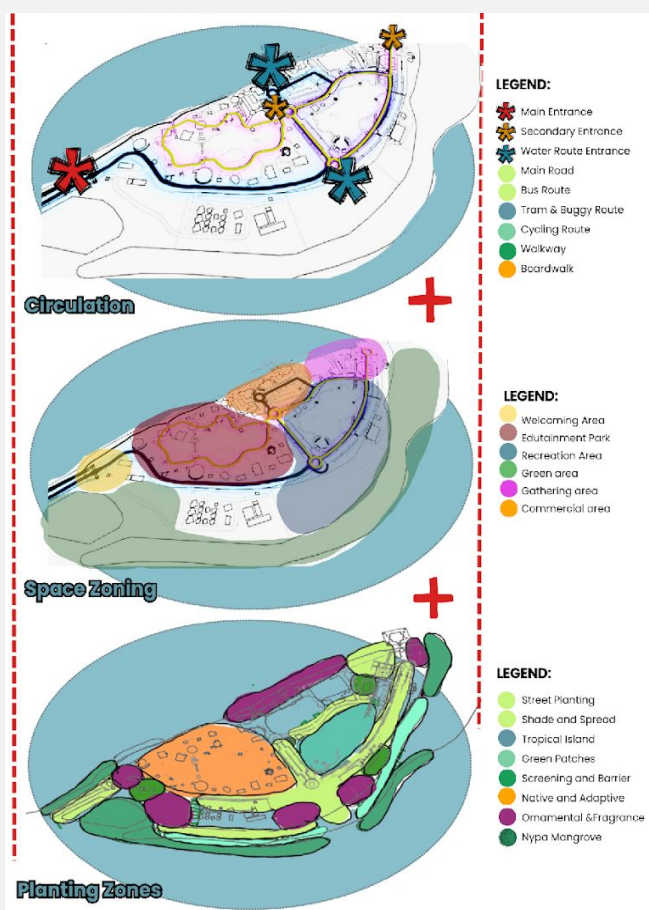


Figure 12 : Functional Diagrams

CONCEPTUAL PLAN

Building upon the insights derived from the functional diagrams, the conceptual plan represents a design stage where initial ideas are translated into a cohesive spatial strategy. This phase begins to shape the physical narrative of the Seerah i-Learn concept by defining key zones, circulation patterns, and experiential pathways as shown below.

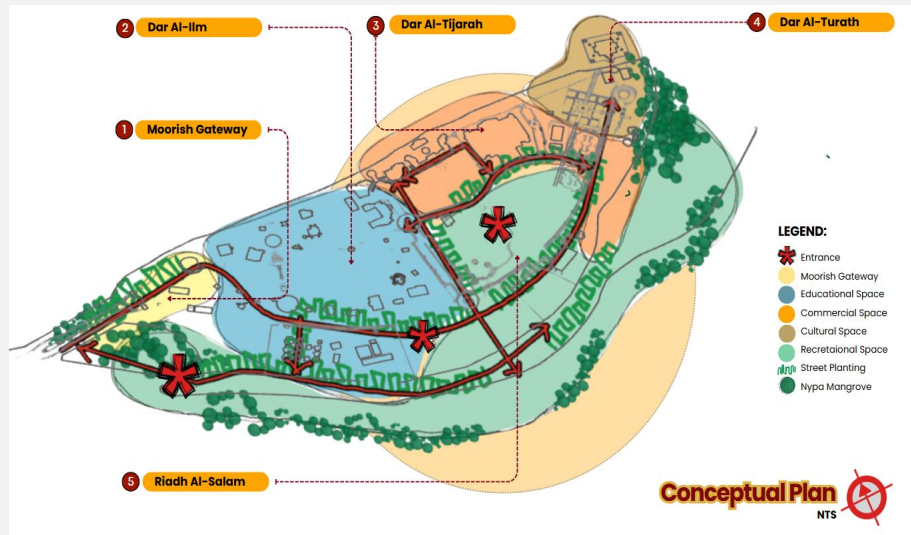


Figure 13 : Conceptual Plan

SCHEMATIC PLAN

The schematic plan establishes the foundational spatial organisation of the site, translating conceptual strategies into clearly defined zones and movement networks. This phase outlines the functional distribution of spaces while emphasising accessibility, landscape continuity, and user experience. As illustrated in the plan, key zones are strategically arranged along primary circulation paths that encourage seamless navigation between natural, cultural, and institutional areas. Figure 6.6 illustrates the schematic plan highlighting the distribution of major zones and the connectivity between them.

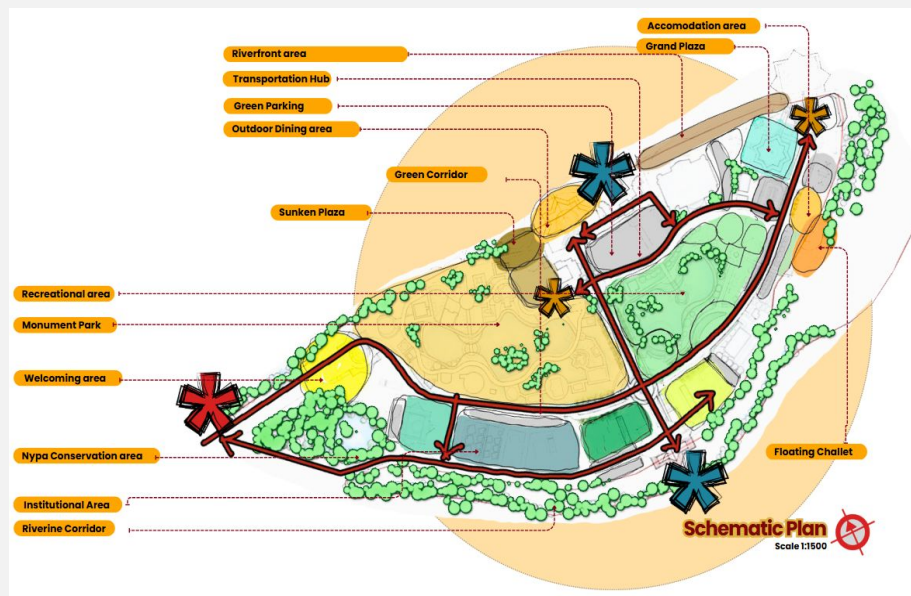


Figure 14 : Schematic Plan

PLANTING CONCEPT

The planting concept for this project is guided by the Eden Revival vision, reinterpreting the Qur'anic image of paradise as a living, resilient landscape. Inspired by the harmony and symbolism of Islamic gardens, this approach integrates spiritual meaning with ecological function. The planting design across the site is organised into distinct thematic zones, each reflecting symbolic and ecological narratives drawn from Islamic heritage.

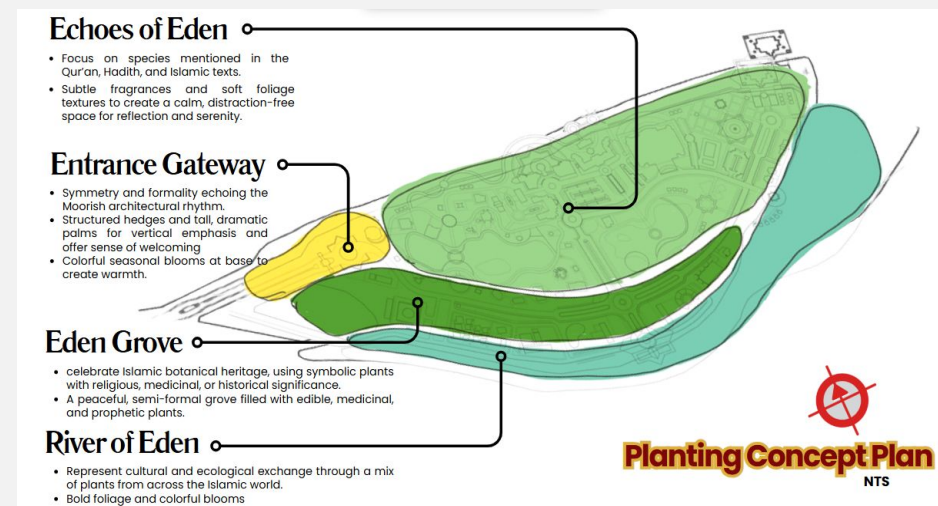


Figure 15: Planting Concept Plan

PLANTING STRATEGIES

The planting strategy for the Seerah i-Learn landscape is developed to deliver multiple functions include ecological, aesthetic, educational, and spiritual while reinforcing the Eden Revival concept. Each component of the strategy is carefully integrated to support biodiversity, promote sustainability, and enhance the user experience through meaningful engagement with nature.

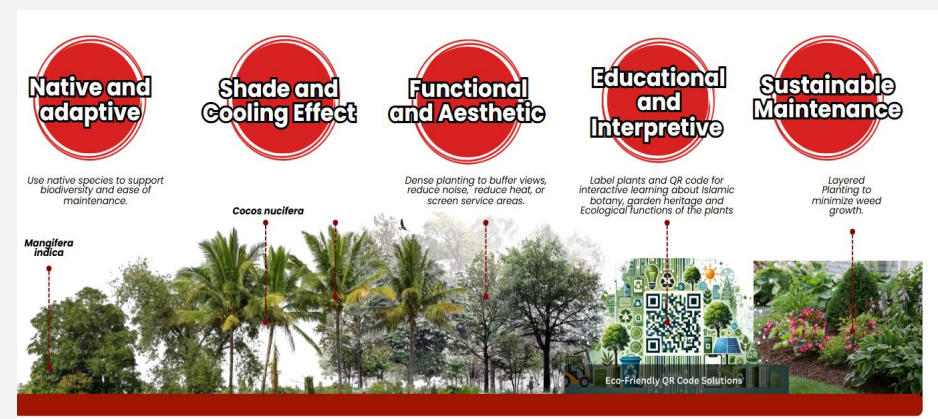


Figure 16: Design Strategies

Planting Approach

- Symmetry
- Symbolism
- Continuity
- Closure
- Tranquility
- Linear Form
- Simplicity
- Unity

Planting Principle

- Symbolism of Paradise
- Geometry and Order
- Water as a Key Element
- Shade and Fragrance

PRELIMINARY MASTER PLAN

Preliminary Master Plan further develops the schematic layout into a more resolved spatial composition. At this stage, the design translates conceptual and schematic intentions into a clear arrangement of zones, built elements, green systems, and circulation routes. Special focus is given to the functional integration of learning, cultural, and recreational areas.



Figure 17 : Preliminary Master Plan

LANDSCAPE MASTER PLAN

The Master Plan represents the final and most comprehensive stage of the planning process. It synthesises all prior design phases from the conceptual, schematic, and preliminary, transformed into a fully coordinated and site-specific layout..



Figure 18: Master Plan



Figure 19: Section Cut B-B

SECTIONAL ELEVATION AND PERSPECTIVES

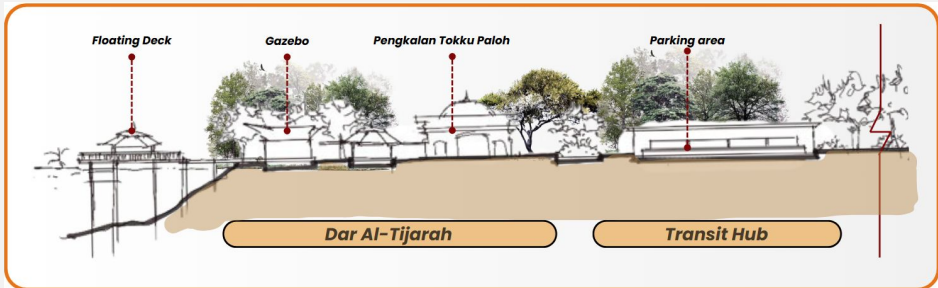


Figure 20: Section cut A-A

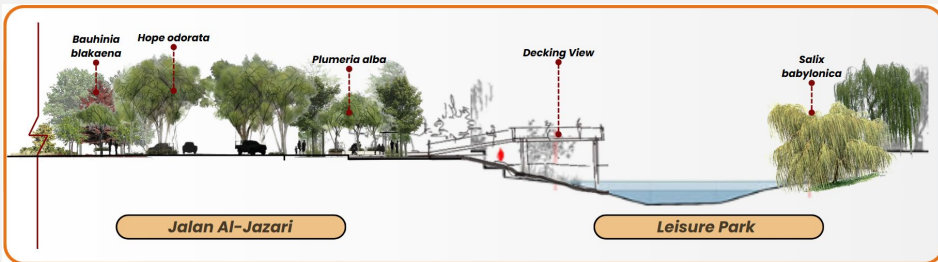


Figure 21: Section cut A-A

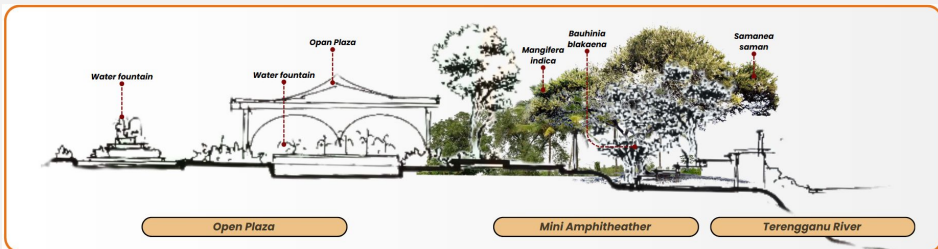


Figure 22: Section cut C-C

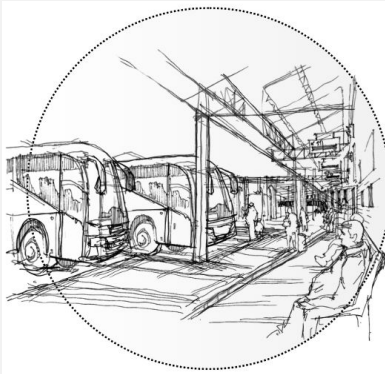


Figure 23: Transit Hub

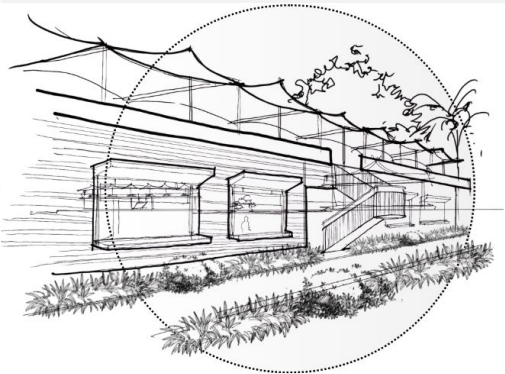


Figure 24: Souq, Dining area



Figure 25: Perspective View of Lakefront Promenade highlights a nature-integrated recreational zone.



Figure 26: Perspective View of Pedestrian-Friendly Park Edge illustrates a shared edge between vehicular infrastructure and park.

DETAILED DEVELOPMENT

The detailed development plan advances the vision established in the master plan by translating it into specific design interventions. This phase focuses on the spatial refinement and experiential quality of key zones, ensuring that each area supports the educational, cultural, and spiritual objectives of the Seerah i-Learn concept.



Figure 27: Detailed Development Plan

Dar Al-Turath is envisioned as a vibrant cultural and communal precinct that honors the diverse artistic and heritage traditions of the Islamic world. Anchored by a symmetrical landscape layout, the space is framed by two expansive reflecting pools that amplify the visual depth and elegance of the setting. This axial arrangement enhances the spatial harmony of the site and complements the adjacent Dome Pavilion, establishing a powerful cultural corridor within the development.

1. Transit Point, located at the entrance of the site, serves as a welcoming hub for visitors. It includes sheltered seating and orientation signage to support smooth transitions between vehicles and pedestrian movement.
2. A grand linear reflecting pool is placed along the central axis near the Pavilion Dome, creating visual balance and depth. By reflecting the dome, sky, and surrounding palm trees, the pool adds a sense of calm and enhances the contemplative atmosphere of the space.
3. The Idyllic Water Fountain, positioned along the main promenade, acts as a visual landmark leading toward the Pavilion Dome. Featuring sculptural jets and lush vegetation, it adds movement, sound, and cooling effects, enriching the sensory experience of visitors.
4. A checkered open lawn, with alternating grass and pavers, offers a flexible space for informal gatherings, events, or passive recreation. It is framed by ornamental trees and shaded seating, contributing to comfort and visual appeal.
5. The Craft Centre, designed in a traditional vernacular style with timber roofing and open verandas, serves as a cultural space for artisans. It hosts workshops and exhibitions, supporting local heritage, community interaction, and small-scale economic activity.



Figure 28: Aerial View of Dar Al-Thurath illustrate the overall layout of the spaces.



Figure 29: Aerial perspective illustrating a linear reflecting pool flanked by stratified rows of palm species, establishing a strong axial visual corridor



Figure 30: Annotated aerial perspective effectively illustrates the key spatial elements. The design emphasizes axial clarity, symmetry, and experiential layering through a blend of water features, open lawns, cultural nodes, and ecological buffers.

SECTIONAL ELEVATION AND PERSPECTIVES

The sectional drawings in the Detailed Development Plan phase offer a more refined view of selected nodes, including structural and softscape detailing. Key areas illustrated include the Pavilion Dome, Sunken Plaza, and Riverfront Corridor, all of which emphasize the design's layered experience and its interaction with human scale and natural elements.



Figure 31: Cut section E-E illustrate the view of Sunken Amphitheater across Pavilion Dome



Figure 36: The main road to Masjid Kristal is framed by a grand boulevard lined with linear rows of tall palm trees, creating a majestic approach that emphasizes symmetry and procession.



Section cut below illustrates the spatial relationship between the central pavilion dome and adjacent cultural plaza. It highlights the layering of hardscape, shaded walkways, and reflecting pools, with emphasis on accessibility and visual axis.



Figure 41: Cut section D-D illustrate the view of Cultural Plaza across Masjid Kritical and Riverfront.

INNOVATIVE DESIGN ELEMENT

The Solar Dome Pavilion represents an innovative architectural intervention within the revitalized Islamic Civilization Park, designed to function as a sustainable, multifunctional landmark. It not only enhances visitor experience but also reinforces the educational and environmental goals outlined in the Seerah i-Learn framework. Rooted in Islamic architectural heritage and scientific legacy, the pavilion serves as a physical and symbolic expression of knowledge, stewardship, and community engagement.

The conceptual foundation of the Solar Dome Pavilion draws inspiration from traditional Islamic design elements, including domes, geometric ornamentation, and principles of balance and symmetry. The structure is envisioned as an open, adaptable public facility that combines cultural aesthetics with advanced solar technologies. It functions as a central node within the park, contributing to both the spatial composition and the educational narrative of the site.

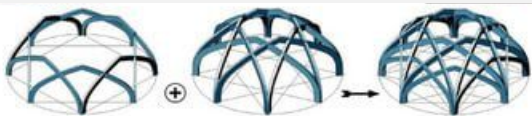


Figure 42 : Initial Form of Solar Dome

Photovoltaic (PV) panels are mounted across the outer surface of the dome structure..

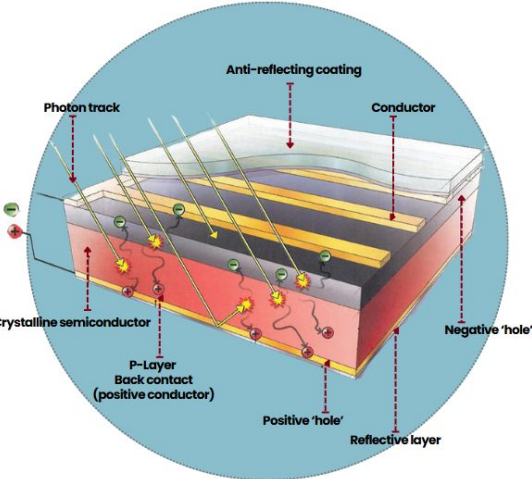


Figure 44 : Cut section of Solar Cell Structure and Operation

Functional Operation

- 1 Photovoltaic (PV) panels are mounted on the dome's exterior to produce electricity directly from sunlight
- 2 Solar energy collected throughout the day.
- 3 Solar energy is stored in batteries bank embedded underneath of structures for use during shaded periods or at night.
- 4 Lithium-ion or deep-cycle AGM; stores energy for night use.
- 5 Inverter function to converts DC to AC if using standard appliances as charging port.

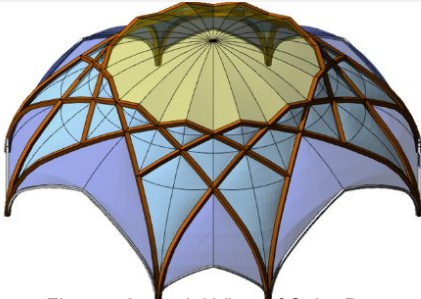


Figure 43 : Aerial View of Solar Dome

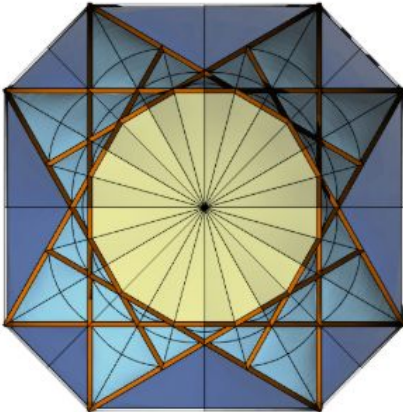


Figure 45: Plan View of Solar Dome

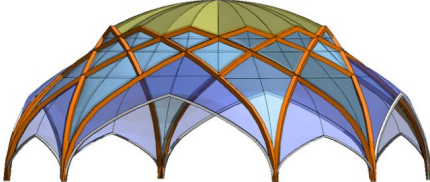


Figure 46: Rear View of Solar Dome

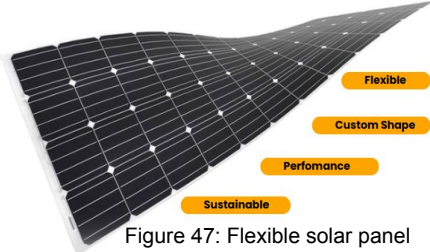


Figure 47: Flexible solar panel

SUSTAINABLE FEATURES OF SOLAR DOME

The Solar Dome Pavilion is designed with a range of passive and active sustainable strategies that enhance both environmental performance and visitor comfort. These features demonstrate a commitment to climate-responsive architecture while supporting the educational and interpretive goals of the Seerah i-Learn concept.



Figure 48: Sustainable Features of the Solar Dome Pavilion

The design of the Solar Dome Pavilion is guided by several core objectives that align with principles of sustainability, cultural enrichment, and environmental education. The following key objectives are explained below:

- Renewable Energy Integration
- Climate Responsiveness
- Public Functionality
- Sustainable Materials and Systems.
- Interpretive Learning.

PURPOSE OF SOLAR POWER USE

The Solar Dome Pavilion is designed to harness renewable solar energy not only as a sustainable power source but also as a driver of immersive educational and cultural experiences. The energy generated is allocated across five primary functions, each enhancing the user experience while reflecting the project's environmental and thematic goals.

1. Holographic Displays
2. Lighting
3. Water Fountain System
4. Motion Sensors
5. Digital Information Panels



Figure 49: Aerial View of the Solar Dome Pavilion

SOFTSCAPE DETAILING

The softscape detailing component of this project focuses on the careful integration of plant materials into the built environment, enhancing both ecological value and user experience. It is designed not only for aesthetic appeal but also to reinforce cultural symbolism, microclimatic comfort, and biodiversity.

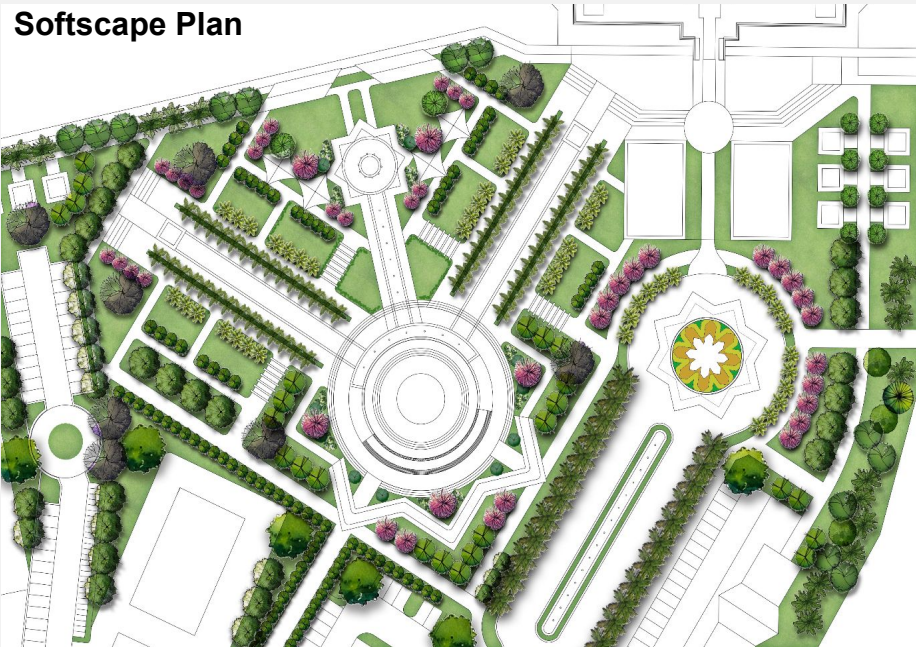


Figure 50: Softscape Plan

Softscape Schedule

Tree

No.	Symbol	Scientific Name	Common Name	Height (m)	Width (m)	Nos
1		<i>Araucaria heterophylla</i>	Norfolk Island pine	8	8	36
2		<i>Bauhinia blakeana</i>	Butterfly Tree	5	4	40
3		<i>Bucide molineti</i>	Tadiah Hujan	5	5	10
4		<i>Casuarina equisetifolia</i>	Rhu	7	8	12
5		<i>Cupressus sempervirens</i>	Cypress	8	3	130
6		<i>Delonix Regia</i>	Royal Poinciana	10	8	6
7		<i>Hopea Odoroata</i>	Merawan Siput Jantan	7	6	40
8		<i>Jacaranda obtusifolia</i>	Jambol Merah	7	6	8
9		<i>Morus nigra</i>	Black Mulberry	3	4	28
10		<i>Plumeria alba</i>	White Champaca	3	4	12
11		<i>Plumeria rubra</i>	Frangipani	3	4	6
12		<i>Salix babylonica</i>	Weeping Willow	5	6	7
13		<i>Tabebuia rosea</i>	Pink poui	5	6	5

Palm

No.	Symbol	Scientific Name	Common Name	Height	Width	Nos
14		<i>Adonidia merrillii</i>	Manilla Palm	7	5	15
15		<i>Cocos nucifera</i>	Coconut Palm	10	5	15
16		<i>Roystonea regia</i>	Royal Palm	10	6	39
17		<i>Phoenix dactylifera</i>	Dates Palm	2	5	48
18		<i>Phoenix canariensis</i>	Canary Dates Palm	5	5	56

Shrubs and Groundcover

No.	Symbol	Scientific Name	Common Name	Height	Width	Nos
19		<i>Bougainvillea spectabilis</i>	Great Bougainvillea	3-5	2-4	
20		<i>Hymenocallis littoralis</i>	Spider Lily	0.5-1	0.5-1	
21		<i>Murraya paniculata</i>	Orange Jasmine	2-4	1.5-3	
22		<i>Ixora chinensis</i>	Ixora	2-4	0.6-1	
23		<i>Jasminum grandiflorum</i>	Jasmine	1-3	1-2	
24		<i>Pandanus pygmaeus</i>	Dwarf Pandan	0.3-0.6	0.5-1	
25		<i>Syzygium campanulatum</i>	Kelat Paya	3-7	2-4	
26		<i>Axonopus compressus</i>	Cowgrass	0.1-0.2	-	-

Figure 51: Softscape Schedule

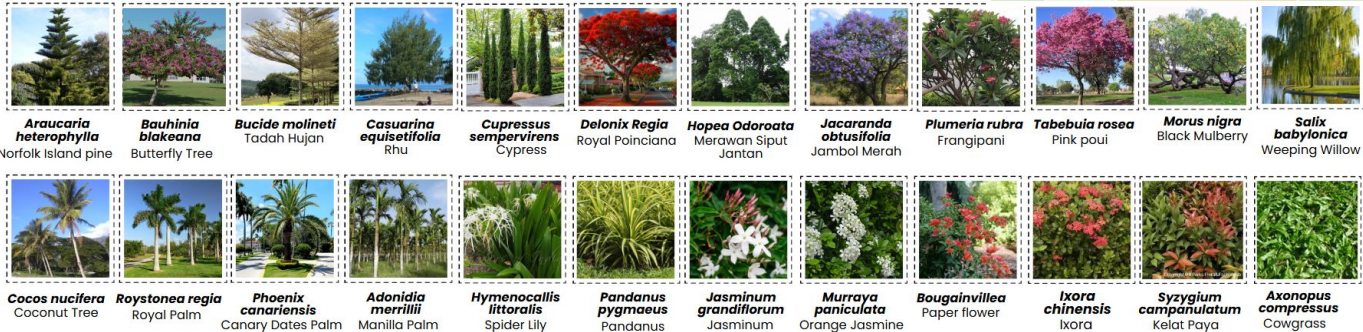


Figure 52: Planting Palette

HARDSCAPE DETAILING

The hardscape plan provides a comprehensive layout of all constructed surfaces and features. It ensures spatial coherence, material zoning, and effective circulation patterns throughout the landscape

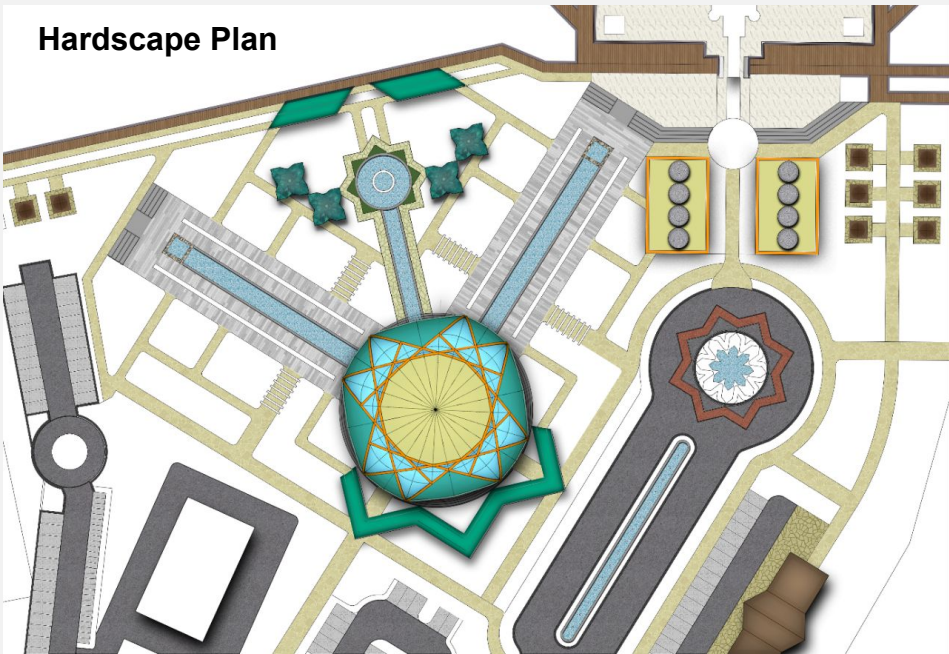


Figure 53: Hardscape Plan

Hardscape Schedule

No.	Symbol	Structure Name	Material
1		Solar Dome Pavilion	Flexible or semi-transparent PV panels
2		Solar Walkway	Photovoltaic Paving Panels
3		Shaded structure	Galvanized steel frame with tempered low-E glass
4		Grasscrete Pavers	Porous grass concrete
5		Pavilion Pavement	Concrete Tiles
6		Pergola	Timber or powder-coated steel frame with polycarbonate or bamboo slats for roofing
7		Pedestrian Walkway	Light brown Concrete
8		Tiles	Precast concrete paving slabs finishing with grey colour
9		Gazebo	Reinforced concrete, natural stone (granite/marble), stainless steel
10		Paving Stone	Precast square stone pavers with light brown
11		Concrete Slab	Cast-in-place concrete in beige colour
12		Reflecting Pool	Reinforced concrete base with turquoise mosaic tile
13		Seating	Concrete base with pebblewash stone top
14		Wooden Deck	Composite decking (WPC), or concrete with anti-slip coating
15		Road	Asphalt with concrete
16		Structure Platform	Reinforced Concrete



Figure 52 : Hardscape Features



Figure 54: Hardscape Material

CONCLUSION

In conclusion, this project has explored the ideas and the possibility for revitalisation of Islamic landscape heritage through the lens of landscape architecture, focusing on the Islamic Civilization Park at Pulau Wan Man. The literature review established a strong theoretical foundation grounded in Islamic garden principles, cultural identity, and sustainable landscape design. The site inventory and contextual analysis offered essential insights into the site's physical, ecological, and socio-cultural conditions. The analysis explored various aspects, identifying potentials and challenges for improvement.

Based on the theme and potentials of the site, design strategies were developed to connect Islamic heritage with modern needs through functional spaces, thematic landscaping, and environmental care. Guided by the “Seerah i-Learn” concept, the proposal envisions the park as a living and learning landscape inspired by the Qur’anic imagery of paradise. The design aims to create a learning landscape that reflects Islamic values and the beauty of paradise. It is envisioned as a living landscape that bridges the past, present, and future, reviving spiritual identity while contributing to the evolving discourse on culturally grounded and sustainable landscape design.

REFERENCES

- Hamid, M. A., Fuza, Z. I. M., & Zain, R. A. (2016). Sustainable tourism development practices from economic perspectives for MICE Venue in Terengganu: A study of Taman Tamadun Islam convention centre. In *Terengganu International Business and Economics Conference*.
- Jani, H. H. M., & Harun, N. Z. (2018). The Physical Characteristics Of The Islamic Garden And The Importance Of The Concept In Malaysia. *Planning Malaysia*, 16.
- Jani, H. H. M., Harun, N. Z., Mansor, M., & Zen, I. (2015). Exploring the Islamic Garden concept as inspirational landscape design. *Procedia-Social and Behavioral Sciences*, 170, 359-368.
- Jani, H. H. M., Harun, N. Z., Mansor, M., & Zen, I. (2017). Discovering the values of the Islamic Garden. *Asian Journal of Behavioural Studies*, 2(5), 11-19.
- John Smith, R. (2024). Dreamstime.com. <https://www.dreamstime.com/built-wan-man-island-hectare-islamic-civilisation-park-takes-visitors-in-triguing-journey-world-s-rich-art-image160082204>
- Kamil, S. M., & Yunus, M. Y. M. (2015). Establishing Malaysia Islamic Garden Based On Quranic Paradise Imagery: Descriptive Analysis From Tafsir Surah Waqiah. *Advances in Environmental Biology*, 9(23), 115-119.
- Latiff, Z. A., & Yaman, M. M. (2017). Revisiting Andalusian garden: Visions for contemporary Islamic garden design. *Planning Malaysia*, 15.
- Ihsan, P. M. (2021). The Characteristics Of Islamic Civilization. *International Journal Of Multidisciplinary*, (6), 4. https://Old.Rrjournals.Com/Wp-content/Uploads/2021/04/78-84_RRIJM20210604013.Pdf
- Nazia Ansari. (2011). The Islamic Garden. Department of Landscape Architecture CEPT University. https://medomed.org/wp-content/uploads/2014/08/NAAnsari_Islamic_Garden_r.pdf
- Rahiman Bin, C., & Rozaid, C. (2021). *Potential of Taman Tamadun Islam as an Attraction Tourism Centre At Kuala Terengganu*. Universiti Teknologi Mara <https://ir.uitm.edu.my/id/eprint/51427/1/51427.pdf>
- Ranguelov, B., Berdenov, Z. G., & Efe, R. (2021) Developments In Engineering And Architecture. *The Intended Use Of Plants In Campus Open Green Spaces*.

03

SUSTAINABLE WATERFRONT LANDSCAPE TO REVITALISE THE COASTAL HERITAGE OF TELUK SENGAT, KOTA TINGGI, JOHOR

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ABSTRACT

The coastal heritage of Teluk Sengat in Kota Tinggi, Johor represents a complex intersection between natural ecosystems, cultural legacy, and human settlement patterns. As a historic port town situated along the Johor River, Teluk Sengat holds tangible and intangible heritage values that have evolved under pressures from climate change, rapid urbanisation, and unsustainable development. This study analyses the landscape character, environmental vulnerabilities, and socio-economic challenges of the area to propose a holistic, resilient design solution. A combination of qualitative methods including site inventory, stakeholder interviews, and literature review were used to inform the design strategies. By integrating heritage conservation, ecotourism infrastructure, and climate-sensitive planning, the project aims to regenerate the coastal identity of Teluk Sengat while supporting local communities and preserving biodiversity. The final proposal envisions a sustainable waterfront landscape that enhances cultural continuity, ecological resilience, and economic viability.

Keywords: Coastal Heritage Conservation, Ecotourism Development, Climate-Resilient Design, Community-Based Planning, Integrated Coastal Landscape

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PROJECT INTRODUCTION

Teluk Sengat is one of Johor's coastal towns, which is rich in history and cultural traditions. However, it faces modern challenges that threaten its identity and natural systems. Once a thriving fishing hub and maritime node, the town now contends with rising sea levels, polluted shorelines, and loss of traditional livelihoods. Coastal landscapes are particularly vulnerable due to their transitional nature between land and sea. Teluk Sengat faces natural processes such as erosion, tidal shifts, and storm surges, as well as human-induced factors including land reclamation, overfishing, and unmanaged tourism. This project seeks to address the vulnerability of the town by exploring how coastal heritage can be safeguarded and reimagined through sustainable design for waterfront landscape.

Teluk Sengat, traces its origins to the early 1900s as a modest fishing village known for its strategic position within the maritime trade routes of southern Johor. By the mid-20th century, it grew into a bustling port town, with its jetty serving as a key node for rubber and seafood exports. The town's heritage is also tied to colonial-era influences, traditional Malay fishing practices, and crocodile farming, which became a unique local identity (neocities.org). Its heritage assets face increasing pressures from environmental degradation and modern development (Ahmad, 2013).

This study aims to preserve and revitalise the coastal heritage of Teluk Sengat by integrating sustainable landscape design, cultural conservation, and ecotourism development. Studies on cultural landscape and coastal identity through landscape design and recreational use are such as by Nazir et al. (2024) and Mohamad et al. (2024). This project focuses on identifying both tangible and intangible heritage values and proposing design strategies that protect the environment while benefiting local communities. Key issues of the site include the erosion of cultural identity due to rapid urbanisation, loss of biodiversity in mangrove zones, rising sea levels, and the deterioration of historical assets such as the jetty and waterfront spaces.

Problem Statement

Teluk Sengat's coastal landscapes are increasingly vulnerable to both natural and human-induced challenges. Coastal erosion, sea level rise, tidal shifts, and storm surges, intensified by climate change, threaten the stability of its shorelines and the resilience of ecosystems. For example, by 2030, around 20,670 hectares of coastal land in Malaysia could be affected by sea level rise, with potentially significant impacts on coastal areas like Johor (myiklimysd.ukm.my). At the same time, unsustainable human activities such as land reclamation, overfishing, and unmanaged tourism accelerate environmental degradation and weaken natural coastal defense. These pressures not only compromise ecological health but also diminish the cultural, recreational, and economic value of the coastal area. Addressing these issues requires landscape design solutions that integrate ecological restoration, adaptive infrastructure, and community-sensitive interventions.

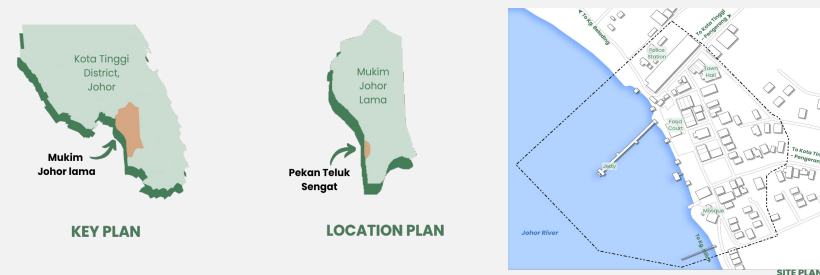


Figure 1: Key plan, location plan and site location

Significance of the Project

The research highlights the urgent need for sustainable management to protect coastal areas from threats like climate change, pollution, overfishing, and rapid urbanisation. Its findings are intended to guide policy development that balances economic growth with environmental protection, ensuring the preservation of coastal heritage for future generations.

LITERATURE REVIEW

Coastal areas are dynamic zones where land meets the sea. It is home to systems like beaches, wetlands, mangroves, estuaries, and coral reefs. These environments host rich biodiversity and provide essential services such as protecting against floods, supporting fisheries, and offering cultural spaces for local communities. However, they remain highly vulnerable to both natural processes and human impacts. Sea-level rise, pollution, overfishing, over tourism and unchecked urbanisation increasingly threaten these sensitive environments, calling for holistic strategies to preserve them (Axon et al., 2024; Pásková, et al., 2024).

Coastal heritage is more than just physical landmarks. It includes cultural practices, maritime traditions, and natural landscapes that together shape a community’s identity. It consists of tangible heritage such as ports, jetties, shipyards, and architecture, and intangible heritage like storytelling, rituals, fishing practices, and oral traditions (Vallega, 2003; Vladimirova, 2016). These elements give meaning to coastal life and reflect how communities have interacted with marine environments over time. Protecting coastal heritage ensures continuity across generations, promoting both environmental and cultural resilience.

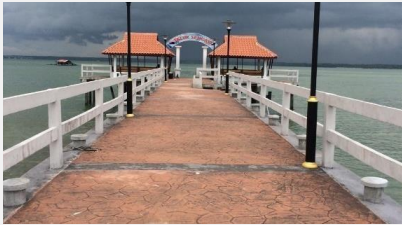


Figure 2: Tangible heritage: Structure of Teluk Sengat Jetty (neocities.org)



Figure 3: Intangible heritage: Fishing tradition in Teluk Sengat (neocities.org)

Precedent studies

To address challenges, sustainable strategies are essential. The precedent studies include studies on structural stabilisation (e.g., seawalls, breakwaters), beach nourishment, green infrastructure, and coastal vegetation management (by Kim et al., 2018; Prato et al., 2016; Karcher, 2023). More innovative approaches such as Integrated Coastal Zone Management (ICZM) promote long-term planning that balances development with heritage protection. Likewise, cultural and rural tourism can generate economic value while raising awareness about conservation. When implemented together, these strategies support communities in preserving their heritage, sustaining livelihoods, and adapting to climate change.



Figure 4: Batu Ferringhi's Beach nourishment programme at Penang(Kim et al., 2018)

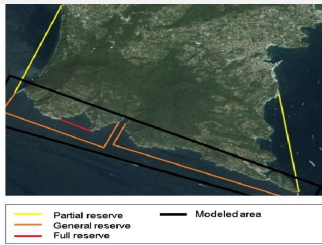


Figure 5: Zoning map for coastal and marine reserves in the modelled area in Portofino(Barrier et al., 2014)



Figure 6: The living shoreline project in Hatteras Village, North Carolina (nccoast.org)

Table 1: Precedent Studies Outcome

Precedent Study	Location	Key Strategies for Conservation	Outcomes and Takeaways
Beach Nourishment Programme (Kim et al., 2018)	Penang, Malaysia	Beach nourishment, coastal rehabilitation, ICZM	Improved water quality and erosion control, boosted tourism and economy, and stronger coastal protection.
Marine Protected Area (MPA) (Barrier et al., 2014; Prato et al, 2016)	Portofino, Italy	Strict access control, sustainable tourism, ecological awareness, fishing regulations	Supports marine life, tourism income, and community awareness.
Living Shorelines Project (Karcher, 2023)	North Carolina, USA	Natural shorelines (oyster reefs, salt marshes), riparian buffers, permeable infrastructure	Less erosion, better habitats, and stronger shorelines.

METHODOLOGY

The project adopted a qualitative mixed-methods approach. Site observations, heritage mapping, community interviews, and archival research informed the understanding of tangible and intangible values. Tools such as suitability analysis were used to layer spatial information. The research also prioritised local knowledge to ensure that proposed design development resonate with community aspirations and daily practices. The methodology also incorporated design thinking to iterate between problem framing, ideation through schematic plans.



01 Site Observation

Physically explore and document the site inventory to note existing features and visual aspects for analysis.



02 Interview

Asking locals including community elders, fishermen and local business owners on historical background, cultural, social and development of the area.



03 Literature Review

Researching through articles, journals and books to find a related data analysis to the site area.



04 Government

Asking local authority's officers for local development plan, current issues, conservation and tourism promotion and development initiatives.

ANALYSIS AND FINDINGS

Aim and objectives

This study aims to identify and protect the coastal heritage of Teluk Sengat through landscape design by looking at its history, environment, and community values. It focuses on finding long-term ways to keep the area safe and alive through ecotourism, cultural preservation, and environmental care.

The objectives are to identify the coastal heritage values, both physical and cultural, and to understand their strengths and challenges. It also aims to suggest suitable design strategies to protect and improve these values. Lastly, the study promotes eco-friendly tourism that connects nature, culture, and community activities in a sustainable way.

Site inventory and analysis

There are 13 of attributes checklists listed with a comprehensive understanding to analyse the coastal heritage of Teluk Sengat. It is shown that every attribute is essential to provide a sustainable landscape design solutions to site.

Table 2: Site Inventory and Analysis Attributes Checklist

Attributes	Description
Site Context	Location, history, and environment—important for sustainable tourism planning.
Landscape Morphology	Natural landforms like hills and water bodies—helps identify conservation and tourism areas.
Heritage Values	Cultural, historical, and natural significance—preserves identity and attracts tourists.
Socio-economic	Tourism’s impact on local economy and community—ensures fair benefit distribution.
Land Use	How land is used to support conservation and sustainable development.
Microclimate	Local climate conditions—important for designing comfortable tourist facilities.
Topography	Physical layout of the area—affects access, infrastructure, and activity planning.
Soil	Soil quality—vital for vegetation and ecosystem health.
Hydrology	Water resources—important for flood control, water quality, and habitat.
Circulation & Access	Tourist movement and transport—key to a positive visitor experience.
Facilities & Utilities	Amenities like restrooms and waste systems—ensure comfort and sustainability.
View & Senses	Scenic views, sounds, and air quality—enhance tourist appeal.
Vegetation & Wildlife	Biodiversity—supports conservation and ecological health.

Suitability analysis

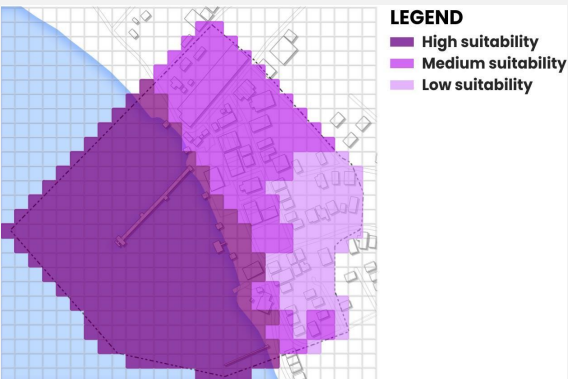


Figure 7: Overall suitability map

Suitability analysis performed show that high suitability areas offer scenic views, stable land, good access, rich biodiversity, and strong tourism benefits. Medium suitability areas need restoration, have moderate terrain and infrastructure challenges, and require targeted improvements. Low suitability areas are mostly residential with poor access, degraded ecology, and limited community or tourism value.

Building on the overall analysis, Teluk Sengat presents a variety of opportunities that shape its development potential. The site is rich in cultural heritage, coastal ecosystem, and it has a strategic location that offer significant prospects for eco-tourism, community engagement, and environmental conservation. However, challenges such as flooding risks, outdated infrastructure, and environmental degradation require careful planning and sustainable strategies to balance growth with preservation as shown in the cross analysis in Figure 8.

Coastal Heritage and Landscape Conservation Features	Heritage Values	Socio-economic	Land Use	Microclimate	Topography	Soil	Hydrology	Facilities and Utilities	Circulation and Accessibility	View and Senses	Vegetation	Wildlife
Tangible Heritage	●	●	●	●	●	○	●	●	●	●	●	●
Intangible Heritage	●	●	●	●	○	○	○	○	●	●	●	○
Geographical Features	●	●	●	●	●	●	●	○	●	●	●	●
Traditional Cultural Practices	●	●	●	●	○	○	○	●	○	●	●	○
Conservation and Preservation	●	●	●	●	●	●	●	●	●	●	●	●
Sustainable Strategies	●	●	●	●	●	●	●	○	●	●	●	●

● Highly Suitable ● Partially Suitable ○ Not Suitable

Figure 8: Cross analysis

Synthesis

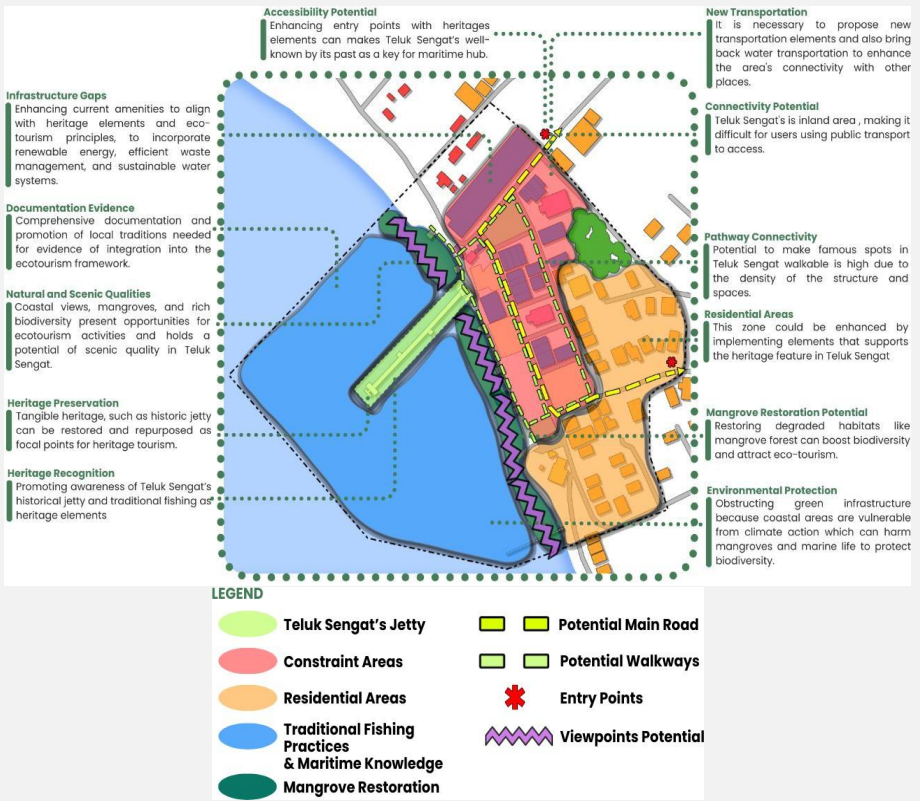


Figure 9: Synthesis map

Based on the synthesis map and summary in Figure 9 Teluk Sengat holds strong potential for eco-tourism because of its unique combination of cultural heritage and natural beauty. The area can be revitalised by improving transportation access, which would make it easier for tourists to visit. Environmental protection efforts such as conserving coastal ecosystems and managing waste would help preserve the natural landscape. Additionally, involving the local community in tourism planning and activities ensures that development is sustainable and benefits residents economically and socially. Together, these efforts can transform Teluk Sengat into a vibrant, eco-friendly destination that celebrates both nature and culture.

DESIGN STRATEGIES

The design strategies for the revitalisation of Teluk Sengat focus on eight key areas: Heritage conservation strategies, mangrove and habitat restoration, community engagement and education, sustainable amenities, eco-tourism infrastructure, water-based tourism design, climate-resilient design, and connectivity enhancements. These categories provide a comprehensive framework to balance cultural preservation, ecological restoration, and sustainable development.



Figure 10: Design strategies attributes

Table 3: Design strategies

Attributes	Strategy	Description
Heritage Conservation (Barianaki et al., 2024)	Adaptive Reuse of Historic Structures	Restore and repurpose the historic jetty and use it to highlight Teluk Sengat’s cultural and ecological heritage.
	Interpretive Signage and Trails	Create engaging walkways that share stories of fishing traditions and local practices while connecting key landmarks.
	Cultural Education	Introduce a heritage trail linking traditional fishing zones, villages, and cultural landmarks.
Community Engagement (Khakzad & Griffith, 2016)	Cultural Workshops	Organise workshops on traditional fishing techniques, crafts, and heritage.
	Public Participation	Host cultural events and festivals to foster partnerships and raise awareness about Teluk Sengat’s traditions.
Mangrove and Habitat Restoration (Sam et al., 2023)	Mangrove Rehabilitation	Reestablish degraded mangrove areas to enhance biodiversity, stabilise shorelines, and educate visitors.
	Biodiversity Corridors	Introduce native plant species to improve connectivity between habitats and support local wildlife.
Sustainable Amenities (Papallou et al., 2024)	Eco-Friendly Tourism Facilities	Install solar-powered lighting, renewable energy-based systems, and recycling stations to reduce environmental impact.
	Nighttime Experience	Use low-impact lighting systems to minimise light pollution and maintain safety for visitors.
Eco-Tourism Infrastructure (Samal & Dash, 2023)	Walkability and Accessibility	Develop pedestrian-friendly pathways connecting attractions like the jetty, scenic viewpoints, and cultural spaces.
	Elevated Viewing Platforms	Provide panoramic views of the Johor River and its surroundings, highlighting ecological and cultural significance.
	Water-Based Connectivity	Enhance transportation options to access Teluk Sengat via water routes.

Water-Based Tourism Design (Pásková et al., 2024)	Activity Encouragement	Expand activities like kayaking and small eco-cruises to ensure minimal ecological disruption while enhancing visitors’ experience.
	Design Submerged Platform	Create observation platforms to showcase marine life and fishing techniques in an interactive, educational way.
Climate-Resilient Design (Chohan et al., 2024)	Flood Management	Utilise permeable paving and bioswales to absorb and filter stormwater, reducing flood risks.
	Vegetation for Stability	Introduce coastal vegetation to mitigate storm surges, prevent erosion, and stabilise soil.
Connectivity Enhancement (Geurs et al., 2023)	Transport Hubs	Develop hubs with pedestrian and cycling options to connect Teluk Sengat to neighbouring areas.
	Eco-Tourism Plaza	Create a vibrant gathering space for visitors, cultural events, and traditional performances.
	Cultural Event Space	Designate spaces for hosting festivals and showcasing traditional heritage.

From design strategies above, the comprehensive design plan organises the coastal area into functional zones to ensure a harmonious integration of heritage, ecology, and tourism. Figure below outlines design strategies plan for Teluk Sengat, focusing on heritage conservation, eco-tourism, and sustainability. Key zones include the coastal heritage zone for cultural preservation, the activity and water recreation zone for eco- tourism, and the mangrove conservation zone for biodiversity. Sustainable amenities and infrastructure, like walkways and renewable energy systems, enhance connectivity while maintaining ecological and cultural integrity. The approach balances conservation, tourism, and sustainability for Teluk Sengat’s revitalisation.

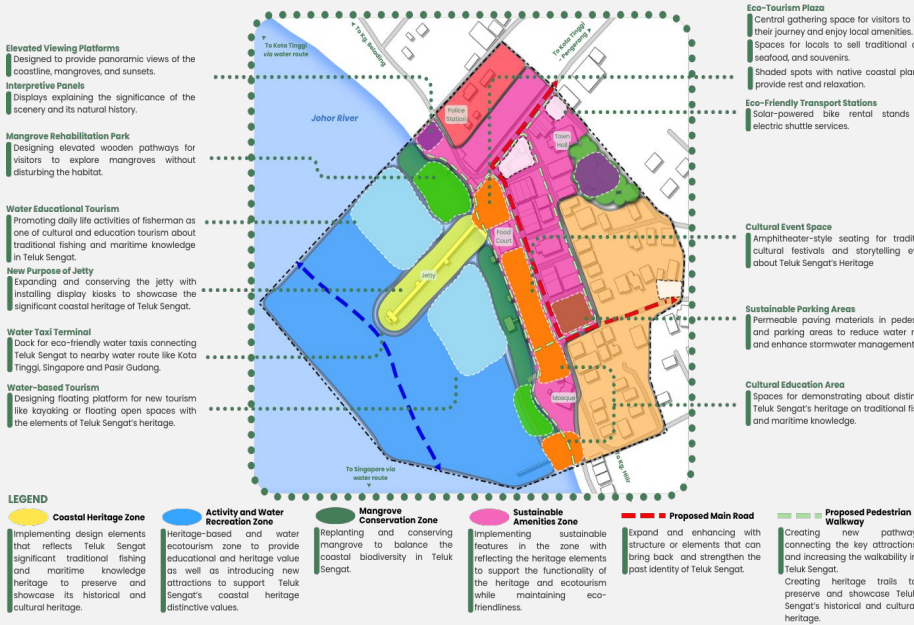


Figure 11: Design plan overview

LANDSCAPE MASTERPLAN DEVELOPMENT

Introduction

The design development for Teluk Sengat focuses on transforming its coastal heritage into a resilient, community-driven landscape that celebrates culture, supports biodiversity, and promotes sustainable tourism.

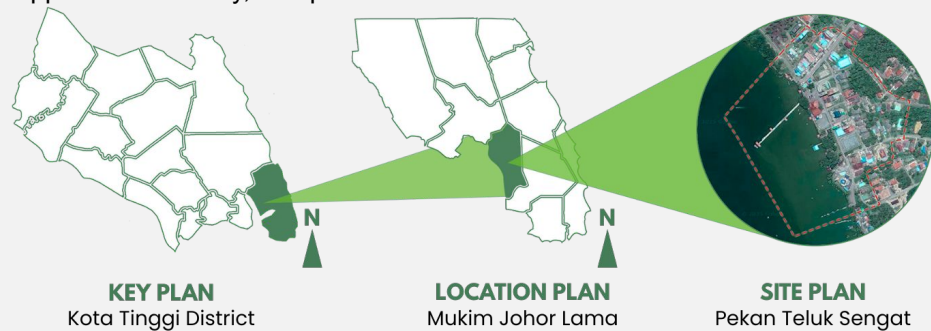


Figure 12: Site section for masterplan

Potentials

- 01 Rich Nature** - The site has mangrove and river views that are great for nature and eco-tourism.
- 02 Cultural Value** – The old jetty and local fishing traditions give the place a strong heritage identity.

Issues

- 01 Flooding & Erosion** – The area often floods and the shore is wearing away due to rising sea levels.
- 02 Heritage Loss** – Old sites and traditions are fading because of modern development and lack of care.

Design strategies

- 1. PROTECT NATURAL COASTAL AREAS**
 - Keep mangrove forests as natural buffers and wildlife habitats.
 - Restore damaged mangroves using native plants.
 - Avoid building in sensitive environmental areas.
 - Set up buffer zones to protect ecosystems and support wildlife.
- 2. USE SUSTAINABLE AND SMART LANDSCAPE IDEAS**
 - Upgrade the old jetty for multiple uses.
 - Use green materials and renewable energy like solar lights.
 - Mix traditional planting styles with eco-friendly design.
- 3. CELEBRATE COMMUNITY AND CULTURE**
 - Turn open spaces into art galleries and stages for cultural shows and highlight local identity.
 - Design trails and signs that guide visitors through history and nature.
 - Create open, welcoming plazas for events and gatherings.

Figure 13: Selected design strategies

Design aim

To revitalise Teluk Sengat's coastal heritage by transforming its historic jetty and cultural landscape into a vibrant and sustainable eco-tourism destination. This effort integrates ecological restoration, heritage preservation, and active community engagement.

Design objectives

- 01** To enhance coastal resilience and ecological function.
- 02** To promote cultural heritage and community identity.
- 03** To foster sustainable tourism and educational engagement.



Design concept

The concept of **PERSADA BUDAYA** is centred on the revitalisation of Teluk Sengat's cultural and ecological heritage through a design approach that integrates both cultural and ecotourism elements. The term “Persada” refers to spaces associated with water-based activities and entertainment, such as jetties, waterfronts, and coastal areas. In contrast, “Budaya” encompasses traditional Malay knowledge and practices, particularly those related to fishing and transportation. Together, these ideas form a holistic vision for preserving and celebrating the region's identity.

Space development

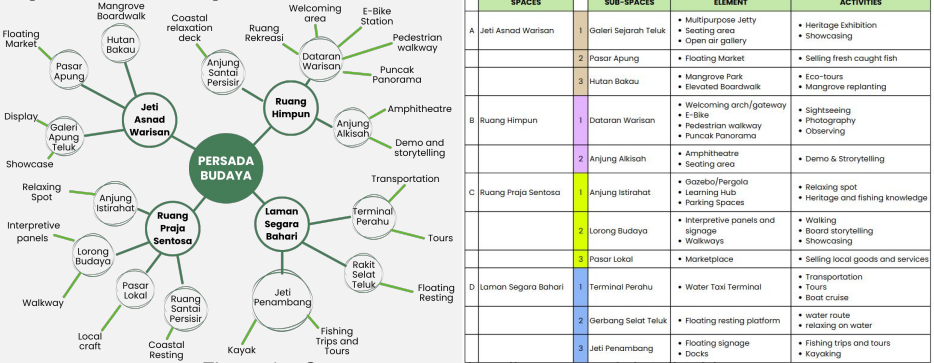
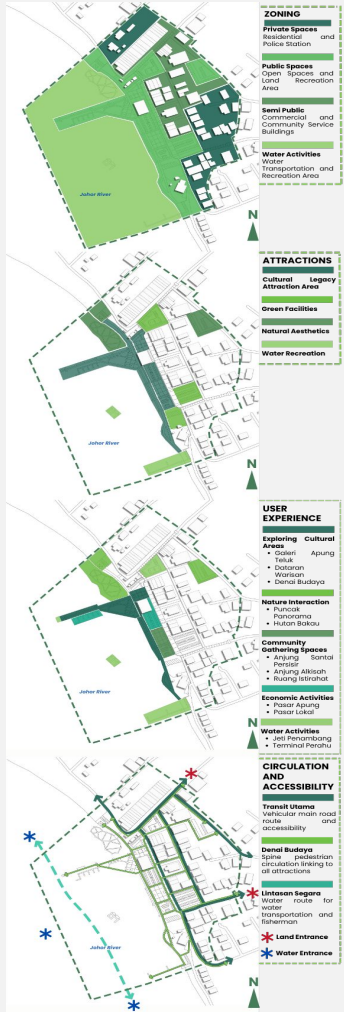
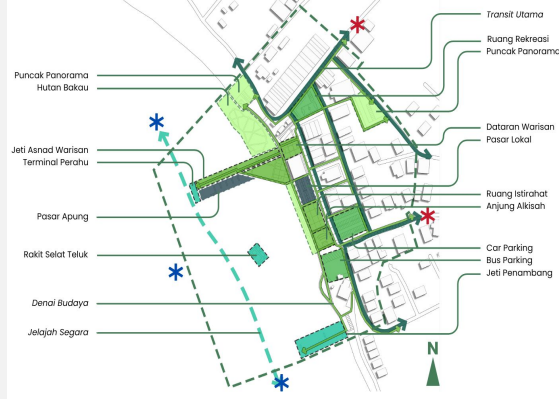


Figure 14: Space programming diagram and detail table

Functional diagrams



Conceptual diagram



Schematic plan



Figure 15: Design development consisting of functional and conceptual diagrams, and schematic plan

Planting concept

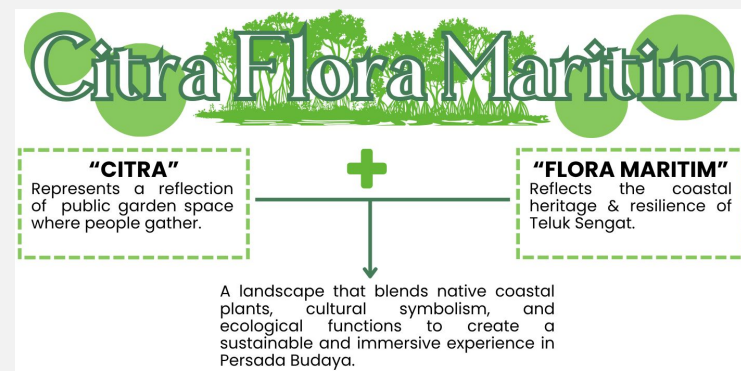


Figure 16a: Planting concept diagram

The planting concept for Persada Budaya, titled "CITRA FLORA MARITIM", is designed to reflect the coastal identity, cultural heritage, and ecological resilience of Teluk Sengat. This concept integrates native vegetation with symbolic and functional landscape elements to create a sustainable, meaningful, and immersive environment. It supports the overall design narrative by enhancing user experience, promoting biodiversity, and reinforcing the site's connection to its natural and cultural context.

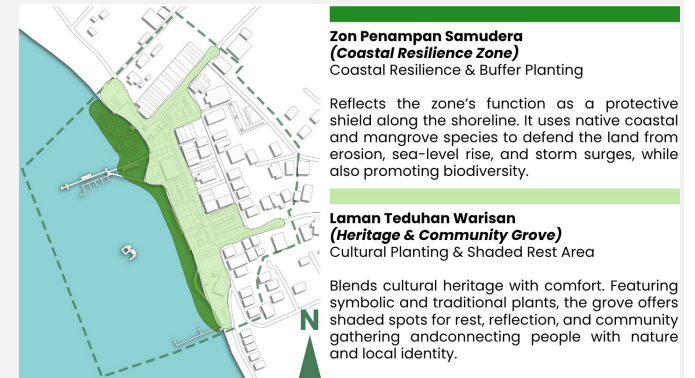


Figure 16b: Planting approach conceptual layout

Preliminary masterplan



Figure 17: Preliminary masterplan

This preliminary masterplan outlines the final design phase before moving to the final proposed stage. It features a well-planned coastal layout with a mix of buildings, green spaces, and waterfront elements. The coastline includes jetty for water activities, while buildings are arranged in both grid and natural patterns. Green areas, including a central park, add recreational and ecological value. Roads and walkways connect key cultural, community, and natural sites, creating a balanced and accessible environment.

Landscape masterplan



Figure 18: Landscape masterplan

This landscape masterplan illustrates the spatial arrangement of attractions within the coastal area. It highlights important landmarks, circulation routes, and public spaces that support cultural, ecological, and community-focused activities.

Space design

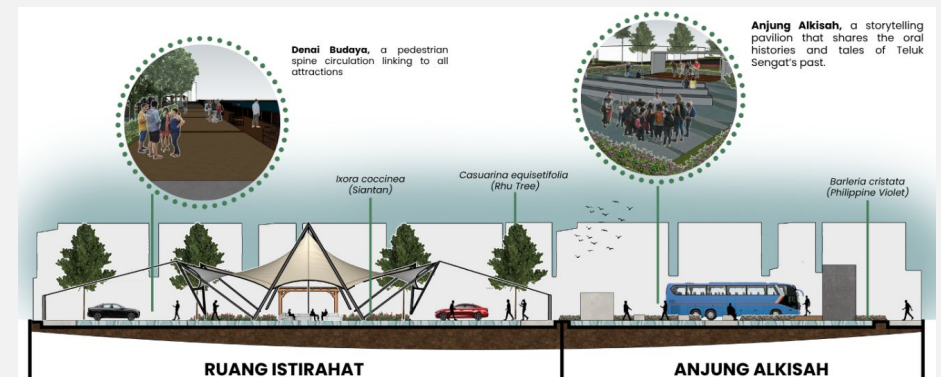


Figure 19: Section cut that consist of Ruang Istirahat, Anjung Alkisah and Denai Budaya with several perspectives.

Ruang Istirahat is a shaded rest area with comfortable seating under Ixora and Rhu trees (*Casuarina equisetifolia*). It includes nearby parking to ensure easy access for visitors. Anjung Alkisah is a storytelling pavilion where visitors can enjoy local stories and learn about Teluk Sengat's culture. Surrounded by Philippine Violet (*Barleria cristata*), it offers a warm and inviting space for sharing heritage

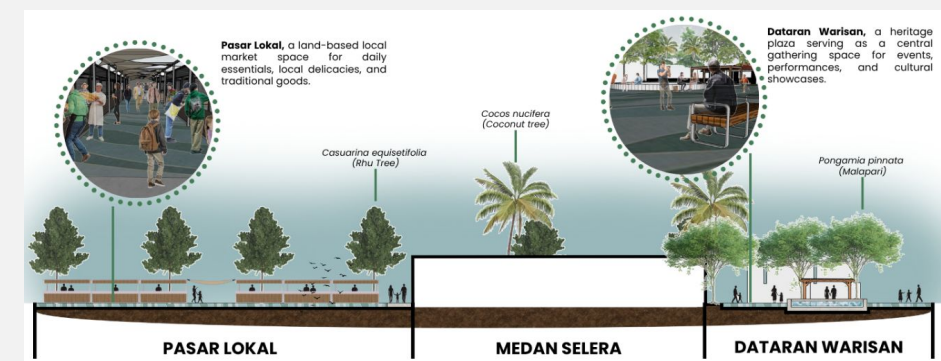


Figure 20: Section cut that consist of Pasar Lokal, Dataran Warisan and the existing building, Medan Selera with some thumbnail perspectives.

Pasar Lokal is a local market that offers traditional foods, goods, and essentials. Shaded by Rhu trees (*Casuarina equisetifolia*), it provides a comfortable and natural setting for both vendors and visitors.

Dataran Warisan is a heritage plaza that serves as a central space for cultural events and public celebrations. Landscaped with Malapari trees (*Pongamia pinnata*), known for reinforcing the area's cultural identity.



Figure 21: Sectional perspective for spaces called Anjung Santai Persisir and Ruang Istirahat



Figure 22: View towards Anjung Santai Persisir, where people can sit and relax while enjoying the scenic view of sunset with Johor River.



Figure 23: View towards Ruang Istirahat, a small resting pavilion offering shelter and comfort along pedestrian pathways.



Figure 24: Sectional Perspective for Galeri Apung Teluk and its surroundings.



Figure 25: View towards Galeri Apung Teluk showcasing Teluk Sengat's coastal culture, history, and art.

DETAILED DEVELOPMENT PLAN

Site Introduction

The selected area for detailed development plan consists the area of Transit Utama, Dataran Warisan, Pasar Lokal, Denai Budaya, Anjung Santai Persisir and the existing building at the centre of the area called Medan Selera Teluk Sengat.

By detailing the spatial configurations, circulation systems, landscape materials, and supporting amenities, the development plan seeks to bridge the gap between concept and implementation, ensuring that the proposal is contextually appropriate, community-oriented, and future-proof.



Figure 26: Highlighting the selected area for detailed development plan at the previous masterplan

Site Justification

The selected area for the detailed development plan was chosen due to its strategic location along the riverfront and its direct connection to key heritage elements such as the old jetty and nearby community spaces. This area acts as the heart of Teluk Sengat, where daily activities, fishing practices, and local interactions take place, making it ideal for reinforcing cultural identity through design. Its proximity to the mangrove belt also offers opportunities for ecological restoration and education. Compared to other parts of the site, this zone holds the strongest potential for combining tourism, conservation, and community use in one integrated, accessible space, making it the most suitable focus for detailed development.

Detailed development plan

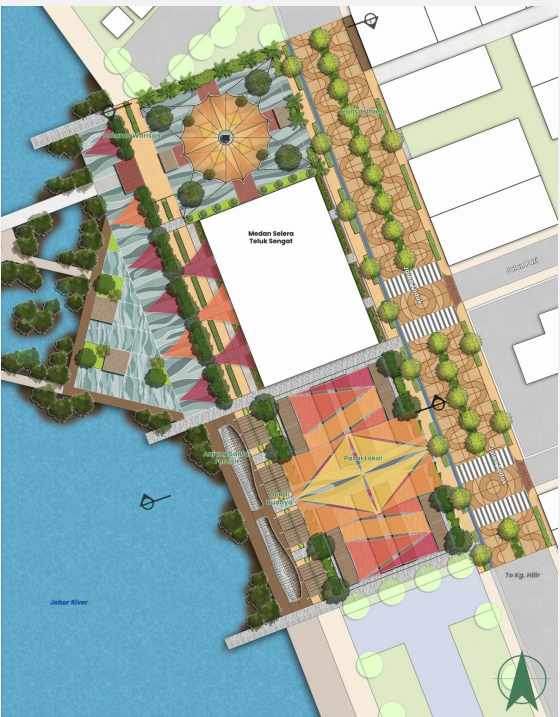


Figure 27: Detailed development plan

01 Transit Utama

A vibrant street cultural boulevard that celebrates community identity through walkable spaces, shaded greenery, artistic pavement design, and interactive public seating, inviting pedestrians to experience culture, connectivity, and creativity in motion.

02 Dataran Warisan

A dynamic cultural plaza that serves as a gathering hub for heritage appreciation and community interaction by iconic canopy structures, vibrant walkways, and open spaces that celebrate local identity and tradition.

03 Anjung Santai Persisir

A coastal deck to relax and enjoy the view of Sungai Johor and the sunset, with seating and hammock floors in the shade of the indigenous mangroves.

04 Denai Budaya

A shaded heritage walks with storyboards that share the culture and history of Teluk Sengat.

05 Pasar Lokal

A local market that reflects the everyday life of Teluk Sengat, offering fresh produce, local delicacies, and traditional goods. It brings back the charm of the town's trading culture while supporting community and heritage.

Space design



Figure 28: Section cut that consist the space of Transit Utama and Dataran Warisan



Figure 29: Compilation of perspective that view towards Transit Utama, framed by rows of trees and artistic pavements, where shaded walkways and inviting public seating create a lively corridor of movement, culture, and connection.



Figure 30: Compilation of perspective that view towards Dataran Warisan, a lively cultural plaza opens up with striking canopy structures and vibrant walkways, where open spaces invite community gatherings, heritage celebrations, and moments of creative expression.



Figure 31: Section cut that consist the space of Anjung Santai Persisir, Denai Budaya and Pasar Lokal

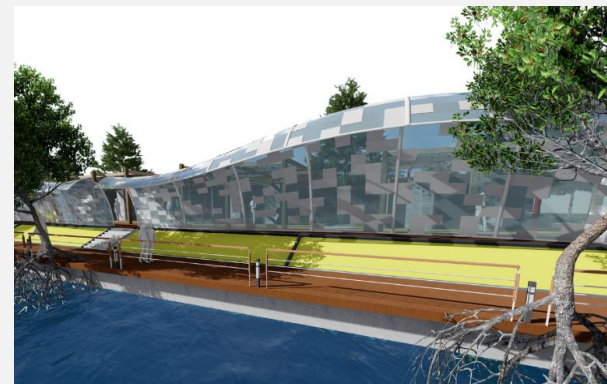


Figure 32: View towards Anjung Santai Persisir: A tranquil coastal deck nestled among mangroves, where shaded seating and hammock floors invite visitors to unwind and take in the serene views of Sungai Johor and the setting sun.



Figure 33: View towards Denai Budaya: A peaceful heritage walk winds through shaded paths, where storyboards gently unfold the rich culture and history of Teluk Sengat, inviting visitors to explore and reflect.



Figure 34: Compilation of perspective that view towards Pasar Lokal, A lively local market scene unfolds, where stalls brim with fresh produce and traditional goods, capturing the everyday rhythm and rich trading heritage of Teluk Sengat.

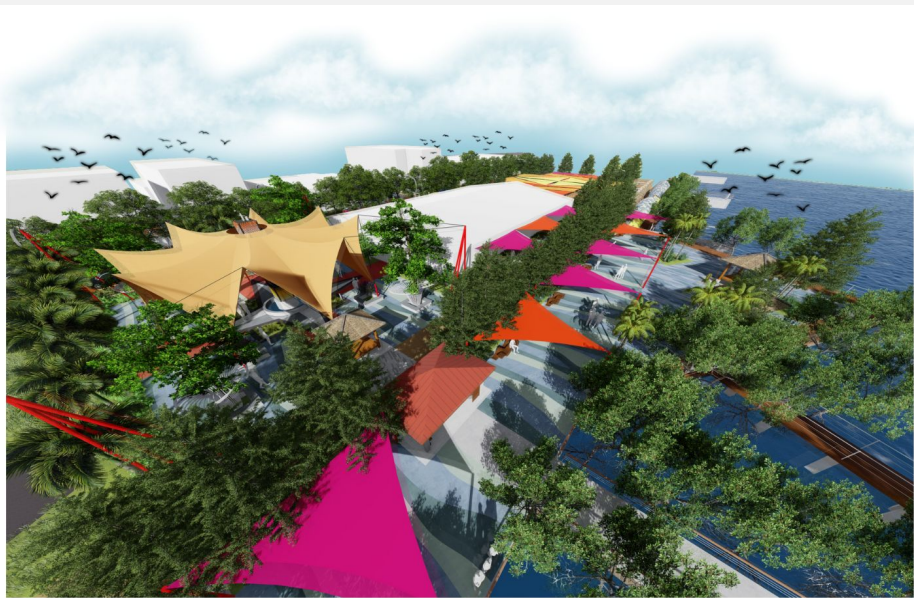


Figure 35: Aerial view from Dataran Warisan, showcasing the vibrant atmosphere of Teluk Sengat's cultural ecotourism, where heritage, nature, and community spaces connect seamlessly.

Softscape detailing

The softscape plan follows the Citra Flora Maritim concept, blending coastal resilience with cultural identity. It organizes plants into two zones—Zon Pemampan Samudera for native coastal species that protect the environment, and Laman Teduhan Warisan for traditional plants that reflect local heritage. This design supports both ecological health and cultural value, creating a meaningful and functional landscape.



Figure 37: Softscape plan and schedule

Hardscape detailing

The hardscape plan for Teluk Sengat supports movement and place identity through well-arranged structures and surfaces. It includes pavilions, seating, canopies, and decorative paving to improve comfort, define activity zones, and match the site's natural and cultural setting. Each element is placed to ensure accessibility, visual harmony, and a resilient coastal experience.

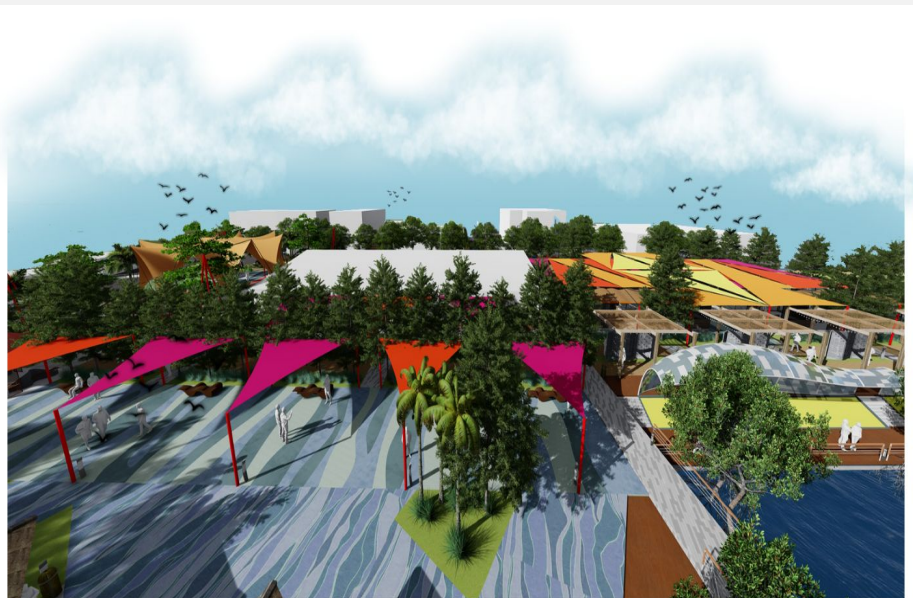


Figure 36: Aerial View of Teluk Sengat Cultural Spine: A vibrant blend of heritage, community spaces, and nature, connecting Denai Budaya, Dataran Warisan, and Pasar Lokal in one seamless landscape.

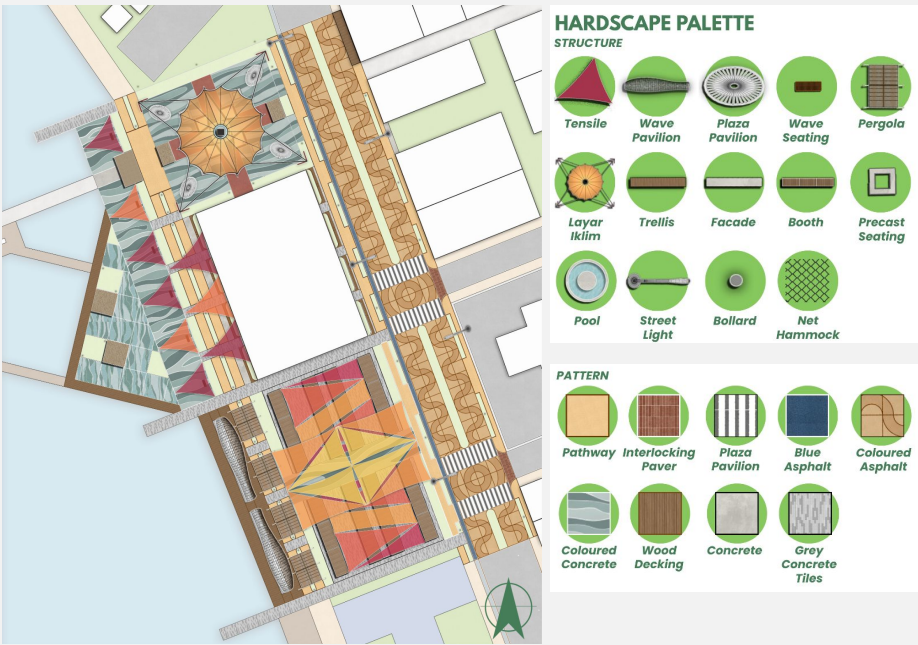


Figure 38: Hardscape plan and palette



Figure 39: View at another area of Dataran Warisan provided with canopy and customised seating on a coloured concrete that reflecting the Teluk Sengat's identity.

Innovative design elements

LAYAR IKLIM is an innovative design element that has been proposed for the ecotourism development at Teluk Sengat. Layar Iklim is a multifunctional canopy structure that serves as both a weather-responsive installation and a cultural landmark. This element is inspired by the traditional *layar* (sails) of Malay fishing boats, symbolising the maritime heritage of the local community while addressing environmental and climatic challenges of the coastal site.

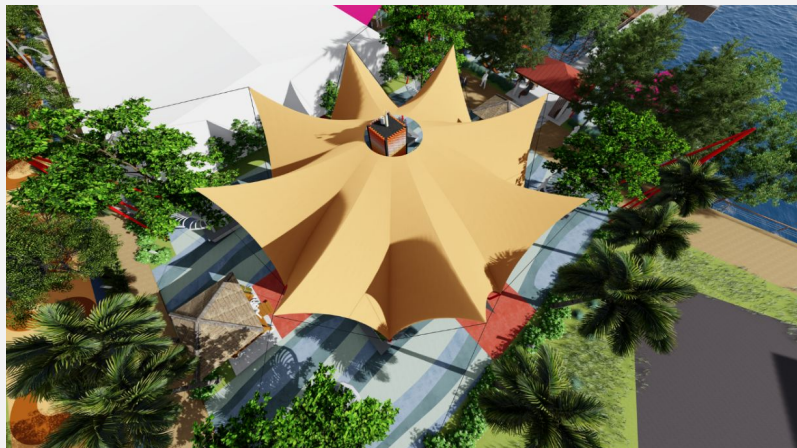


Figure 40: The view of Layar Iklim at the site's area

The canopy comprises a series of layered, sail-like fabric panels stretched across red structural frames. These panels are arranged in an uneven, dynamic configuration to simulate the visual effect of sails billowing in the wind. The form not only evokes a sense of motion but also enhances the spatial experience beneath the structure.

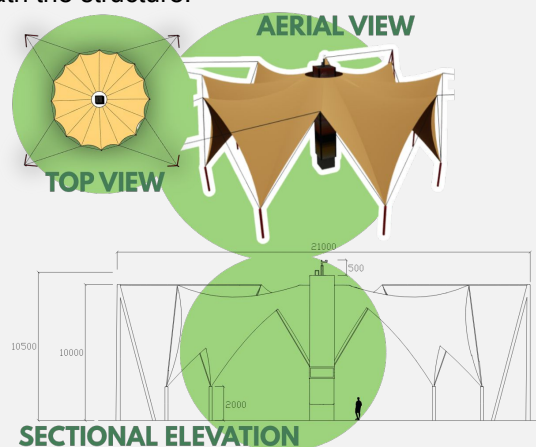


Figure 41: The layout illustration for Layar Iklim

Pancang Iklim (Weather Indicator): This vertical element functions as a modern totem pole, symbolising climate data and serving as a visual reference for environmental conditions. It reinforces the theme of climate awareness and acts as a cultural landmark within the site.

Lembar Layar (Canopy): Designed to mitigate strong coastal winds through its semi-perforated, wavy structure. The layering allows for controlled light penetration while maintaining an open and breathable environment underneath. This design enhances user comfort and supports passive climate control strategies.

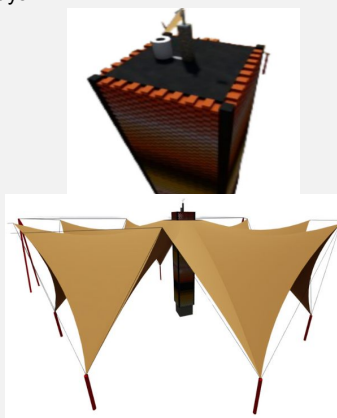


Figure 42: Pancang Iklim and Lembar Layar

CONCLUSION

In conclusion, this project highlights the urgent need to protect and revitalise the coastal heritage of Teluk Sengat through sustainable landscape design. By analysing the site's historical, environmental, and cultural values, the study identified a series of integrated strategies—ranging from mangrove restoration and eco-tourism planning to community-focused spaces and climate-responsive design. The final proposal aims to preserve local identity while supporting environmental resilience and economic growth. This design approach does not only strengthens Teluk Sengat's role as a heritage-rich coastal town but also offers a model for future coastal developments in Malaysia and beyond.

REFERENCES

- Ahmad, R. (2013). *Cultural landscapes as heritage in Malaysia: Potentials, threats, and current practices*. Utrecht University.
- Axon, S., Chapman, A., & Light, D. (2024). Climate Impacts on Tangible Coastal Cultural Heritage in the United States: Towards Sustainable and Adaptive Coastal Heritage Management. *Sustainability*, 16(16), 6800.
- Barianaki, E., Kyvelou, S. S., & Ierapetritis, D. G. (2024). How to Incorporate Cultural Values and Heritage in Maritime Spatial Planning: A Systematic Review. *Heritage*, 7(1), 380–411. <https://doi.org/10.3390/heritage7010019>
- Barrier, Céline & Prato, Giulia & Guidetti, Paolo & Cappanera, Valentina & Cattaneo-Vietti, Riccardo & Mangialajo, Luisa & Francour, Patrice. (2014). Assessing the trophic functioning of the marine protected area of Portofino (Italy) with a standardized ecosystem model.
- Chohan, Awad, J., Jung, C., & Bhai Khan Sher. (2024). Enhancing Climate Resilience Against Flooding in Housing Design Through Synergistic Strategies in Pakistan. *Future Cities and Environment*, 10(1). <https://doi.org/10.5334/fce.226>
- Karst Geurs, A.B. Grigolon, Münzel, K., Konstantinos Gkiotsalitis, Durán-Rodas, D., Büttner, B., Kirchberger, C., Pappers, J., Lluís Martínez Ramírez, Graf, A., Hansel, J., Roxani Gkrava, & Klementschtz, R. (2023). The Smarthubs integration ladder: a conceptual model for the categorisation of shared mobility hubs. *Transport Reviews*, 1–28. <https://doi.org/10.1080/01441647.2023.2239499>
- Khakzad, S., & Griffith, D. (2016). The role of fishing material culture in communities' sense of place as an added-value in management of coastal areas. *Journal of Marine and Island Cultures*, 5(2), 95–117. <https://doi.org/10.1016/j.imic.2016.09.002>
- Kim, Hyun & Aoki, Shin-ichi & Kobayashi, Nobuhisa & Onaka, Susumu. (2018). The Effective Method of Beach Nourishment Placement. *Coastal Engineering Proceedings*. 1. 66. 10.9753/icce.v36.sediment.66.
- Mohamad, S. M. S., Hussain, M. R. M., & Zakariya, K. (2024). The Gems of Johor Bahru: Revitalising Sungai Segget as a Vibrant Heritage and Cultural Riverfront. *Design Ideals Journal*, 6(2).
- Nazir, M. A. H. M., Ibrahim, P. H., & Jani, H. H. M. (2024). East Coast Identity of Kuantan: Taman Gelora As A Recreational Coastal Park. *Design Ideals Journal*, 6(2).
- Papallou, E., Katafygiotou, M., & Dimopoulos, T. (2024). Emerging Sustainability Trends in Tourist Facilities: A Comparative Assessment of Multiple Hotels and Resorts. *Sustainability*, 16(9), 3536. <https://doi.org/10.3390/su16093536>
- Pásková, M., Štekerová, K., Zanker, M., Lasisi, T. T., & Zelenka, J. (2024). Water pollution generated by tourism: Review of system dynamics models. *Heliyon*, 10(1), e23824. <https://doi.org/10.1016/j.heliyon.2023.e23824>
- Prato, G., Barrier, C., Francour, P., Cappanera, V., Markantonatou, V., Guidetti, P., ... & Gascuel, D. (2016). Assessing interacting impacts of artisanal and recreational fisheries in a small Marine Protected Area (Portofino, NW Mediterranean Sea). *Ecosphere*, 7(12), e01601.
- Samal, R., & Dash, M. (2023). Ecotourism, biodiversity conservation, and local livelihoods: Understanding the convergence and divergence. *International Journal of Geoheritage and Parks*, 11(1), 1–20. <https://doi.org/10.1016/j.ijgeop.2022.11.001>
- Sam, K., Zabbey, N., Gbaa, N. D., Ezurike, J. C., & Okoro, C. M. (2023). Towards a framework for mangrove restoration and conservation in Nigeria. *Regional Studies in Marine Science*, 66, 103154. <https://doi.org/10.1016/j.rsma.2023.103154>
- Karcher, T. J. (2023). *Estuarine Shoreline Stabilization Methods in Coastal North Carolina: a Case Study Analysis of Coastal Resiliency* (Doctoral dissertation, North Carolina State University).
- Vallega, A. (2003). The coastal cultural heritage facing coastal management. *Journal of Cultural Heritage*, 4(1), 5–24.
- Vladimirova, M. (2016). Maritime cultural landscape—Cultural tourism—Sustainable development. *Int. J. Cult. Digit. Tour*, 3, 56–65. https://myiklimysd.ukm.my/csmf_001_nahrim/ <https://kampungteluksengattravel.neocities.org/history> <https://www.nccoast.org/2015/01/durants-point-living-shoreline/>

04

WOMEN RECHARGE: TRAINING AND ECONOMIC SANCTUARY FOR SINGLE MOTHERS IN TUMPAT, KELANTAN

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ABSTRACT

This paper focuses into the pivotal role of helping single mothers to grow not only emotionally but also in economic aspect. Single mothers represent a growing but marginalised group both in urban and rural area of Malaysia. Single mothers often face dual responsibilities as caregiver and breadwinner. Hence, this paper explores the architectural aspect which envisioned “training and economic sanctuary” in order to help single mother grow and give them a better chance to sustain their life. One of the main interest is to recognise the growing presence of women in micro businesses particularly in Kelantan, which emphasise on *Batik* and tailoring. However, a combination of modern entrepreneurship is needed which lead to the presence of digital training aligned with current modernisation. These activities encourage both the growth of single mothers and empower the area of Tumpat, Kelantan as main hub for Batik production.

Keywords: Single mothers, Batik, Empowerment, Responsibilities, Training & Economical.

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INTRODUCTION

In Malaysia, the number of single mothers is steadily increasing due to divorce, widowhood, migration, accidental pregnancies, and single motherhood by choice. Studies confirm a strong link between single mothers and household poverty (Muzalwana, Khaleeda, Sharifah, & Adzmel, 2021; Yu, 2019). Many have low education, work in informal or low-paying jobs, or rely on aid. Beyond economic struggles, they face emotional challenges, children’s behaviour, and community stigma, all affecting their quality of life (Muzalwana et al., 2020).



Figure 1: Artist impression of the single mother training and economic sanctuary in Tumpat, Kelantan

ISSUES AND PROBLEMS

There are three main issues in this study, which are:

Limited Employment and Source of Income for Single Mothers

Employment is one of the most important source of income especially for single mothers in Malaysia. In Malaysia, specifically in Kelantan, Terengganu and Kedah, single mothers tend to work in low-quality job resulting in vulnerable financial condition among them. Income drops are almost unavoidable among single mothers hence, their living standard also drop, which ten affected their children. Further, during the stable marriage, many women prefer to leave their jobs to care for their home and family. It is likely that after divorce or widowhood, women cannot easily find a job considering their condition (Zarina, 2022).

Family Responsibility

According to studies, having children reduced mothers participation in labour market. As a result, childcare and family responsibilities hindered women’s labour participation. One of the most crucial issue faced by single mothers particularly in rural area like Kelantan is family responsibilities, which directly affected their ability to participate in the workforce (Syed & Mansor, 2022). Unlike many dual parents households, single mothers are solely responsible in the upbringing of their children. Not only that, they are also responsible for the house duties, and ensuring financial stability. Hence, the constant juggling of roles lead to stress and physical exhaustion (Hashim, Azmawati & Endut, 2015).

• Lack of Community Support

Single mothers particularly in rural area of Kelantan often face stigma from the surrounding community. The stigma from society or negative perceptions towards single mothers are the biggest challenge for them to be able to play their role within the society. Many studies confirm that the impact of stigma towards single mothers will affect their mental health and self-esteem. However, the pressure of handling both paternal and maternal roles should be supported by the community and surrounding and their surrounding environment.

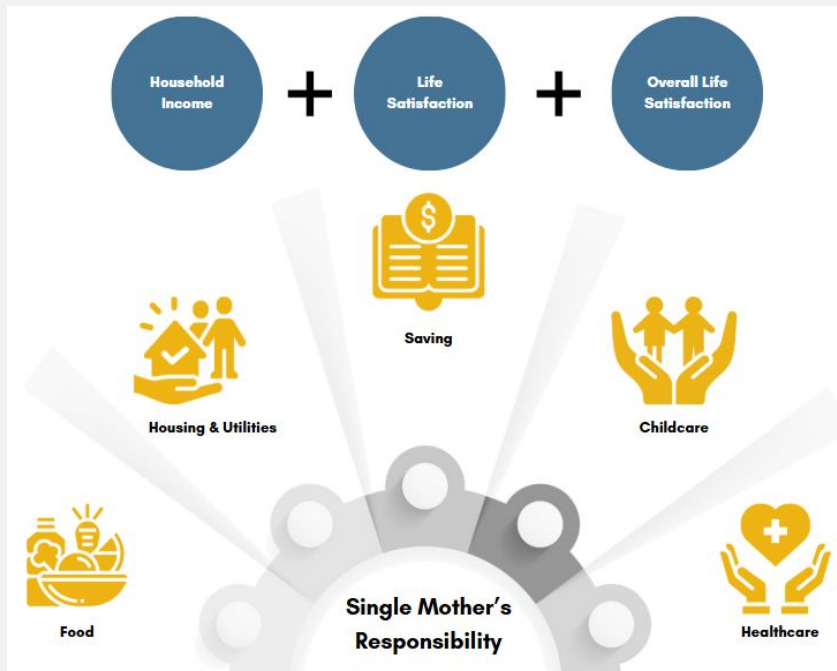


Figure 2: Single Mothers Multiple Responsibility

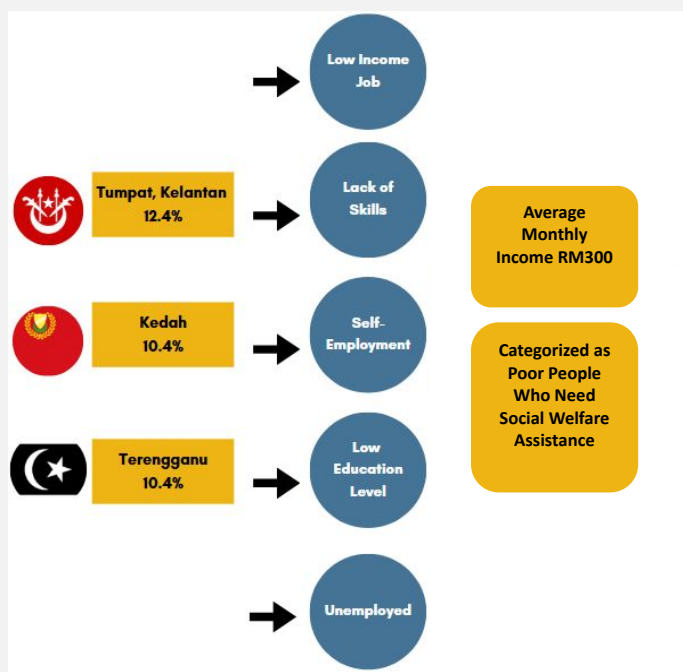


Figure 3: Single Mothers Poverty

STUDY AIM

The project aims is to design a sustainable and integrated architectural solution that fosters economic empowerment, social support, and environmental sustainability for single mothers in Kelantan. The project seeks to create a safe and multifunctional space that supports single mother, as well as their children while integrating with community.

OBJECTIVES

1. To design a multifunctional space for training and business incubation hub for single mothers.
2. To design on-site childcare to incorporate communal spaces for social support both mother and children.
3. To provide a good communal space where the community can gather.

SIGNIFICANCE OF STUDY

This project is significant in addressing social and gender issue within context of rural Malaysians. Single mothers often face hardship in terms of economic, stigma and lack of support. By proposing an architectural response through design of the “sanctuary”, this project contributes to a growing knowledge on socially responsive design.

LITERATURE REVIEW

Single Mother in Malaysia

Single parenting is not a new phenomenon, in 89 countries respectively, over 101.3 million homes are led by single mothers. Most of them are living alone with their children. According to Ministry of Women, Family and Community Development (KPWKM - Kementerian Pembangunan Wanita, Keluarga dan Masyarakat), there are few definition to single mother which are: widowed, divorced or permanently separated, never married but have adopted child or child born out of marriage and spouses who are ill and unable to work. There are 910,091 women who fall under category of single mother (Women's Aid Organisation, 2024).

In Malaysia, single motherhood has gained increased attention due to its growing multifaceted challenges. According to Department of Statistic Malaysia (DOSM), the number of single mother in Malaysia is steadily rising with many of them categorised as low-income household particularly in three states which are Kelantan, Kedah and Terengganu. In more conservative state like Kelantan, the challenges faced by single mothers are intensified by traditional gender role and cultural expectation. Hence, there are a lot of initiatives from government and NGOs to help single mother financially. According to KPWKM, government effort such as *Skim Bantuan Ibu Tunggal* and any other programmes from Jabatan Pembangunan Wanita have been introduced.

Poverty Among Single Mother

In Malaysia, the measurement of poverty across all households income are by comparing income earned by the family with the standard income requirement. According to Economic Report 2009/2010, Kelantan is categorised as second highest for hardcore poor household income. According to Rohayu et al. (2021), the problem of poverty continues to occur in any kind of economic sector due to the lack of complement input. The inputs are land, capital and entrepreneurship. Hence, entrepreneurship is a vital element as a way to exit poverty. In Malaysia, the poverty related to women as leader to household income is high in Kelantan, Kedah and Terengganu (Rohayu, Sharipah, Yusmarwati, Maziana & Rasid, 2011).

Poverty occurs due to many factors, and one of them is low-income job. The large number of self-employment, low education level and lack of sufficient skills also contribute to poverty. Single mothers who have no working experience, skills or educational attainment face harder challenges in securing jobs. Hence, most of them work in a job that only provides low-income salary. Although many incentives and support were given in the form of finance and equipment, the numbers of *Bumiputera* entrepreneur including single mothers who failed in business are still high (Rohayu, Sharipah, Yusmarwati, Maziana & Rasid, 2011).

Table 1: Data of Poor Household in Malaysia

State	Hardcore Poor ¹	Poor ²	Vulnerable Poor ³	Total
Johor	1,502	2,542	5,555	9,599
Kedah	2,228	3,827	6,384	12,712
Kelantan	4,108	7,719	13,718	25,807
Melaka	474	1,157	2,925	4,556
Negeri Sembilan	394	801	3,408	4,618
Pahang	973	1,859	5,766	8,628
Perak	2,099	4,324	7,434	14,107
Perlis	439	1,225	3,290	5,129
Pulau Pinang	645	1,922	8,240	10,817
Sabah	18,295	15,746	13,820	47,862
Sarawak	12,537	14,528	18,740	45,805
Terengganu	4,377	9,322	14,194	28,015
WP. Kuala Lumpur	126	271	860	1,257

Women Empowerment in Kelantan

Women, especially single mothers act as vital economic contributors for the country's development. In Kelantan, women are often associated with business where B40 Kelantanese women face difficulties in living due to low household income (Suraya, Sabrina, Zuriati & Sakinah, 2021). Industrialisation and urbanisation era give a big impact on the status and role of single mothers in Malaysia especially in rural area like Tumpat, Kelantan. There are several agencies in Kelantan that help established few programmes for single mothers which are, Women's Development Program (PPW - Pusat Pembangunan Wanita), Kelantan State Embroidery Centre (PSNK) and Women's Development Centre (PPWK) (Suraya, Sabrina, Zuriati & Sakinah, 2021).

U-Kekwa (Urus Setia Kebajikan, Pembangunan Keluarga dan Wanita Kelantan) is now responsible in implementing all single mothers agenda aligned with Kelantan's Women Policy. The agency's main objective is to provide sufficient basic skills training to single mothers in Kelantan and to improve their ability to augment family economy. There are various programmes held to help single mothers in Kelantan in order to prepare themselves with knowledge and skills. Handicraft skills such as sewing, cooking and baking are offered through certain periods and they have received tremendous participations from local women. This being said, single mothers are very interested in this kind of efforts and activities. However, the problem is consistency in acquiring training and a proper centre for it.



Figure 4 : Example of Programme held by KPWN Kelantan

CASE AND PRECEDENT STUDIES

Ayu Fashion Kelantan

Ayu Fashion is not only a tailoring shop but also serves as a production and retail space. The owner, a local entrepreneur, manages sewing orders, fabric display, fitting sessions, and small-scale production all within the same premises. In this research, spatial observations from Ayu Fashion directly informed the zoning of training and production spaces, particularly in defining storage capacity, workflow layout, and display areas. The shop's efficient use of compact space underscores the need for a multi-functional hub where single mothers can train, work, and grow their businesses within an architecturally supportive and empowering environment.



Figure 5 : Ayu Fashion Kelantan

Laman Warisan, Kampung Laut Kelantan

The commercial shops at Kampung Laut represent a modest yet vibrant example of community-based, small-scale economic activity in a rural Kelantanese setting. Situated in close proximity to heritage and tourism areas, these shops serve both locals and visitors. This study focuses mainly on the layout and circulation of visitors, who are mostly locals.

The spatial layout and design observation for *Laman Warisan* is the linear arrangement of stalls. All stalls are arranged in row with open spaces in front of them to allow visibility and circulation. Furthermore, the open fronted design helps create an inviting environment for customers to browse easily.



Figure 6 : Laman Warisan, Kampung Laut Kelantan

METHODOLOGY

The methods of data collection for this study are the primary data and secondary data collection.

Primary Data

A site survey was conducted in Tumpat, Kelantan to observe and document the actual condition of the site and its surrounding environment. The site survey focused on a few prominent places of Tumpat, Kelantan, which are Bandar Baru Tumpat, Masjid Kampung Laut and Ayu Fashion. During the site survey, various physical aspects were recorded, including the orientation of the site, access points, road connections, availability of public transportation, sun path, and wind direction. The survey also took into account the proximity of schools, mosques, markets, and residential areas. These observations helped identify the best layout for the proposed functions.

In addition to the site visit, interviews with Ayu Fashion worker and single mother who work at Pasar Sumayyah were conducted. These interviews were important in gaining more information and in-depth understanding about the production of *batik*, which later will be

proposed at the centre and the activities of women in Tumpat Kelantan. The data collected from the interview enabled researchers to provide context and help in developing better understanding of the topic.

Secondary Data

In addition to primary data collected through field visits and interviews, this research also relies heavily on secondary data to provide a theoretical and contextual foundation for the design proposal. Secondary data was primarily gathered through a comprehensive literature review, focusing on issues surrounding women's empowerment, single motherhood in Malaysia, social architecture, and community-based economic models.



Figure 7 : Site Study, Pasar Sumayyah



Figure 8 : Site Study, Bandar Tumpat, Kelantan



Figure 9 : Interview with Puan Halimah

SITE LOCATION

Based on the background study and interviews, the site selection and nature of project is located at Tumpat Kelantan, as Tumpat holds the highest number of single mothers in Kelantan with high poverty rate. Located within the growing urban edge of Tumpat, this area presents a strong potential for development that balances accessibility, community integration, and economic opportunity key principles that underpin the thesis objectives.

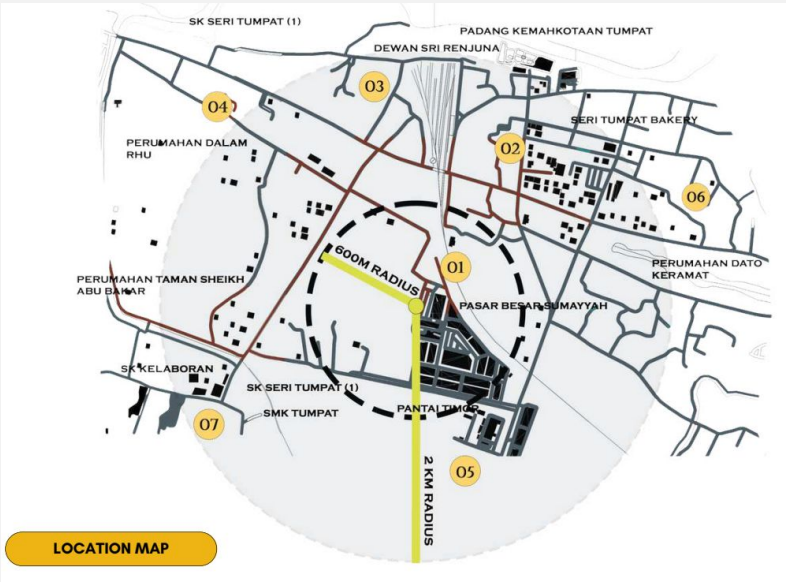


Figure 10 : Project Location map in Tumpat, Kelantan

NEIGHBOURHOOD CONTEXT

Tumpat is characterised by a predominantly Malay Muslim population, with minorities from Chinese and Thai. The diverse demographic contributes to modest yet culturally layered local identity. The neighbourhood context in Tumpat is inclined towards traditional *kampung* lifestyle that coexist with semi-urban setting and small scale commercial activities. Hence, Tumpat is a rich ground for community based and architectural interventions.

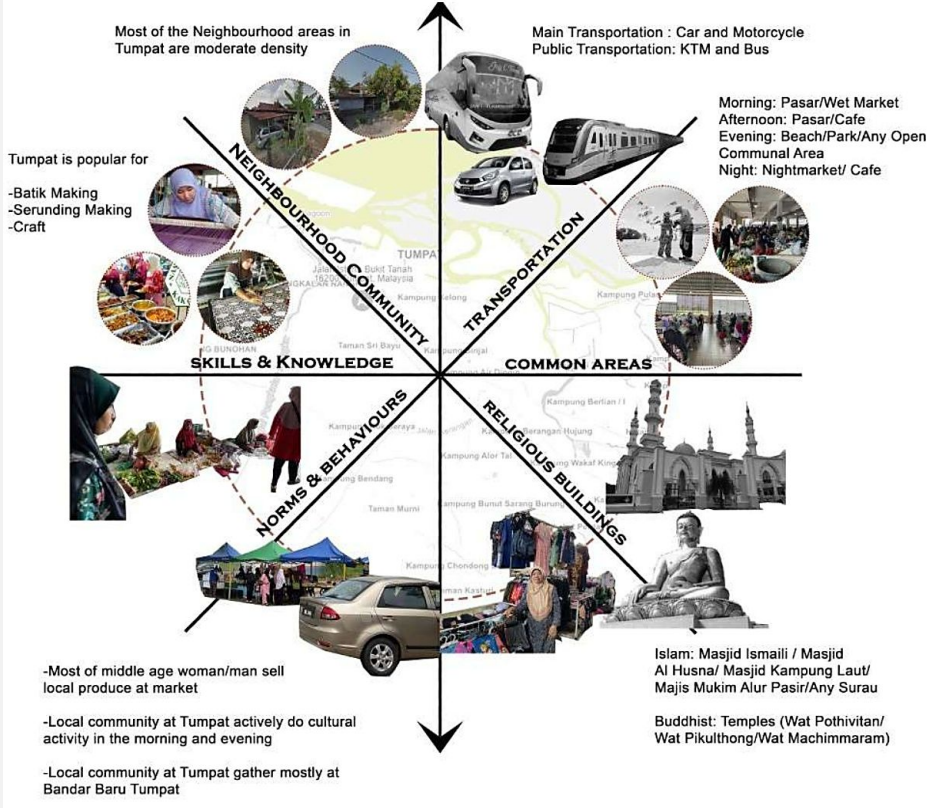


Figure 11 : Macro Context of Tumpat, Kelantan

DESIGN BRIEF

The design brief acts as the backbone of the project, clearly defining the purpose, objectives, user requirements, spatial needs, and design intentions that guide the development of the architectural solution.

The design brief started with the issues until the proposed architectural solutions, which in turn is used to develop the schedule of accommodation for the proposed single mother training and economic sanctuary in Tumpat, Kelantan.

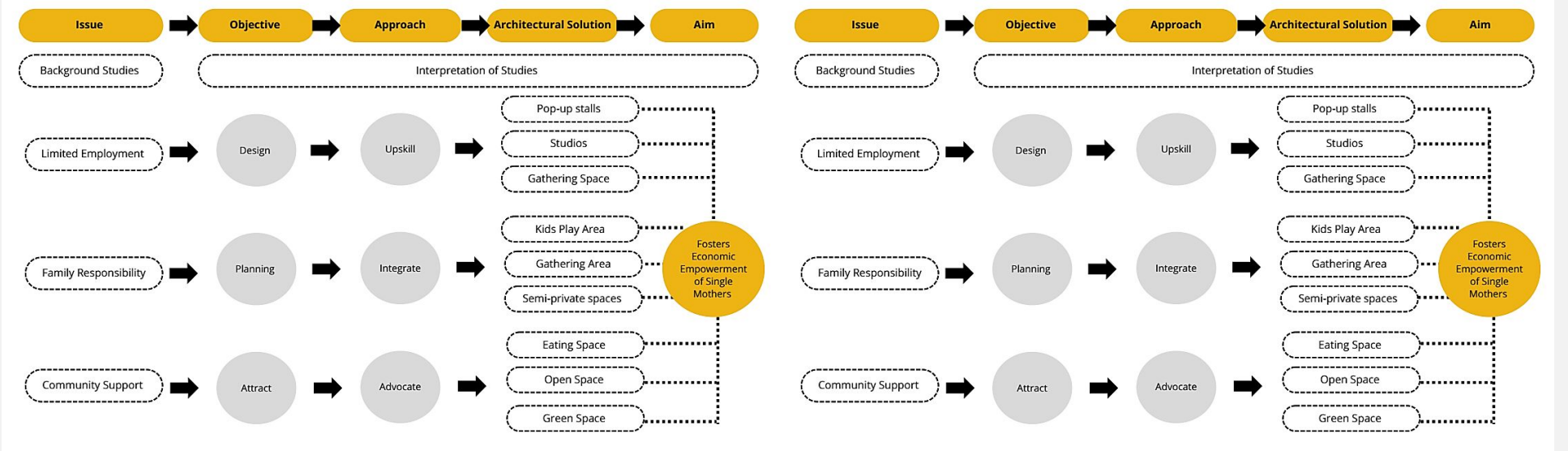


Figure 12 : Design Brief

PROJECT FINDINGS

Design Concept

The concept for this project is “Interposed Transit”.

The concept of “Interposed Transit” embodies the journey of growth and transformation in a supportive environment. The “Transit” represents the progression and interposition between spaces that create interconnected system that guide user for better future. It is to bridge the gap between single mothers, and with economic opportunities and quality of life. It serves as intermediary space where single mothers can recharge, learn and grow. The concept is reflected in layout and hierarchy of spaces.

The concept of Interposed Transit also reflects on how circulation is not merely a means of moving from one point to another but it emphasize on spatial experience that later connect people, space and purposes. As it core, the concept Interposed Transit is inspired by the flow and movement of daily activities where paths often overlap with living, working and selling.

Design Development

This phase of the project illustrates how the integration of functional zoning, user flow, and contextual sensitivity has informed the transformation of initial ideas into architectural form.

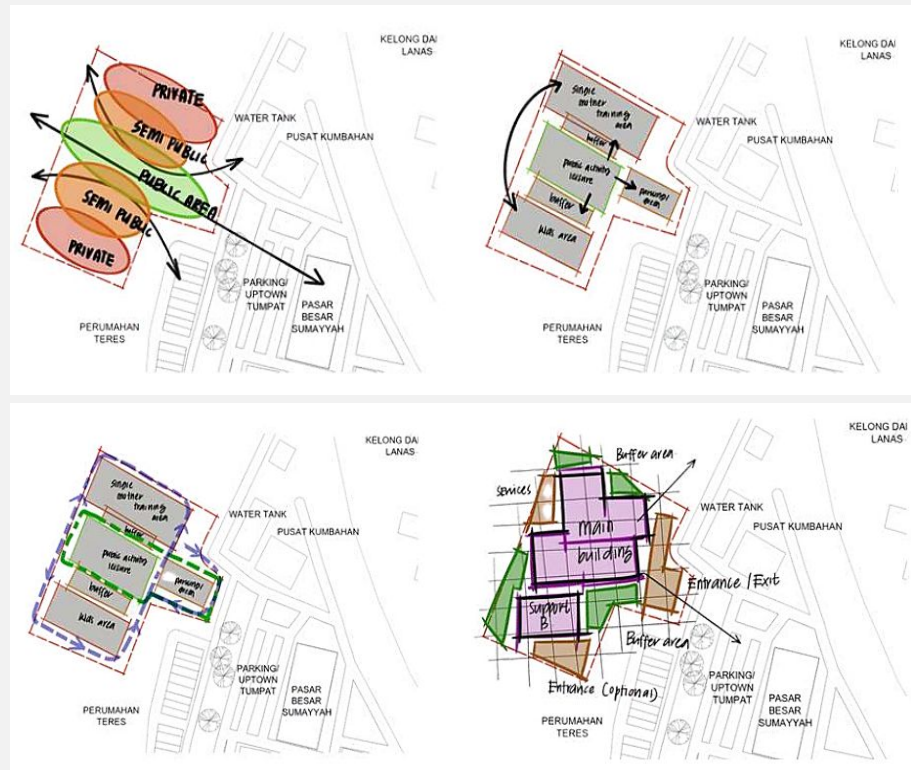


Figure 13 : Design Development Progress

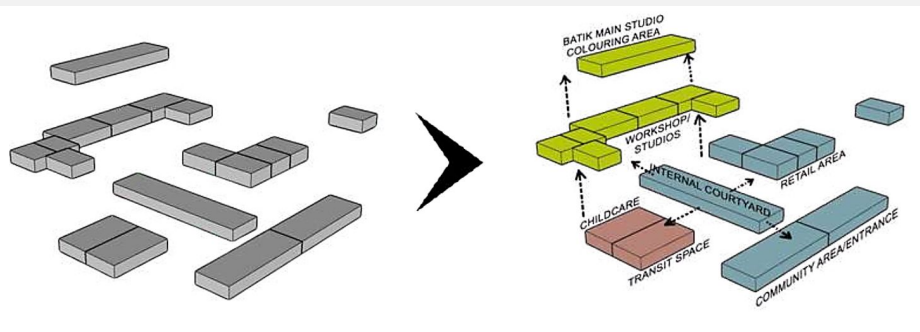


Figure 14 : Design Development Progress

The early stage of the design focuses on the separation of spatial zones according to the degree of privacy required.

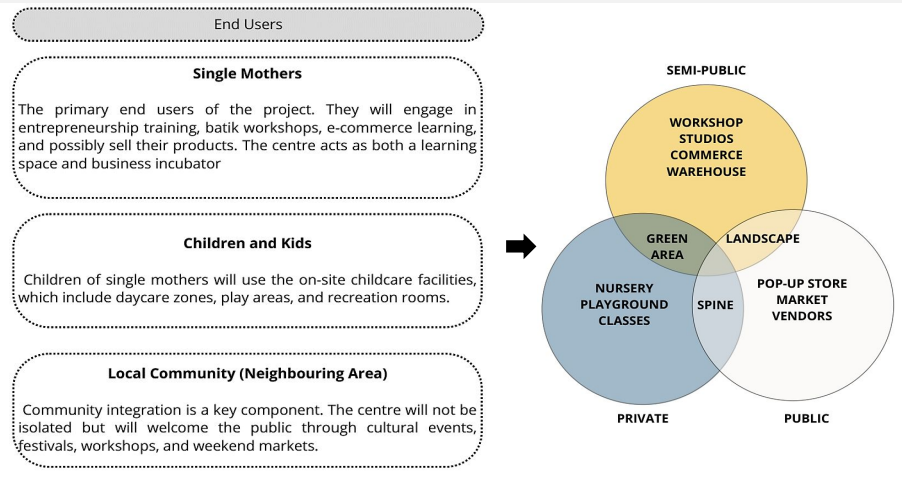


Figure 15 : The end users and associated zoning

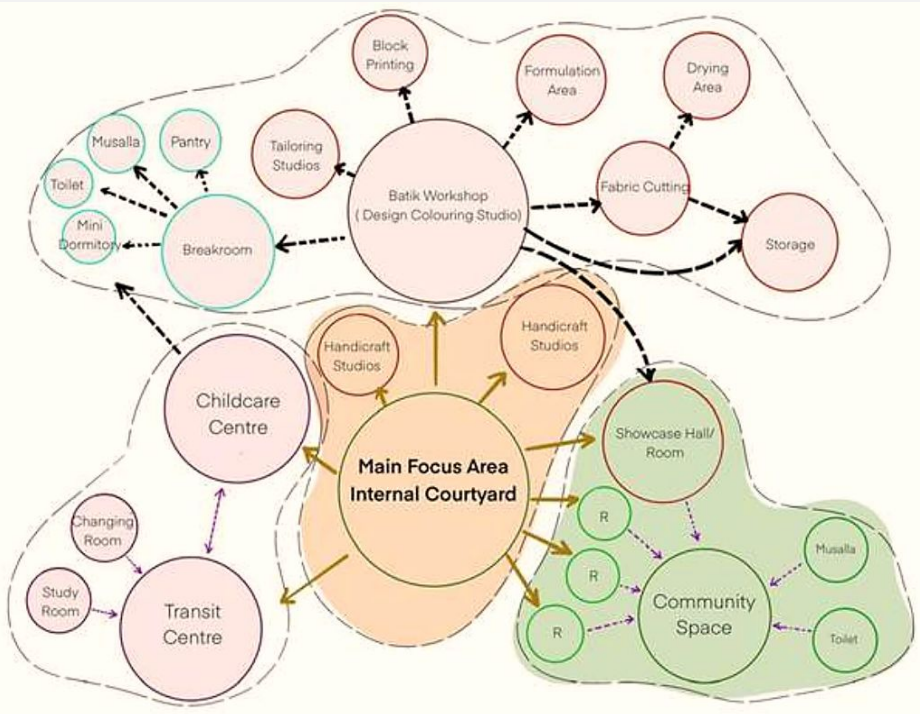


Figure 16 : Design Process

Floor Plans

The training and economic sanctuary features good walkways directly from Pasar Sumayyah. The centre has three separated buildings, which each holds their respective function. The design has a semi-open centralised plaza that can be access from all parts of the building and direct access from Pasar Sumayyah through shaded walkway. The plaza acts as a space for events such as food festival, batik event, daily event and entrepreneurship event.

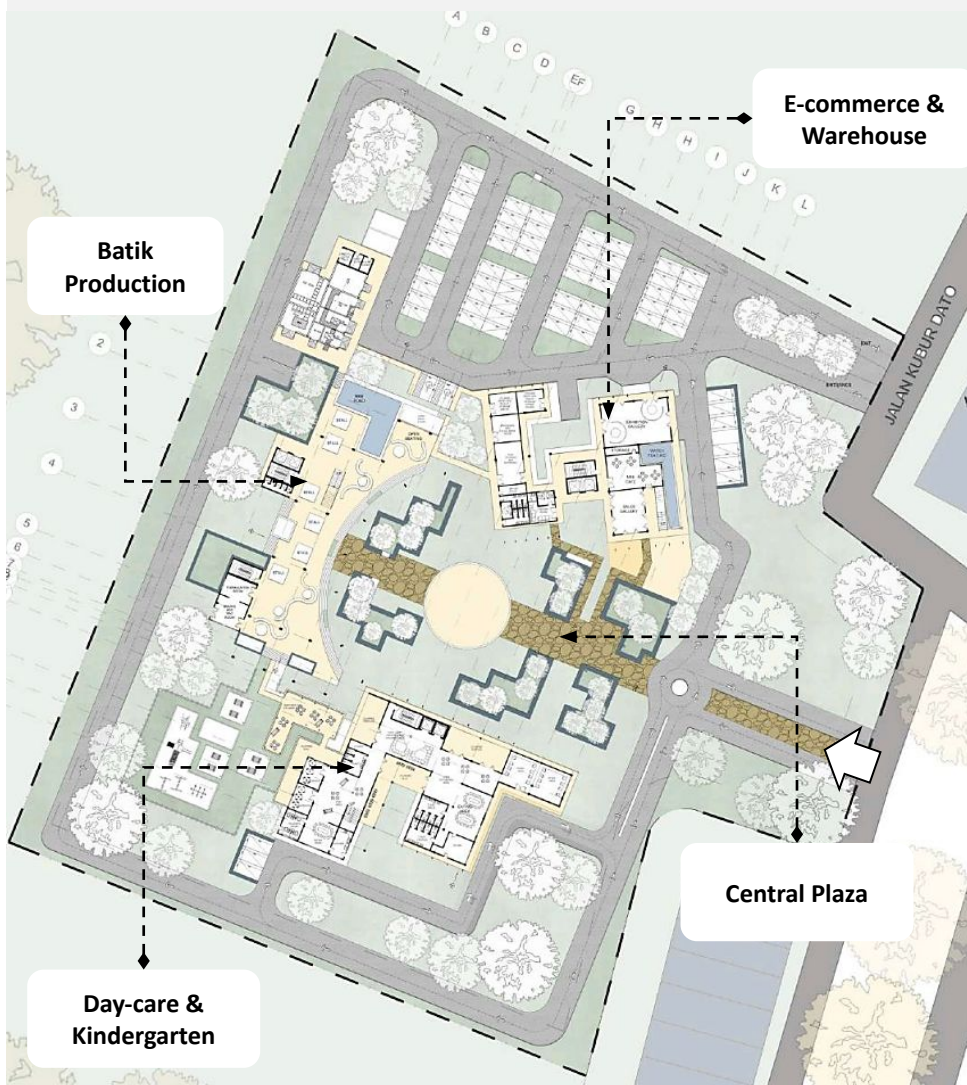


Figure 17 : Ground Floor Plan (NTS)

The main building (Batik Production)

Ground Floor: semi-open ground floor, for public use where single mothers can have their temporary stalls installed and public can have activity and gathering during the day or any event held at the centre.

First Floor: mainly for Batik production - public can access up until Batik colouring area only, all studios and workshop are restricted to single mothers.

Second Floor: consist of digital studios for single mother to do live selling and tailoring room for production. There is also batik colouring area that is open to the public.

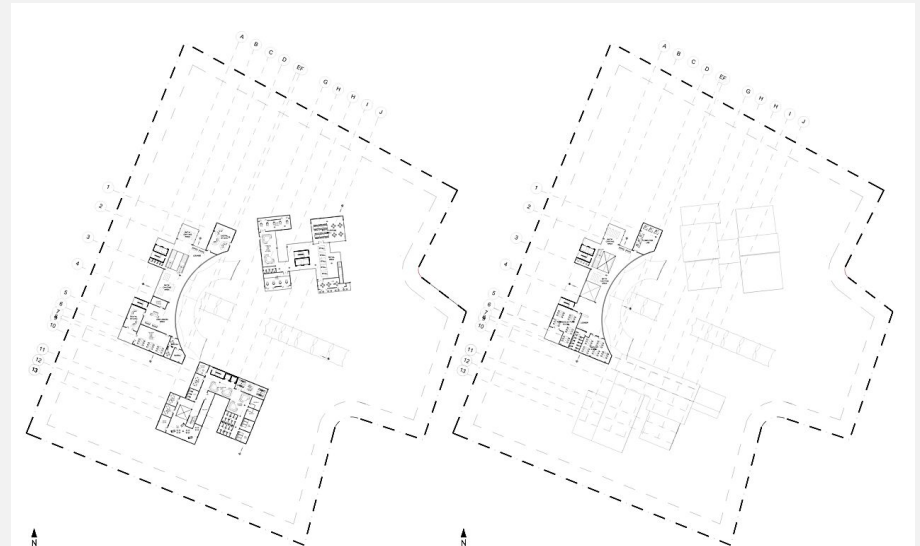


Figure 18 : First and Second Floor Plan (NTS)



Figure 19 : Tailoring Studio



Figure 20 : Batik Production

The secondary building (E-commerce and Warehouse)

Ground Floor: consists of storage room where the single mothers products are stalled. Mini warehouse and fulfilment room are proposed for online selling production. On the other side of the building, there is a cafe and exhibition gallery where Batik and other produced are showcased, and a cafe is accessible directly from the entrance.

First Floor: Single mothers' communal area and live host studios where they work for the online selling and temporary stalls are installed at the commerce area. A multipurpose hall is open to any events for public.



Figure 21 : Stalls/ Cafe Area



Figure 22 : Stalls/ Cafe Area

The Childcare building

Ground Floor: consists of covered play area, near the classroom so that it is easy for teachers and kids to be outdoor and indoor. The transit consists of study area, which is divided into male and female area respectively. Both areas have their own kitchen and eating space.

First Floor: consists of infant room and nursing room for more privacy. It is to protect the privacy of smaller kids and single mothers who need time with their kids. For transit area, there are female and male *musolla*, toilet, shower area and nap zone for them to have a rest after school.



Figure 23: Childcare Focus Area

The Outdoor Area/Facade

The facade of the building is mainly glass panels with Batik display to prevent direct heat and glare. A carved batik railings are installed at the main building and commerce building, to create a more traditional look as well as emphasising on Batik image.



Figure 24 : East Elevation



Figure 25 : The Facade/ Frontage from Pasar Sumayyah

The Program Hierarchy

The main building is the core, symbolising the main economic and function of the centre. It emphasises the project's vision of women empowerment through craft and skills, specifically in Batik production, which is the nature of Tumpat.

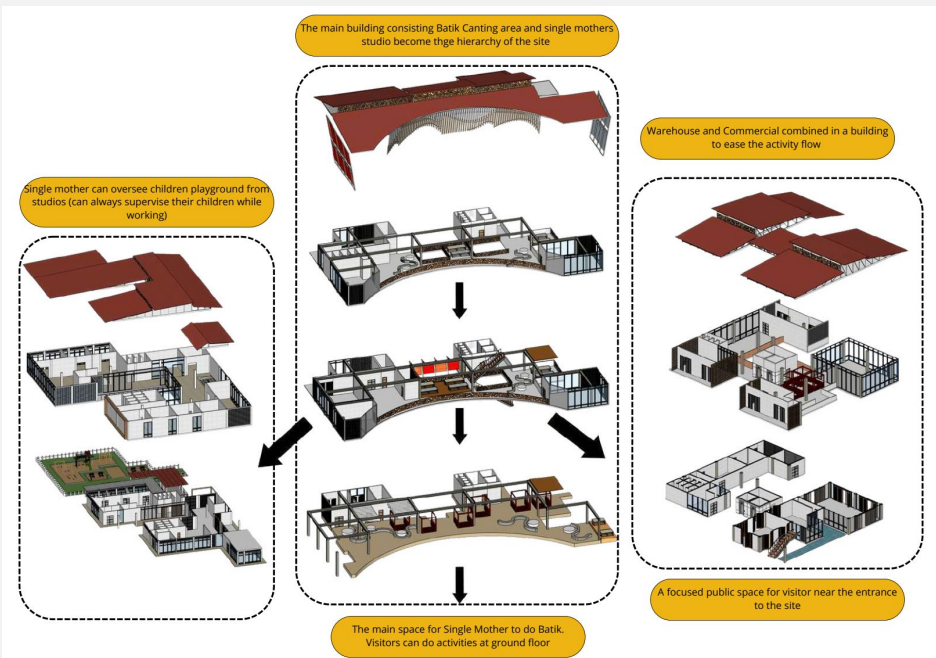


Figure 26 : The Program Hierarchy

Plaza Activation Through Community Based Festivals

The festivals are not isolated events. They are the vital programming tools that can activate the plaza as a space of empowerment. It transforms into a beacon of cultural pride of Tumpat, a symbol of single mothers' economic growth and social upliftment in Tumpat. These festivals promote the economic participation, cultural expression and social integration of women, especially single mothers while strengthening the local identity and community integration.



Figure 27 : Daily Activity at Plaza



Figure 28 : Batik Event at Plaza



Figure 29 : Digital Womenpreneur Bazaar

The central plaza of the proposed Centre of Training and Economic Sanctuary for single mothers in Tumpat Kelantan serves not only as a communal activity but also a flexible space designed to host diverse festivals and cultural activities throughout the year. Among the key elements are the Batik and Craft festival, where single mothers, artisan and trainees can display and sell their handcrafted textiles, accessories and tailoring products. Live demonstration will also be held at the main building, as well as workshops that allow visitors to appreciate the intricacy of Kelantanese Batik making directly from single mothers while also reinforcing the centre role in craft preservation and entrepreneurship. Similarly, the Kelantan Food Festival brings the community together through culinary tradition and empowering food vendors by single mothers.

CONCLUSION

The Training and Economical Sanctuary for single mothers in Tumpat serves as a holistic architectural response to the challenges faced by single mothers in Kelantan. The integration of training facilities, economic production areas, childcare support, and communal public space uplifts single mothers' livelihood through skills development and creates an opportunity for financial independence. To ensure long-term viability, the centre embeds self-sustaining features such as rental stalls, café operations, and periodic festivals that generate continuous income and community engagement. This centre also restores single mothers' sense of dignity and identity them as part of the surrounding community.

This study shows how architecture can move beyond function to become a catalyst for social integration by bridging the gap between opportunity, collective growth of single mothers, and fostering resilience.

ACKNOWLEDGEMENT

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REFERENCES

- Md Nor, Z. (2022). Precarious employment amongst low income single mothers in Malaysia: The implications on family wellbeing. *E3S Web of Conferences*, 339, 06009. <https://doi.org/10.1051/e3sconf/202233906009>
- Mohd Hashim, I. H., Azmawati, A. A., & Endut, N. (2015). Stress, roles and responsibilities of single mothers in Malaysia. *SHS Web of Conferences*, 18, 03003. <https://doi.org/10.1051/shsconf/20151803003>
- Muzalwana Abdul, N., Khaleeda, M., Shahabudin, M., & Adzmel, M. (2021). Household income and life satisfaction of single mothers in Malaysia. *International Journal Studies on Children, Women, Elderly and Disabled*, 9, 49–58.
- Rohayu Roddin, Shariah Sidi, Yusmarwati Yusof, Maziana Mohamed, & Rasid Razzaq, A. (2011). Poverty alleviation among single mothers in Malaysia. *International Journal of Business and Social Science*, 2(17), 78–85. <http://www.ijbssnet.com>
- Suraya Husin, Sabrina Zahari, Zuriati Amani, & Sakinah M. Zin. (2021). Kelantan women's economic development through PPWK program. *Review of International Geographical Education*, 11(7), 2923–2932. <http://www.rigeo.org>
- Syed Salleh, S. N., & Mansor, N. (2022). Women and labour force participation in Malaysia. *Malaysian Journal of Social Sciences and Humanities*, 7(7), e001641. <https://doi.org/10.47405/mjssh.v7i7.1641>
- Women's Aid Organisation. (2024, December). *Single mothers' experiences during COVID-19 in Malaysia: A data snapshot*. Women's Aid Organisation. <https://wao.org.my/wp-content/uploads/2024/12/Single-Mothers-Data-Snapshot-FINAL.pdf>
- Yu, D. (2019, June 19). Employed but still poor: The state of low-wage working poverty in South Africa. *The Conversation*. <https://theconversation.com/employed-but-still-poor-the-state-of-low-wage-working-poverty-in-south-africa-118018>

05

ASIAN TRADE AND CULTURAL VILLAGE: BUILDING UNITY THROUGH HERITAGE, TRADE, AND CULTURE

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ABSTRACT

As Asia takes centre stage in global economic development, preserving a shared cultural identity in the built environment becomes essential. Modernism should not erase the distinctive architectural language and heritage that bind the region together. This project demonstrates Asian architecture through the integration of shared components from ASEAN (Association of Southeast Asian Nations) and SAARC (South Asian Association for Regional Cooperation) countries. Key elements include water, local vegetation, open spaces, and courtyards, combined with contemporary facilities such as exhibition halls, an auditorium, and craft showcase spaces. The chosen site, currently abandoned, is transformed into an active urban place that strengthens its surrounding context. Findings show that embedding shared architectural components creates an authentic Asian atmosphere while meeting functional needs. The study recommends architecture as both a physical and cultural construct, where tangible elements and intangible activities together define identity. This project exemplifies how architectural intervention can foster Asian identity and celebrate shared values across the region.

Keywords: Cultural Village, ASEAN and SAARC, Asian identity, Contextual architecture.

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INTRODUCTION

Asia's long history of cultural exchange, from the Silk Road to today's ASEAN and SAARC corridors, has shaped its rich identity. In Kuala Lumpur, this diversity is visible in food streets and religious buildings but lacks a central cultural hub. The Asian Trade and Culture Village addresses this by creating walkable clusters inspired by regional food, crafts, and architecture, showing the importance of preserving cultural identity in today's built-environment (Politeknik Pertanian Negeri Samarinda & Solissa, 2025). Designed with passive cooling and locally sourced materials, it provides an engaging space where trade, tradition, and unity come together, following sustainable approaches proven effective in tropical contexts (Kolani, Wang, Zhou, Nouyep Tchitchui, & Okolo, 2023).



Figure 1: Artist impression of the proposed Asian Trade and Cultural Village at Ampang, Kuala Lumpur

PROBLEM STATEMENT

Despite Asia's rich cultural heritage and growing economic influence, contemporary public architecture across the region often fails to capture its depth, identity, and social cohesion. Many convention centres especially in cities like Kuala Lumpur adopt Western formalism and rigidity, remaining disconnected from everyday Asian life (Sun, 2023). As a result, cultural wealth is dispersed across community halls, temporary tents, and national pavilions instead of being celebrated cohesively and permanently. The core issue lies not in the scarcity of cultural resources but in the absence of architectural spaces that meaningfully interweave trade, craft, cuisine, and tourism into holistic environments. There is an urgent need for architectural frameworks that foster pride, strengthen community ties, and reflect Asia's shared identity through the built environment (Jieqiong & Malek, 2025; Scriver et al., 2019).

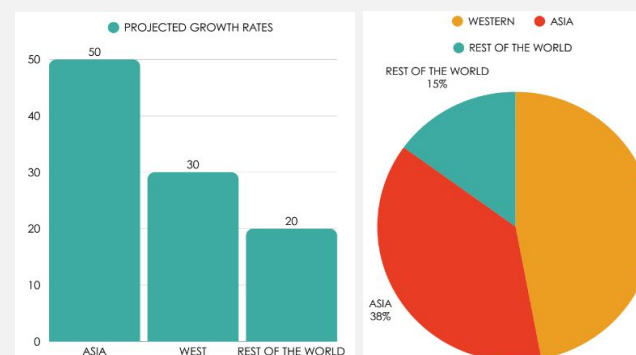


Figure 2: Share of global GDP: Asia vs The West and Projected growth rate
[Source: International Monetary Fund (IMF). 2024]

AIM AND OBJECTIVES

The goal of this project is to design an architectural village that honours the common trade, culture, and way of life in Asia. It imagines a cultural landscape of immersive areas that mirror the atmosphere, materials, and architecture of various Asian regions. The project fosters intercultural understanding, economic cooperation, and architectural storytelling by grouping ASEAN and SAARC cultures into thematic zones. In order to promote social cohesiveness and a sense of belonging, the project makes use of interactive plazas, craft-centered pavilions, culinary and educational areas, and passive cooling systems. By encouraging involvement and curiosity, it seeks to develop into a dynamic forum for cultural diplomacy and exchange.

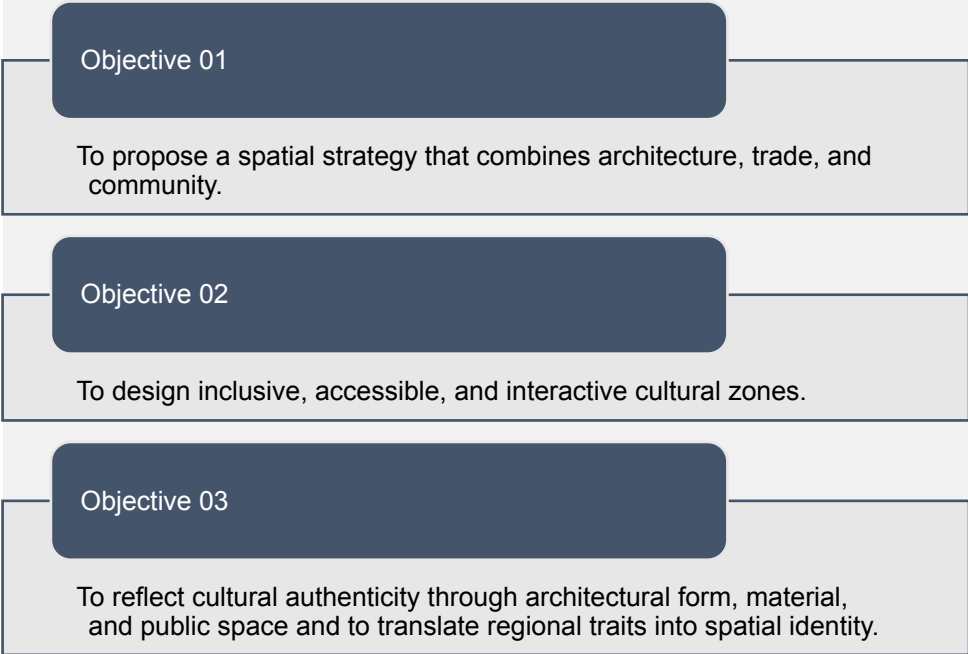


Figure 3: Thesis objectives to achieve the stated aim.

PROJECT STATEMENT

An Asian Trade and Culture Convention Centre should be fundamentally Distinct from that of the image of modern Western Architecture because of the long heritage and cultural richness of Asian nations. So, this project attempts to discover the common aspects of Asian Architecture to apply into the proposed Convention Centre.

METHODOLOGY

The study adopts a qualitative and design-based methodology that combines research and practice. A literature review is conducted to understand Asian architecture and approaches to creating culturally rooted urban spaces. Precedent studies of KLCC, MITEC, PICC, and international cultural villages provide insights into existing models. Site observations at Jalan Ampang examined accessibility and surrounding cultural assets, while user behaviour surveys captured perspectives from diverse communities in Kuala Lumpur. Finally, design simulations, including form studies and 3D models, were used to explore spatial qualities and test placemaking strategies.

THE SITE

The site on Jalan Ampang, Kuala Lumpur, was chosen for its accessibility, visibility, and symbolic value for regional cooperation. Located near diplomatic enclaves, major roads, transit, and cultural institutions, it is ideal for trade shows and international events. Its zoning, pedestrian access, and potential for plazas, water features, and exhibition areas support the thesis aim of uniting Asians through shared culture and economic ties.



Figure 4: The proposed site at Jalan Ampang, Kuala Lumpur.

The project site is located at Lot No. 20013, 270 Jalan Ampang, Kampung Berembang, 55000 Kuala Lumpur, Wilayah Persekutuan Kuala Lumpur. It covers an area of 4.6 acres, equivalent to 18,616.17 square meters (200,382.77 square feet). The land is designated as Kawasan Lapang Awam 1 (public open space) and is currently used as a parking area with surrounding green space, with no existing buildings on the site.



Figure 5: Justification for site selection.

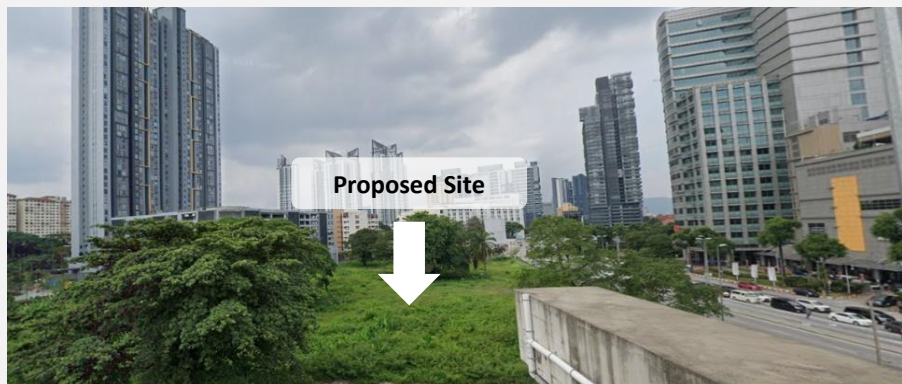


Figure 6: The aerial view of overall looks of surrounding site Jalan Ampang.

DESIGN BRIEF

The proposed project emerges from the pressing issues faced by Asia in terms of unity, economic disparities, cultural disconnect, trade barriers, and missed opportunities. Fragmented efforts among nations have weakened Asia's global leadership, while unequal growth rates and limited integration in trade and culture have reduced cooperation and underutilised the region's potential. To address these challenges, the project envisions an architectural hub that symbolises collaboration, promotes shared growth, and provides platforms for cultural and economic exchange.

The spatial formulation reflects these needs and common aspects of Asian architecture such as stilt structures, water features, cluster planning, courtyards, and culturally rooted materiality. Trade halls, conference rooms, and offices support governments, businesses, and investors in fostering collaboration. Workshop and training areas enable SMEs to share knowledge, build capacity, and incubate ideas, tackling economic imbalances. Exhibition halls, art galleries, theatres, and cultural pavilions bridge cultural gaps, while logistics hubs and networking lounges ensure integrated trade operations. The Grand Central Hall and iconic structures act as symbolic anchors, celebrating Asia's heritage and deliberately avoiding the Western formalism of rigid symmetry and monumental dominance. Lessons from precedents like KLCC and MITEC guided circulation efficiency, public engagement, and program hierarchy, transforming regional challenges into a multifunctional hub that integrates trade, culture, and innovation.

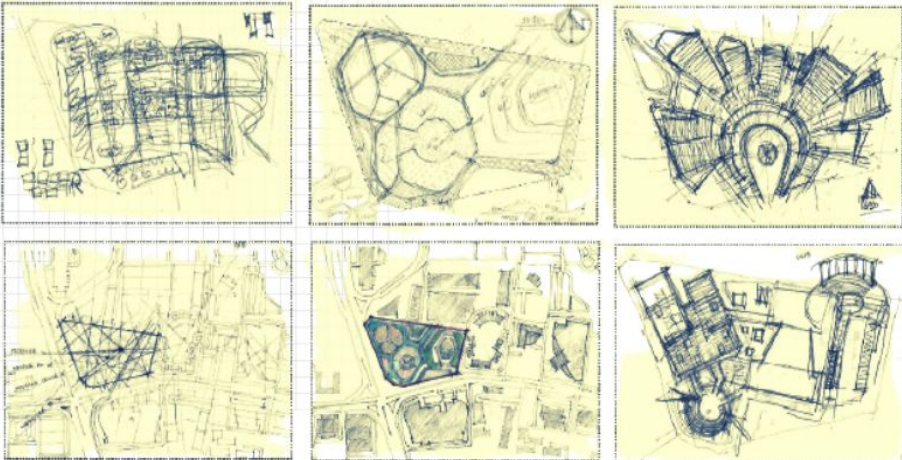


Figure 7: Early conceptual sketch during design development.

THE CONCEPT

The design is inspired by the philosophy "Bersatu Teguh, Bercerai Roboh" (United We Stand, Divided We Fall), echoing the message of Surah Hujurat 49:13 which reminds humanity that we are created into nations and tribes to know one another, not to be divided (Saheeh International, 2011). This spirit of unity is translated into architectural form through interlocking volumes that symbolise completeness, while weaving-inspired façade patterns from Songket, Kantha, and Luntaya traditions reflect the binding of cultures into one fabric. The central form, drawn from the tree and root system, illustrates diverse origins growing into a shared trunk, supported by the kampung cluster concept that celebrates communal living.

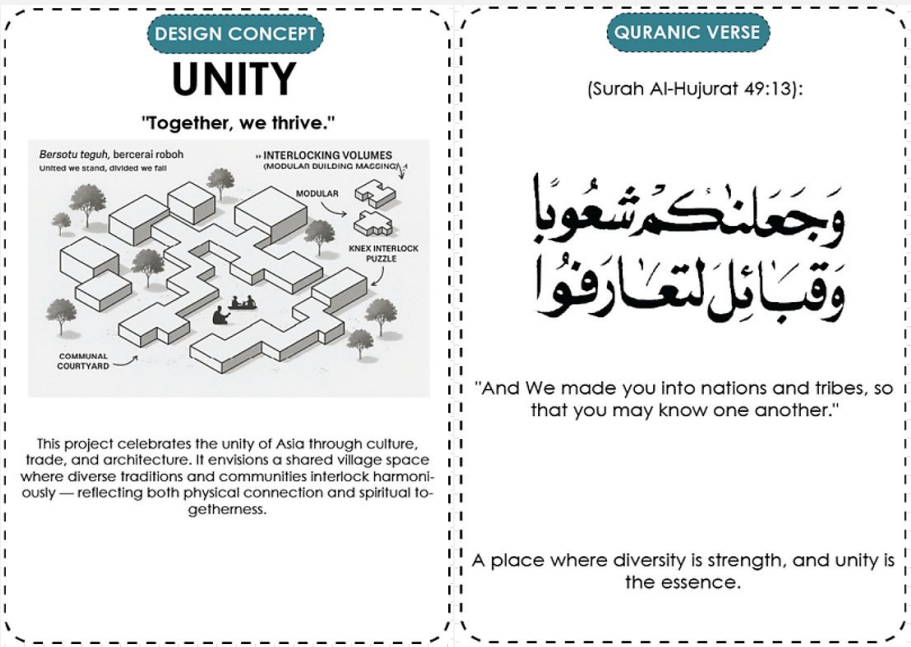


Figure 8: The design concept and Qur'anic inspiration

DESIGN DEVELOPMENT

The project develops its architectural language through a balance of conceptual vision and contemporary user needs. Four cultural zones—Nusantara Warisan, Mekong Budaya, Dataran Himalaya, and Pulau Rasa anchor the site, each celebrating the distinct heritage of its region. Floating-market plazas, water-integrated event halls, and stilted structures enhance spatial experience while supporting passive cooling. Courtyards, regionally sourced materials, and cluster planning reinforce cultural identity and sense of place, reflecting Asian traditions rather than Western monumentalism.

Sustainability is embedded as both technical and cultural principle. Passive cooling is achieved through water bodies and architectonic shading, creating naturally comfortable environments. Indigenous building forms and materials ensure cultural resonance while promoting low-impact construction. Walkable discovery paths with storytelling markers narrate Asia's shared heritage. Rainwater harvesting and distributed solar arrays reinforce ecological resilience. Precedents such as KLCC informed efficient circulation and public engagement, while MITEC lessons ensured flexibility and functional clarity, integrating experiential spaces without imposing Western rigid formality.

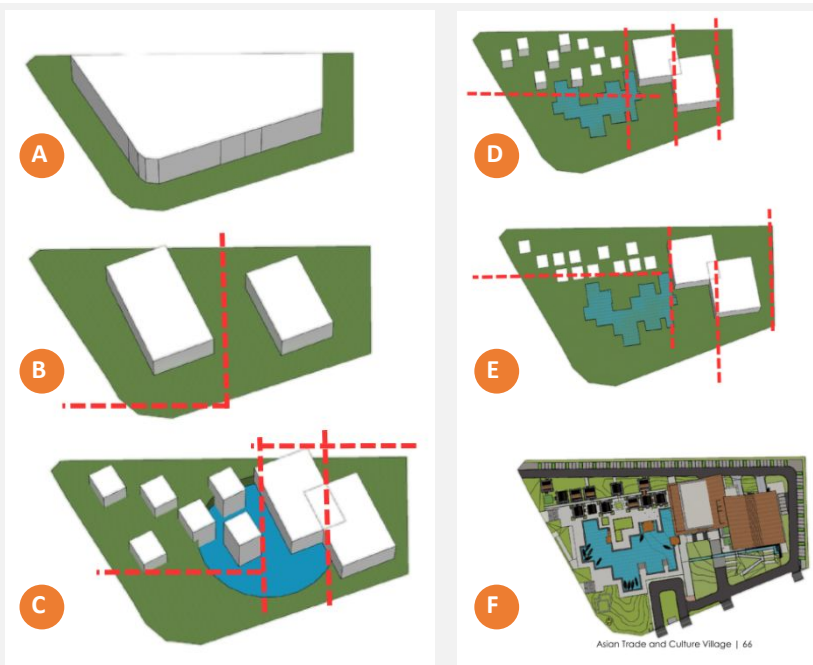


Figure 9: Design development and placemaking through adaptive building morphology

The design process (Figure 9) begins with the consideration of the maximum building volume capacity **(A)** to ensure the site is fully optimised. The program is then organised into two main blocks for two distinct functions **(B)**, establishing clarity in spatial hierarchy. To enrich the form, Block 1 is divided into two intersecting parts, while Block 2 is broken down into smaller clusters around a circular water body **(C)**. This approach evolves further as Block 1 maintains its intersected alignment, while Block 2 clusters are scattered beside the water feature **(D)**. The composition is refined when Block 2 clusters are aligned with Block 1 along a central axis **(E)**, creating order and cohesion. Finally, a road layout integrated with landscaped elements is merged seamlessly with the overall design **(F)**, reinforcing both accessibility and harmony with the natural environment.

SITE PLAN



Figure 10: The site plan showing the placement of the urban plaza adjacent to the main road for easy accessibility.

FLOOR PLANS

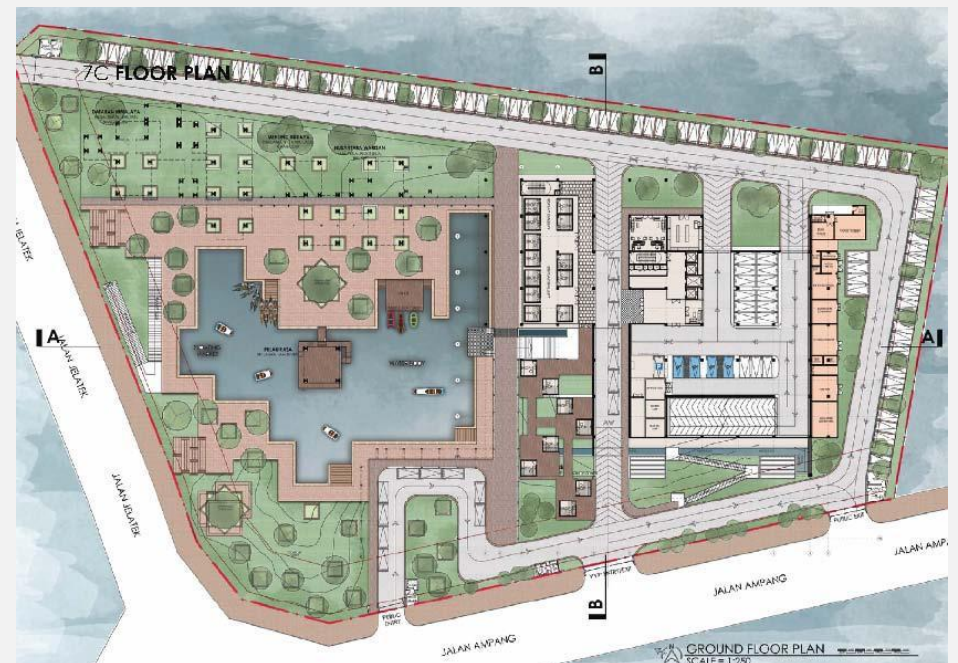


Figure 11: Ground Floor Plan focusing on vehicular access for visitors and VIPs.

For the ground floor plan (Figure 11), priority was given to maximising urban connections so that people around the site could benefit from the project. The nearby LRT attracts a large number of daily commuters who walk toward adjacent apartments, passing in front of the existing Great Eastern Shopping Mall.

To capture this pedestrian flow, the design proposes an urban plaza with a water body and walkways, seamlessly connected to surrounding roads and pathways commonly used by pedestrians moving between the MRT station and residential buildings. The plaza also incorporates an annex building that portrays the culture and heritage of Asia. On the eastern side of the ground floor, vehicular traffic is prioritised for drop-off and pick-up areas, VIP access, and service entrances.

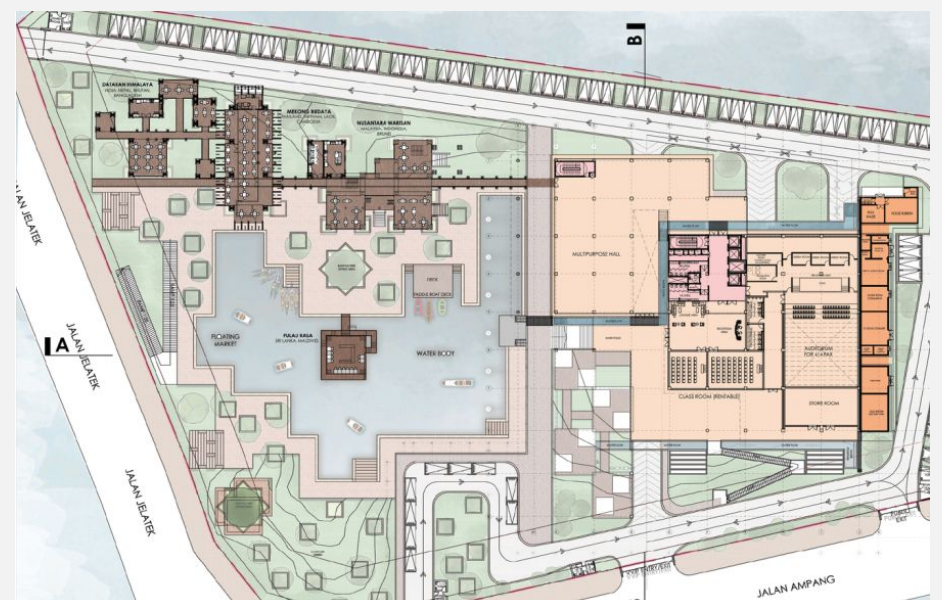


Figure 12: First floor plan Floor Plan focuses on the connectivity with the plaza.

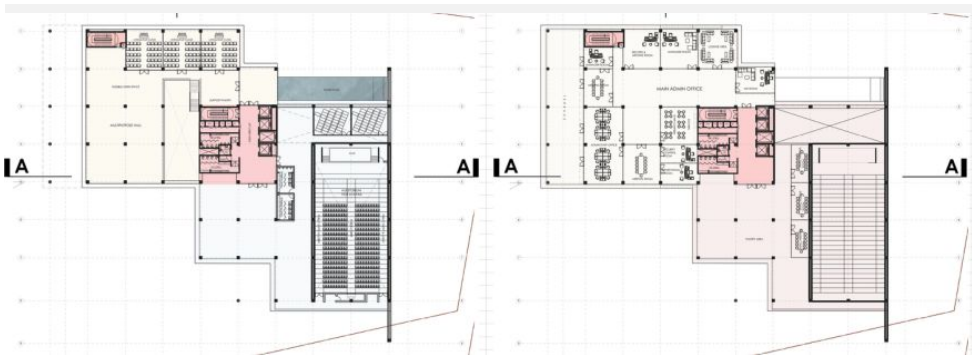


Figure 13: 2nd and 3rd floor plan showing the auditorium seating and training spaces.

The general drop-off and pick-up zone is located between the main buildings and the urban plaza, while the VIP entrance provides direct access into the main building complex, with its own drop-off point closely linked to the lift core, ensuring discreet access to functional spaces without passing through the plaza. Meanwhile, the service entrance is positioned on the far east side, connecting efficiently to the main building's service areas. On the first floor (Figure 12), the auditorium entrance is complemented by access to seminar rooms, classrooms, and a cultural heritage kiosk. From this exhibition space, a bridge across the water body leads to the annex building, which houses regional Asian dining and café areas.

Above the second floor (Figure 13), the complex accommodates the main auditorium, management offices, and additional classrooms for training programmes, establishing a coherent spatial arrangement that balances cultural identity, user convenience, and functional performance.

The sectional perspective (Figure 14) shows the functional spaces of the auditorium, exhibition hall and their vertical connections. A central circulation core connects the entire complex for efficient movement and spatial clarity.

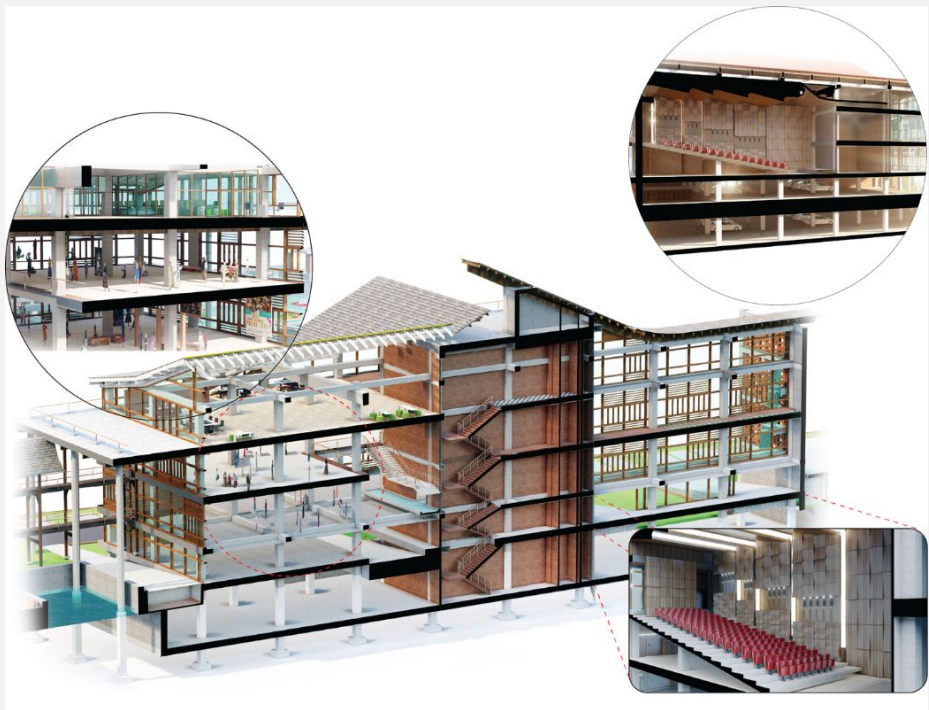


Figure 14: Sectional perspective through the main building complex.

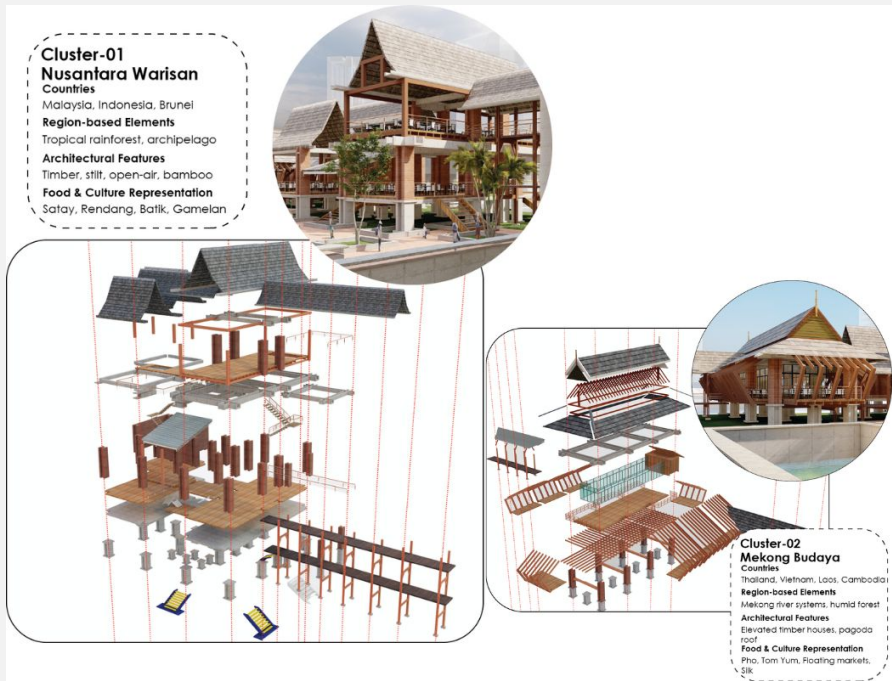


Figure 15: Exploded view of the cluster buildings which represents the countries of *Nusantara* (Malay Archipelago).

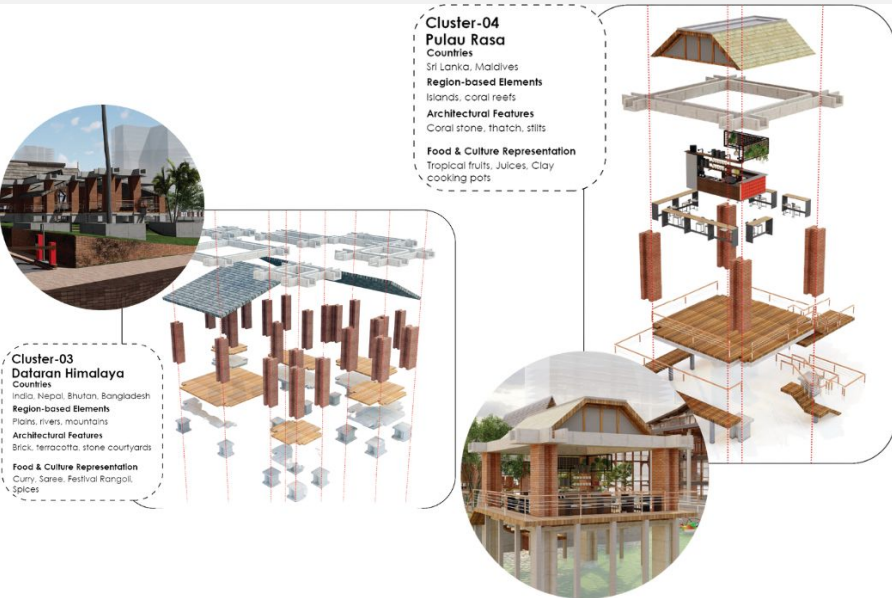


Figure 16: Exploded view of the cluster buildings representing the South Asian countries.

Figure 15 and Figure 16 illustrate the annex clusters representing Nusantara and the South Asian countries through their spatial arrangements, materiality and overall ambience. For example, the cluster 1 represents Malaysia, Indonesia, Singapore and Brunei by incorporating spaces like *anjung* (porch) and *serambi* (veranda) with the structures built on stilt and covered with pitch roof. Meanwhile, Cluster 4 represents the island nations of South Asia, like Sri Lanka and Maldives and the structures are built on the waterbody, connected by pedestrian bridge and accessible by recreational boats. Each of the cluster will house cafes that offers the traditional dishes of the representative countries for the urban population who may visit the facility for recreation and entertainment.

SUSTAINABLE DESIGN STRATEGIES

This project includes passive water-cooling systems inside the multipurpose hall to deal with Malaysia's hot and humid tropical climate. There is a constant flow of water across the floor, which acts as a natural thermal buffer. This design is based on traditional Asian architecture's water courtyards, where moving water helps cool the air around it by evaporating and radiating heat (Chidiadi & Taki, 2025). When air moves over the water's surface, it cools down before rising into the building's occupied areas. This makes a naturally ventilated and comfortable microclimate without relying too much on mechanical air conditioning systems.

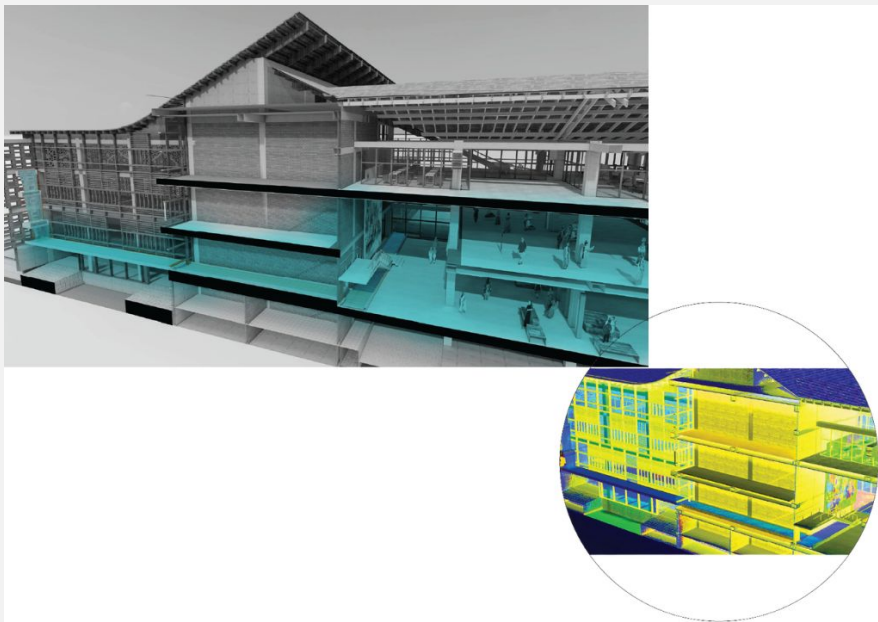


Figure 17: Sectional perspective which is showing blue color which is representing cool area during water flow time.

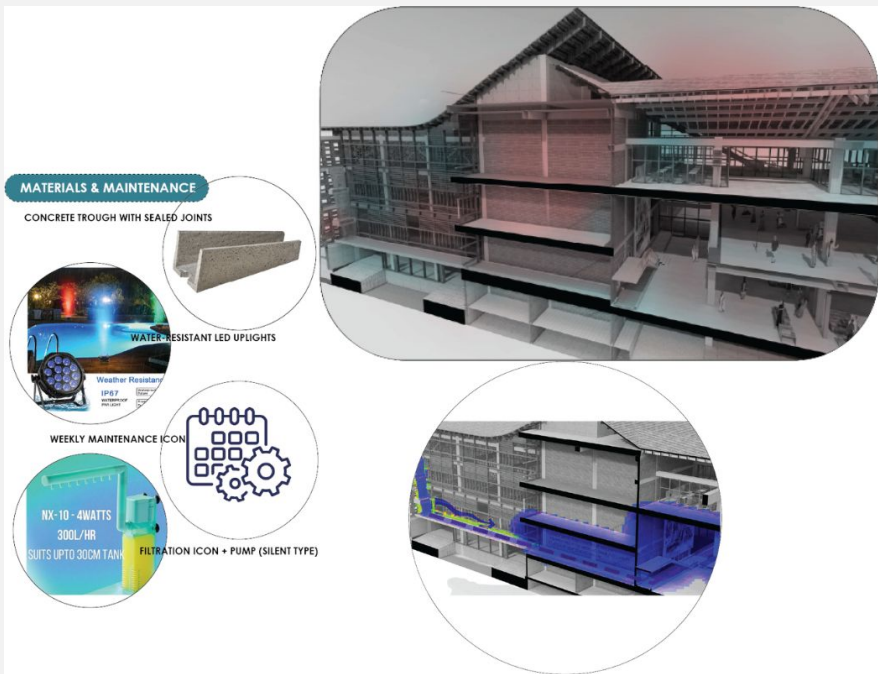


Figure 18: Sectional perspective when the waterfall remain close. The temperature goes high more than 3-4 degree Celsius. And when waterfall started the temp goes down.

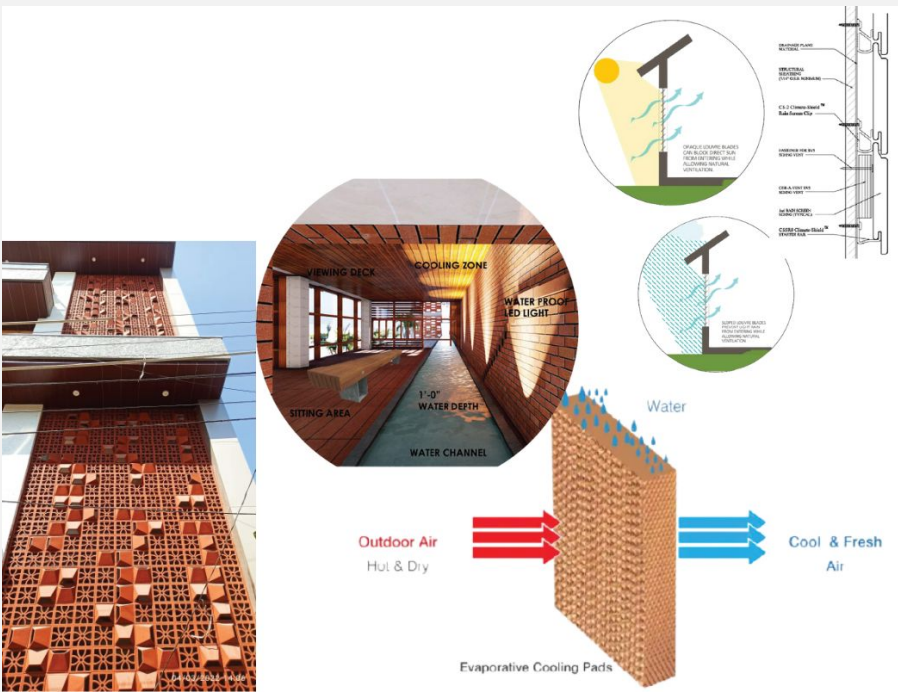


Figure 19: Bricks, shading device and evaporative cooling pads.
Source: Author

Using brick *jali walls* (Figure 19) in a Kobogo-inspired pattern, placed carefully on facades that are exposed to prevailing winds, works well with this system. These screen walls with holes let hot air out and cool air in, which makes a pressure difference that makes cross ventilation happen. The bricks are porous, so they not only filter sunlight to cut down on glare and solar gain, but they also help with evaporative cooling by holding moisture and letting breezes pass through wet surfaces (Mohamed et al., 2021). These two systems, water flow and brick *jali*, work together to make public spaces cooler, use less energy, and be more comfortable to be in while also honouring the materials and crafts of the area.

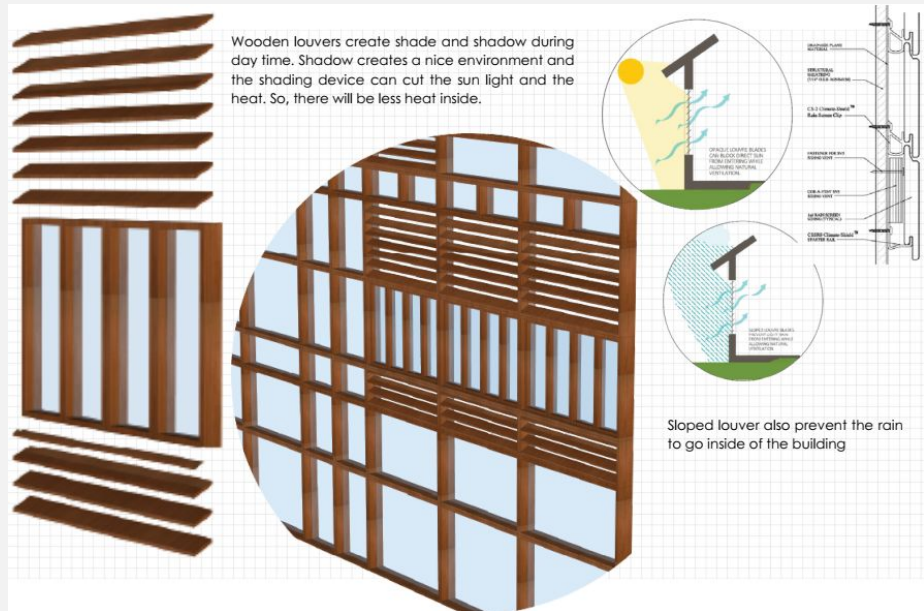


Figure 20: Wooden louvre panels for enhancing façade aesthetics and providing shade from the sun to reduce cooling load.

This integrated approach (Figure 21) to achieve maximum sustainability not only addresses climatic responsiveness but also enriches the spatial and sensory experience, reinforcing the project's cultural narrative through the use of traditional passive strategies reimaged in a contemporary architectural language.

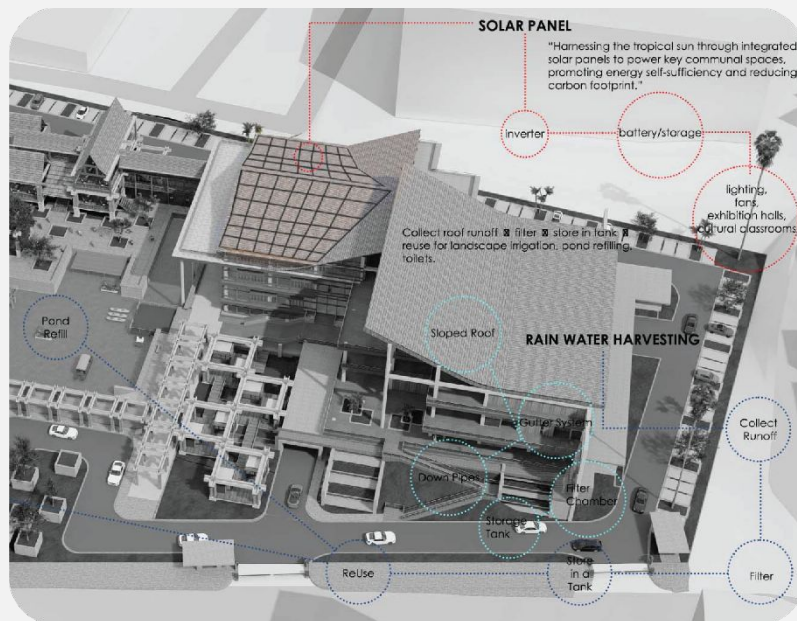


Figure 21: Shows the solar panel, rain water harvesting area as a fundamental requirement for achieving sustainable design.

CONCLUSION

The project began with the proposition that contemporary urban spaces in Kuala Lumpur often lack a unifying cultural identity, and that architecture can unite Asia's diverse traditions into a shared environment of learning, exchange, and community.

Through the Asian Trade and Culture Village, this aim is achieved by a decentralised, walkable master plan shaped by courtyards, floating markets, and interactive spaces that respond to users and the urban context. The four cultural clusters function as living environments where food, crafts, performances, and social learning activate everyday cultural exchange. The Grand Central Hall and iconic structures deliberately avoid Western formalism by prioritising human scale, cultural motifs, and interactive experience.

A true Asian architectural identity emerges not through superficial motifs but through weaving shared heritage and lived traditions. Sustainability—passive cooling, water integration, and locally sourced materials—is integral, reflecting historical environmental harmony. By embedding these practices in contemporary design, the project positions Asian architecture as both a vessel of identity and a model of resilience.

ACKNOWLEDGEMENT

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REFERENCES

- Chidiadi, E., & Taki, A. (2025). Examining the impact of multilevel courtyards in hot-dry and humid climates. *Energies*, 18(10), 2425. <https://doi.org/10.3390/en18102425>
- Jieqiong, J., & Abdul Malek, N. A. (2025). Integrating Mongolian culture in urban square design: A literature review on cultural identity and user engagement. *Malaysian Journal of Social Sciences and Humanities*, 10(4), e003267. <https://doi.org/10.47405/mjssh.v10i4.3267>
- Kolani, K., Wang, Y., Zhou, D., Nouyep Tchitchui, J. U., & Okolo, C. V. (2023). Passive building design for improving indoor thermal comfort in tropical climates: A bibliometric analysis using CiteSpace. *Indoor and Built Environment*, 32(6), 1035–1052. <https://doi.org/10.1177/1420326X231158512>
- Mohamed, S., Al Khatri, H., Calautit, J. K., Omer, S. A., & Riffat, S. B. (2021). The impact of a passive wall combining natural ventilation and evaporative cooling on schools' thermal conditions in a hot climate. *Journal of Building Engineering*, 44, 102624. <https://doi.org/10.1016/j.job.2021.102624>
- Muh., A., & Solissa, F. (2025). Exploring the influence of cultural identity on contemporary architectural styles in Southeast Asia. *The Journal of Academic Science*, 2(5). <https://doi.org/10.59613/qnkr8a78>
- Saheeh International. (2011). *The Qur'an: English meanings and notes*. Jeddah: Al-Muntada Al-Islami Trust.
- Scriver, P., Srivastava, A., & Lu, D. (2019). Re-Asia: Architecture as tactic. *Architectural Theory Review*, 22(3), 301–308. <https://doi.org/10.1080/13264826.2018.1523032>
- Sun, W. (2023). The collective realms in the Chinese city: Towards an alternative framework for public space. *ARENA Journal of Architectural Research*, 8(1), 10. <https://doi.org/10.55588/ajar.362>

06

ARUNIKA: THE ENHANCEMENT OF KAED COURTYARDS THROUGH MULTI-MOTION DESIGN FOR WELLNESS AND LEISURE

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ABSTRACT

Courtyards in the Kulliyyah of Architecture and Environmental Design (KAED) at IIUM serve as transitional and communal spaces that enhance interaction, comfort, and identity within academic environments. However, the KAED courtyards are currently underutilised, offering limited inclusivity, comfort, and spatial character. This project aims to transform the KAED Courtyard (Gallery) and KAED Courtyard (Café) into vibrant, climate-responsive, and multifunctional hubs that reflect the faculty's creative spirit and foster community engagement. A multidisciplinary methodology, including site analysis, user observation, precedent studies, design development, and cost evaluation had guided the formulation of the "Multi-Motion" concept. The proposed design introduces interactive gathering zones, varied seating arrangements, greenery, and water features to enhance comfort, inclusivity, and environmental responsiveness, while prioritising cost-effective materials and solutions. This approach upgrades the KAED Courtyards into dynamic, sustainable, and financially feasible community spaces.

Keywords: KAED courtyard, courtyard design, multi-motion, wellness & leisure
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PROJECT INTRODUCTION

This study reports on upgrading the KAED Courtyard (Gallery) and KAED Courtyard (Café) at the Kulliyyah of Architecture and Environmental Design (KAED). The project responds to maximise of under utilised spaces, enhance courtyard's aesthetic and identity, which create a vibrant and inclusive gathering spaces. Through a multidisciplinary approach, students from different fields collaborate to propose innovative solutions to enhance functionality, improve comfort, and strengthen the courtyards' character, integrating their expertise by combining architectural design, landscape planning, interior aesthetics, and user experience strategies into a cohesive redesign process. The redesign integrates climate-responsive strategies and introduces flexible uses. By transforming the courtyards into welcoming and dynamic spaces, the project aims to foster creativity, interaction, and sustainability, while positioning the courtyards as important hubs of community life within KAED.



Figure 1 KAED Courtyard (gallery)
(Source: Authors, 2025)



Figure 2 KAED Courtyard (cafe)
(Source: Authors, 2025)

METHODOLOGY

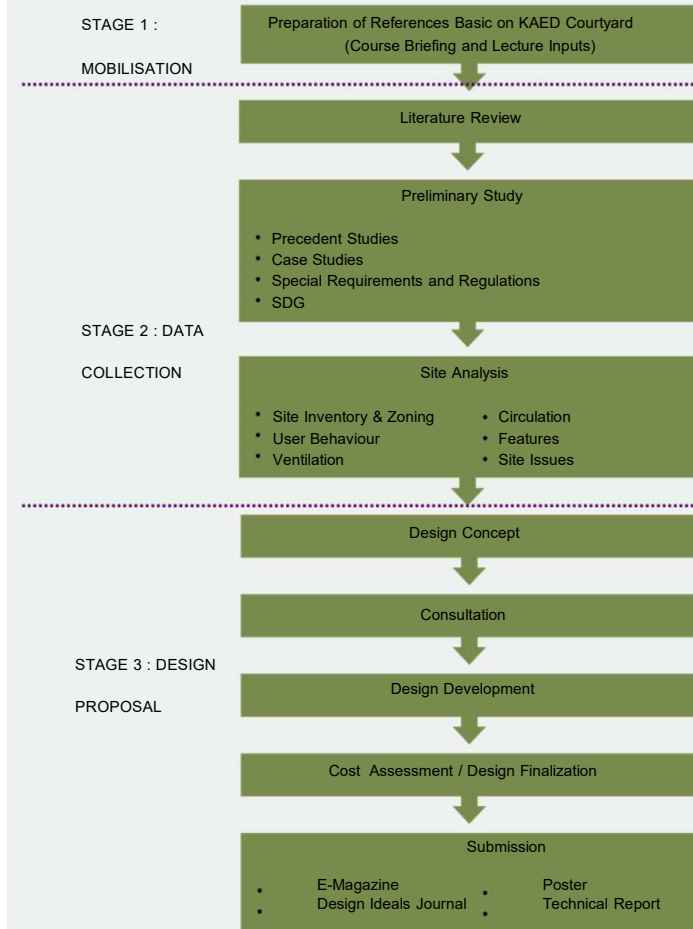


Figure 3: Methodology

LITERATURE REVIEW

COURTYARD DESIGN IN ARCHITECTURE

Courtyard design in architecture plays a crucial role in enhancing social interaction, environmental comfort, and aesthetic appeal. Courtyard brings environmental and thermal benefit by enhance thermal comfort, especially in hot climates, by regulating microclimates and providing shade (Ucer et al., 2024). Studies indicate that square-shaped courtyards with optimal height-to-width ratios can improve energy efficiency and reduce reliance on mechanical cooling systems (Patherya & Lau, 2012). In modern architecture, courtyards have evolved in their function and form such the design of courtyards fosters social interaction and community bonding, contributing positively to psychological well-being (Juba & Bogenç, 2024).

HUMAN MOVEMENT AND SPACE INTERACTION

The design of courtyards significantly influences human movement and social interactions by shaping user experiences within these spaces. Courtyards serve as multifunctional areas that enhance social interaction, psychological well-being, and environmental comfort. Spatial configuration directly impacts movement among users (Vedhajanani & Amirtham, 2024). Observation studies on human movement in well-organized environments show that clear pathways encourage exploration and interaction, increasing dwell time (Atef et al., 2023). Comprehensive courtyards promote lingering, as eye-tracking studies reveal users are drawn to these spaces for social interaction and relaxation (Sun, 2024). Psychological benefits include improved mental health, recovery, and well-being through social activities and community bonding (McIntosh & Jenkin, 2022).

GREEN & CLIMATE-RESPONSIVE DESIGN

Green and climate-responsive design principles are essential for building sustainable communities, focusing on minimising environmental impact while enhancing the quality of life for residents. These principles integrate energy efficiency, resource conservation, and community well-being into the architectural process. Adopting this principles into design can influence local microclimates, enhancing thermal comfort through strategic design elements such as vegetation and water features (Ucer et al., 2024).

CAMPUS COURTYARDS AS SOCIAL HUBS

Campus courtyards play a significant role in fostering social interactions and community building among students by providing spaces that encourage engagement, comfort, and a sense of belonging. These outdoor spaces are integral to the physical environment of a university, influencing student behavior and interaction patterns. The design and features of these courtyards, such as seating arrangements, visibility, and accessibility, are crucial in promoting social opportunities and informal gatherings. Courtyards with seating, shade, and visibility are preferred by students, as they offer opportunities for social interaction and informal gatherings (Hasan et al., 2024). The spatial layout and design of these areas significantly affect how students use the space, with a preference for areas that facilitate easy movement and visibility.

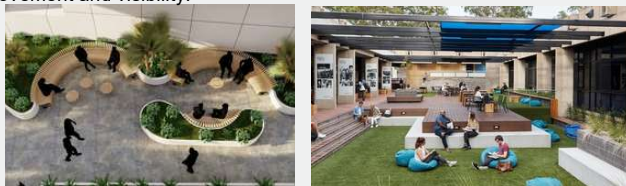


Figure 4: Campus courtyard as social hub, fostering social interaction, movement among students (Source: Pinterest.com)

CASE STUDY AND PRECEDENT STUDY

1) ROOFTOP GARDEN TRX, KUALA LUMPUR

The TRX Rooftop Park, completed in 2020 as part of the 70-acre Tun Razak Exchange development, spans approximately 10 acres (435,600 ft²), making it one of the largest rooftop parks in Southeast Asia. Designed as a multifunctional recreational hub, the elevated park integrates lush greenery with the urban core, featuring jogging tracks, walking paths, open lawns, shaded pavilions, and water elements. Its elevated design not only offers panoramic views of the Kuala Lumpur skyline but also mitigates the urban heat island effect, creating a healthier microclimate. The project follows contemporary biophilic design principles by merging modern infrastructure with nature to enhance user well-being. Sustainable strategies such as rainwater harvesting, energy-efficient lighting, and low-maintenance tropical planting further strengthen its ecological performance. By transforming an underutilised rooftop into a vibrant, community-centered urban oasis, TRX Rooftop Park exemplifies how urban design can align with Sustainable Development Goals 11 (Sustainable Cities and Communities) and 3 (Good Health and Well-Being).



Figure 5: TRX Rooftop Park offering elevated greenery within the KL skyline. (Source: OCULUS, 2024)

2) TAMAN TASIK TITIWANGSA, KUALA LUMPUR

Taman Tasik Titivangsa, covering approximately 95 hectares (234 acres / ~10 million ft²), underwent a major redevelopment by Dewan Bandaraya Kuala Lumpur (DBKL) and officially reopened in December 2019. The transformation introduced upgraded jogging and cycling tracks, children's playgrounds, shaded pavilions, and water-based recreational features, making it one of the city's most inclusive and dynamic public parks. The design prioritizes accessibility with barrier-free circulation, clear zoning, and spaces that cater to families, students, and sports enthusiasts alike.

Through its integration of landscaped lawns, shaded walkways, and diverse activity zones, the park enhances comfort in Malaysia's tropical climate while strengthening its role as a social hub. The redevelopment strongly supports SDG 3 (Good Health and Well-Being) and SDG 11 (Sustainable Cities and Communities) by promoting active living, inclusivity, and sustainable urban recreation.



Figure 6: Redeveloped Taman Tasik Titivangsa highlighting upgraded community facilities, cycling tracks, and shaded gathering zones. (Source: iStock, 2025)

3) ALIBABA XIXI CAMPUS (PARK C), HANGZHOU – ASPECT STUDIOS

The Alibaba Xixi Campus Park C, completed in 2019, spans approximately 22 hectares (54 acres / ~2.3 million ft²) and was designed by ASPECT Studios as part of Alibaba's headquarters expansion in Hangzhou. The design takes inspiration from the nearby Xixi Wetlands, weaving ecological systems into the corporate environment through water gardens, ecological corridors, pedestrian bridges, and shaded seating areas. These elements encourage social interaction, relaxation, and outdoor work, creating a landscape that balances productivity with well-being. Sustainability is at the core of the project, with strategies such as native planting, wetland restoration, and natural stormwater management that regulate the microclimate and increase biodiversity. The park not only enhances the ecological value of the campus but also provides employees with restorative green spaces that foster creativity and collaboration. By merging nature with workplace culture, Alibaba Xixi Campus Park C demonstrates how corporate landscapes can support both ecological resilience and human health, aligning with SDG 3 (Good Health and Well-Being), SDG 11 (Sustainable Cities and Communities), and SDG 15 (Life on Land).



Figure 7: Alibaba Xixi Campus Park C combining wetland-inspired landscapes with workplace and social functions. (Source: world and landscape architect, 2022)

4) TOM LEE PARK, MEMPHIS – SCAPE + STUDIO GANG

Tom Lee Park, a 30-acre (1.3 million ft²) riverfront park in Memphis, reopened in September 2023 after a \$60 million redesign by SCAPE in collaboration with Studio Gang. Situated along the Mississippi River, the project transforms a historic public space into a resilient, inclusive, and ecologically rich urban park. The redesign introduces flexible event lawns, shaded pavilions, ecological wetlands, and extensive walking and cycling trails that accommodate both everyday recreation and large-scale civic gatherings.

A central focus of the project is climate resilience, achieved through flood-tolerant landscapes, native plantings, and stormwater management strategies that protect the riverfront while improving biodiversity. At the same time, the park emphasizes cultural identity and inclusivity, offering spaces that reflect Memphis' diverse communities and history. By blending ecological restoration with accessible and vibrant social programming, Tom Lee Park stands as a model for resilient waterfront design, supporting SDG 11 (Sustainable Cities and Communities) and SDG 13 (Climate Action).



Figure 8: Tom Lee Park redesigned riverfront featuring event lawns, wetlands, and inclusive public spaces. (Source: world and landscape architect, 2023)

SITE ANALYSIS AND FINDING

The KAED Courtyards, located at the heart of the Kulliyah of Architecture and Environmental Design (KAED), IIUM, serve as transitional and communal spaces surrounded by lecture rooms, studios, and circulation corridors. Their central placement makes them highly accessible to both students and staff, positioning the courtyards as potential hubs for interaction, rest, and academic activities. Despite this strategic location, the courtyards are currently underutilised, functioning more as circulation spaces rather than vibrant communal areas. The North (A) and South (B) Courtyards consist mainly of tiled flooring with limited softscape elements, resulting in spaces that feel rigid and exposed. Existing furniture is sparse and inconsistent, offering little comfort or incentive for prolonged use. Shaded areas are minimal, making the courtyards uncomfortable during peak daylight hours, while heavy rainfall renders the space unusable due to a lack of sheltered zones. Ventilation remains adequate due to their open-air design, yet the absence of weather protection limits flexibility throughout the day and across different seasons.



Figure 9: Top View of KAED Courtyard (A) Gallery (Source: Authors, 2025)

User observation indicates that the majority of students and staff simply pass through the courtyards between classes rather than occupying them for meaningful purposes. On occasion, small groups use the space for waiting, casual conversations, or quick meals, but the lack of greenery, shade, and comfortable seating discourages extended stays. The courtyards therefore fail to reflect the dynamic identity of KAED, where creativity, collaboration, and cultural expression are central to academic life.

In their current state, the courtyards present several challenges: minimal greenery, weak spatial identity, poor comfort levels, and a heavy reliance on circulation patterns. However, these challenges also highlight opportunities. With thoughtful redesign, the courtyards can be transformed into multifunctional spaces that balance circulation with relaxation, integrate biophilic design elements, and provide inclusive, shaded zones for learning, socialising, and community events.

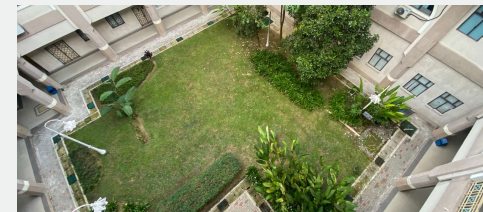


Figure 10: Top View of KAED Courtyard (B) cafeteria (Source: Authors, 2025)

SWOT ANALYSIS

Categories	Descriptions
Strength	Strategic Location , The KAED Courtyards are positioned at the core of the faculty, directly linked to studios, lecture rooms, and circulation corridors, making them one of the most accessible and visible spaces for students and staff.
Weakness	Lack of Comfort , The courtyards lack shaded areas, proper seating, and weather protection, discouraging users from staying longer than necessary and limiting their potential as social or learning spaces.
Opportunities	Potential for Transformation , The large, open areas provide flexibility and the opportunity to be reimagined as multifunctional zones that can accommodate discussions, relaxation, exhibitions, or small events, enhancing the vibrancy of KAED life.
Threats	Environmental Challenges , The courtyards are overly exposed to direct sunlight and heavy rainfall, making them uncomfortable during peak hours and unusable during wet weather, while the absence of greenery further reduces climate resilience.

Figure 11: Table of SWOT Analysis

Site Zoning

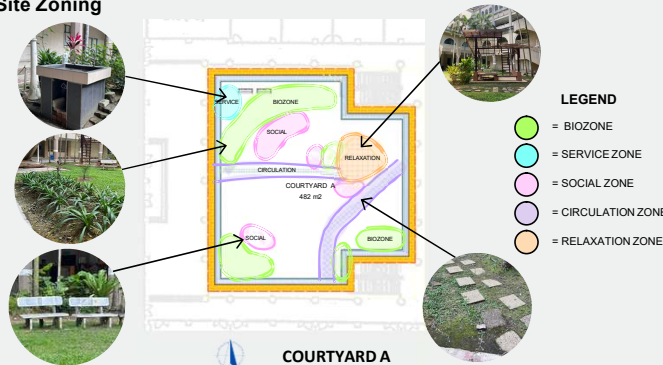


Figure 12: Courtyard A is located closer to the main lecture halls and frequently acts as a transitional route for students moving between classes. Circulation dominates the central portion of the courtyard, while the edges remain underutilised, with only a few scattered seating areas.

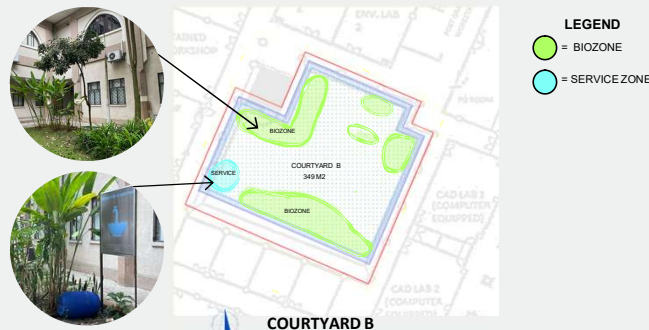


Figure 13: Courtyard B is slightly more enclosed, surrounded by studios and workshop, giving it the potential to become a quieter, more intimate gathering zone.

DESIGN CONCEPT

Concept : Multi Motion

The Multi-Motion concept is inspired by continuous human interaction with nature, reflecting the diverse movements of users—walking, gathering, exercising, and socializing within the KAED Courtyard (Gallery) and Courtyard (Café). Central to this concept is the idea of dynamic pathways that support fluid pedestrian movement, flexible zones that adapt to different social activities, and layered circulation that accommodates both fast and slow patterns of behaviour. The built environment is therefore designed to respond to and enhance natural elements, creating spaces that are vibrant, climate-responsive, and socially meaningful. Insights from precedent studies were directly embedded into the design development: features from the TRX Rooftop Garden, particularly its shaded pavilions and strategies to reduce the urban heat island effect, informed the approach to microclimate mitigation and canopy placement in Courtyard A. Similarly, Taman Tasik Titiwangsa's clear pedestrian zoning and barrier-free circulation guided the configuration of these dynamic pathways and the overall structuring of movement flows across both courtyards. With these influences, Courtyard A is envisioned as a larger, high-circulation zone composed of flexible activity areas supported by shaded structures, tree planting, and open gathering spaces. In contrast, Courtyard B offers a smaller, cozier environment enriched with shrubs, palms, and comfortable seating, forming a more intimate layer within the overall circulation system. Together, these spaces create a balanced courtyard system that integrates active engagement with quiet retreat. The verse in Surah An-Nahl (16:15), often interpreted as a metaphor for stability within motion, further reinforces the conceptual interplay between movement and grounding.

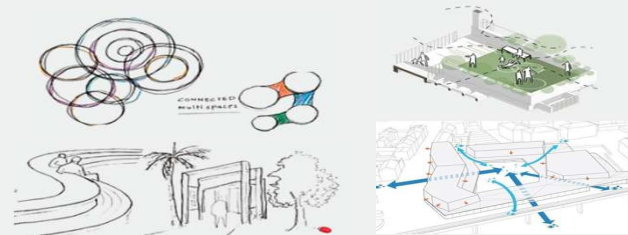


Figure 14: Waterfall scenery
(Source : CentralPark.com)

Through Multi-Motion concept, courtyard design supports Sustainable Development Goals such as SDG 3 (Good Health and Well-Being) by encouraging relaxation, social interaction, and stress relief through greenery and shaded spaces. It aligns with SDG 7 (Affordable and Clean Energy) by maximising natural ventilation, shading, and daylight to reduce energy use. At the same time, it reflects SDG 12 (Responsible Consumption and Production) through the use of durable, eco-friendly materials and efficient water features, ensuring sustainable practices within the KAED courtyards.



Figure 15: The related SDGs that align with the project

DESIGN DEVELOPMENT , BUBBLE DIAGRAM PROCESS AND RELATIONSHIP CHART

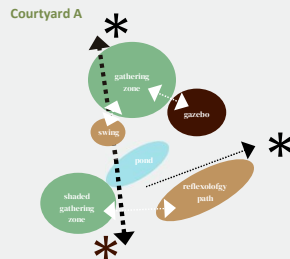


Figure 16: Bubble diagram courtyard A

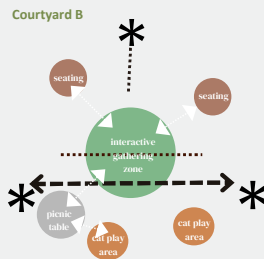


Figure 17: Bubble diagram courtyard B

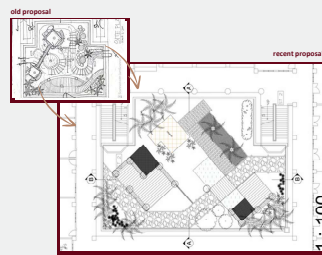


Figure 18: Design development courtyard A

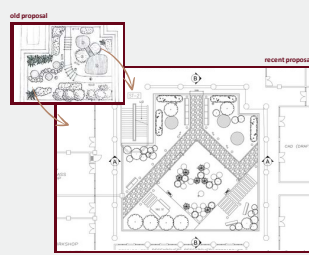


Figure 19: Design development courtyard B

IDEA DEVELOPMENT

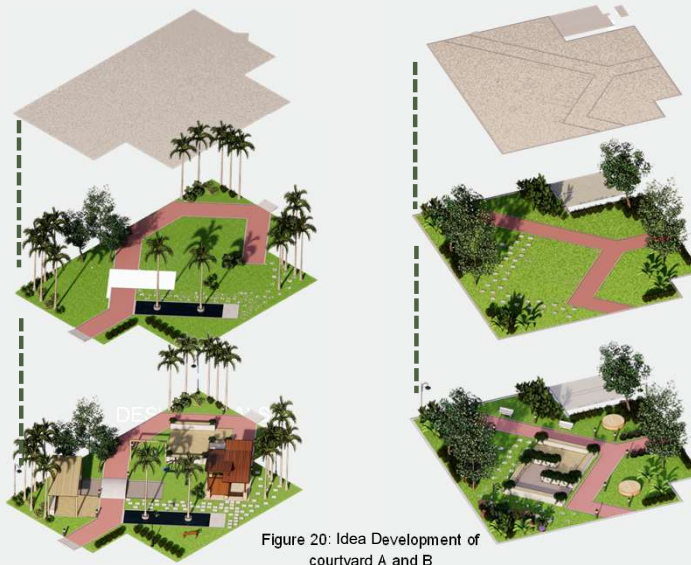


Figure 20: Idea Development of courtyard A and B

DESIGN FINALISATION

The concept of "Multi-Motion" is fully realised in the finalised design of the KAED Courtyards, where spaces are intentionally clustered into zones that encourage distinct behavioural patterns. The central gathering area facilitates the "gathering" motion, acting as the heart of the courtyards and extending outward to gazebos, swings, picnic tables, seating clusters, and a reflective pond, each designed to support moments of rest, play, and social interaction. Circulation patterns are carefully layered to balance efficiency and exploration. Direct, linear pathways support the "transition" motion, enabling users to move quickly between gallery spaces and activity zones. In contrast, looping routes encourage the "exploration" motion, guiding users around landscape features and activity nodes, creating movement that is both purposeful and leisurely. The integration of natural and built elements enhances comfort, usability, and cultural identity. Shaded seating and tree canopies improve microclimate response, while water features and greenery enhance sensory experience. Meanwhile, gazebos, pathways, and outdoor furniture anchor "pause-and-engage" motions, inviting users to sit, converse, or observe. Overall, the design creates a coherent and engaging environment that transforms the courtyards into vibrant communal hubs — inclusive, flexible, and expressive of KAED's creative spirit, while clearly translating the Multi-Motion concept into physical, functional spatial experiences.



Figure 21: Axonometric view of Courtyard A



Figure 22: Axonometric view of Courtyard B

COURTYARD A



Figure 23: A,B Perspective Views of Entrance



Figure 24: C,D Perspective Views of Gathering Zone



Figure 25 :E,F Perspective Views of Swing and pond



Figure 26: G,H Perspective Views of Shaded Gathering Zone and Reflexology Path

COURTYARD B



Figure 27: I,J Perspective Views of Entrance



Figure 28: K,L Perspective Views of Interactive Gathering Zone



Figure 29: M,N Perspective Views of Sitting Area

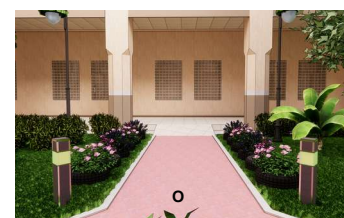


Figure 30:O,P Perspective Views Planters Area

THE PROPOSAL

The proposed of Courtyard A illustrates the spatial arrangement and design elements through floor plan, sectional, and elevation views. Figure 31 presents the floor plan layout, showing the overall organization of circulation paths, vegetation, and built structures within the courtyard. Figure 32, Section A-A, provides a vertical cut that highlights the relationship between courtyard features such as trees, seating, and architectural structures against the multi-storey building backdrop, while Figure 33, Section B-B, emphasizes spatial depth and elevation differences, showing how vegetation and built elements interact with the surrounding façade.

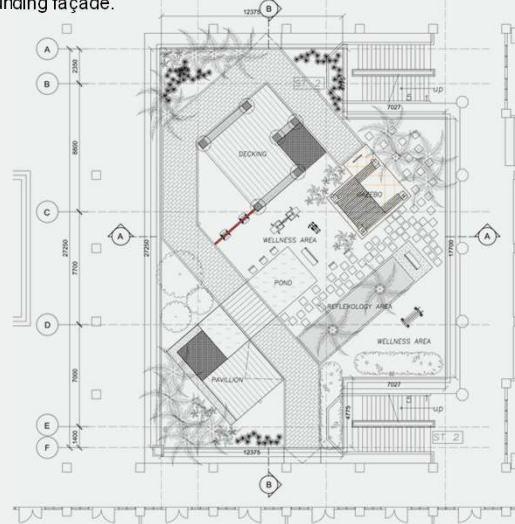


Figure 31: courtyard A floor plan design



Figure 32: courtyard A Section A - A



Figure 33: Courtyard A Section B - B

The four elevations further demonstrate the courtyard's character from different viewpoints: Figure 34 (North Elevation) depicts the arrangement of palm trees and structures with the building as a backdrop; Figure 35 (South Elevation) shows the clustering of greenery that frames the central courtyard; Figure 36 (East Elevation) illustrates the linear alignment of palms and built interventions along pedestrian pathways; and Figure 37 (West Elevation) presents a balanced view of vegetation and structures, reinforcing the courtyard as a focal space within the architectural setting.



Figure 34: North Elevation

NE NORTH ELEVATION
SCALE 1:100



Figure 35: South Elevation

SE SOUTH ELEVATION
SCALE 1:100



Figure 36: East Elevation

EE EAST ELEVATION
SCALE 1:100

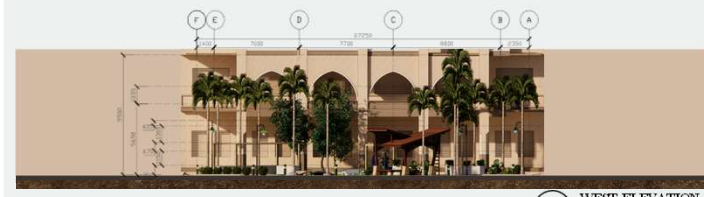


Figure 37: West Elevation

WE WEST ELEVATION
SCALE 1:100

The proposed of Courtyard B provide a comprehensive representation of the courtyard design through floor plan, sectional, and elevation views. Figure 36 presents the floor plan layout, illustrating the spatial organisation of circulation paths, greenery, and seating areas within the courtyard. Figure 37, Section A-A, shows a vertical cut through the courtyard, highlighting the arrangement of vegetation, pathways, and built elements in relation to the adjacent architectural structures, while Figure 38, Section B-B, emphasises the scale and depth of the courtyard, showing how trees and landscaping integrate with the arched façade of the building.

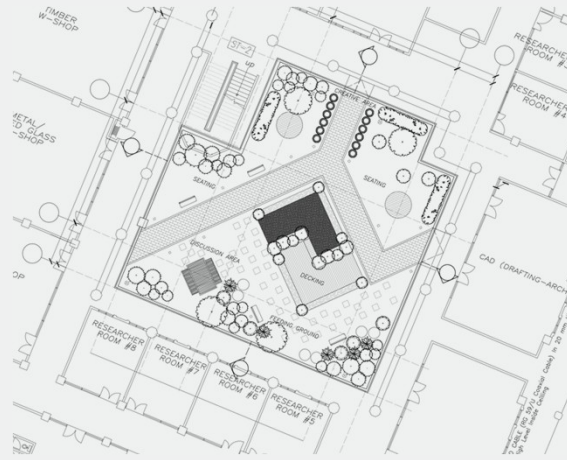


Figure 36 courtyard B floor plan design



Figure 37 courtyard B Section A - A

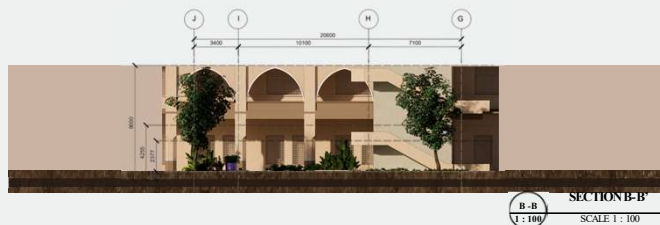


Figure 38 Courtyard B Section B - B

The elevation drawings further depict the courtyard from four perspectives: Figure 39 (North Elevation) illustrates the positioning of trees and greenery with the building as a backdrop; Figure 40 (South Elevation) highlights the central arched openings framed by vegetation; Figure 41 (East Elevation) shows the placement of trees and landscape features along the courtyard edge; and Figure 42 (West Elevation) presents a balanced composition of vegetation and arched architectural features, reinforcing the courtyard's role as a harmonious and inviting space within the building context.



Figure 39 North-East Elevation



Figure 40 South-East Elevation



Figure 41 East-West Elevation



Figure 42 North-West Elevation

COST PROPOSAL

1) COURTYARD A & B

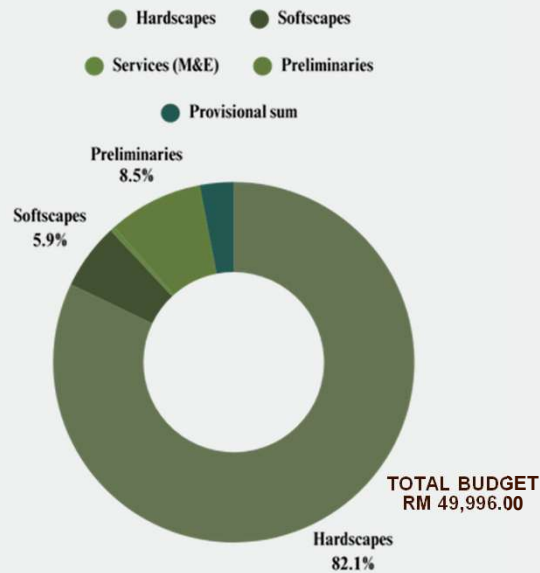


Figure 38: Budgeting for Courtyard A & B

NO	COMPONENT	AMOUNT (RM)	PERCENTAGE (%)
A	Preliminaries	4,215.00	8.50
B	Hardscapes	40,768.00	82.10
C	Softscapes	2,946.00	5.90
D	M&E Services	217.00	0.40
TOTAL		48,146.00	97
E	Provisional Sum	1,500.00	3
GRAND TOTAL		49,646.00	100

2) TOTAL ELEMENTAL COST

The project is designed to stay within a budget of RM50,000, striking a balance between creativity and practicality. Courtyard A focuses on interactive gathering and activity areas, while Courtyard B offers a serene setting for comfort and reflection. By using locally sourced materials, sturdy furniture, and native plants, the design minimises costs and long-term maintenance, ensuring both sustainability and feasibility.

COURTYARD A : RM 31,952.00

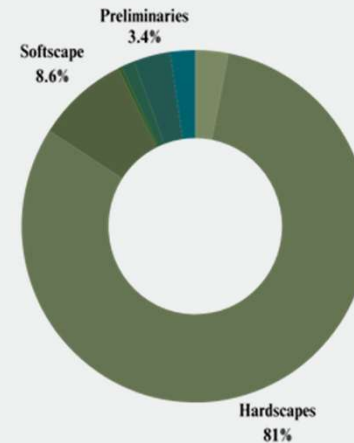


Figure 39: Budgeting for Courtyard A

COURTYARD B : RM 17,694.00

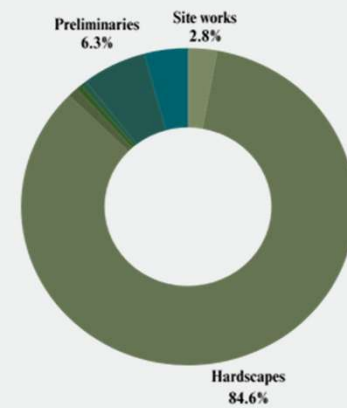


Figure 40: Budgeting for Courtyard B

CONCLUSION

This paper presents the findings of a study conducted at the Kulliyyah of Architecture and Environmental Design (KAED) on the transformation of IIUM courtyards. A collaborative effort involving students from multiple programmes explored innovative strategies to address challenges such as inadequate circulation, underutilised space, and an uninviting atmosphere. The project aims to develop a modern, sustainable courtyard system, enhance lighting and thermal comfort, and incorporate ergonomic design elements to create a more functional, welcoming, and engaging environment. This renovation is envisioned to strengthen the KAED courtyards' role as a central hub for research, teaching, and learning within the IIUM community, providing vibrant spaces that respond to the diverse needs of its users. In conclusion, the project demonstrates a significant impact on the KAED community by fostering collaborative engagement, promoting sustainable design practices, and enhancing the quality of shared spaces. It contributes to the broader knowledge of sustainable courtyard design while offering recommendations for future research, including further exploration of user experience, adaptive design strategies, and the integration of innovative technologies to optimise functionality and comfort.

ACKNOWLEDGEMENT

This project was carried out by a group of students from various programmes at the Kulliyyah of Architecture and Environmental Design, International Islamic University Malaysia, under the guidance of lecturers:

1. Roziha Che Haron
2. Sufian Hamat
3. Raja Intan Suhaylah Raja Abdul Rahman
4. Masidah Abdul Majid
5. Mohd. Fairullazi Ayob
6. Asiah Abdul Rahim
7. Siti Noorfairus Che Abdullah
8. Nur Ulfah Awatif Umairah Alias
9. Julaila Abdul Rahman

The group members involved in this study are as follows:

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2	Aqif Bin Abidin	ARCH
3	Farah Safiyyah Binti Mohd Amin	ARCH
4	Aiman Nurzahira Binti Azaddin	ARCH
5	Fatin Alyssa Binti Safiek	ARCH
6	Nur Ainahazwani Binti Yusof	ARCH
7	Muhammad Nasruddin Bin Rozalman	ARCH
8	Nur Humaira Syazwani Binti Azman Zamri	AQS
9	Ily Ayuni Binti Mazli	AQS
10	Aisyah Humaira Binti Mohd Lutfi	AQS
11	Nur Nabihah Insyirah Binti Adnan	AQS
12	Aishah Binti Mansor	AQS
13	Nurul Elia Farhana Binti Abdul Rahim	AQS
14	Muhammad Syakir Zufairi Bin Helmi Shahid	AQS
15	Amar Firdaus Bin Shofyan	AAD (ID)
16	Nurul Syafiza Binti Wan Shariman	AAD (ID)
17	Nor Atiqah Syaquirah Binti Amri Shah	AAD (ID)
18	Arif Salihin Bin Muhammad Aminuddin	AAD (IDE)

REFERENCES

- Atef, N., Abdul Rahman, J., Mohd. Din, S. A., & Kamaruddin, Z. (2023). *Characteristics of cabin design for female-friendly car*. In 6th International Conference on Architecture and Civil Engineering 2022 (ICACE 2022), 18 August 2022, Kuala Lumpur, Malaysia.
- Hasan, N., Hijazi, I., Enab, D., Qanazi, S., Shahrou, I., Al-Qadi, H., & Qamhie, K. (2024). Influence of campus outdoor spaces on students behavior: Enhancing social interaction and learning at An-Najah University. *An-Najah University Journal for Research - A (Natural Sciences)*, 39(2), 125–136. <https://doi.org/10.35552/anujr.a.39.2.2335>
- Juba, I., & Bogenç, Ç. (2024). *Impact of courtyard architecture on personal well-being and human health: Literature review*. Türkiye Peyzaj Araştırmaları Dergisi. <https://doi.org/10.51552/peyad.1479365>
- McIntosh, J., & Jenkin, G. (2022). The role of courtyards within acute mental health wards: Designing with recovery in mind. *International Journal of Environmental Research and Public Health*, 19(18), 11414. <https://doi.org/10.3390/ijerph191811414>
- Patherya M., & Lau, B. (2012). *Assessment of the behaviour of "courtyards" as a design element in India and its implication as an environmental solution*. Proceedings of the 28th International PLEA Conference on Sustainable Architecture and Urban Design: Opportunities, Limits, Needs – Towards an Environmentally Responsible Architecture, November 2012.
- Sun, W. (2024). Visual experimentation research on traditional residential courtyard spaces using virtual eye-tracking technology. *Communications in Humanities Research*, 36(1), 17–29. <https://doi.org/10.54254/2753-7064/36/20240004>
- Ucer, H. B., Tzortzi, J. N., Lux, M. S., & Ogut, O. (2024). Sustainable urban landscapes in hot-dry regions: Climate-adaptive courtyards. *Land*, 13(7), 1035. <https://doi.org/10.3390/land13071035>
- Vedhajanani, B., & Amirtham, L. R. (2024). Influence of courtyard on the behavioural, cultural, climatic and spatial characteristics in a transformed vernacular courtyard house – A case study in Kumbakonam, Tamil Nadu. *Indian Journal of Science and Technology*, 17(8), 691–701. <https://doi.org/10.17485/ijst/v17i8.3118>

07

A SPACE OF ENGAGEMENT: PROPOSING ENHANCEMENT OF COURTYARDS IN KULLIYAH OF ARCHITECTURE AND ENVIRONMENTAL DESIGN, IIUM

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ABSTRACT

The proposed enhancement of the two KAED Courtyards at the Kulliyah of Architecture and Environmental Design (IIUM) focuses on transforming underutilised outdoor areas into meaningful and engaging spaces for the campus community. The objectives are to strengthen the identity of KAED, create inclusive gathering spaces, maximize the use of open areas, and promote environmentally responsive design. The proposal emphasizes multifunctionality, sustainability, and community engagement, envisioning the courtyards as vibrant and adaptable hubs that support academic, social, and cultural activities while contributing to the long-term sustainability of the faculty. Beyond aesthetic and functional improvement, the project serves as a pedagogical platform where students can apply sustainable and community-oriented design approaches, reinforcing IIUM's mission to integrate knowledge, faith, and practice within the built environment.

Keywords: Courtyard Design, Community Engagement, Landscape Design, Sustainability

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INTRODUCTION

The Kulliyah of Architecture and Environmental Design (KAED) is located at the International Islamic University Malaysia (IIUM), which was established in June 1996. KAED was founded with the aim of advancing education and professional training in the built environment disciplines. Its academic philosophy is uniquely shaped by the *Tawhidic* approach, which integrates Islamic principles into teaching, research, and practice across architecture, planning, and design. This pedagogical orientation positions KAED as a pioneer in holistic education, dedicated to producing graduates who are not only technically proficient but also guided by ethical and spiritual values that contribute meaningfully to society.

Within this context, the courtyards at KAED represent underutilised assets with the potential to support academic, social, and cultural life within the faculty. Their current lack of vibrancy and limited functionality restrict their ability to foster engagement and strengthen KAED's identity. This study therefore seeks to revitalise these spaces, transforming them into inclusive hubs that encourage interaction, learning, and relaxation. The proposal is based on *Sejahtera* principles, which stress the importance of balance between spiritual, intellectual, emotional, and physical health and well-being. These principles also encourage harmony between people and the environment. Although several studies in IIUM have examined sustainable campus design, limited research has addressed how outdoor learning spaces can embody *Sejahtera* values and strengthen community connection. By integrating multifunctional use, sustainable landscaping, and community-oriented design, the project aligns with the IIUM *Sejahtera* Framework and supports Sustainable Development Goals (SDGs) 3,

4, 11, and 13.

This project is undertaken in conjunction with BAQS 2300 (Integrated Multi-Disciplinary Project), involving students from the departments of Architecture, Applied Arts & Design, and Quantity Surveying. Over a duration of 5 weeks, each team developed design solutions that enhance the KAED Courtyards, with the aim of creating spaces that strengthen campus life and reflect KAED's architectural and environmental values.

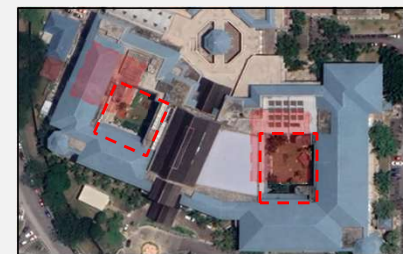


Figure 1. Site Plan - KAED Courtyard A (right) & Courtyard B (left)
(Source: Google Earth, 2025)



Figure 2. Top View of Courtyard A (right) & Courtyard B (left)(Source: Authors, 2025)

METHODOLOGY

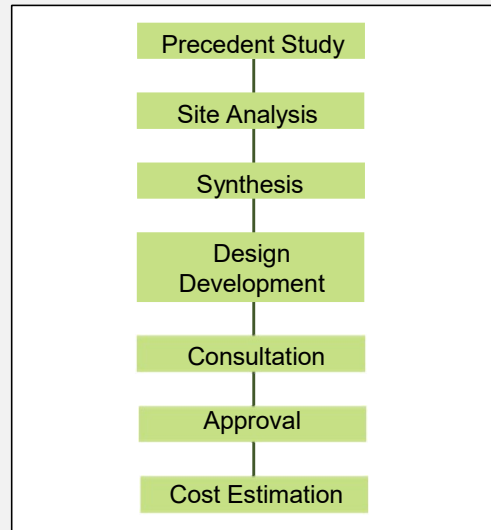


Figure 3. Methodology used in the study (Source: Authors, 2025)

LITERATURE REVIEW

This project explores the transformation of underutilised campus spaces into inclusive and engaging areas that support interaction, learning, and well-being. Previous studies highlight the importance of inclusive design, creating environments that encourage community participation. The outcome of the literature review provides a foundation for understanding how design principles and planning strategies can be applied to enhance campus environments in meaningful and functional ways.

COURTYARD DESIGN

Courtyard spaces have long been recognized as essential architectural features that contribute to social, cultural, and environmental functions within the built environment. They serve as transitional zones that balance openness with enclosure, allowing for natural ventilation, daylight penetration, and opportunities for human interaction. Recent scholarship highlights their continuing relevance in contemporary design, particularly in addressing sustainability and inclusivity concerns in urban settings.

Gupta and Joshi (2021) emphasise that courtyards are not merely residual spaces but integral design elements that foster community engagement and adaptability. Their study underscores how courtyards can be strategically planned to enhance circulation, accommodate vegetation, and mediate between shaded and sunlit areas. This aligns with current efforts in sustainable landscaping and campus planning, where multifunctional outdoor spaces are increasingly prioritised.

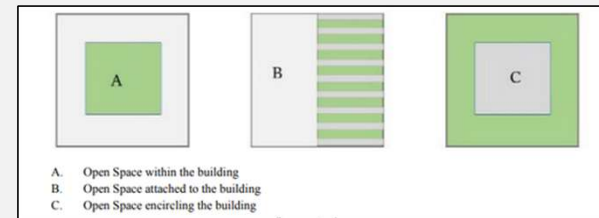


Figure 4. Different categories of transitional spaces

(Source: Gupta and Joshi, 2021)

OUTDOOR GYM

Outdoor gyms (OGs) are increasingly recognised as environmental infrastructure that supports health, fitness, and social well-being. Zhang (2020) explored outdoor gym design as a medium for stimulating social interaction, proposing cooperative play, competition, and conversational opportunities as strategies to strengthen engagement and community ties.

COMMUNITY ENGAGEMENT

Community engagement is a critical element of efforts to improve the built environment because it ensures that concerns of local residents are considered in partnerships and planning while also building social capital. Improvements to the built environment can facilitate social connections and increase opportunities for interaction, leading to greater community ownership, deepening opportunities for engagement, and instilling a sense of pride in physical improvements. Salameh et al. (2020) emphasise that inclusive design practices—especially in educational settings—can elevate user satisfaction by aligning architectural features with community aspirations.

PRECEDENT & CASE STUDIES

TAMAN TASIK TITIWANGSA



Figure 5. Aerial view of Taman Tasik Titivangsa (Source: Google)

Taman Tasik Titivangsa is a prominent urban park in Kuala Lumpur, occupying approximately 46 hectares and featuring a large lake formed from a former tin mining pond. It was redeveloped and opened in February 1980 to serve surrounding communities with green recreational space. Designed to support fitness, leisure, family outings, and cultural functions, the park meets diverse user needs. Inclusivity: The park is accessible and welcoming, drawing users of various ages.

TRX CITY PARK



Figure 6. The playground area inside the TRX city park (Source: Google)

TRX City Park is a groundbreaking 10-acre rooftop park atop The Exchange TRX mall within Kuala Lumpur's Tun Razak Exchange district. It is the city's first major public park in over two decades and the largest elevated park in Southeast Asia. Circulation & Microclimate: A gracefully curving central promenade is shaded by high canopy trees, with layered planting, water features, and steel shade structures enhancing thermal comfort.

COURTYARD @ UITM PUNCAK ALAM



Figure 7. Courtyard at UiTM Puncak Alam (Source: Google)

The symmetrical layout, structured with pathways, greenery, and raised planters, emphasises circulation and relaxation. Greenery and axial views frame a calming atmosphere, while planter edges, textured paving, and natural surfaces introduce tactile variation. Natural sounds, wind, and fragrant planting enhance the sensory palette, resulting in a multi-sensory environment suitable for study, relaxation, and light physical activity.

TAYLOR'S LAKESIDE CAMPUS



Figure 8. Taylor's Lakeside Campus (Source: Google)

At Taylor's Lakeside, the waterside setting provides a dynamic spatial experience. Waterside seating and breeze-oriented design foster comfort, while reflective water surfaces and expansive views evoke openness. The sounds of water splashing, rustling leaves, and the earthy, slightly swampy scent further enrich the sensory environment. The campus' design promotes a spacious, event-ready setting, offering flexibility for both casual gatherings and large-scale activities.

USM SCHOOL OF THE ARTS



Figure 9. Courtyard at USM School of the Arts (Source: Google)

The open sculpture garden and grass amphitheater at USM exemplify an integration of art, landscape, and social interaction. With dappled shade, green scenery, and vibrant sensory inputs such as rustling leaves, birdsong, and human activity. The space creates an engaging atmosphere. Textures from paved walkways, shrubs, and sculptural features complement floral scents and earthy tones. This design encourages curiosity and reflection while maintaining a calming and inspiring setting.

SITE ANALYSIS

Located at the heart of the KAED building, the two internal courtyards are surrounded by studios, lecture rooms, galleries and corridors. Courtyard A, near the main lobby, is larger and more open but remains underused due to direct sun exposure and lack of shade or seating. Courtyard B, closer to academic spaces, workshop and cafe is more enclosed with partial tree cover and occasional student use but lacks identity and function.

SITE ZONING & CIRCULATION

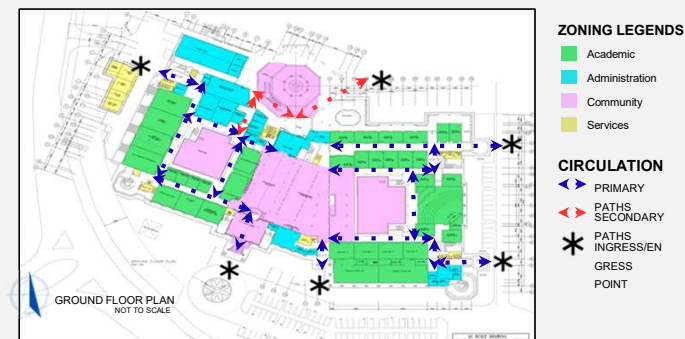


Figure 10. Circulation & Zoning of Courtyard A & Courtyard B. (Source: Authors, 2025)

The site is surrounded by three main neighbourhood contexts: social, educational, and service/utilities. Access is primarily shaped by the educational zone, as most users, students, staff, and visitors approach from nearby lecture theatres, laboratories, and tutorial rooms.

EXISTING UTILITIES & MAN MADE FEATURE



Figure 11.



Figure 12.



Figure 13.

Figure 11,12, and 13 Existing utilities at Courtyard A



Figure 14.



Figure 15.



Figure 16.

Figure 14,15, and 16 Existing utilities at Courtyard B

Both courtyards are equipped with basic utilities such as water supply systems, drainage, and lamp poles to support functionality and user comfort. Courtyard A (482 m²) includes water bibs, a basin, and downpipes, while Courtyard B (349 m²) features a water dispenser and underground pipe supply. Despite these provisions, several lamp poles in both courtyards are not functioning, limiting visibility and reducing safety at night. This highlights the need for proper maintenance to ensure that the courtyards can serve as sustainable and inclusive spaces for the KAED community.



Figure 17.



Figure 18.

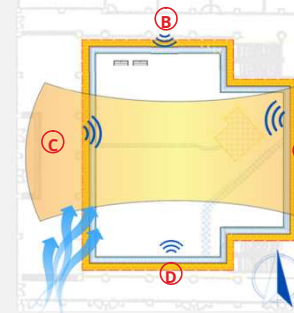


Figure 19.

Figure 17,18, and 19 Existing man made features at Courtyard A

The site shows several maintenance issues, including damaged benches and tables, a deteriorated gazebo under renovation, and uneven pavement caused by soil deposits and tree root intrusion. The land condition leads to water stagnation and surface cracks during rain, while one lamp post is non-functional, creating dim areas at night. Despite these challenges, the site hosts 16 types of trees, including palms, shrubs, and groundcover, and is equipped with a sink and water tap for practical use. The drainage system remains in good condition, effectively managing water overflow.

MICROCLIMATE & SENSORY



DATA COLLECTION	10 A.M	4 P.M
Temperature	27 °C	27.6 °C
Wind	1.6 m/s	1.03 m/s
Sound	55db	50.46db

Figure 20. Shows data of microclimate and sensory for Courtyard A
(Source: Author, 2025)



DATA COLLECTION	10 A.M	4 P.M
Temperature	28.1°C	29.5 °C
Wind	0.9m/s	0.6m/s
Sound	52db	49.2db

Figure 21. Shows data of microclimate and sensory for Courtyard B
(Source: Authors, 2025)

SWOT ANALYSIS

S	- Strong architectural identity with Islamic elements. - Passive design supports ventilation and daylight. - Clear spatial zoning with courtyards as breathing spaces. - Integration with natural terrain and scenic views.
W	- Poor hygiene leading to unpleasant odours. - Limited shading causes excessive heat buildup. - Insufficient student attraction and engagement. - Ineffective management and maintenance routines. - Poor soil conditions resulting waterlogging, safety issues.
O	- Design courtyards with shaded, multifunctional spaces. - Improve wayfinding with clear visual cues. - Use climate-friendly, cultural materials. - Provide openings, shading, and greenery.
T	- Climatic extremes reduce usability. - Increasing student intake risks overcrowding - Without maintenance, cladding, roof, and drainage may deteriorate - Inflexible design limits adaptation.

Figure 22. SWOT Analysis table (Source: Authors, 2025)

DESIGN CONCEPT

ENGAGEMENT: The proposed courtyard design is guided by the principles of movement, memory, and meaning, framing the courtyard as an interactive and inclusive space of engagement. The concept seeks to balance physical, social, and mental well-being through spaces that are both functional and culturally resonant, reflecting the Islamic values of harmony (*mizan*), unity (*tawhid*), and community (*ukhuwah*).

Movement, Memory & Meaning — A Space of Engagement: To create a space that actively draws in students through functionality, interaction, visual appeal, cultural resonance, and physical activity, the design embodies the spirit of *ihsan*—striving for beauty and purpose in the built environment as a form of holistic well-being.

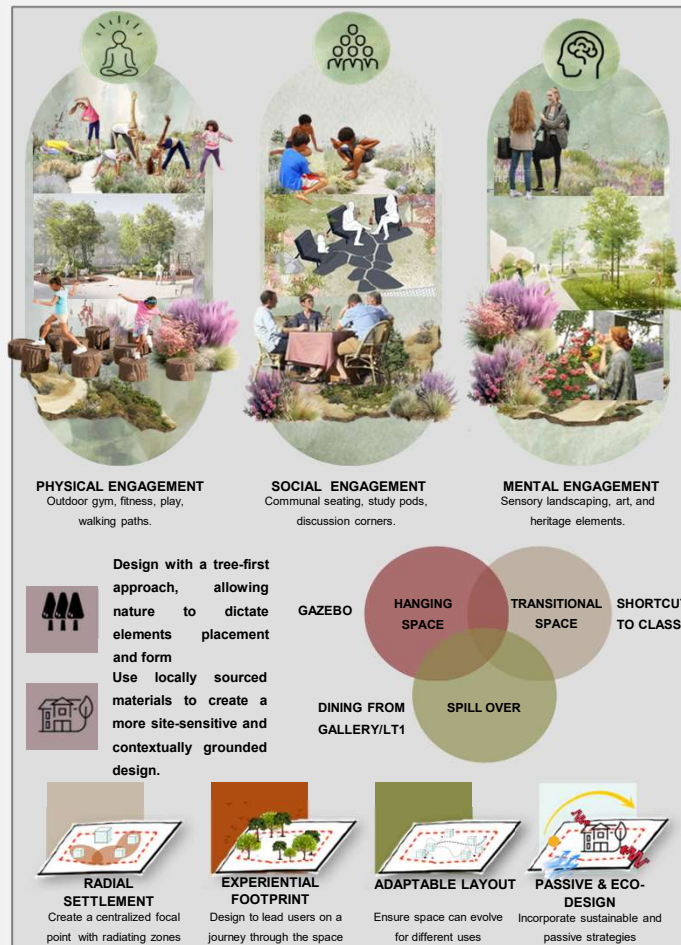


Figure 23. Design Concept & Theme (Source: Authors 2025)

DESIGN DEVELOPMENT

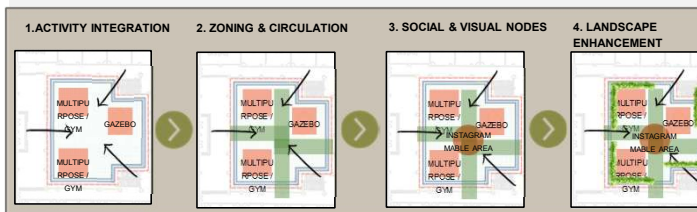


Figure 24. Design Development of Courtyard A (Source: Author, 2025)

The concept integrates four key strategies: activity integration, zoning and circulation, social and visual nodes, and landscape enhancement. The first step involved activity integration, positioning the courtyard as an active hub equipped with outdoor gym facilities, multipurpose areas, and gazebos. To organise these functions effectively, zoning and circulation were carefully developed. The design also emphasises social and visual nodes, which act as focal points within the courtyard. Finally, landscape enhancement was incorporated to elevate environmental comfort and visual appeal in line with the Islamic emphasis on stewardship (*khalifah*) and care for nature.

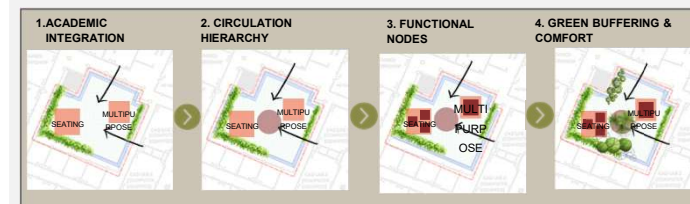


Figure 25. Design Development of Courtyard B (Source: Authors, 2025)

The design development of Courtyard B begins with academic integration, framing the courtyard as a study and relaxation garden where nature blends with learning spaces to support informal discussions and research activities. Building on this, a radial circulation hierarchy is introduced to ensure smooth and direct access from all surrounding rooms, reinforcing its role as a central connector. Next, functional nodes are established to provide flexible zones for group work, individual study, or casual rest, ensuring the space adapts to different academic and social needs. Finally, green buffering and comfort strategies enhance the microclimate, reduce heat, and soften the courtyard visually, while incorporating varied seating and multipurpose areas that allow the courtyard to operate as both a contemplative retreat and a collaborative hub inspired by *barakah*—spaces that nurture productivity and togetherness.

The design aspires to cultivate a balanced environment where learning, reflection, and social interaction coexist harmoniously. By embedding Islamic values of moderation, respect for creation, and communal belonging, the courtyard becomes not only a physical space but also a medium of holistic education and shared growth.

DESIGN FINALISATION



Figure 26. The Bench



Figure 27. The Multipurpose Area



Figure 28. The Instagrammable Spot



Figure 29. The Outdoor Gym



Figure 30. The Timber Entrance



Figure 31. The Bamboo Partition

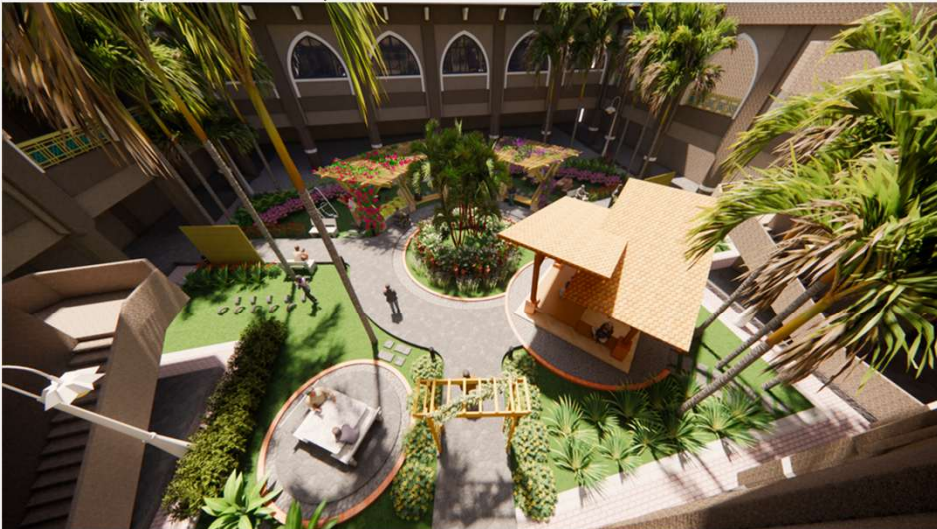


Figure 32. The Aerial View of Courtyard A



Figure 33. The Floor Plan of Courtyard A

Key features of Courtyard A include an outdoor gym for fitness and wellness, a multipurpose area that supports studying, mini-games, or small events, and resting/seating spaces designed for relaxation, sketching, or social interaction. To enhance identity and user experience, an Instagrammable area and interactive information boards are placed strategically as visual anchors and communication tools. A gazebo offers shaded seating for group discussions, while sanitation facilities ensure practicality with handwashing and water supply.



Figure 34. The Bamboo Wall



Figure 35. The Pergola



Figure 36. The Centre



Figure 37. The Pavement



Figure 38. The Entrance



Figure 39. The Seating Area



Figure 40. The Aerial View of Courtyard B



Figure 41. The Floor Plan of Courtyard B

The design of Courtyard B highlights flexibility, comfort, and visual identity, offering a more intimate yet multifunctional outdoor environment. Organised through public, semi-private, and private zoning, the courtyard balances spaces for both active use and quiet retreat. The multipurpose area serves as the core activity hub, accommodating studying, casual discussions, mini-games, or small-scale events. Surrounding this, resting and seating areas provide opportunities for reading, sketching, or socializing in a relaxed atmosphere. An Instagrammable area strengthens the courtyard's visual appeal, inviting photography and videography to enhance its role as a vibrant engagement spot.

PRESENTATION DRAWING



Figure 42. North and South Elevation of Courtyard A (Source: Author, 2025)



Figure 43. East and West Elevation of Courtyard A (Source: Authors, 2025)

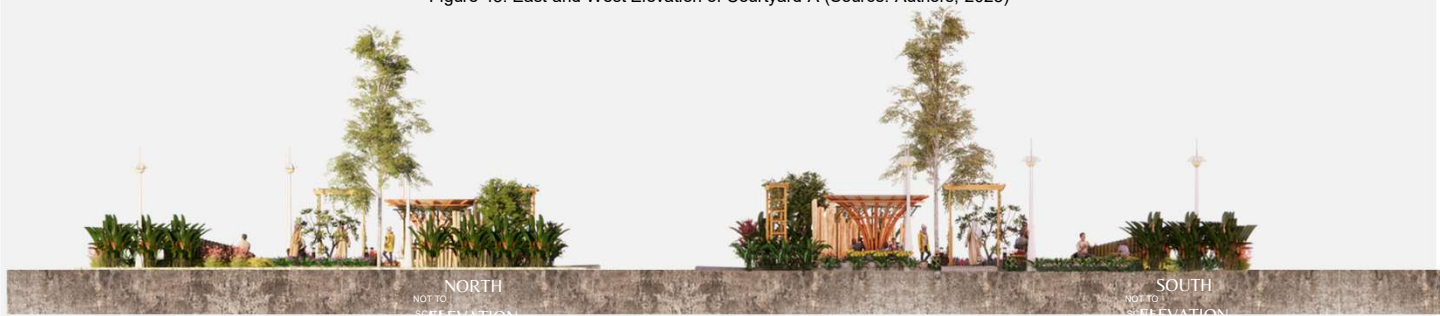


Figure 44. North and South Elevation of Courtyard B (Source: Authors, 2025)



Figure 45. East and West Elevation of Courtyard B (Source: Authors, 2025)

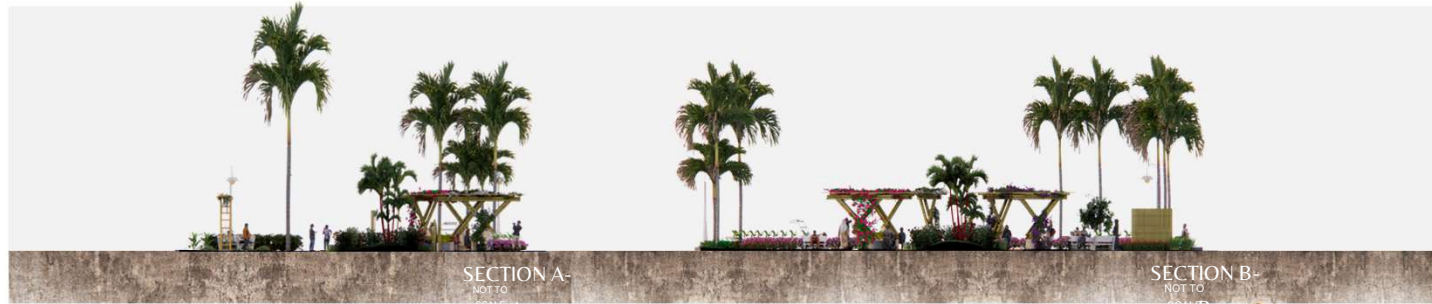


Figure 46. Section A-A' and B-B' of Courtyard A (Source: Author, 2025)



Figure 47. Section C-C' and D-D' of Courtyard B (Source: Authors, 2025)

The section and elevation of the KAED Courtyard are included in the journal to provide a clearer understanding of its vertical proportions, spatial layering, and relationship between built and open elements, while also highlighting aspects such as natural ventilation, daylight penetration, and human-scale interactions, thereby complementing the plan view and offering a more holistic perspective of the overall design.

COST ESTIMATION & SPECIFICATIONS

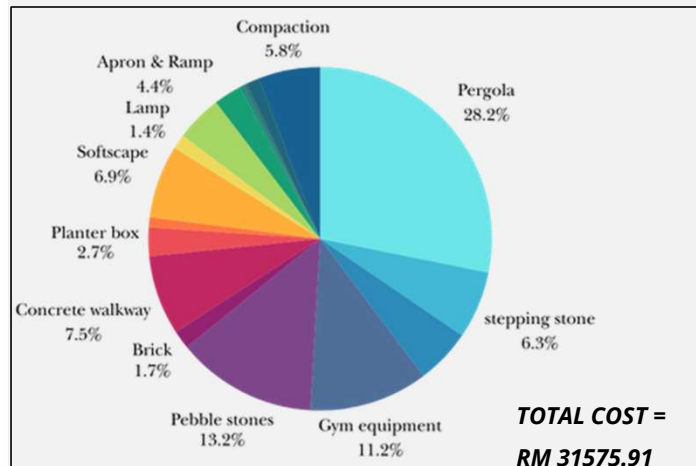


Figure 48. Cost Data for Courtyard A (Source: Authors, 2025)

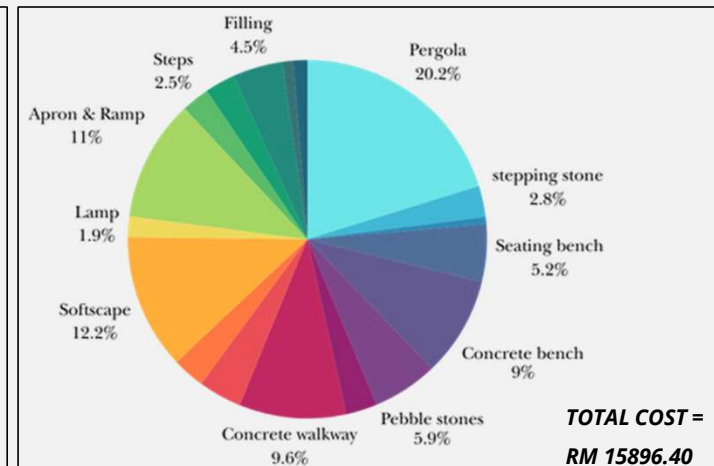


Figure 49. Cost Data for Courtyard B (Source: Authors, 2025)

The cost analysis shows that Courtyard B costs RM 15,896.40, with spending focused on seating, softscape, and modest landscape features, making it a budget-friendly design for relaxation and social use. Courtyard A, at RM 31,575.91, is costlier due to the pergola, gym equipment, and extensive landscape works, emphasizing active and multifunctional engagement.

CONCLUSION

The Courtyard Enhancement project reimagines Courtyard A and Courtyard B as dynamic spaces that embody the spirit of engagement, learning, and community. Each courtyard is envisioned as an active social landscape that harmonizes functionality, comfort, and cultural identity, reflecting IIUM's Sejahtera values of balance between spiritual, intellectual, emotional, and physical well-being. Courtyard A emphasises inclusivity and movement through activity zones, shaded seating, and green buffers that encourage both physical wellness and social interaction. Courtyard B, on the other hand, integrates learning and reflection through a radial layout that connects surrounding academic spaces, transforming it into a study garden where nature and knowledge coexist.

The design also adopts sustainability as a guiding framework, using passive environmental strategies such as shading, vegetation, and permeable surfaces to enhance comfort while reducing heat gain and water runoff. These interventions not only improve the microclimate but also cultivate a stronger connection between users and their natural environment. Through material selection and landscape integration, the project demonstrates how ecological sensitivity can coexist with aesthetic and cultural expression.

Looking ahead, the project offers valuable pedagogical potential as a living laboratory for KAED students, where theories of sustainable design, spatial planning, and Islamic built environment values are tested in real contexts. The courtyards thus become more than physical spaces—they serve as catalysts for collaboration, experiential learning, and community-building, reinforcing KAED's commitment to creating environments that nurture holistic well-being and embody the principles of Sejahtera in everyday campus life.

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REFERENCES

- Gupta, R., & Joshi, M. (2021). Courtyard: A look at the relevance of courtyard space in contemporary houses. *Civil Engineering and Architecture*, 9(7), 2261–2272.
- Zhang, X. (2020). Designing for stimulating social interaction in outdoor gym [Master's thesis, Uppsala University]. DiVA Portal.
- Salameh, T., Mahdjoubi, L., & Aouad, G. (2020). Assessing user satisfaction within higher education buildings: A framework for strategic space planning in UK universities. *International Journal of Sustainable Built Environment*, 9(1), 100–115.
- Banihashemi, S., Tabadkani, A., Aghasizadeh, S., & Hajirasouli, A. (2022). Courtyard design impact on indoor thermal comfort and utility costs for residential households: Comparative analysis and deep-learning predictive model. *Frontiers of Architectural Research*, 11(5), 963–980. <https://doi.org/10.1016/j.foar.2022.02.006>
- Alnaim, M. M. (2023). The typology of courtyard space in Najdi Architecture, Saudi Arabia: a response to human needs, culture, and the environment. *Journal of Asian Architecture and Building Engineering*, 23(1), 91–110. <https://doi.org/10.1080/13467581.2023.2229399>

08

SOCIOLOGICAL IMPACT IN PUBLIC TOILET DESIGN: CASE STUDY OF KAED MALAY HERITAGE LIVING LAB.

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ABSTRACT

Human interaction in public spaces is influenced by both environment and culture. Public toilets, however, often fall short in meeting user needs due to poor facilities and lack of proper amenities. In the Malay cultural context, *Adat* plays an important role in shaping social behaviour and shared practices, which can guide more context-sensitive design. This project explores the sociological and cultural dimensions of public toilet design with a focus on human factors. The objectives are: (1) to identify design criteria for public toilets, (2) to examine contextual impacts on user behaviour, and (3) to develop a 3D model for restroom of *Rumah Kutai*. The study employs literature review, case studies, and site observations within the KAED Malay Heritage Living Lab, IIUM. Findings are expected to highlight culturally rooted design criteria and demonstrate how traditional values can be integrated with functional requirements to create inclusive, responsive, and sustainable public toilet facilities.

Keywords: Public toilet design, Human factors, Malay culture, *Adat*, Rumah Kutai, Sociological impact,

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INTRODUCTION

People interact for various reasons, and human behaviour in public areas is often influenced by the presence of others within the same space and time (Borowski, 2014). Public toilets, as shared social environments, become sociological touchpoints where issues of comfort, safety, privacy, and cultural expectations intersect—yet many facilities fail to meet these needs due to unpleasant odours, faulty amenities, and poor upkeep (Isham, 2022). In Malaysia's broader cultural-urban context, such shortcomings affect everyday public life, tourism experiences, and community well-being, signalling the need for design solutions that balance functionality with cultural sensitivity. Within the Malay cultural setting, *Adat* plays a vital role in shaping traditional values and guiding social behaviour, influencing expectations of modesty and spatial etiquette (Suhail et al., 2020). The KAED Heritage Living Lab, an initiative by the Kulliyah of Architecture and Environmental Design (KAED) at IIUM Gombak, focuses on the preservation of Malay architectural heritage (Figure 1). It functions as a teaching laboratory that promotes experiential learning while showcasing Malay culture to local and international communities.



Figure 1: Location Plan (Illustrated by Aisyah, 2024)

The KAED Heritage Living Lab functions as an open space for cultural engagement and community-oriented activities, accessible to both staff and the public. This project is undertaken as part of BAQS 2300 (Integrated Multi-Disciplinary Project), involving students from the Departments of Architecture, Applied Arts and Design, and Quantity Surveying. Over a duration of five weeks, each team is required to develop a public toilet design that integrates harmoniously with the existing Heritage Living Lab environment. The necessity of this project is underscored by the current spatial condition of the site. The Heritage Living Lab is situated approximately 5–10 minutes from the KAED main building, which houses the nearest toilet facilities. This distance poses practical challenges for users, particularly during continuous activities and events. Additionally, the Heritage Living Lab frequently accommodates various programmes and receives external visitors, further highlighting the need for an accessible on-site sanitation facility to support user comfort and operational efficiency. Accordingly, the proposed designs (Figure 1) aim to better serve students, lecturers, and visitors while enhancing the overall functionality, usability, and experiential quality of the KAED Heritage Living Lab (Figure 3-4).



Figure 2: Toilet Design Proposal by Alam Citra

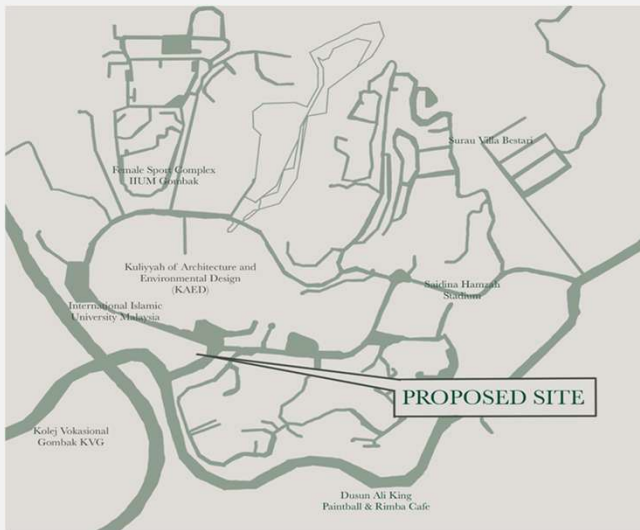


Figure 3: Key Plan
(Illustrated by Aisyah, 2024)

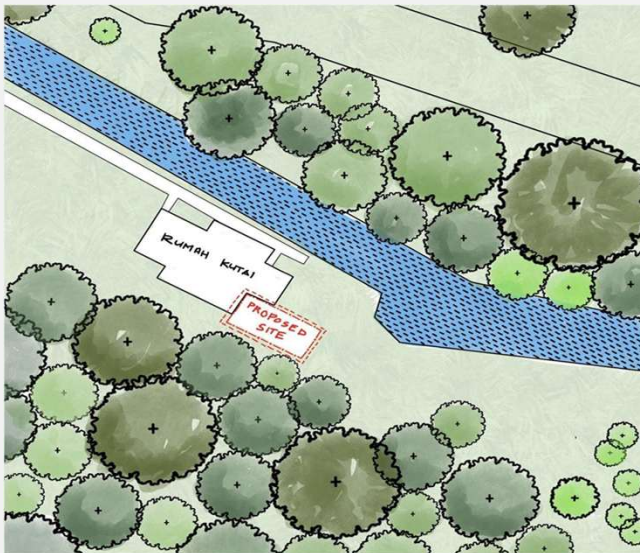


Figure 4: Site Plan
(Illustrated by Aisyah, 2024)

METHOD AND PROCEDURE

The approach illustrated in the Figure 5 was adopted to achieve the objectives of the design project. The process commenced with a site analysis (Figure 5), followed by a review of precedents and case studies. These stages informed and culminated in the development of proposed additional structures for the KAED Heritage Living Lab.



Figure 5: Methodology and Framework

SITE ANALYSIS



Figure 6: Circulation in site observation
(Illustrated by Aliff, 2024)

Findings from the **site analysis** and **behavioural mapping** indicate that the layout of public and private circulation areas reflects careful consideration of privacy. These methods revealed how users naturally move through the space and how certain zones require greater seclusion. The analysis shows that male and female areas remain distinct, aligning with Malay cultural practices and values of modesty. The PWD toilet, being non-gender specific, emerges as a key spatial element; its central placement, as observed in the behavioural patterns on site, not only improves accessibility but also functions as a natural separator between the male and female zones.

LITERATURE REVIEW

Malaysian Public Toilet Standards

According to the ASEAN Public Toilet Standard, a public toilet is a place that comprises one bowl with or without seating, to sit or squat and is connected to a drainpipe and flushing equipment that is shared by people to urinate and defecate (Isham, 2022). Some public toilets are far from clean, with an unpleasant odour, defective equipment and lack of basic facilities (Isham, 2022) (Figure 7).



Figure 7: Public toilets in Malaysia
(Source: New Straits Times 2023)

Scale and proportions of public toilets

Scale and proportions of public toilets are critical for accessibility and comfort. Anthropometric data that is inclusive must cover both able-bodied and disabled adults, primary and secondary school children, and the elderly (Adnan & Dawal, 2019). Measurements vary across countries due to factors including genetics (Majdi, 2021). Standard toilets often fail to meet the needs of elderly and disabled users (Hussain et al., 2021). As a result, improvements to daily-use items, systems, and environments should accommodate age-related functional capabilities (Pennathur et al., 2003). Designing enclosed spaces with user-centric considerations enhances comfort, accessibility, and safety for diverse users (Atef, Abdul Rahman, et al., 2023), a principle that can be applied directly to public toilet design to improve movement, usability, and overall user experience.

Sociological and Gender Impacts in Public Spaces

Public spaces are shaped by both structures and human activities, with social interactions influencing how people use these areas (Gehl, 1987; Lelévrier, 2013; Moulay, Ujang, & Said, 2017). Gender significantly affects public toilet design, as facilities often fail to meet needs for availability, hygiene, privacy, and usability (Corradi, 2023). Such shortcomings create difficult experiences, particularly for menstruating individuals, and safety concerns can limit women's access due to fear of assault or harassment (Sommer et al., 2020; Hartigan et al., 2020; Hernandez et al., 2021). Addressing these issues is vital for inclusive, safe, and supportive public spaces.

KAED Heritage Living Lab

The KAED Heritage Living Lab is an initiative by KAED focusing on the restoration and preservation of Malay architectural structures. It serves as a teaching laboratory that promotes experiential learning for future generations while showcasing Malay culture to both local and international communities within IIUM. The open space of the KAED Heritage Living Lab provides a venue for cultural activities and events, which are frequently attended by staff and the public (Figure 8). At present, there are no fully equipped facilities, such as toilets, to support these events. Given the high usage of the space, there is a clear need to study and identify the types of facilities required to enhance user comfort, accessibility, and overall experience.



Figure 8: KAED Heritage Living Lab
(Source: ADUKA inc, 2024)

Behavioral patterns of Malay People

Behavioral patterns of Malay people are strongly influenced by Adat, which shapes Malay traditional heritage through customs, practices, and social norms that guide daily life and social interactions (Suhaib et al., 2020). According to Azizah and Putri (2013), modesty can be classified into two categories: (a) physical modesty, relating to dress code and design humility, and (b) inner modesty, encompassing self-perception and social interaction, including shyness, humility, and politeness. Studies on behavioral interaction with designed objects, such as playset furniture, reveal how approach behaviors are influenced by cultural and social norms (Nazri, Raja Abdul Rahman, & Umar, 2021). These insights demonstrate that design and cultural context are closely linked, shaping both how individuals engage with objects and their broader social behaviors.



Figure 9: Importance of cleanliness in Malay culture. Tempayan is placed at the entrance of a house to wash the feet.

PRECEDENT AND CASE STUDIES

Ecological Public Restrooms in Trado by MOL Arquitectura

Bioclimatic architecture focuses on designing buildings that respond to the local climate, harmonizing with the environment and natural surroundings while utilizing local resources. In this design, bioclimatic elements such as the Z-shaped geometry of the lobby roof and the facades facilitate rainwater collection and natural ventilation. Additionally, the clear separation of male and female restrooms enhances privacy and supports smooth circulation throughout the space.



Figure 10 Figure 11

Figure 10 & 11 shows the use of louvres as a natural ventilation following bioclimatic design (Source: ArchDaily, 2020)



Figure 12

Figure 13

Figure 12 & 13 shows the interior material selection opting for anti-vandal paint for low maintenance (Source: ArchDaily, 2020)

Lehi Bathroom by Fuse

The Lehi Bathroom integrates features that enhance its connection to the natural surroundings, including large windows and open spaces. The elevated roof supports effective ventilation strategies suited for tropical climates and allows the optimal use of natural sunlight. Additionally, an outdoor sink provides users with the option to wash their hands without entering the public toilet space, improving both convenience and hygiene.



Figure 14



Figure 15

Figure 14 & 15 shows use of natural ventilation through elevated roof (Source: Archchello, 2024)

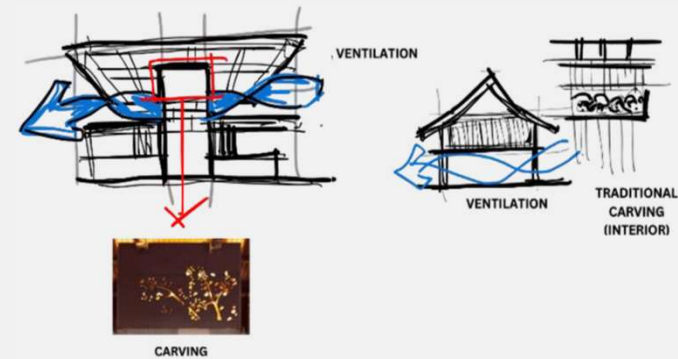


Figure 16: The illustration shows relationship of roof case study to rumah kutai. (Illustrated by Zulhelmi, 2024)

CONCEPT : ALAM CITRA

The concept of “Alam Citra” is defined as “The Reflection of the Malay World”. Alam represents the context of the Malay World, while Citra translates as image or reflection. This concept seeks to evoke familiarity by reflecting the behaviours and intangible characteristics of Malay culture. It was selected to guide the design of a toilet space that provides safety and comfort for users while seamlessly integrating with the surrounding environment of the Rumah Kutai.

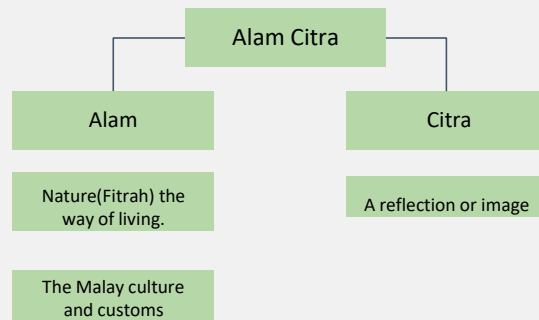


Figure 17: Alam Citra derived from two definitions.



Figure 18: Moodboards visualising the concept (Arranged by Shafie, 2024)

To establish a strong sense of identity, the concept emphasises incorporating aspects of everyday Malay life, including cultural practices, beliefs, and social background. Nature, a central element in Malay heritage, evokes nostalgia and conveys cultural meaning, demonstrating how the natural environment shapes and influences Malay traditions.



Figure 19: Sample board experimenting modern materials to achieve Malay Nostalgia. (Arranged by Shafie, 2024)

Malay Art and Architecture



Figure 20



Figure 21



Figure 22



Figure 23



Figure 24

Figure 20,21 & 22 shows characteristics of Malay culture through architecture to create nostalgia in design.

(Source: Malaysia Timber Council, 2024)

Figure 23 & 24 shows the Traditional Malay art of tekak, inspiring the landscapes of Alam Citra

(Source: Jabatan Muzium Malaysia, 2019)

DESIGN DEVELOPMENT

To create a design that reflects Malay behavioural characteristics, it was essential to understand the distinct roles and behaviours of males and females within Malay culture. The Figure 25 below summarizes the findings and highlights common characteristics observed.

ALAM CITRA	
MALE	FEMALE
Head of household upfront. responsibility to take care of family.	Play supportive roles and are more private and reserved.

Figure 25: Gender roles according to Malay culture.

Extensive research through literature review and precedent studies identified the distinct requirements and preferences of Malay males and females. This insight informed a tailored design addressing the specific needs of each gender, resulting in a balanced spatial layout. Spatial hierarchy, determined by the relative sizes of each area, guided the allocation of space for male, female, and PWD facilities. Centrally positioned, the PWD toilet functions as both an accessible facility and a natural separator between male and female areas, enhancing privacy and safety, particularly for female users (Figure 25).



Figure 26



Figure 27



Figure 28

Figure 26, 27 & 28 shows stages of creating layout from considerations of site analysis (Illustrated by Aliff, 2024)

The design prioritises privacy, social norms, and spatial requirements. Figure 29 illustrates the spatial segregation through an open-concept layout. The male section emphasizes openness and encourages social interaction, reflecting cultural norms where male spaces are typically less enclosed and more visible. In contrast, the female section is more enclosed, underscoring the importance of privacy. This approach aligns with Malay cultural values, where privacy and seclusion are particularly significant for women, reflecting dignity and modesty within the community.

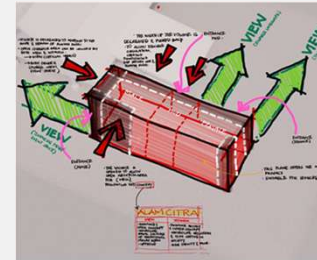


Figure 29

Figure 29 shows spatial segregation of three different spaces in public toilet. (Illustrated by Aliff, 2024)

The roof design integrates traditional Malay architectural elements with contemporary design principles. Characteristic of traditional Malay houses, the elevated and distinctive roof form is maintained, while varying roof levels facilitate natural air ventilation through strategically placed louvres, responding effectively to the local climate. Additionally, volume manipulation through a hyperbolic paraboloid introduces a visual contrast that distinguishes the space from the Rumah Kutai while still maintaining harmony with the overall architectural style (figure 30).

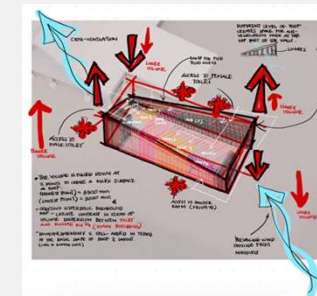


Figure 30

Figure 30 shows use of natural ventilation through the concept of Hyperbolic Paraboloid (Illustrated by Aliff, 2024)

Perspectives of Toilet



Figure 31: Female Toilet Interior



Figure 32: Natural Ventilation



Figure 33: Outdoor Sink



Figure 34: PWD Interior

The overall design of Alam Citra emphasizes the creation of a harmonious environment that honors and reflects Malay cultural heritage. Drawing inspiration from traditional Malay homes, the design evokes a sense of familiarity and nostalgia while addressing contemporary needs. In addition to exploring the sociological impact and behavioural patterns of Malay culture, the design highlights the role of material selection in shaping cultural narratives within the public toilet space. The use of timber and patterned tiles is particularly significant: timber, widely employed in Malay architecture, conveys warmth and a connection to nature, while patterned tiles introduce a nostalgic aesthetic that reinforces the cultural identity of the space (Figure 31-34).

Landscape

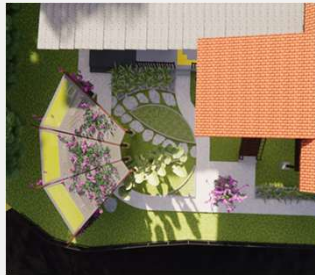


Figure 35: Top view of Landscape showing the Tekat motif



Figure 36: Pergola Teratai



Figure 37: Pergola Rimpang



Figure 38: Vegetation

Landscape is inspired by the traditional art and craft of Tekat (embroidery). The incorporation of the Tekat motif and overall landscape design is aligned with the architectural and cultural themes of Rumah Kutai, a cultural heritage of Perak. Two pergolas known as *Kelopak* (*Petal*) and *Rimpang* (*Rhizome*) are situated within the landscape with *Kelopak* nearing the women's and PWD toilet while *Rimpang* is located near the males' toilet. The pergolas are more than just structural elements, they are crucial to the design narrative. The pathway is designed with elegance in mind, reflecting the graceful forms of the teratai motif. The curved lines of the pathways mimic the delicate lines of tekak embroidery, adding cultural connection to the site (Figure 35 – 38).

Toilet Design Proposal



Figure 39: Plan



Figure 40: Axonometric View



Figure 41: Left Elevation



Figure 42: Right Elevation



Figure 43:PWD Ramp



Figure 44: PWD Entrance

CONCLUSION

In conclusion, the design demonstrates an understanding of the sociological dimensions of public toilet planning within the context of Malay culture while simultaneously aligning with broader universal design and inclusive design principles. By ensuring accessibility, privacy, comfort, and cultural sensitivity, the proposal addresses both culturally specific needs and universal user requirements, thereby increasing its wider applicability.

The collaborative effort among students from the Departments of Architecture, Applied Arts and Design, and Quantity Surveying reflects a strong commitment to producing solutions that are innovative, inclusive, and responsive to diverse user groups. The proposed design enhances the functionality of the KAED Heritage Living Lab and supports long-term adaptability.

The concept *Alam Citra* draws from the behavioural patterns, lifestyle, and cultural identity of the Malay community. Its emphasis on familiarity, safety, and comfort resonates with inclusive design principles that promote usability for all, including different genders, age groups, and users with disabilities. Furthermore, by integrating strong cultural identity and sensitivity into the spatial planning, the design ensures that the public toilet not only meets practical requirements but also harmonises with the cultural and aesthetic context of Rumah Kutai, reinforcing both heritage value and universal accessibility.

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REFERENCES

- Ali, K. K. (2022). A discourse on the Malay cultural identity within the Malaysian society. *Kajian Malaysia*, 40(1), 83–107. <https://doi.org/10.21315/km2022.40.1.5>
- Atef, N., Abdul Rahman, J., Mohd. Din, S. A., & Kamaruddin, Z. (2023, August 18). Characteristics of cabin design for female-friendly car. In 6th International Conference on Architecture and Civil Engineering 2022 (ICACE 2022), Kuala Lumpur, Malaysia.
- Azmin, A. K., Abdullah, F., Sanusi, A. N. Z., Yusof, Z. B., & Asif, N. (2021). Sustainability of Malay wood craftsmanship symbolism in deciphering Malaysia's architectural identity. In DARCH 2021 1st International Conference on Architecture & Design. <https://doi.org/10.46529/darch.202124>
- Corradi, G., Theirs, C., Garcia-Garzon, E., & Barrada, J. R. (2023). A silent burden: How negative experiences with public toilets impact quality of life and life satisfaction. *Scandinavian Journal of Psychology*, 64(4), 495–503. <https://doi.org/10.1111/sjop.12914>
- Ellisa, E., & Luana, L. (2021). Female restrooms in the tourist destination: How the socio-spatial conditions of public toilets influence women's perception of safety. *Journal of Asian Architecture and Building Engineering*, 21(4), 1624–1639. <https://doi.org/10.1080/13467581.2021.1941995>
- Hussain, M. R., Haron, N. A., Effendi, R. A. A. R. A., Rokhani, F. Z., Ahmad, S. A., Ashari, A., Hassan, M. K., Dolah, M. S., & Ramli, S. H. (2023). Design requirement of bathroom and toilet for the elderly in Malaysia. *Pertanika Journal of Science & Technology*, 31(4). <https://doi.org/10.47836/pjst.31.4.15>
- KAED Malay Enclave Site – Kulliyah of Architecture and Environmental Design (KAED). (n.d.). Retrieved from <https://kulliyah.iium.edu.my/kaed/kaed-malay-enclave-site-2/>
- Kostakis, I., & Lolos, S. (2024). Uncovering the impact of cultural heritage on economic growth: Empirical evidence from Greek regions, 2000–2019. *Annals of Regional Science*. <https://doi.org/10.1007/s00168-024-01280-3>
- Mawaddah, M. (2024). Cultural identity of Malaysian Malay ethnic in Perlis village. *ICORHESSTECH2024*, 1(1), 510–518. <https://journal.ibrahimy.ac.id/index.php/icorhestech>
- Mohamad Isham, N. H., Abdul Rahman, H., & Mohamed Zain, I. N. (2022). Community perception and assessment of public toilets in Kuala Lumpur among users of KTM Commuter public toilet. *Malaysian Journal of Medicine and Health Sciences*. eISSN 2636-9346
- Mustafa, N. A. B., & Abdullah, N. C. (2021). Intangible cultural heritage as right to livelihood. *International Journal of Academic Research in Business and Social Sciences*, 11(11). <https://doi.org/10.6007/ijarbss/v11-i11/11472>
- Navarrete-Hernandez, P., Vetro, A., & Concha, P. (2021). Building safer public spaces: Exploring gender difference in the perception of safety in public space through urban design interventions. *Landscape and Urban Planning*, 214, 104180. <https://doi.org/10.1016/j.landurbplan.2021.104180>
- Nazri, A., Raja Abdul Rahman, R. I. S., & Umar, R. S. (2021). Approaching behaviour treatment on a playset furniture. *Design Ideals Journal*, 3(1), 37–40.

09

HEALING INDEPENDENT ELDERLY VILLAGE IN KOTA KINABALU, SABAH

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ABSTRACT

As Malaysia's ageing population continues to rise, many elderly individuals particularly in Kota Kinabalu face challenges such as loneliness, declining health and inadequate care environments. Existing facilities often lack cultural sensitivity, emotional warmth, and proper support for independence, leading to isolation and loss of dignity. This thesis proposes a new architectural response through the design of *Walai Healing Elderly Village*, inspired by traditional Sabahan house typologies such as the Rumah Bajau, Rumah Dusun Lotud, and Rumah Panjang Rungus. The proposal integrates universal design standards, passive environmental strategies, and healing landscapes to promote autonomy, cultural belonging, and social connection. The aim is to create a healing environment that enhances well-being by embracing the cultural familiarity, nature, and the community living.

Keywords: *Elderly, Village, Healing, Kota Kinabalu, Sabah*
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INTRODUCTION

The enhancement of facilities for the elderly has become increasingly important in response to the rising aging population, as highlighted by the Department of Statistics Malaysia (2022). Globally, the World Health Organization (WHO) predicts that by 2030, one in six people will be aged 60 years or older, with the number rising from 1 billion in 2020 to 1.4 billion. By 2050, this figure is expected to double, reflecting a significant demographic shift that calls for age-responsive environments and services.

In Malaysia, this trend is already becoming evident. A report released by the Department of Statistics Malaysia (DOSM) on August 29, 2024, identified seven administrative districts as "ageing districts," where more than 7% of the population is aged 60 and above. These include Kuala Selangor (Selangor), Johor Bahru (Johor), Kota Bharu and Kuala Krai (Kelantan), Seberang Perai Utara (Penang), Kota Kinabalu (Sabah), and Miri (Sarawak), as noted in the news at Harakahdaily (2023).

Sabah mirrors this national trend, with its elderly population steadily increasing. As of 2023, approximately 217,000 individuals in Sabah are aged 60 and above, making up about 6% of the state's population. In Kota Kinabalu specifically, an estimated 37,300 elderly residents account for 7.1% of the city's population, qualifying it as one of Malaysia's ageing districts.

Kota Kinabalu is also marked by its ethnic diversity. According to Wikipedia (2022), the largest ethnic group in the city is the Kadazan-Dusun (25%), followed by the Bajau and Chinese (20% each), Malays (15%), and other indigenous groups such as the Murut and Rungus (10%). The remaining 10% includes expatriates and minority communities. This multicultural context plays a crucial role in shaping inclusive, culturally sensitive elderly care facilities that meet the varied needs of its aging population.

THESIS ISSUES AND PROBLEMS

This thesis is driven by three key issues that highlight the urgent need for a new approach to elderly care design.

a. Loneliness of Elderly

Based on statistics, 23 percent or 538,000 of the 2.4 million elderly in Malaysia experience Empty Nest Syndrome, which is the feeling of loneliness and sadness from living alone due to being far away from their children (Noor et al, 2024). Noor et al (2024) shown from her studies out of 644 respondent in Kota Kinabalu stated that numbers of respondent who Stay alone (11.5%), Stay with spouse only (15.1%), Stay with family (69.1%), Stay with relatives/friends (2.2%), Elderly care center (2.2%).

Human life expectancy has increased dramatically (Lutz et al., 2008). Estimates suggest that in a pre-modern world, life expectancy was around 30 years in all regions of the world. Since 1900 the global average life expectancy has increased by more than 50%, and is now above 70 years (*Physiopedia, n.d*).

Most commonly the cause of loneliness experienced by the elderly is often exacerbated by the abandonment or loss of family members due to neglect or the death of loved ones. These factors significantly impact their emotional well-being, leading to feelings of isolation and grief that can affect their mental and physical health (Nour et al, 2024).

Loneliness of elderly can contribute to mental health challenges such as depression, anxiety, and cognitive decline, especially in cases of empty nest syndrome. It also elevates physical health risks, including high blood pressure, weakened immunity, and inflammation-related illnesses, underscoring the need for stronger social and emotional support systems for the elderly (Bakri & Che Rose, 2021).

Loneliness of elderly can contribute to mental health challenges such as depression, anxiety, and cognitive decline, especially in cases of empty nest syndrome. It also elevates physical health risks, including high blood pressure, weakened immunity, and inflammation-related illnesses, underscoring the need for stronger social and emotional support systems for the elderly (Bakri & Che Rose, 2021).

b. Health and Mobility Amongst Elderly

As stated by World Health Organization (WHO), ageing occurs because of the gradual accumulation of molecular and cellular damage over time, leading to a progressive decline in physical and cognitive functions, heightened vulnerability to diseases, and ultimately, death. Furthermore, Malaysia is going towards the ageing population based on World Health Organization (WHO) latest statement. Thus, it shown that people need to pay more attention regarding the ageing population in Malaysia.

The most common health issues reported in Kota Kinabalu were impaired vision (26.2 %), knee pain (19.6 %), high blood pressure (15.7 %), diabetes (12.2%), heart disease (12.0 %), exhaustion (10.9 %) and other illnesses such as stroke and Alzheimer (Noor et al, 2024).

c. The Need For Proper Facilities

There is an insufficient number of existing elderly care centers in Sabah to meet the growing demand for such services (Isa et.al., 2020). The statement highlights a pressing concern about the inadequacy of elderly care centers in Sabah, which poses significant challenges given the region's aging population.

However, there is a noticeable lack of focus on providing housing that is specifically designed for the needs and preferences of elderly in Sabah. In comparison to other industrialized nations, notably Singapore, elderly housing arrangements were well-maintained, particularly by the government (Xin, 2024)." Figure 1 shows the news articles on elderly group wants retirement village in Sabah.



Figure 1: The need for retirement village for Sabah's elderly

According to The Star News Stephanie Lee (2018) a group, comprising healthcare professionals, social workers, and community leaders, Retirement Village for Sabah's Elderly" likely highlights an initiative by a group or organization proposing the development of a retirement village to cater to Sabah's aging population "With changing family dynamics, such as increased migration for work, traditional forms of elderly care are diminishing. This has led to an increasing need for professional elderly care facilities" (Isa et.al, 2020). Figure 2, 3 and 4 shows the conditions of the elderly care homes in Sabah.



Figure 2: Residents in elderly care homes in Sabah are forced to sleep accompanied by mosquitoes' due lack of proper facilities. Sri Pritchard Old Folks Home, Kinarut. (Source: Hassan ,2013. *The fate of elderly orphans in nursing homes*, Borneo Post.)



Figure 3: Normal Residential Home change into elderly care
Comfort Aged Care Centre, Kota Kinabalu
(Source: comfortagedhome.com)



Figure 4: shows elderly care Standard in Sri Pritchar Old Folks Home
(Source: Source: Hassan, 2013. *The fate of elderly orphans in nursing homes*, Borneo Post.)

THESIS AIM

The goal is to provide a safe, accessible and therapeutic space for elderly individuals, particularly those with mobility challenges and chronic illnesses. It focuses on enhancing physical well-being through supportive design, promoting mental and emotional health with calming, nature-inspired environments and providing holistic medical care.

THESIS OBJECTIVE

1. Exploring ways to optimize communal space to create a more inclusive and interactive living environment for seniors.
2. To identify the architectural design elements that best support mobility and enhance safety for elderly residents that promotes independent living.
3. To identify and analyze key infrastructural and design deficiencies in elderly care centers, and how they influence the quality of care provided.

THESIS THEORETICAL FRAMEWORK

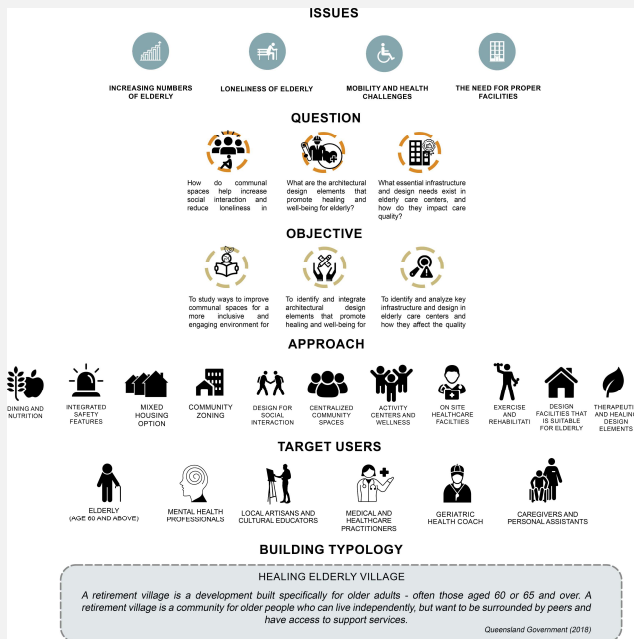


Figure 5: Design Thesis Theoretical Framework.
(Source: Author)

METHODOLOGY

This design thesis aims to explore the spatial, cultural, and environmental needs of an aging population by proposing a healing elderly village in Kota Kinabalu, Sabah. The objective is to develop a design that integrates cultural identity, natural elements, and care-oriented architecture, contributing to a new typology for elderly living in Malaysia. The study adopts a **qualitative research approach**, involving both primary and secondary data collection.

Primary Data: Field observations were conducted on-site at selected locations in Sabah to examine the elderly care in Kota Kinabalu, Sabah. These observations were systematically analysed to arrive at typical designs' features and local characteristics of Sabah's elderly villages. End-users' needs were also deduced from this primary data.

Secondary Data: Literature reviews, including scholarly journals, news articles, and reports related to aging, healing environments, vernacular architecture, and elderly care in Malaysia were also gathered. However, access to certain elderly living spaces and villages are hindered due to privacy and remote distance between one location to another. Additionally, the research was self financed with no research grant.

SITE LOCATION

The site for the proposed elderly village is carefully selected based on several key criteria to ensure the comfort, safety, and well-being of its residents. Proximity to hospitals, clinics, and emergency services is crucial. A site that is part of or near an established community can help residents feel more integrated and provide opportunities for socializing and engagement. Flat and easy-to-navigate terrain is ideal for ensuring comfort and safety for older residents. Access to grocery stores, pharmacies, banks, and other essential. Nearby public transport options (e.g., bus stops) are important for elderly. Figure 6 shows the proposed site location.



Figure 6: Proposed Site location
(Source: Author)

Proposed location: Jalan Penampang, Kota Kinabalu Sabah

Area: 4.7 acres (205,940 sqft)

LAND USE AND ZONING

The site is zone under zoning Local Centre Zone which is fall under Commercial zoning. According to Planning Act 2016, The purpose of the Local Centre Zone is to provide for a limited variety of commercial, community and retail activities to service local residents and other uses and activities that integrate with and enhance, the Local Centre. Figure 7 shows the site land use and zoning.



Figure 7: Site land use and zoning.
Source: DBKK Zoning Map

SITE AERIAL VIEW



Figure 8 Aerial view of site from west
(Source: Author)

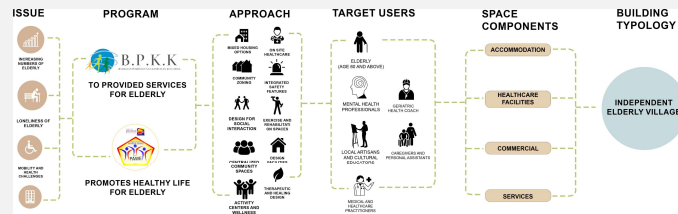


Figure 9: Aerial view of site from south
(Source: Author)

SITE AERIAL VIEW

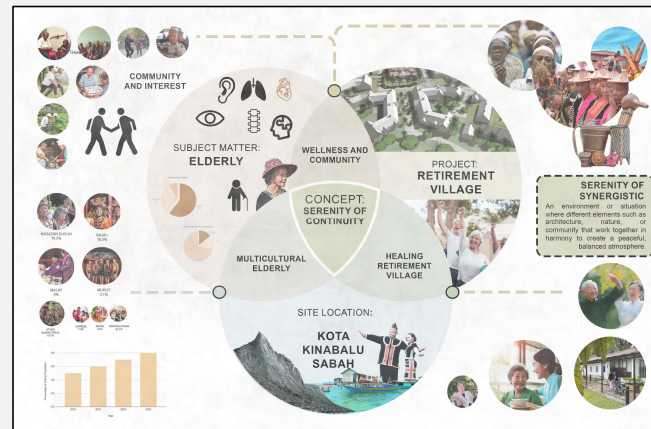


DESIGN BRIEF



The design brief was derived based on the research methods employed in the design thesis that aspired to achieve design that are healing-oriented and independent living village for elderly in Kota Kinabalu, Sabah. The study adopts a qualitative approach, combining **field observation** and **literature review** as the primary methods in arriving at design thesis project.

"Serenity of Continuity" is a healing architectural concept that emphasizes the seamless connection between past, present, and nature, rooted in the cultural soul of Sabah and the lived experiences of its elderly. It promotes mental, emotional, and spiritual well-being through continuity of environment, cultural memory and ritualistic daily rhythms. Within the concept, the design would encourage propagate communal and independent living. In the context of Kota Kinabalu, this village becomes a living landscape where tradition, community and healing spaces flow as one. Figure 11 shows the design concept for healing elderly village.



DESIGN IDEALS

CLIMATE AND SENSORY

Kota Kinabalu have a warm, tropical climate with relatively stable environmental conditions throughout the year. According to data from IQAir and Meteoblue, the city typically records air quality ranging from **good to moderate**, with PM2.5 levels occasionally exceeding WHO guidelines but generally remaining within a safe range for outdoor activities. The **temperature** hovers between **24°C and 29°C**, accompanied by high humidity, while **wind speeds** are mild, averaging between **6 to 13 km/h**, mostly coming from the southeast to southwest directions.

These environmental conditions, combined with consistent sea breezes, support a comfortable outdoor atmosphere, making the area suitable for elderly-friendly developments that emphasize natural ventilation and shaded outdoor spaces. Figure 12 shows the site wind speed and sun path analysis and Figure 13 shows the temperature and amount of rain in Kota Kinabalu.

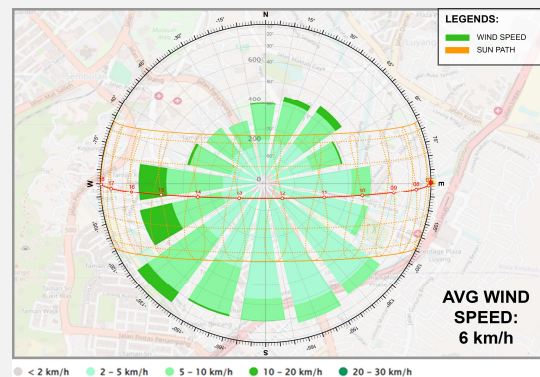


Figure 12: Site Wind Speed And Sun Path Analysis in Kota Kinabalu
Source: Meteoblue.com

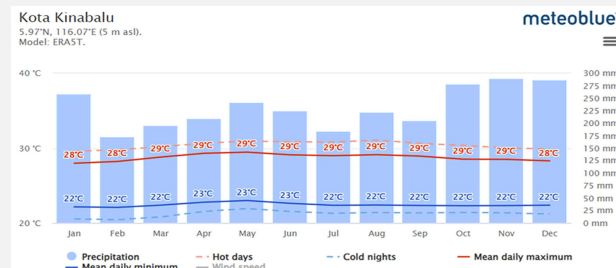


Figure 13: Kota Kinabalu Temperature And Amount of Rain
Source: Meteoblue.com

SITE NEIGHBOURHOOD CONTEXT

According to Bahauddin et al (2016), Maranjak Longhouse is one of a place that is used as accommodation with the cultural theme of the Rungus tribe who are also the majority population in the Kudat district. The Rungus Longhouse, known locally as Vinatang, is a traditional communal dwelling of the Rungus people, an indigenous ethnic group in Sabah, Malaysia. It serves as both a home and a social hub, reflecting the Rungus people's strong emphasis on community living.

The Rungus lifestyles require traditional living environment, many Rungus live in longhouses, with each family having its own room along the common hall. At the end of the communal hall, a platform of split bamboo with a sloping walls provides a place for socializing and communal work. Usually, the house are on stilts but only a few feet above the ground (Bahauddin, 2016). Figure 14 shows the Traditional Rungus Longhouse and Figure 15 shows the Maranjak Longhouse.



Figure 14: Maranjak Longhouse, Kudat.
Source: The Rungus Longhouse of Sabah, Malaysian Borneo, A Dying Architecture, Bahauddin et al (2015).

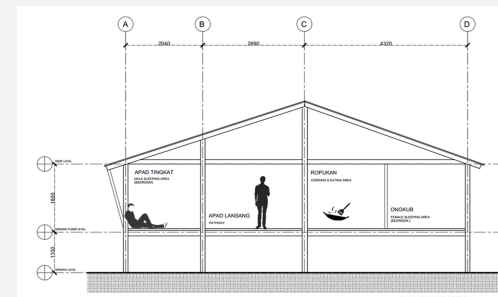


Figure 15: Maranjak Longhouse, section of space components.
(Source: author)

Bahauddin et al (2016) also explain that the design and architecture of the Rungus longhouse reflect both practical and cultural wisdom. Elevated on stilts, the structure is built primarily from natural materials like bamboo, mangrove wood, and palm fronds, offering protection from flooding and wild animals while blending seamlessly with the environment. A distinctive feature is its slanted walls, which provide comfort for sitting and resting without the need for modern furniture. The longhouse supports communal living, with multiple families residing under one roof, fostering strong social bonds and intergenerational support.

Traditional Bajau house

The traditional Bajau Laut house is composed of functional spaces that reflect their maritime lifestyle and communal culture. Key components include the Pentan, a semi-outdoor deck used for socializing, drying fish and daily chores; and the Diom Luma (Interior space), the main interior space where sleeping, eating, and gathering occur in a flexible, open layout. Supporting spaces like the Lantai Luar serve as extended platforms for sea access and transitions, while the Dapur (kitchen) is usually located at the rear for safety and ventilation. These spatial elements are simple yet efficient, promoting natural ventilation, family interaction, and connection to the sea, the qualities that can be reinterpreted in elderly village design to foster healing, accessibility and cultural continuity (Ismail, 2018). Figure 17 shows the Bajau Laut Spatial Layout.



Figure 18: Shows Traditional Bajau House (Rumah Marilaut).
Source: The Spatial Extensions of Traditional Coastal Sama-Bajau Houses. Ismail (2018)

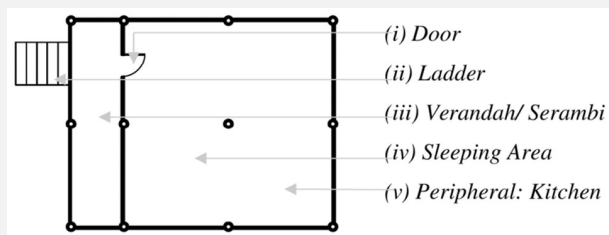


Figure 17: Bajau Laut Spatial Layout
(Source: The Spatial Extensions of Traditional Coastal Sama-Bajau Houses. Ismail (2018))

Traditional Bajau house



Figure 16: Maranjak Longhouse, Kudat.
(Source: Lim (2012), Traditional Suang Lotud house of Sabah Borneo, Malaysia. Kampung Panjut.)

Lim (2012) explains, that the entire house is constructed without the use of nails, as these were once difficult to obtain. Instead, the structure relies on ingenious joinery techniques, where beams are fitted together using slip-in methods and secured with rattan bindings. A typical longhouse unit includes several key spaces: a sleeping area (*Kawas*), a kitchen (*Soriba*), an attic (*Tilud*), and a corridor (*Olod-Olod*) that separates the enclosed living quarters from the shared veranda (*Solio*). The number of poles or stilts supporting the house corresponds to the overall length or the number of individual living units. This traditional design is commonly found in the Tuaran district. Figure 19 shows the section of Lamin Kopio (Dusun Lotud House).

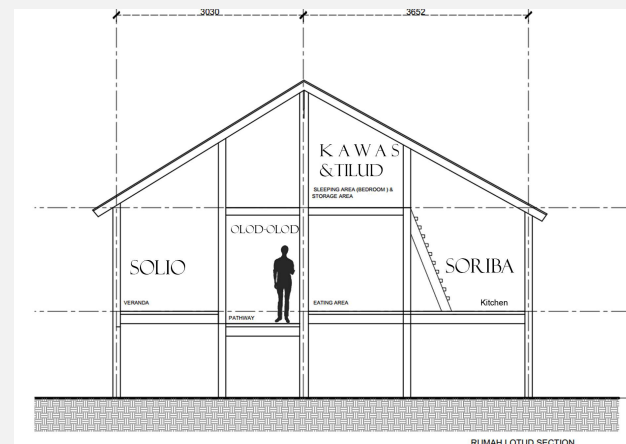


Figure 19: Section of Lamin Kopio (Dusun Lotud House)
(Source: Author)

PROJECT FINDING

DESIGN DEVELOPMENT

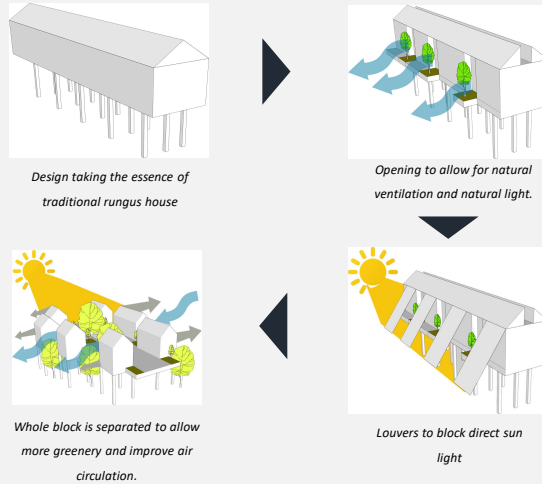


Figure 20: The Development of Form for the Healing Elderly Village. (Source: Author)

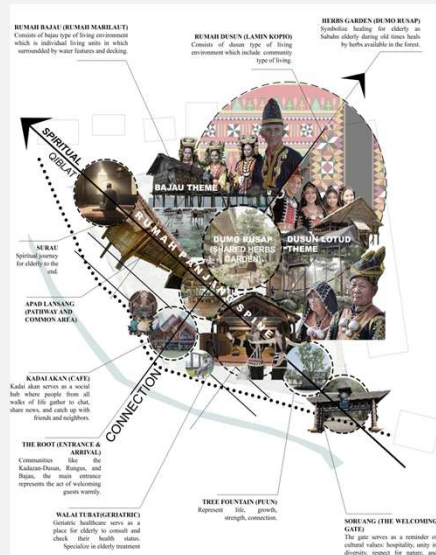


Figure 21: Abstract art for the Elderly Village. (Source: Author)

SITE PLAN



Figure 22: Site Plan of Healing Elderly Village (Source: Author)

FLOOR PLANS

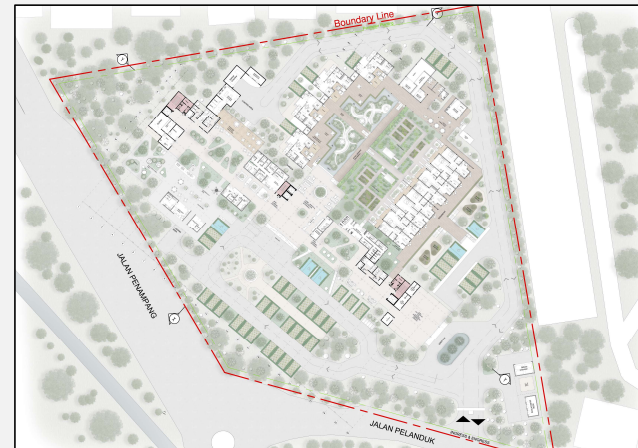


Figure 23: Ground floor plan for Healing Elderly Village. (Source: Author)

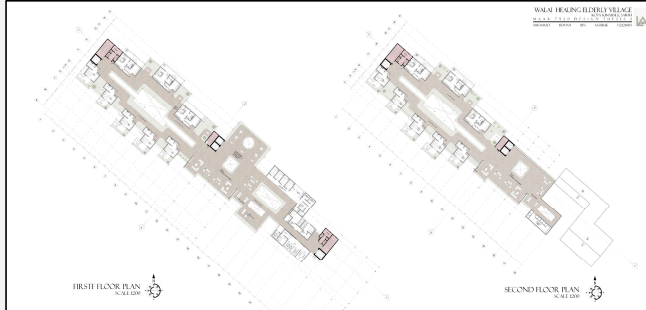


Figure 24: Layout plan for Healing Elderly Village.
(Source: Author)

The Healing Elderly Village in Kota Kinabalu, Sabah, is envisioned as a culturally rooted and wellness, focused on residential community that supports the physical, emotional and social well-being of elderly residents. Inspired by the rich architectural traditions of Sabah's indigenous groups, the village features various types of housing units that reflect familiar cultural forms while being adapted for modern elderly care.

SPACE COMPONENTS

The Rungus-inspired units include Apad Tingkat, a compact room unit designed for individual living with privacy and ease of access and Ongkub, a larger room unit suitable for couples or residents requiring more space. These units retain elements of the traditional Rungus longhouse. Figure 25 shows the internal pathway towards the Apad Tingkat and Ongkub units Healing Elderly Village.



Figure 25: Internal Pathway towards the Apad Tingkat and Ongkub units Healing Elderly Village.
(Source: Author)

The Rumah Marilaut, modeled after the Bajau house, is raised on stilts and designed to offer openness, sea-breeze ventilation, and a strong connection to nature. Its spatial arrangement supports calmness and visual clarity, beneficial for cognitive health. Figure 26 shows the view of Rumah Marilaut from Apad Lansang. Meanwhile, the Lamin Kopio, inspired by the Dusun Lotud traditional house, features a prominent gabled roof and central communal area, symbolizing warmth and family-like togetherness. Figure 27 shows the view of Lamin Kopio from Apad Lansang.



Figure 26: View of Rumah Marilaut (Bajau House) from Apad Lansang (Pathway).
(Source: Author)



Figure 27: View of Lamin Kopio (Dusun Lotud House) from Apad Lansang (Pathway).
(Source: Author)

Serdang Garden in the Healing Elderly Village is thoughtfully designed to reflect and celebrate the cultural traditions of Sabah's indigenous communities, while supporting the well-being and healing of its elderly residents. Drawing inspiration from the Bajau community, who are traditionally coastal dwellers with a deep connection to water, the garden incorporates water features such as ponds and small streams.

FLOOR PLANS



Figure 28: Layout plan for Healing Elderly Village.
(Source: Author)

Beyond residential units, the village includes key amenities tailored for holistic elderly care. The Rompuhan dining area serves as a communal space for shared meals and daily interaction, fostering a sense of belonging. The Monomoli Hall functions as a multipurpose hall for cultural activities, celebrations, and group therapies. A fully equipped healthcare clinic ensures residents have access to regular medical support and emergency care. Additionally, facilities such as a gym designed for low-impact physical activity support mobility and health maintenance.

INTERNAL GARDEN



Figure 29: View of Lamin Kopio (Dusun Lotud House from Apad Lansang (Pathway)).
(Source: Author)

SPACE COMPONENTS



Figure 30: Aerial View for Healing Elderly Village.
(Source: Author)

STRUCTURE SYSTEM

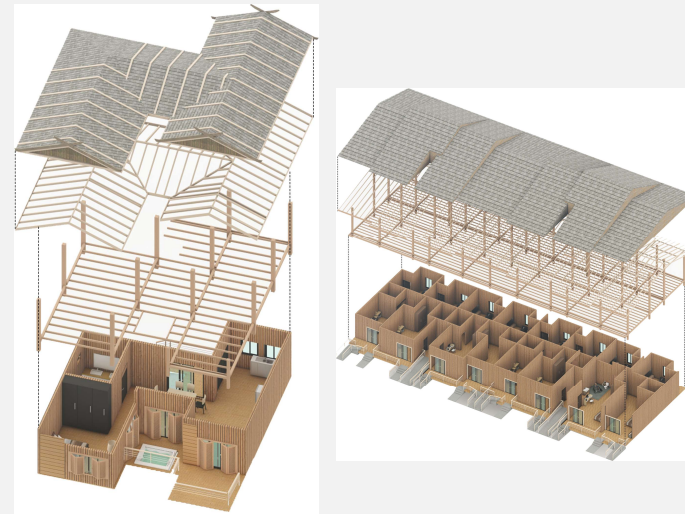


Figure 31: Rumah Marilaut (left) and Lamin Kopio (right) structural construction.
(Source: Author)

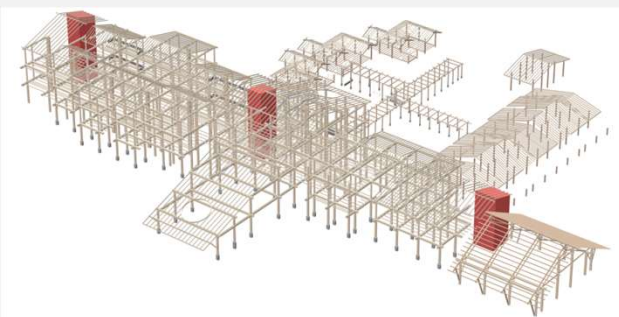


Figure 32: Overall building structure.
(Source: Author)

CONCLUSION

The proposed design for healing elderly village in Kota Kinabalu do resembles the quality and essence of Sabah's traditional homes such as Rumah Panjang Rungus, Rumah Bajau and Rumah Dusun Lotud into a unified care environment that honors cultural identity. Each vernacular house type offers familiar spatial qualities that foster social interaction, emotional well-being, and a sense of belonging. By blending these cultural elements with modern healthcare principles, passive design, and natural landscaping, the village becomes a restorative sanctuary that supports both the physical and emotional needs of the elderly, setting a new benchmark for elderly care design in Malaysia. Additionally, the design promotes communal and independent living for elderly care combating the negative perceptions of loneliness and dependency.

REFERENCES

- Bahauddin, A., Kassim, P. S. J., & Nasir, N. M. (2016). The Rungus longhouse of Sabah, Malaysian Borneo: A dying architecture. *Journal of Design and Built Environment*, 16(1), 1–15. <https://doi.org/10.22452/jdbe.vol16no1.1>
- Bakri, N. A. & Che Rose, R.A (2022). Disturbance of Empty-nest Syndrome Towards Elderly Citizens in Sabah. *Jurnal Wacana Sosiologi*, 34(1), 1-10. <https://doi.org/10.22452/jws.vol34no1.1>
- BlueCare. (n.d.). *What is a retirement village and how do they work*. BlueCare. Retrieved February 3, 2025, from <https://www.bluecare.org.au/retirement-living/content/what-is-a-retirement-village-and-how-do-they-work>
- Calvyn. (n.d.). *10 deaths of elderly persons in 2023, all of whom died alone in their homes*. Retrieved February 3, 2025, from <https://www.calvyn.com/elderly-deaths-2023>
- Department of Statistics Malaysia. (2023, August 29). *Current population estimates by administrative district, 2023* [Statistical release].
- Harakahdaily. (2023). *Is Malaysia ready to meet needs of ageing population?* Harakah Daily. <https://harakahdaily.net/2023/10/is-malaysia-ready-to-meet-needs-of-ageing-population/>
- Hassan, J. (2013). The fate of elderly orphans in nursing homes, Borneo Post. Retrieved from <https://www.theborneopost.com/2013/11/07/the-fate-of-elderly-orphans-in-nursing-homes/>
- Ipswich City Council. (2012). Local Centre Zone Code. Retrieved from [https://hdp-au-prod-app-ipsw-shapeyouripswich-files.s3.ap-southeast2.amazonaws.com/8517/1030/8631/ICC_Local_Centre_Zone_240312.pdf]
- Isa, F. M, et.al. (2020). Exploring the facet of elderly care centre in multiethnic Malaysia. *PSU Research Review*, ahead-of-print. <https://doi.org/10.1108/prr-05-2020-0013>
- Ismail, I. E. (2018). Spatial evolution of Sama-Bajau houses in coastal area of Sabah (Master's thesis). Universiti Teknologi Malaysia. <https://openscience.utm.my/items/af900942-9796-4c14-af59-4e652251acd3>
- Lee, S. (2018). Group wants retirement village for Sabah's elderly. The Star Online. <https://www.thestar.com.my/metro/metro-news/2018/07/17/>
- Lim, H. (2012). Traditional Suang Lotud houses of Sabah Borneo, Malaysia. Kampung Panjut. <https://kampungpanjut.blogspot.com/2012/06/traditional-suang-lotud-houses-of-sabah.html>
- Local Government and Planning. (2017). Queensland. Department of Infrastructure, Planning Regulation 2017-Schedule 2: Zones for local planning instruments. In Planning Act 2016 (as amended).
- Madison Trust Company. (2024). *The top 50 countries with the largest percentage of population aged 65 and up*. Madison Trust Company.
- Meteoblue. (n.d.). Weather forecast for Kota Kinabalu, Malaysia. Meteoblue. Retrieved February 3, 2025, from https://www.meteoblue.com/en/weather/week/kota-kinabalu_malaysia_1733432
- Noor, H. M., et.al. (2024). Mobility issues among the elderly in Kota Kinabalu, Sabah: An initial study. *Journal of Sustainability Science and Management*, 19(5), 173–187.
- World Health Organization. (n.d.). *Mental health of older adults*. World Health Organization. Retrieved October 3, 2024, from <https://www.who.int/news-room/fact-sheets/detail/mental-health-of-older-adults>

10

REVIVING SOULS: ENHANCING LAMAN KAED AS COMMUNAL PUBLIC SPACES IN UNIVERSITY

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Kulliyyah of Architecture and Environmental Design, International Islamic University Malaysia

ABSTRACT

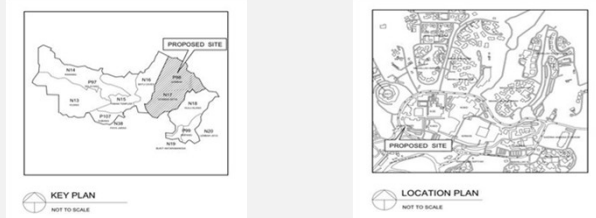
Laman KAED at the Kulliyyah of Architecture and Environmental Design (KAED), IIUM, has the potential to serve as a central hub for interaction, creativity, and spiritual reflection. However, the space is currently underutilised, and lacking in vibrancy, inclusivity, and functional character. This project aims to revive and transform Laman KAED into a multifunctional, sustainable, and *Shariah*-compliant environment that reflect the faculty's identity and fosters community engagement. A collaborative methodology, including site assessment, user observation, precedent review, design development, and cost assessment guides the proposal toward a holistic intervention. The design introduces paved walkways for improved circulation, kiosks as income-generating elements, and a stage to support academic and social activities. Together, these innovations emphasise harmony between nature, humanity, and divine principles while creating a meaningful, inclusive, and financially viable space. The outcome positions "Revive" as a purposeful, dynamic, and sustainable transformation that restores both the physical and symbolic value of Laman KAED. By integrating passive systems, multifunctional structures, and biophilic design, the space evolves into a living environment that adapts to changing academic and social needs while nurturing creativity, interaction, and well-being. Grounded in Islamic values, the project aspires to deliver long-lasting academic, social, and spiritual benefits, establishing Laman KAED as an iconic landmark that strengthens community identity and belonging.

Keywords: *Laman KAED, Social Development, Interaction, Sustainability, Shariah compliance*

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1.0 INTRODUCTION

Laman KAED, a pocket garden located in front of the Kulliyyah of Architecture and Environmental Design (KAED), IIUM, holds significant potential as a communal space for students and staff. Aesthetic and vibrant gathering spaces are vital for fostering interaction, creativity, and a sense of belonging, while also supporting mental well-being and academic engagement. Efficient use of such spaces ensures inclusivity and sustainability, with multi-purpose areas accommodating diverse activities in line with *Shariah* compliance. In this context, the study aims to transform Laman KAED into a sustainable landscape that reflects KAED's architectural identity and values by harmonising nature, humanity, and divine principles. Proposed interventions such as paved walkways, kiosks as income-generating elements, and a stage for lecturer–student interaction will enhance circulation, encourage community participation, and establish the pocket garden as a multifunctional hub that supports both academic excellence and social development.



2.0 METHODOLOGY

Figure 1 shows the process undertaken to achieve the design project's objectives. The process began with a literature review, followed by site analysis, precedent studies and formulation of design concept. Consultation sessions with the supervisors were carried out regularly to finalise the design. Lastly, the process of the project design was documented in an E-magazine and a multimedia presentation.

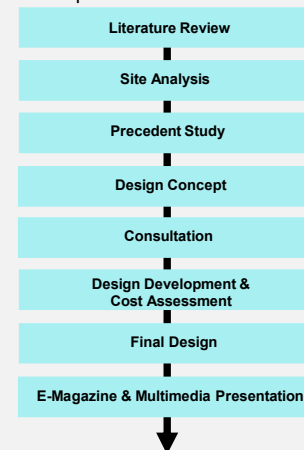


Figure 1: Research methodology chart
(Source: Authors, 2025)

3.0 LITERATURE REVIEW

Placemaking and the Role of Communal Spaces in Malaysia

Recent studies show that well-designed communal spaces in Malaysia provide social, environmental, and psychological benefits when supported by sustainable planning. Tharim et al. (2023) highlight how biophilic strategies implemented in Malaysian green-rated office buildings improved user comfort and enhanced environmental resilience. Similarly, Manan, Artha, and Putri (2025) examined public perception of biophilic design in Kuala Lumpur high-rise buildings, suggest that natural integration positively shaped how users engaged with urban communal environments. These findings reinforce that communal spaces, when embedded with ecological and cultural sensitivity, can foster vibrant interactions and long-term usability. Parallel insights from design research also demonstrate that interactive and playful interventions in shared environments, such as those explored by Raja Abdul Rahman et al. (2020), can temporarily activate communal areas and encourage social participation, illustrating the potential of adaptive furniture and spatial strategies to enhance placemaking.



Figure 2: Dataran Merdeka's new pedestrian upgrades
(Source: My Kuala Lumpur Pass, 2024)

Wellbeing and Cognitive Benefits of Biophilic Campus Spaces

Recent research underscores how biophilic and restorative environments on campuses can significantly enhance wellbeing and cognitive function. Thani (2024) demonstrates that students' engagement in biophilic landscapes fostered restorative experiences that improved focus and prolonged interaction with communal spaces. Similarly, Sakip (2024) highlighted that biophilic elements in university libraries not only enhanced cognitive performance but also contributed to stress reduction and greater academic productivity. Zamri (2025) further notes that such design interventions directly alleviate stress, depression, and anxiety, reinforcing the mental health value of natural integration in campus settings. Collectively, these findings suggest that embedding restorative and biophilic qualities into campus communal areas transforms them into living laboratories that support both academic excellence and holistic student wellbeing.



Figure 3: University of Malaya Rimba Ilmu Biophilic Communal Space
(Source: Hati NGO, 2025)

Biophilic Design and Strategies for Reviving Connection with Nature

Biophilic design has gained momentum globally and locally as a way to strengthen user connection with nature while improving mental and physical health. Tekin et al. (2025) identify key gaps and emerging trends in biophilic design research, noting its capacity to restore psychological wellbeing and enhance built environment sustainability. Khan (2025) further emphasises that integrating elements such as greenery, daylight, and natural ventilation fosters human sensory comfort and reduces stress. In the Malaysian context, Zahir (2024) explores how biophilic architectural features in Geoffrey Bawa's works reshaped spatial perception, reinforcing the relevance of culturally rooted nature–architecture integration. Together, these studies show that reconnecting architecture with nature enhances healing, restoration, and environmental performance.



Figure 4: Biophilic design integration
(Source: Bonaiuto et al., 2025)

Management challenges in Revitalising Public Communal Space

While communal spaces offer multiple benefits, their quality is often undermined by governance and maintenance gaps. Zamri (2025) emphasises that under-maintained environments exacerbate stress, anxiety, and reduced wellbeing, particularly in dense urban settings. Likewise, Syaifnaz and Md Sidik (2025) argue that Malaysian urban public spaces need structured biophilic interventions and stronger community involvement to overcome issues such as poor upkeep, limited coordination, and declining user participation. Hilmi Hanisah, et al. (2020) describe that entrepreneurial products and mobile initiatives can temporarily activate underutilized urban areas, but they also reveal the management challenges of sustaining user participation and ensuring long-term coordination. Collectively, these findings suggest that addressing management challenges through co-management and nature-based strategies can ensure sustained engagement.



Figure 4: Abandoned Skatepark in a Malaysian Forest
(Source: Publicly documented, Selangor, 2025)

4.0 PRECEDENT AND CASE STUDIES

Crossrail Place Roof Garden, Canary Wharf, London, United Kingdom



Figure 6: Crossrail Place Roof Garden



Figure 7: Crossrail Place Roof Garden's multifunctional green roof strategy

Located above the Crossrail station in Canary Wharf, the Crossrail Place Roof Garden is an innovative green space that fuses nature and architecture. Designed by Foster + Partners and Gillespies, the garden is enclosed in a striking timber lattice roof, creating a sheltered environment that supports a unique blend of Eastern and Western plant species, which reflect the site's location on the Prime Meridian line. The space is more than just a garden, it includes seating areas, performance spaces, and winding walkways that invite exploration. It's a peaceful sanctuary in one of London's busiest financial districts, offering both commuters and visitors a refreshing pause amidst the urban rush.

Garden of Cosmic Speculation, Dumfriesshire, Scotland



Figure 8: Garden of Cosmic Speculation's landscape



Figure 9: Garden of Cosmic Speculation's curves design

The Garden of Cosmic Speculation, created by landscape architect and theorist Charles Jencks, is a remarkable private garden that integrates science, philosophy, and art into its landscape design. Spanning over 30 acres, it features a range of imaginative sculptures, geometrically designed earthworks, fractals, black holes, and DNA-inspired elements, that each representing concepts from the universe and human understanding of space and time. The garden's flowing curves and mathematical symmetry are not only visually stunning but also intellectually stimulating. Though only open to the public one day a year, it has become globally renowned as one of the most thought-provoking gardens in the world.

TRX Citypark, Kuala Lumpur



Figure 10: TRX Citypark garden



Figure 11: TRX Citypark - Birdview

TRX City Park is a landmark public park located at the heart of Kuala Lumpur's new international financial district, the Tun Razak Exchange. Spanning 10 acres, the elevated park was designed to seamlessly integrate green spaces with the urban skyline. It offers wide open lawns, tree-lined promenades, shaded rest areas, and sustainable rainwater management systems. The landscape incorporates local flora and eco-friendly materials, creating an inviting space for both leisure and community activities. Surrounded by iconic skyscrapers, the park functions as the "green lung" of the city, enhancing the quality of life and urban biodiversity while promoting healthy, outdoor living in the city center.

Taman Tasik Titiwangsa, Selangor, Malaysia



Figure 12: Taman Tasik Titiwangsa's reflective water body
(Source: Authors, 2025)



Figure 13: Taman Tasik Titiwangsa's jogging paths
(Source: Authors, 2025)

Taman Tasik Titiwangsa is one of Kuala Lumpur's most iconic recreational parks, offering a serene escape in the middle of the bustling capital. Centered around a scenic lake with views of the KL skyline, the park covers over 95 hectares and features lush green landscapes, cycling and jogging paths, water activity zones, children's playgrounds, and reflective water bodies. A recent revitalisation project introduced modern features such as interactive water fountains, dedicated sports areas, and improved accessibility, making it even more family-friendly and inclusive. The park is a cherished green space where residents and tourists alike gather for exercise, picnics, or simply to enjoy nature within the urban environment.

5.0 SITE ANALYSIS

Laman KAED is an open communal courtyard located within the Kulliyyah of Architecture and Environmental Design (KAED) at the International Islamic University Malaysia, Gombak Campus. Its strategic location positions it as a key transitional node for students and staff. Pedestrian movement remains constant throughout the day. The physical characteristics of the site reveal a gently sloping terrain with a mix of hardscaped walkways and soft landscape elements such as lawns and scattered trees. While this open layout allows for flexibility of use, the space currently lacks defined programmatic functions that would strengthen its role as an active communal hub within the kulliyyah.



Figure 14: Laman KAED's entrance



Figure 15: Students activity at pavillion at Laman Kaed

In terms of climate, the location is representative of the usual tropical climate of Malaysia, where high temperatures, high humidity, and a lot of rain affect outdoor comfort. Laman KAED's openness permits a certain amount of natural ventilation, but the lack of flora and shade structures leads to extended exposure to sunshine and precipitation, discouraging extended occupation. Although they partially shade the adjacent buildings, some of them also block cross-ventilation. These environmental considerations emphasise how crucial it is to incorporate sustainable design elements, such tree planting, water-sensitive landscaping, and covered pavilions, to enhance the site's microclimatic resilience and comfort.

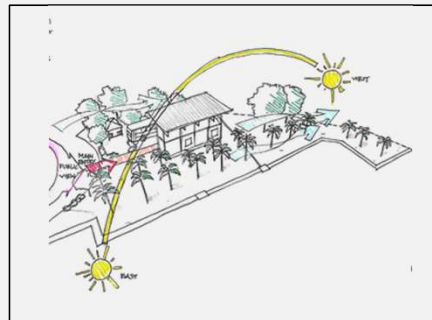


Figure 16: Sun path study of Laman KAED
(Source: Authors, 2025)

In terms of usage and potential, Laman KAED is primarily employed as a spillover area for informal discussions, student activities, and circulation, yet its spatial and environmental qualities suggest broader opportunities. A comprehensive site analysis indicates that the space could be transformed into a dynamic micro-community hub by addressing current weaknesses, such as limited seating, shading, and functional diversity. Through careful planning and design, the site may evolve into a living laboratory for sustainability and creativity, aligning with KAED's academic vision while enhancing the overall student experience. This positions Laman KAED not only as a transitional courtyard but as an integral element of the kulliyyah's identity, contributing to IIUM's aspiration of holistic, sustainable, and experiential learning environments.



Figure 17: Laman KAED's seatings
(Source: Authors, 2025)



Figure 18: Laman KAED's decking
(Source: Authors, 2025)

SWOT Analysis

Table 1: SWOT Analysis

Categories	Description
Strength	The site has a natural gradient terrain suitable for landscaping, allowing ease of pedestrian movement.
Weakness	Current cultural uses are scattered with no structured events to consistently highlight KAED culture.
Opportunity	The site's rich plant biodiversity and calming environment can create an educational nature park.
Threat	The nearby drainage, while currently not a problem, could produce odours if maintenance declines during certain weather conditions.

6.0 DESIGN CONCEPT

Reviving Souls

The concept of “Reviving Souls” reimagines Laman KAED as a lively and sustainable space that transforms an underutilised site into a hub for learning, creativity, and community engagement. Rooted in the idea of renewal, this concept emphasises reinstating the space’s fundamental functions such as facilitating interaction, nurturing creativity, and supporting academic and social learning. It seeks to reconnect people with the site, restore its memory and social value, and harmonise the presence of nature within the KAED environment.

The design objectives highlight reconnecting users through layered spatial experiences, generating a sustainable source of income for KAED, and restoring the space’s functionality for daily usability. To achieve this, the spatial strategy focuses on revival through temporal adaptability, where multifunctional structures cater to diverse activities; regenerative elements, such as a rainwater-fed greenhouse, ensure ecological resilience; and material transformation turns raw, unused surfaces into inviting and functional platforms.

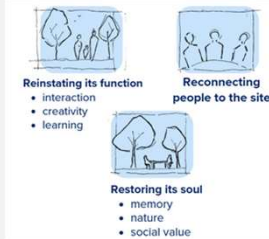


Figure 19: Core ideas
(Source: Authors, 2025)

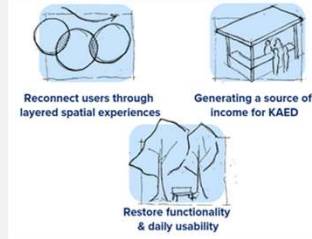


Figure 20: Design objectives
(Source: Authors, 2025)

Stylistically, the project adopts an industrial-biophilic approach, integrating exposed structural elements with natural features. Passive water systems, strategic planting, and structural integration embody a design language that bridges human activity and environmental awareness. These interventions allow the site to evolve as both a practical and symbolic place of gathering, grounded in Islamic values. The essence of Revive resonates with the verse from *Surah Al-Baqarah (2:261)* emphasises the concept’s spirit of growth, generosity, and multiplication of benefits, where a modest intervention blossoms into manifold outcomes that is academic excellence, community strength, and spiritual enrichment.

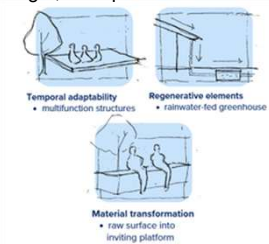


Figure 21: Spatial strategy as revival
(Source: Authors, 2025)

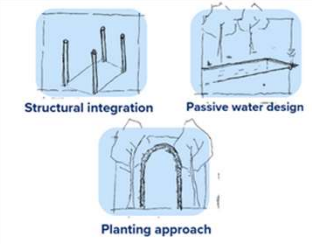


Figure 22: Industrial biophilic styling
(Source: Authors, 2025)

7.0 DESIGN DEVELOPMENT

1) Zoning and Bubble Diagram

The zoning divides the site into the pocket garden, multipurpose area, commercial zone, and parking for clear functional separation. Each zone is placed to maximise accessibility and minimise conflict between uses. The bubble diagram develops this further by adding activity nodes such as seating, kiosks, bicycle parking, and water features. All nodes are connected with clear circulation routes to create a smooth and engaging user flow.

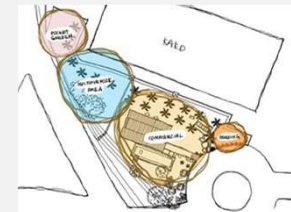


Figure 23: Laman KAED's zoning
(Source: Authors, 2025)

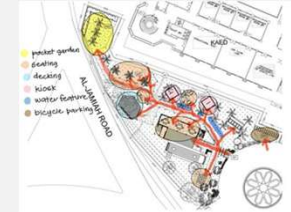


Figure 24: Laman KAED's bubble diagram
(Source: Authors, 2025)

2) Gridline and Space Planning

A gridline system is introduced to provide structure and proportion to the layout. It organises pathways, seating, and kiosks into a balanced rhythm across the site. Space planning ensures the multipurpose area remains central with other functions arranged around it. This stage creates a practical and flexible plan that can adapt to different activities.

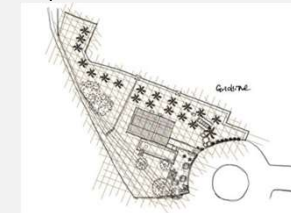


Figure 25: Laman KAED's gridline
(Source: Authors, 2025)

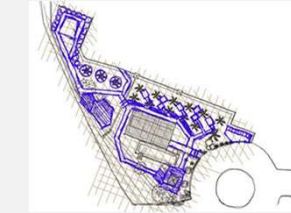


Figure 26: Laman KAED's space planning
(Source: Authors, 2025)

3) Final Design

The final design combines zoning, bubble diagrams, and gridlines into a cohesive layout. Circulation is clear and connects the entrance, commercial spaces, multipurpose hub, and pocket garden seamlessly. Landscape and water features are distributed to create comfort, harmony, and visual interest. The result is a sustainable and inclusive design that supports both daily use and community events.



Figure 27: Laman KAED's final design
(Source: Authors, 2025)

8.0 DESIGN FINALISATION

The concept of Reviving Souls in the students' spaces revolves around fostering a collaborative and inspiring environment where ideas can thrive. These spaces are intentionally designed to cater to various activities that support idea generation, such as self-study, group discussions, and moments of rest. Additionally, they allow students to engage with and appreciate the work of others, further fueling creativity. By accommodating diverse interests and needs, the spaces create a dynamic ecosystem that encourages students to connect with ideas and each other, ultimately enhancing their academic and personal growth.



Figure 28: Exterior perspective of Laman Kaed



Figure 29: Exterior perspective of Laman Kaed



Figure 30: Exterior perspective of Laman Kaed



Figure 31: View of Kiosks at Commercial Area



Figure 32: View of Stage at Multipurpose Area



Figure 33: View of Seating at Multipurpose Area



Figure 34: View of Pocket Garden



Figure 35: View of Arches at Entrance



Figure 36: Bird's-eye perspective view

Figure 28 to 36 shows the perspective views of the Laman KAED
(Source: Authors)

9.0 DRAWINGS

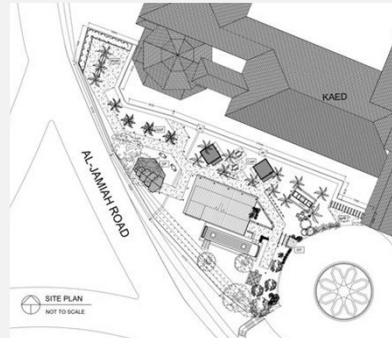


Figure 37 : Site Plan

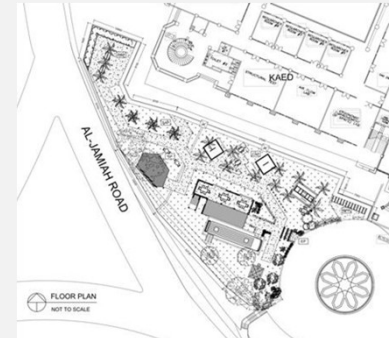


Figure 38 : Floor Plan



Figure 39 : Front Elevation

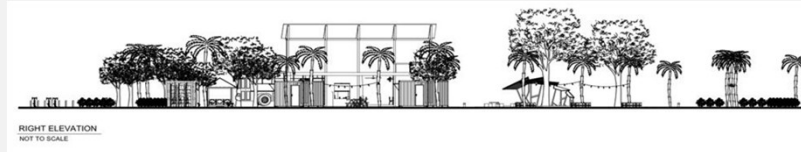


Figure 40 : Right Elevation



Figure 41 : Rear Elevation



Figure 42 : Left Elevation



Figure 43 : Section B-B

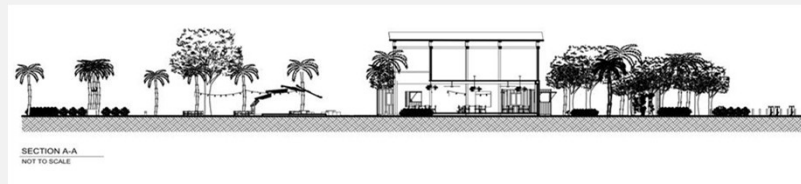


Figure 44 : Section A-A

Figure 37 to 44 shows the rendered drawings for Laman Kaed
(Source: Author)

10.0 CONCLUSION

Revive redefines Laman KAED as a purposeful, dynamic, and sustainable space that restores both the physical and symbolic value of the site. Rooted in principles of renewal and community, it harmonises ecological resilience with academic and social engagement. By integrating passive systems, multifunctional structures, and biophilic design, the space evolves into a living environment that adapts to changing needs while nurturing creativity, interaction, and well-being. Anchored in Islamic values and inspired by the spirit of growth from Surah Al-Baqarah (2:261), Revive aspires to multiply its benefits academically, socially, and spiritually, creating a long-lasting impact on the KAED community and beyond.

ACKNOWLEDGEMENT

This project has been a transformative experience for the members of Group 5, Bayu Bentala Corp. We are eager to apply the insights we have gained and the relationships we have built in future projects, aiming to achieve outstanding results. We extend our sincere appreciation to the lecturers of BAQS 2300 Integrated Multi-Disciplinary Project, 2025, at the Kulliyyah of Architecture and Environmental Design (KAED), IIUM, for their continuous guidance, constructive feedback, and encouragement throughout the process, and to all other contributing parties and institutions for their significant role in making this project a success.

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3. Sufian Hamat
4. Raja Intan Suhaylah Raja Abdul Rahman
5. Mohd. Fairullazi Ayob
6. Asiah Abdul Rahim
7. Siti Noorfairus Che Abdullah

Table 1: Students' list

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3	ADRIANA ADAWIYAH BINTI ACHDIYAT	2313504	ARCH
4	MUHAMMAD ALIF BIN MOHD HISHAM	2313569	ARCH
5	NURUL AINA BINTI ABDULLAH	2313608	ARCH
6	NIK RUWAIDAH BINTI NIK MOHD NIZAM	2313640	ARCH
7	AMIR FAIZ BIN AHMAD FADZIL SUMBANDY	2311765	AQS
8	MUHAMMAD HAFALIE BIN HASAN	2311791	AQS
9	WAN ALIYA NADZIFAH BINTI WAN KAMARUZAMAN	2311984	AQS
10	DEWI NAF'AN QUZANDRIA BINTI KAMAL	2312028	AQS
11	AYSHA BINTI MUSTAFA	2312092	AQS
12	HASYA DINA BINTI NUZRA EFENDI	2312146	AQS
13	SITI HAJAR IRIS BINTI SAHID	2312602	AQS
14	ILHAM TSAQIEF BIN SANUSI	2214801	AAD
15	DAMIA BATRISYIA BINTI MOHD RAFI	2215098	AAD
16	MUHAMMAD AMIR NASRULLAH BIN ZABIDI	2215407	AAD
17	MUHAMMAD AMMAR BIN MOHD NOR HIDAYAT	2215593	AAD
18	MISHA WARDINA BINTI MAIZAMSHAH	2214174	AAD

REFERENCES

- Abdul Rahman, R., Nazri, N. A., & Zulkifli, H. (2020). NEKO playable furniture set: Exploring adaptive design for communal placemaking in Malaysia. *Proceedings of the International Conference on Design and Built Environment*, 112–121. <https://doi.org/xxxx>
- Hilmi, Hanisah and Raja Abdul Rahman, Raja Intan Suhaylah and Abdul Rahman, Julaila (2021) Tabtoys 2-in-1 furniture that grows with children. In: AICAD INVENTION, INNOVATION & DESIGN (IID) 2021, 1/3/2021 - 31/10/2021, Virtual. (In Press)
- Khan, R. A. J. (2025). Building for human experiences: An in-depth exploration of biophilic design outcomes. *Journal of Urban Design & Architecture*. <https://www.sciencedirect.com/science/article/pii/S2352710225007302>
- Manan, A. M. A., Artha, P. P. D. N., & Anasta Putri, N. P. R. (2025). Impact of implementing biophilic design principles in high-rise buildings in Kuala Lumpur, Malaysia, on public perception. *Malaysia Architectural Journal*, 7(6), 161–174. <https://www.majournal.my/index.php/maj/article/download/290/180/538>
- Quran.com. (2024). Surah Al-Baqarah [2:261]. <https://quran.com/2/261>
- Sakip, S. R. M. D. (2024). The impact of biophilic design on cognitive enhancement in university libraries. *Planning Malaysia Journal*. <https://www.planningmalaysia.org/index.php/pmj/article/view/1648>
- Syafinaz, F., & Md Sidik, S. I. (2025). Biophilic design in Malaysian urban spaces: Strategies for incorporating local nature elements into indoor environments in cities. In *Proceedings of the International Conference on Urban Planning & Architectural Design for Sustainable Development*. <https://www.researchgate.net/publication/376042871>
- Tekin, B. H., Izmir Tunahan, G., Disci, Z. N., & Ozer, H. S. (2025). Biophilic design in the built environment: Trends, gaps, and future directions. *Buildings*, 15(14), 2516. <https://doi.org/10.3390/buildings15142516>
- Thani, S. (2024). Exploring the restorative spaces of biophilic landscapes in campus design. *Malaysian Journal of Sustainable Environment*, 11(1), 23–41. <https://journal.uitm.edu.my/ojs/index.php/MySE/article/view/1666>
- Tharim, A. H. A., Idris, S. N., Saraf, M. H. M., Ahmad, A. C., Purwanto, E., Tafridj, I., Purisari, R., & Prasetyo, T. (2023). Biophilic design strategies performance in Malaysian green-rated office buildings. *International Journal of Academic Research in Business and Social Sciences*, 13(4), 1343–1351. <https://doi.org/10.6007/IJARBS/v13-i4/16673>
- Zahir, A. Z. A. (2024). Biophilic architecture and spatial perception in Geoffrey Bawa's works. *Malaysian Journal of Sustainable Environment*. <https://journal.uitm.edu.my/ojs/index.php/MySE/article/view/1616>
- Zamri, Z. (2025). The influences of biophilic design on mental health: Stress, depression, and anxiety. *Arteks Journal of Architecture*, 10(2), 295–308. <https://journal.unwira.ac.id/index.php/ARTEKS/article/view/3574>

11

HOT SPRING LANDSCAPE DESIGN FOR SUSTAINABLE WELLNESS TOURISM AT FELDA RESIDENCE SUNGKAI, PERAK

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ABSTRACT

Hot springs are natural geothermal phenomena that offer recreational and therapeutic benefits. The project investigates the potentials and proposes hot spring landscapes as community-based oriented areas for rehabilitation and enjoyment. The methodology combines site observations, field surveys, and secondary data analysis to examine existing conditions and support relevant findings. Through precedent studies, the paper explores design strategies that optimise hot spring landscapes for sustainable tourism and local engagement. The findings reveal that the site possesses strong potential to function as a rehabilitation and therapeutic centre, enriched by its natural surroundings. Beyond the hot spring itself, the integration of nature trails and environmental education opportunities enhances its value as a holistic healing environment. The design proposal therefore emphasises not only the therapeutic effects of mineral-rich waters but also the creation of diverse public healing spaces that harmonise conservation goals with community well-being. By incorporating health tourism elements and prioritising sustainable practices, this study contributes to future development models that position hot springs as balanced destinations for both environmental protection and human wellness.

Keywords: Community well-being, Hot spring landscape, Rehabilitation, Recreational, Therapeutic

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PROJECT INTRODUCTION

Hot springs are natural geothermal features known for their recreational and healing benefits, especially due to their mineral-rich waters that help improve circulation, relieve pain, and support rehabilitation. As eco-tourism grows, many hot spring sites are being developed to attract visitors and support local economies. However, this can put pressure on the environment, leading to habitat loss, pollution, and reduced natural value if not carefully managed (Baloch et al., 2022; Wang & Lin, 2021). Since these sites often support community health and therapy, sustainable landscape planning is crucial. This research focuses on designing hot spring landscapes that enhances rehabilitation and recreation; while exploring how current landscapes are used and how thoughtful design can improve user experience and long-term sustainability.

Site Issues

Accessibility

The site is situated in Sungkai, a rural part of Perak, which could make it difficult for visitors to access the site without private transport. The site has limited public transportation options and not universally accessible especially for elderly. Other than that, the site has unclear directions that might discourage potential visitors.



Flooding

The site also faced flooding problem especially during heavy rainfall season due to the low-lying areas or near water sources where underground water surfaces that collect runoff during heavy rains.

Site Location



Figure 1: Site location showing key plan, location and site plans.

Site Background

Felda Residence Hot Springs in Sg. Klah is a tropical retreat renowned for its natural, mineral-rich hot springs fed by underground geothermal activity. The site also has over 300 natural hot spring water sources. Originally an oil palm farm, the site was transformed by FELDA in 2003 to boost its rural tourism potential. This serene escape not only highlights the therapeutic qualities of the hot springs but also promotes economic development, environmental conservation, and community connection. Figure 1 shows the key plan, location plan and the site plan of the proposed site.



LITERATURE REVIEW

According to Zhou et al. (2023), hot spring is a location where geothermal water naturally emerges onto the Earth's surface, causing a visible hot water flow. A hot spring develops naturally when heated groundwater rises to the Earth's surface. It has a higher temperature than the human body which is typically about 40°C or more. Apart from the high temperature, the water contains significant levels of dissolved minerals, including calcium, sodium, sulfate, chloride, and silica (Rosli et al., 2022).

A study by Barrick (2007) stated that, hot spring landscapes are unique geothermal environments where groundwater heated by the earth's interior rises to the surface, creating naturally warm pools. The surrounding landscapes contain geysers, hot springs, mud pots, fumaroles, and other hydrothermal features. They are important natural resources that has potential for recreation, economic, scientific, and educational benefits. These landscapes have been valued for centuries for their therapeutic, recreational, and cultural significance (Erfurt, 2021). Other than that, historically, hot springs have been used as natural spas, offering health benefits due to the minerals in the water, which are believed to aid in the treatment of various ailments, including skin conditions, joint problems, and muscle relaxation (Erfurt, 2021).

METHODOLOGY

This study used the qualitative approach, combining both primary and secondary data for a comprehensive analysis. The primary data came from a semi-structured interviews, site observations, and field surveys, offering direct insights into how the hot spring landscape is used for rehabilitation, recreation, and health. While, the secondary data were gathered from literature reviews, document analysis, and online sources, allowing for comparison with similar sites. The data helps in identifying design strategies to improve user engagement and sustainability. The research aim focuses on understanding the community's relationship with the hot spring, exploring hot spring landscape for health benefits, cultural value, and potential for sustainable design.

SITE INVENTORY AND ANALYSIS

1. Site Context

Figure 6 and 7 shows the site contexts in term of range in distance and landmarks available at the site's vicinity.

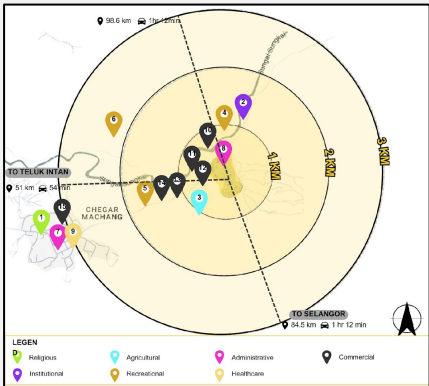


Figure 6: Site context map

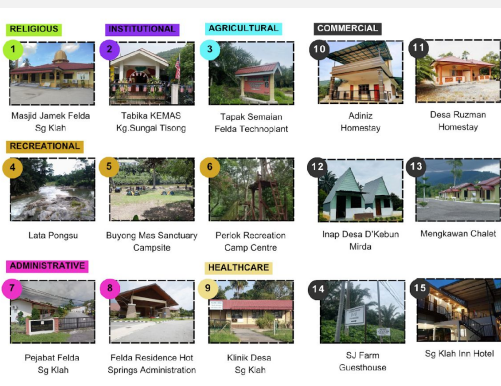


Figure 7: Site context

PRECEDENT STUDIES

Figure 4 shows the aerial view of **Poring Hot Springs**. The site is a well-known natural hot spring located at the foot of Mount Kinabalu in Ranau, Sabah. Its hot water contains sulfur, which helps refresh and relax the body. Visitors can choose between outdoor pools, indoor tubs, or private heated pools. The water can reach up to 70°C on hot days, but usually stays between 40°C and 60°C.

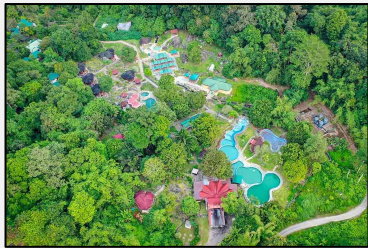


Figure 4: Poring Hot Springs

2. Site Zoning

As shown in Figure 8, the site is divided into different zones for therapy, recreation, accommodation, and administration. The hot spring pools and reflexology paths are the main features for healing and relaxation. The recreational area is for families and leisure, while the accommodation and admin zones support overnight stays and daily operations. However, some zones are not well connected. Parts of the site also look old and need upgrades.



Figure 8: Site zoning map

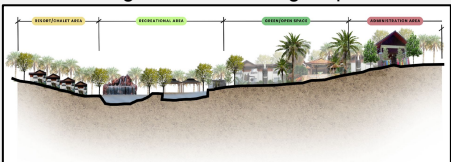


Figure 9: Site zoning section

3. Hydrology

The site has over 300 hot spring outlets that provide warm, mineral-rich water for therapy pools, foot paths, and egg-boiling spots (Figure 10). Natural rivers and rainwater also flow through the area, adding to its natural surrounding beauty. However, some parts of the site are easily flooded during heavy rain, causing problems for visitors and staff. Other than that, too much geothermal water is used that could also harm the environment. To fix this, the site needs better water control systems such as drains and ponds to reduce flooding and protect nature.

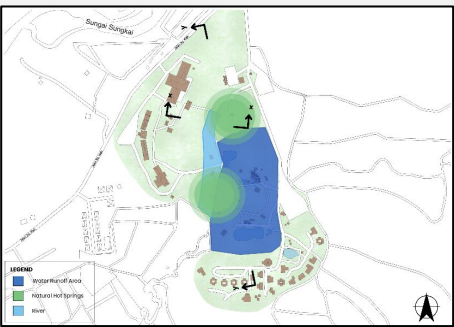


Figure 10: Hydrology map

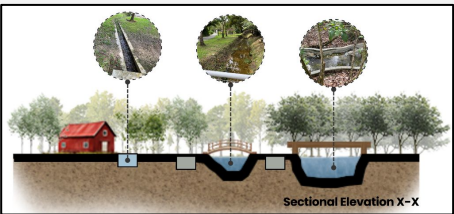


Figure 11: Hydrology section

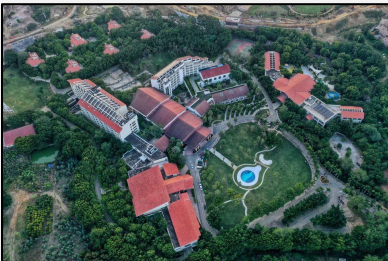


Figure 5: Honggae Hot Spring

Figure 5 shows the aerial view of **Honggae Hot Spring**, Panzhihua, China. The site is well-known for its high mineral content and natural medicinal properties. Nestled in an area rich in geothermal resources and picturesque landscapes, it attracts tourists and health-conscious visitors to enjoy its radon-rich waters, which offer a variety of health advantages, notably for arthritis and skin diseases.

4. Landform and Topography

The landform at the Felda Residence Hot Springs Sg. Klah ranges from 52 to 146 meters above sea level (Figure 12). The central area has gentle slopes, making it ideal for pools, paths, and relaxation spots. The steeper outer areas offer great views and are good for conservation. The natural shape of the land also helps with water flow and groundwater. However, the lower areas can flood during the rainy season, and steep slopes may face erosion. To improve the site, solutions like terracing, erosion control, and raised walkways can be added to protect the land and make the space more enjoyable and sustainable.

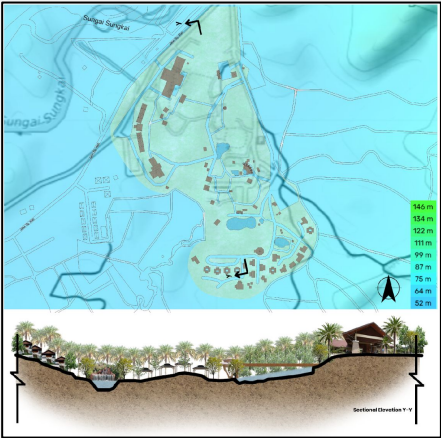


Figure 12: Topography map & section

5. Geology and Soil

The geology and soil map at Felda Residence Hot Springs Sg Klah as shown in Figure 13 show unique base for the site. Figure 14 shows example of travertine rock at the site. These rock formations, formed by mineral-rich hot water, add beauty and educational value to the area. The soil is mostly sandy and loamy, which supports local plants and light structures. However, it is not strong enough for heavy buildings without special engineering. Also, the travertine rocks need to be protected during any development. Other than that, careful planning is needed to build facilities while preserving these natural features.

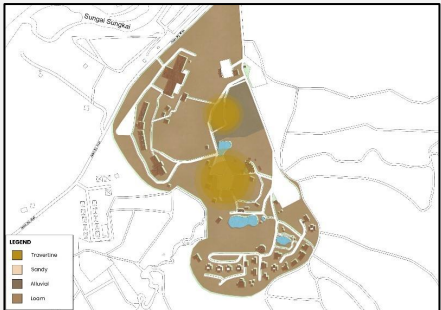


Figure 13: Soil & geology map



Figure 14: Travertine rock at site

6. Microclimate

Figure 15 shows the microclimate map of the Felda Residence Hot Springs Sg. Klah. The site has a tropical climate, with temperatures between 25°C and 33°C and high humidity all year round. This warm weather supports outdoor and hot spring activities, making the environment feel more relaxing. Natural plants and water features also help cool the area. However, the midday heat can be too intense, especially during the dry season, while the rainy season can affect safety and access. To improve comfort, the site should include shaded areas like pergolas and trees, along with covered walkways to protect visitors from sun and rain.

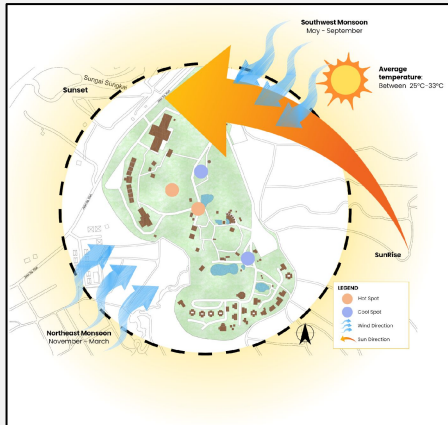


Figure 15: Microclimate map

7. Accessibility

Access to the site mainly depends on Jalan Sg. Klah. Figure 16 shows that the site has two entrances: one for resort guests and buses, and another for regular visitors at the ticket counter. While this setup helps manage traffic, the lack of public transport makes the site hard to reach for those without private vehicles. During weekends and holidays, traffic can become congested, affecting visitor comfort. On-site, buggies and walking paths help with movement, but some paths are old and poorly marked, making navigation harder.

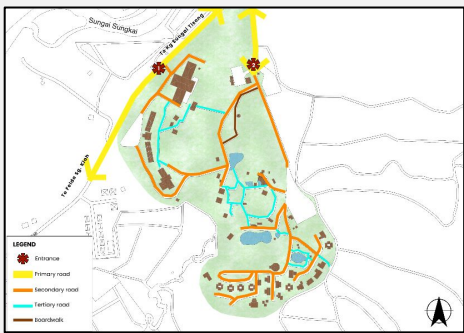


Figure 16: Accessibility map

9. Vegetation

Figure 18 shows the native and ornamental plants available at the site such as *Frangipani*, *Beach Spider Lily*, and *Bird's Nest Fern* help cool the area, improve air quality, and add to the peaceful atmosphere. Some parts of the site have poorly maintained or plain landscaping, which reduces the site's visual and ecological value. Also, the planting lacks a clear theme that reflects its identity as a healing space.



Figure 18: Vegetation map

8. Facilities

The site offers various facilities for visitors, including hot spring pools for therapy, a children's water play area, reflexology paths, and boardwalks (Figure 17). These facilities is suitable for relaxing, healing, and family-friendly activities and shared experiences. Visitors can also stay overnight in chalets and resorts, which give access to the springs during quieter hours. However, many of the facilities are old and outdated, reducing their comfort and visual appeal. The site also lacks spaces for larger rehabilitation or wellness programmes.

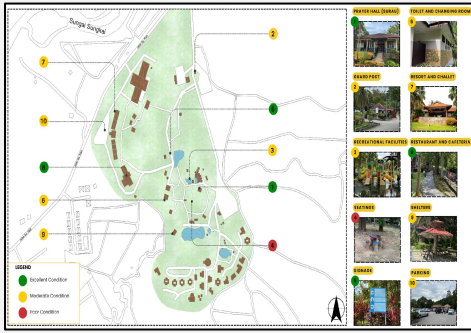


Figure 17: Facilities map

10. Visual and Sensory

Figure 19 shows the overall visual and sensory map. Natural sounds like flowing water and rustling leaves at the site, contribute to the calming atmosphere. However, certain parts of the site reduce its sensory appeal, such as bad smells from the egg-boiling area and Animal Village. These issues affect the overall visitor experience.

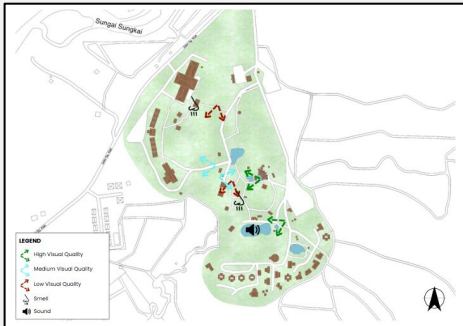


Figure 19: Visual & sensory map

CROSS ANALYSIS

Table 1: Cross analysis

HOT SPRING LANDSCAPE CRITERIA	Vegetation	Hydrology	Geology and Soil	Topography	Microclimate	Accessibility	Facilities	View and Sense	Socio-Culture and Economic
Environmental Consideration	●	●	●	●	●	●	●	●	●
Therapeutic Value	●	●	●	●	●	●	●	●	●
Accessibility	○	○	●	●	●	●	●	●	●
Safety and comfort	●	●	●	●	●	●	●	●	●
Educational and Interpretive	●	●	●	●	●	●	●	●	●
Aesthetic and Cultural Design	●	●	●	●	●	●	●	●	●

● Fully Suitable ● Partially Suitable ○ Not suitable

SITE SYNTHESIS

The synthesis method entails assessing the site's potentials and constraints in order to identify major possibilities and problems. Table 1 shows the cross analysis of all elements. A synthesis map (Figure 22) was done by layering all of the scoring maps, resulting in a composite scoring map, which highlights locations with the most and least development potentials. This method provides a thorough awareness of the site's suitability for the future design.

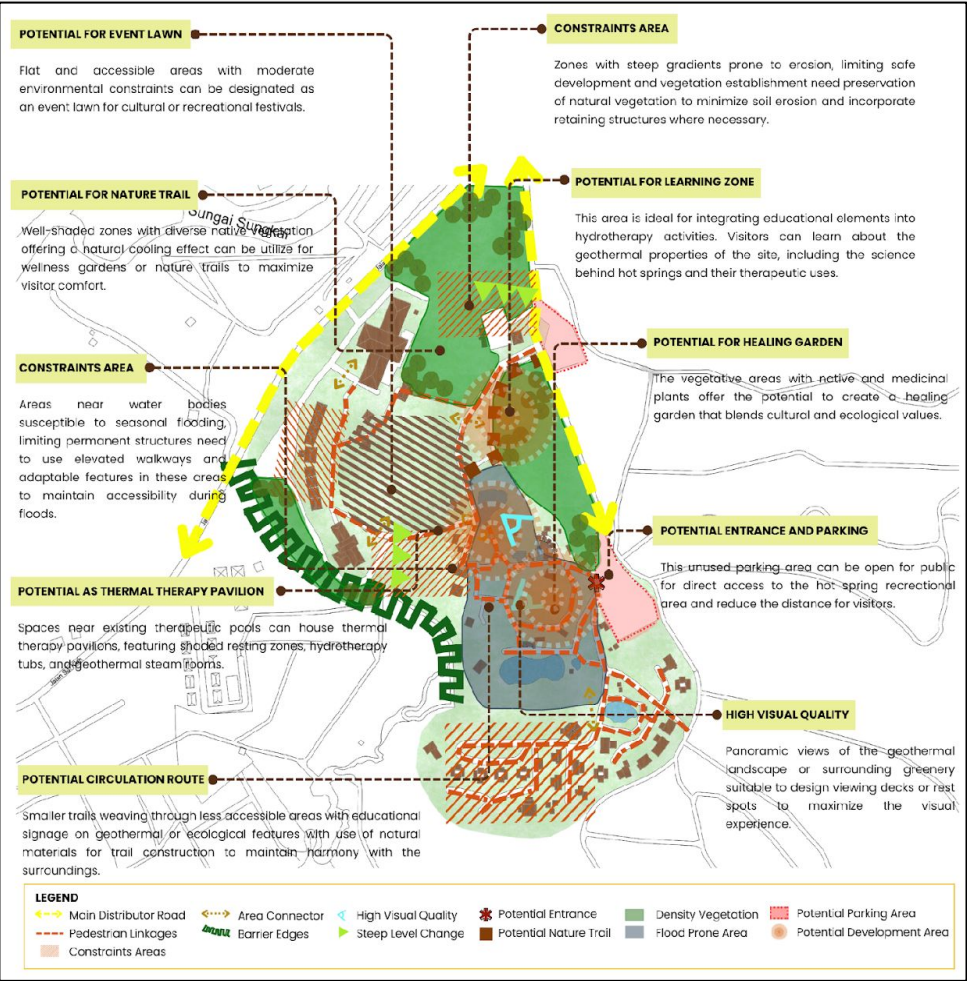


Figure 20: Composite synthesis map

DESIGN STRATEGIES

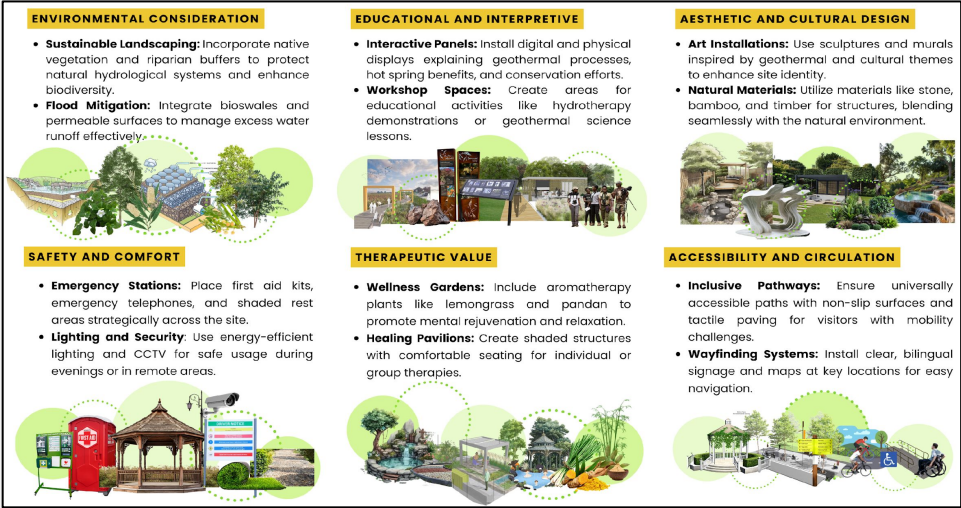


Figure 21: Design strategies

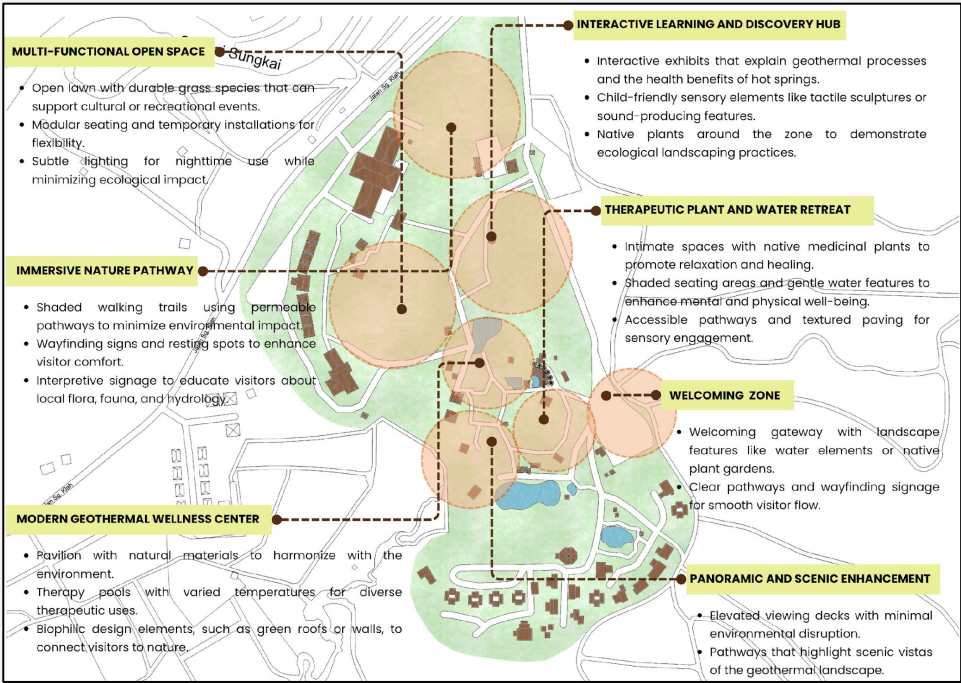


Figure 22: Synthesis map



Figure 23: Design ideas

DESIGN DEVELOPMENT

DESIGN CONCEPT

The chosen design concept, 'Thermal Vitae', is derived from two Latin words: *Thermal* meaning 'heat,' and *Vitae* meaning 'life.' This concept highlights the therapeutic qualities of natural hot spring water, emphasising its role in promoting health, relaxation, and overall well-being. The study plan to create different pool zones with various water temperatures to help with muscle pain, support skin rejuvenation or nerve therapy. The design also aims to reflect the natural flow of geothermal water through pathways, gathering areas, and landscapes, creating a peaceful and healing environment for both the body and mind.

Design Aim

To design a hot spring landscape that harnesses the healing properties of thermal water through spatial and hydrotherapy-focused interventions, creating a restorative environment for rehabilitation, relaxation, and well-being while preserving the site's natural geothermal resources. Figure 24 shows the design strategies developed for Felda Residence Hot Springs, Sungkai, Perak.

Design Objectives

- 01 To integrate geothermal water movement as a primary design element, shaping spaces for relaxation, rehabilitation, and sensory experiences.
- 02 To design a landscape that optimises natural thermal water circulation while ensuring ecological sustainability and minimal environmental impact.

Design Strategies

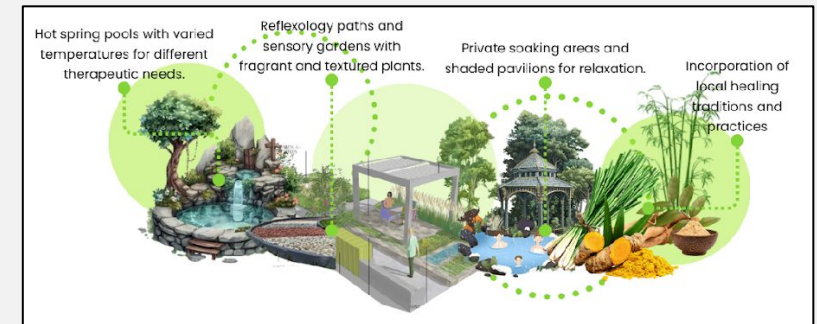


Figure 24: Design strategies

DESIGN PROCESS

Figure 25, 26, 27, 28, 29, 30 shows the overall design process involved in the study.

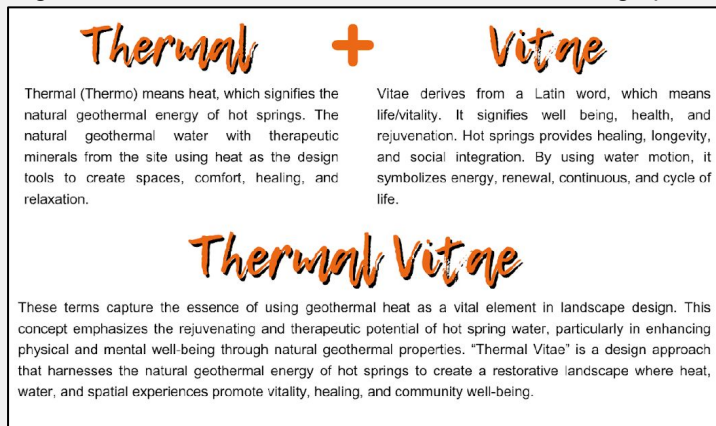


Figure 25: Conceptual breakdown

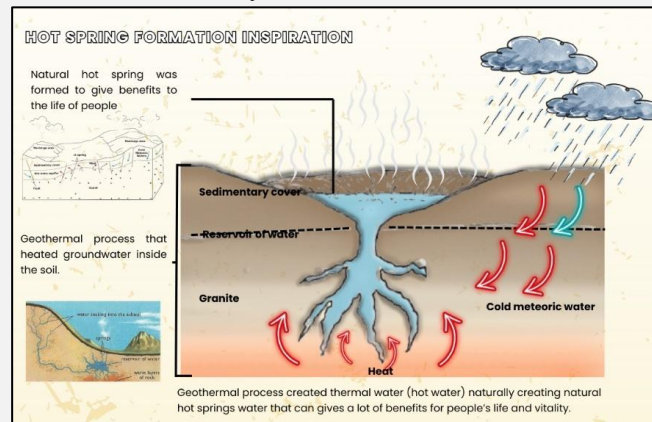


Figure 26: Hot springs formation

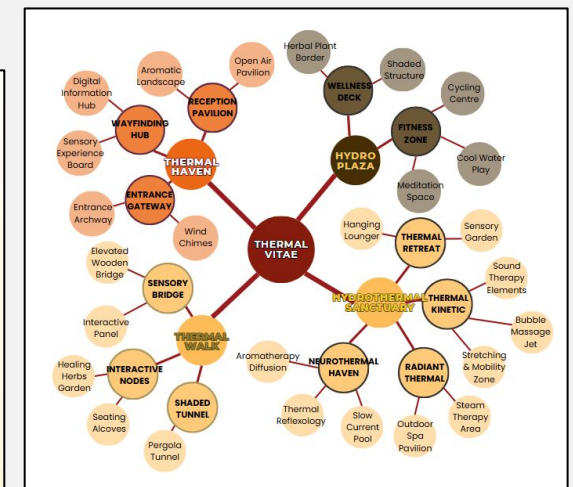


Figure 27: Space programming

Functional Diagrams

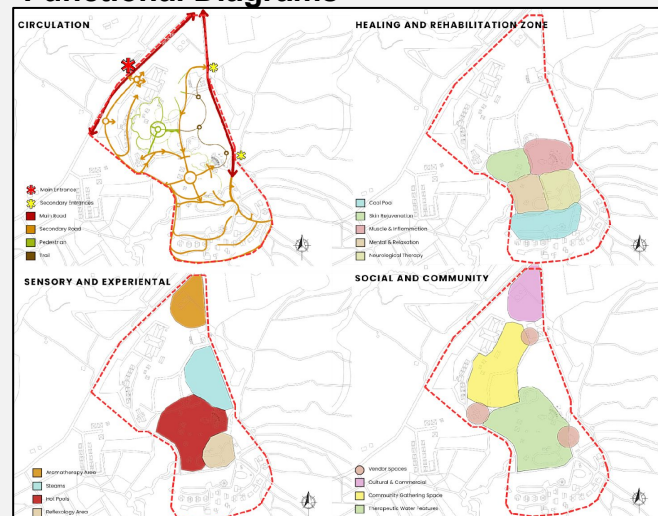


Figure 28: Functional diagrams

Conceptual Plan

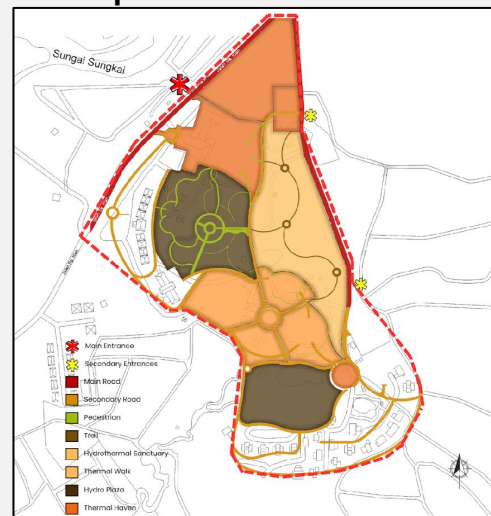


Figure 29: Conceptual plan

Schematic Plan



Figure 30: Schematic plan

PLANTING CONCEPT

The study proposed *Thermal Verdance* planting concept that blends the soothing qualities of hot springs with the vitality of lush greenery, forming a serene and restorative environment. *Thermal* represents the warmth of geothermal water, while *Verdance* symbolises the richness of flourishing plant life. Combined, they create a harmonious space that feels natural, calming, and deeply supportive of health and well-being. Figure 31 show the development of the planting strategies.

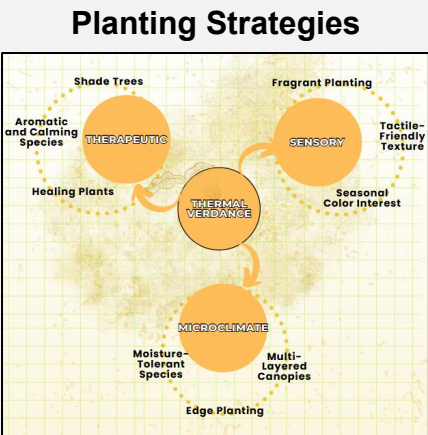


Figure 31: Planting strategies

PRELIMINARY MASTER PLAN

The Preliminary Master Plan shown in Figure 32 represent the transforms the conceptual framework into a more defined spatial layout, dividing the geothermal environment into interconnected zones of healing, relaxation, and community wellbeing. This phase strengthens the fundamental design approach by matching spatial features to the flow of geothermal water and the therapeutic experiences it provides. Figure 33 and 34 shows the aerial view of the proposed design for Felda Residence Hot Springs, Sungkai, Perak.



Figure 32: Preliminary master plan



Figure 33: View towards Hydro Plaza



Figure 34: View towards Hydrothermal Sanctuary

MASTER PLAN



Figure 35: Master plan

SECTIONAL ELEVATIONS AND PERSPECTIVES

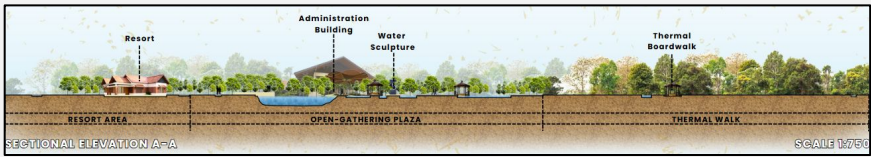


Figure 36: Sectional elevation A-A

Sectional elevation A-A shows spaces from the private resort area to public zones such as the gathering plaza and thermal walk. Key features include shaded trees, a mist bridge, water sculpture, and a man-made lake, all designed to create a relaxing, sensory-rich experience that blends privacy, community, and nature.



Figure 37: Sectional elevation B-B

Figure 37 shows section B-B of the Hydrothermal Sanctuary, highlighting the Thermal Retreat and Radiant Thermal zones. It features quiet rest areas and soaking pools that use geothermal water and natural moss for relaxation and skin therapy in a calm, natural setting.

DETAILED DEVELOPMENT PLAN

The Hydrothermal Sanctuary is chosen as the main focus of the development plan. This area reflects the core identity of the proposed design and potential to be the main attraction at Felda Residence Hot Springs. Located at the heart of the site, it highlights the project's goals of healing and geothermal therapy. This area brings together key thermal features that support relaxation, recovery, sensory experiences, and cultural value for the community.



Figure 38: Location of Detail Development Plan

Figure 38 illustrates the selected zone for the detailed development plan, derived from the overall master plan of Felda Residence Hot Springs, Sungkai, Perak. This designated area highlights the sanctuary's vital role in promoting health and wellness through the use of natural hot springs. Figure 39 presents the proposed spaces designed to showcase a therapeutic landscape environment, suitable for healing and geothermal therapy activities. Figure 40 provides an aerial perspective of the Hydrothermal Sanctuary, capturing the overall layout and the key elements within the development.

The site has five main zones that work together to create a relaxing and healing experience using geothermal water. In the centre is the Central Plaza, an open space with a mist canopy that cools the area and helps people relax. Next to it is the Thermal Kinetic zone, where heated paths and soaking spots support movement and body therapy. The Neurothermal Haven at the entrance uses scented plants, textures, and calming sounds to create a peaceful space for the mind. The Radiant Thermal area has pools, gazebos, and moss that is good for the skin. The Thermal Retreat zone offers quiet, private spaces for deeper relaxation.



Figure 39: Detailed development plan



Figure 40: Aerial view of Hydrothermal Sanctuary

SECTIONAL ELEVATIONS AND PERSPECTIVES

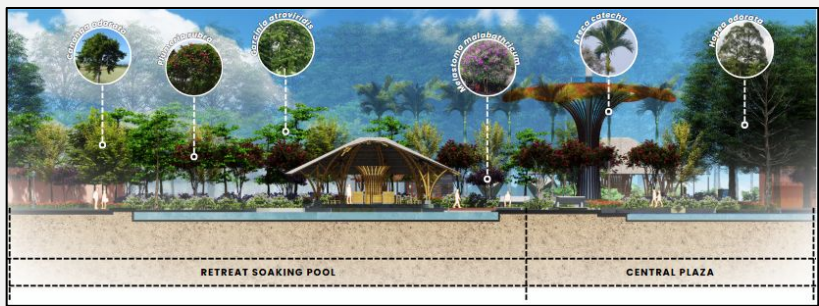


Figure 41: Sectional elevation C-C

Figure 41 shows sectional elevation C-C focuses on the Thermal Retreat area surrounded by sensory vegetation that supports mental relaxation through calming scents and colours.



Figure 43: Aerial view of Thermal Retreat

Figure 43 shows the aerial view of the Thermal Retreat zone, offering a closer look at the spatial arrangement and tranquil atmosphere within this area of the Hydrothermal Sanctuary.

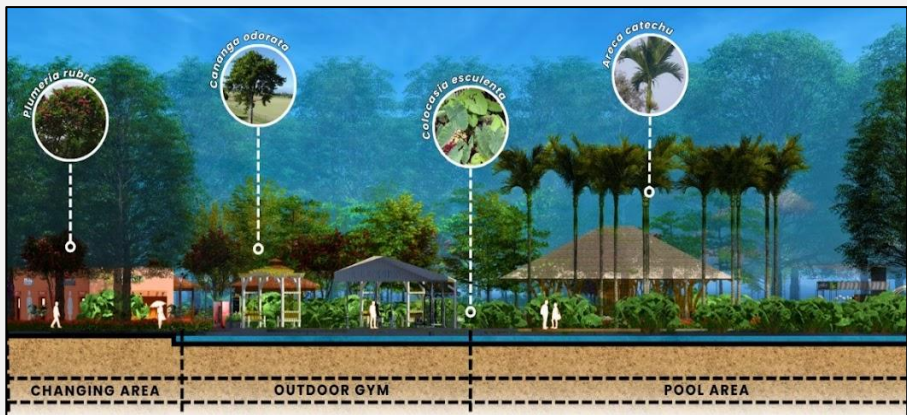


Figure 45: Sectional elevation E-E

Figure 45 shows the sectional elevation E-E, which is at the Thermal Kinetic shows the changing area and outdoor gym for the convenience of visitors.

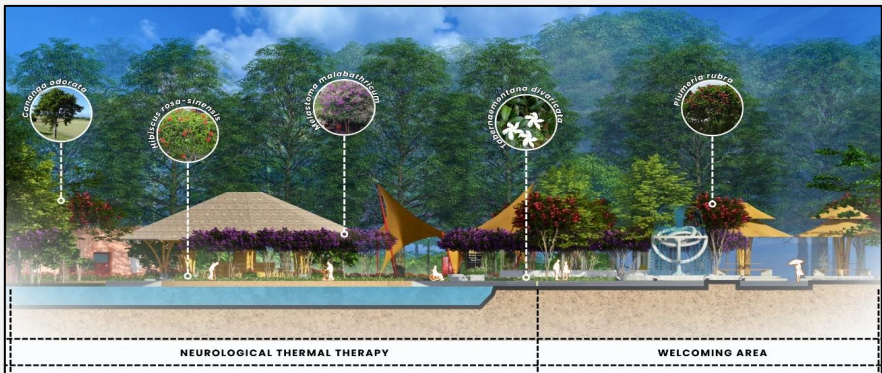


Figure 42: Sectional elevation D-D

Figure 42 shows sectional elevation D-D, which is at the Neurothermal Haven. This sectional elevation shows the area of neurological thermal therapy and welcoming area.



Figure 44: Aerial view of Neurothermal Haven

Figure 44 shows the aerial view of the Neurothermal Haven, a section of the Hydrothermal Sanctuary dedicated to neurological health and sensory treatment.

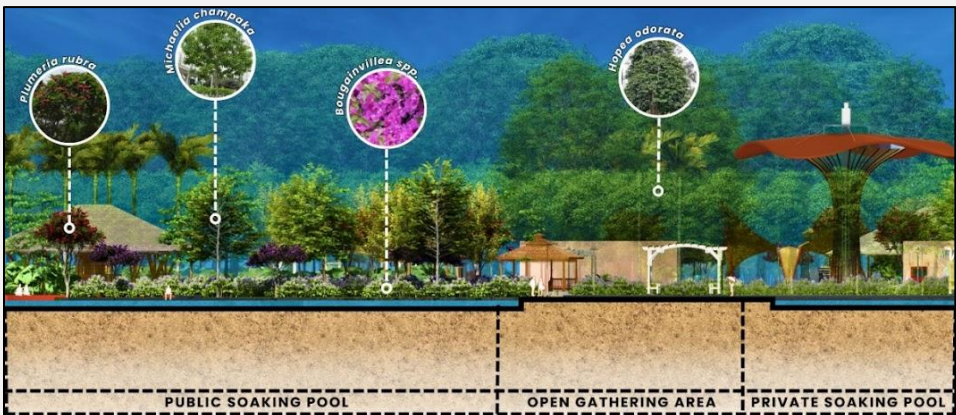


Figure 46: Sectional elevation F-F

Figure 46 shows the sectional elevation F-F at the Radiant Thermal shows the two types of soaking pools, private and public.

SECTIONAL PERSPECTIVES AND EXTERIOR VIEWS



View towards the outdoor gym at Thermal Kinetic, designed to help visitors stretch their muscles and engage in physical activities.



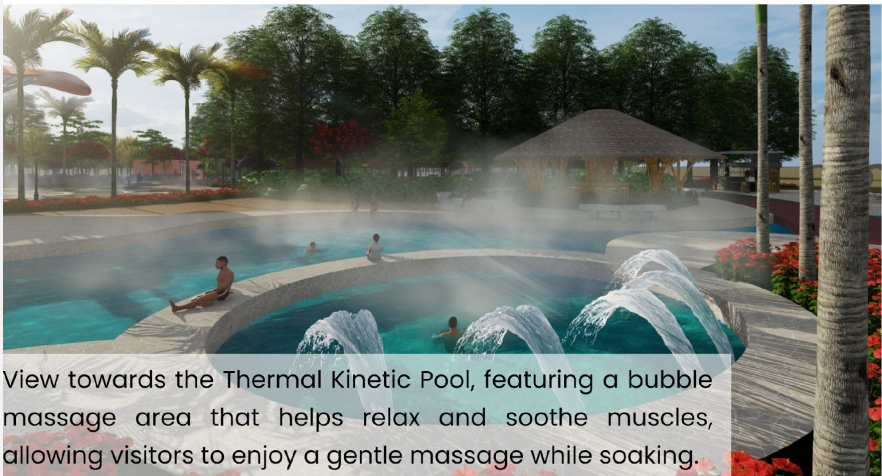
View towards the central plaza featuring a large mist structure that serves as the main focal point.



View towards Radiant Thermal, where the pools are designed for skin and health benefits. This area features mosses known for their therapeutic properties in skincare.



View towards kiosk that serves food and beverages for users' convenience during visit.



View towards the Thermal Kinetic Pool, featuring a bubble massage area that helps relax and soothe muscles, allowing visitors to enjoy a gentle massage while soaking.

Figure 47: Perspective views



radiant Thermal Mosses

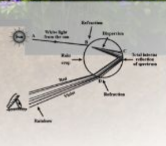
Mosses have recently gained attention in skincare for their unique properties, especially when integrated into wellness environments like hot springs.

- Hydration & Moisture Retention
- Anti-Inflammatory & Antioxidant Properties
- Sustainable & Non-Irritating

Mist Pavement

The pavement with spraying water mist creates a breathtaking rainbow effect, serving as both an Instagrammable spot for visitors and a refreshing cooling area after hot spring activities.

- Instagrammable spot
- Cooling spot



The Central Plaza (Figure 47) integrates mist-spraying technology that cools the surroundings, creating a refreshing microclimate for visitors after their hot spring activities. As the mist interacts with sunlight, it produces a rainbow-like effect, transforming the pavement into a visually captivating, Instagram-worthy feature. Beyond its aesthetic appeal, the plaza doubles as a relaxing, restorative resting area.

The Radiant Thermal Zone (Figure 48) emphasises the therapeutic mosses thoughtfully placed around the hot spring pools. Renowned for their natural skincare benefits—hydrating the skin, soothing inflammation, and offering a gentle touch—these mosses enrich both the visual character of the space and its wellness value. Their presence elevates the environment into a calming sanctuary that nurtures health, beauty, and overall well-being.

Figure 48: Sectional perspective

Vaporine Spire

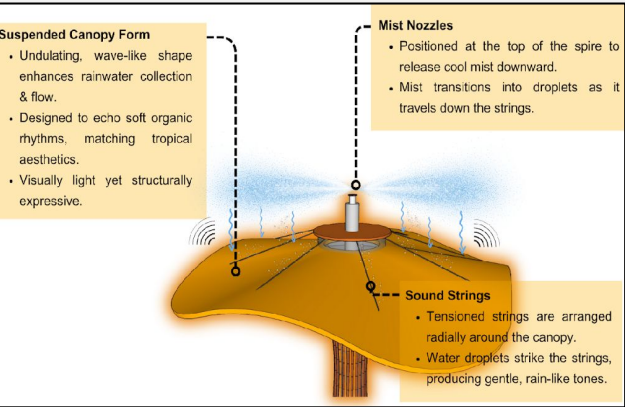


Figure 49: Sound string canopy

INNOVATIVE DESIGN ELEMENT

Figure 49 shows the Vaporine Spire, located in the middle of the therapeutic hot spring landscape, is a trademark design piece that serves as both a cooling mist pavilion and the site's visual focal point. It improves tourists' experience by providing a relaxing, multimodal environment for individuals to unwind after hot spring activities. This structure combines geothermal cooling with sound and mist, increasing the site's therapeutic qualities while also providing a distinctive and picturesque environment. Last but not least, Figure 51 and 52 shows the overall softscape plan and hardscape for the selected detail development plan.

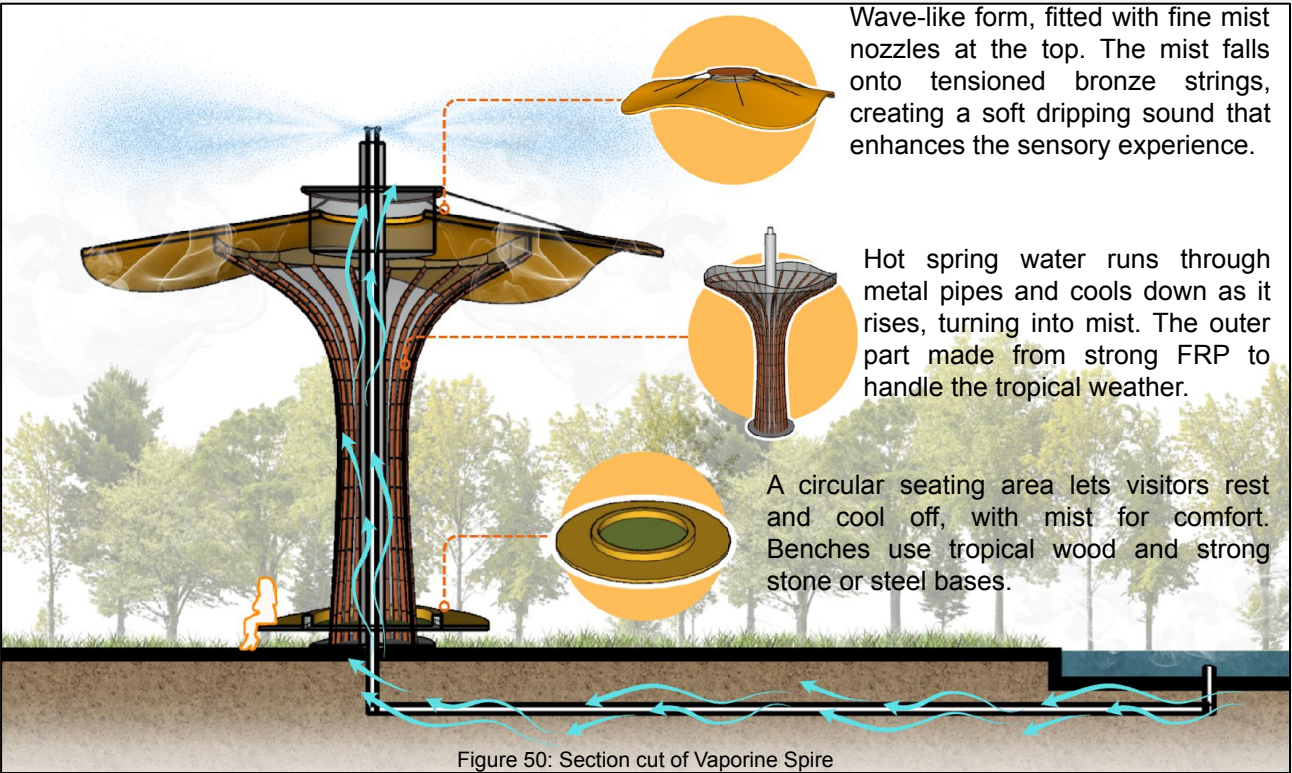


Figure 50: Section cut of Vaporine Spire

SOFTSCAPE PLAN



Figure 51: Softscape plan

Table 2: Softscape schedule

SYMBOL	SCIENTIFIC NAME	COMMON NAME	NOS
	<i>Hopea odorata</i>	Merawan Siput Jantan	56
	<i>Cananga odorata</i>	Ylang-Ylang	63
	<i>Michelia champaka</i>	Cempaka	77
	<i>Cassia Fistula</i>	Golden Shower Tree	25
	<i>Plumeria rubra</i>	Red Frangipani	50
	<i>Garcinia atrovirens</i>	Asam Gelugur	33
	<i>Melastoma malabathricum</i>	Senduduk	78
	<i>Areca catechu</i>	Betel-Nut Palm	30
	<i>Hibiscus rosa-sinensis</i>	Chinese Hibiscus	1201
	<i>Calocasia esculenta</i>	Elephant Ear	108
	<i>Tabernaemontana divaricata</i>	Pinwheel	259
	<i>Ruellia tuberosa</i>	Minnie Root	473
	<i>Axonopus compressus</i>	Cow Grass	-

Tree Palm Shrub Groundcover

HARDSCAPE PLAN

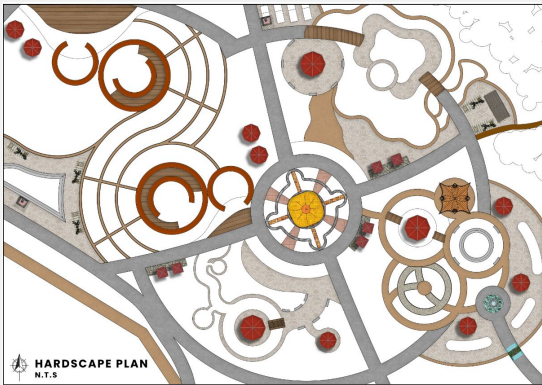


Figure 52: Hardscape plan

Table 3: Hardscape schedule

SYMBOL	ITEM	MATERIAL DESCRIPTION	QTY
	Tennis	PVC-coated polypropylene fabric, PTFE (Teflon-coated fiberglass), or ETFE film	1
	Gazebo	Timber, steel frame, polycarbonate roofing, thatch, stainless steel	11
	Water Fountain	Reinforced concrete, natural stone (granite/marble), stainless steel	1
	Changing Room	Concrete block or precast panels, aluminum doors, ventilation grilles, stainless steel	8
	Pergola Seating	Timber or powder-coated steel frame with polycarbonate or bamboo slats for roofing	5
	Outdoor Gym	Powder-coated steel frame, rubber or EPDM flooring for safety	1
	Deck	Wood (e.g., teak, mahogany), composite decking (WPC), or concrete with anti-slip coating	4
	Road	Asphalt, concrete	6023m ²
	Reflexology Pavement	Pebbles or cobblestones embedded in concrete or mortar bed	177m ²
	Piazza Pavement	Interlocking pavers, stamped concrete, or granite/diary tiles	189m ²
	Pool Area Pavement	Anti-slip porcelain tiles, sandstone, travertine, or WPC decking	6585m ²
	Changing Area Pavement	Ceramic, or anti-slip porcelain tiles, concrete with surface treatment	10m ²
	Welcoming Archway	Glass, wood	1
	Sand Pavement	Compacted sand layer, geotextile underneath for stability	1856m ²
	Concrete Bench	Cast-in-place or precast concrete, with metal inserts	16
	Bridge	Reinforced concrete, timber deck, anti-slip surfacing	5
	Terracotta Pavement	Terracotta tiles or pavers laid on a compacted sub-base	127m ²
	Kiosk	Aluminum frame, Wood-Plastic Composite (WPC)	2
	Hydro-mist Structures	Cooled mist, bronze string, stainless steel pipe, FRP, treated glass	1
	Mist Pavement	Non-slip stone or concrete with integrated mist nozzles (bronze/stainless steel)	123m ²

REFERENCES

Baloch, Q. B., Shah, S. N., Iqbal, N., Sheeraz, M., Asadullah, M., Mahar, S., & Khan, A. U. (2022). Impact of Tourism Development upon Environmental sustainability: a Suggested Framework for Sustainable Ecotourism. *Environmental Science and Pollution Research*, 30(3), 5917–5930. NCBI. <https://doi.org/10.1007/s11356-022-22496-w>

Barrick, K. A. (2007). Geyser Decline and Extinction in New Zealand—Energy Development Impacts and Implications for Environmental Management. *Environmental Management*, 39(6), 783–805. <https://doi.org/10.1007/s00267-005-0195-1>

Erfurt, P. (2021). The conservation of hot springs. In *Geoheritage, geoparks and geotourism* (pp. 91–118). https://doi.org/10.1007/978-3-030-60463-9_4

Rosli, N. A., Anuar, M. N. A., Mansor, M. H., Abdul Rahim, N. S. I., & Arifin, M. H. (2022). What Makes A Hot Spring, Hot? *Warta Geologi*, 48(1), 30–35. <https://doi.org/10.7186/wg481202204>

Wang, W., & Lin, C. (2021). A model for Sustainable tourism development of hot spring destinations following poverty alleviation: Understanding the Tourists' perspective. *Sustainability*, 13(17), 9856. <https://doi.org/10.3390/su13179856>

Zhou, X., Zhuo, L., Wu, Y., Tao, G., Ma, J., Jiang, Z., Sui, L., Wang, Y., Wang, C., & Cui, J. (2023). Origin of some hot springs as conceptual geothermal models. *Journal of Hydrology*, 624, 129927. <https://doi.org/10.1016/j.jhydrol.2023.129927>

12

ABADI: SAFEGUARDING THE RICH FABRICS OF MALAY ARCHITECTURAL HERITAGE THROUGH A CEREMONIAL ENTRANCE OF IIUM MALAY ENCLAVE

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International Islamic University Malaysia

ABSTRACT

This article presents a project on "ceremonial entrance" for the existing Malay Enclave, also called the Malay Heritage Living Lab, at International Islamic University Malaysia. The proposed project incorporates a lookout platform, an entrance archway, bridge guardrails, and landscape works. The main objective of this inventive design proposal is to elevate the Malay Heritage Living Lab, infusing it with captivating elements that are not only safeguarding the rich fabric of traditional Malay architectural heritage but also function as a guiding light to both local and international audiences. In essence, the design concept *Abadi*, stands as a testament to the legacy of bygone eras, offering an immersive experience that effortlessly intertwines the delicate strands of traditional Malay architecture and the quintessential elements inherent to a traditional village setting. To accomplish this vision, an elaborate and systematic approach was carefully developed. This entailed the selection of case studies, each dedicated to exploring a unique aspect of the proposed design: the structure, the passageway, and, importantly, the platform. Throughout this process, the research team explored extensively into the venture of identifying characteristics that delineate each design element. This encompassed a thorough examination of materials, installation techniques, and a thoughtful choice of hues, all of which were scrutinised with great attention to detail, tailored precisely to the context and specific needs of the project. As the project takes shape, it would be supported by a set of core conceptions that encapsulate its essence and goals, with *Rumah Kutai* (Kutai House) being particularly prominent context to the proposed project. The notion of *Abadi*, means eternal, everlasting, or immortal, would serve as guiding principles, ensuring that the design remains rooted in the Malay cultural origins and continues to respect and celebrate the vibrant heritage it strives to preserve and promote. Ultimately, this interdisciplinary undertaking promises to be an extraordinary blend of knowledge, creativity, and appreciation for Malay heritage in the contemporary context.

Keywords: Malay heritage, Malay architecture, Ceremonial Entrance, Rumah Kutai, Architectural Heritage, Malay Enclave, Design Project.
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INTRODUCTION

The architectural legacy of the Malay culture serves as a remarkable illustration of the captivating and diverse history of Southeast Asia. With its unique elements, including intricate wooden carvings, traditional building techniques, and a seamless integration with the surrounding natural environment, Malay architecture has gained worldwide acclaim and appreciation. This architectural heritage not only showcases the aesthetic preferences of its people but also encapsulates their deep bond with nature, community, and spirituality. Nevertheless, in a period defined by swift urban expansion, advancement, and worldwide integration, the physical and non-physical aspects of the Malay architectural legacy confront unparalleled obstacles. Consequently, safeguarding and conserving these valued cultural assets have become exceedingly important, calling for inclusive strategies to ensure the protection of architectural history.

The Malay Enclave showcases the remarkable synthesis between modern architectural ingenuity and the timeless essence of history. With a deep belief in the power of built environments to bridge generations, this laboratory epitomises the mastery of adaptive transformation and serves as a melting pot for architectural approaches that seamlessly integrate heritage and contemporary sensibilities. Nevertheless, the Malay enclave is still lacking a ceremonial entrance, where an introduction to *Abadi* could be highlighted to ensure the continuance of the Malay rich fabrics of architectural heritage.

DESIGN VISION

Abadi responds to a critical juncture of safeguarding the Malay architectural heritage, where the survival of Malay legacy in built environment is threatened by interconnected challenges of modernisation, which include functionality and simplicity. To remain relevant in the modern built environment, adaptation to modernisation is required in the design of the physical environment with Malay heritage characteristics.

These challenges lead to the formulation of design objectives: to elevate the Malay Enclave, infusing it with captivating elements that not only safeguard the rich fabric of traditional Malay architectural heritage but also function as a guiding light to both local and international audiences. To achieve the objectives, first, a systematic research approach is undertaken to identify the characteristics of the Malay architectural heritage, with an emphasis on design form. All aspects are scrutinised with great attention to detail, via case and precedent studies, tailored to the context and specific needs of the project. Second, exploration of design is conducted with careful consideration of the fundamental essence of the Malay enclave. These efforts consequently empower the Malay enclave with its multifaceted role as both a guardian of the past and a source of inspiration for the future.

RESEARCH METHODOLOGY

A qualitative methodological approach was used to achieve an understanding and effective incorporation of Malay heritage architectural elements into the current design project. This approach combines assimilation of case studies and precedent studies, forming a content analysis that underpins the design process. These two analytical approaches work together to guide the genesis and development of the design. Their combined usefulness allows for a multifaceted approach to design analysis and synthesis. In addition, the analytical exploration in this design research focuses on the scope of architectural form, encompassing a thorough investigation into the fundamental design form that make up the essence of Malay heritage architecture.

Case Studies

The utilisation of case studies involves a thorough and systematic examination of exemplary architectural works from the realm of Malay heritage architecture. These carefully chosen case studies serve as the basis for deconstructing and reconstructing the subsequent design. The purpose is to unveil and distill the essential elements and design principles that define traditional Malay architectural expressions.

Precedent Studies

In conjunction with the case studies, precedent studies further enhance the analytical scope. Precedent studies encompass a wider range of architectural typologies, not limited to just Malay heritage architecture. These studies incorporate a comparative aspect, providing a dynamic framework for evaluating the functionality, adaptability, and contextual relevance of design elements derived from the case studies. By identifying shared characteristics and differences between the selected precedents and the specific design context, the basis for design ideation is established.

Analysis of Design Forms

The examination of design elements involves a meticulous exploration of architectural motifs, spatial arrangements, and aesthetic principles that form the basis of Malay heritage architecture. This analysis aims to unravel the complex relationship between form and function, shedding light on the practical use of design elements to create spaces that reflect cultural significance.

Analysis of Ornaments

Ornaments are essential, as one of the major elements in Malay traditional architecture. Ornaments reflect the understanding of integration between functionalism and aesthetics. They represent the uniqueness and beauty of Malay symbols, arts, and philosophy. These decorative elements are designed to signify the characteristics of traditional Malay houses. Figure 1 shows examples of wood-carved ornaments, normally used to decorate the facades of the Malay heritage architecture.



Figure 1: Examples of wood-carved ornaments

PRECEDENT AND CASE STUDIES

Case Study 1

The Korean Folk Village was the first open-air museum constructed in South Korea. Construction of the Korean Folk Village began as a way to preserve traditional Korean culture and customs, including traditional Korean architecture, food, and clothing in response to the rapid westernisation and industrialisation of Korea during the 1960s (In-Jae, 2018). Nestled in the forests of Yongin, a suburb about an hour south of Seoul, Korean Folk Village is a collection of over two hundred Korean traditional homes and other structures, either restored or relocated from other parts of the country. Founded in 1974, the village was a response to Korea's rapid modernisation of the 1960s, a time when not only much of Korea's architectural heritage was being lost to the wrecking ball, but also traditional lifestyles were giving way to newer forms of living.

The fundamental idea behind the Korean Folk Village is similar to the Malay Enclave, focusing on the preservation of the local cultural and architectural heritage, as well as promoting educational activities. Figure 2 shows a view of the Korean Folk Village, and Figure 3 shows a cultural activity carried on in the Korean Folk Village. With a similar notion of safeguarding the architectural heritage, the Malay Enclave also holds cultural activities (KAED, IIUM, 2019), as shown in Figure 4. Meanwhile, the vibrant vibe of the Malay Enclave is prominently presented by the existence of Rumah Kutai, as shown in Figure 5.



Figure 2: A view of the Korean Folk Village (Service, 2023)



Figure 3: A cultural activity carried on in the Korean Folk Village (Service, 2023)



Figure 4: An activity carried on in Rumah Kutai (KAED, IIUM, 2019)



Figure 5: A view of the Rumah Kutai at the Malay Enclave (KAED, IIUM, 2019)

PRECEDENT STUDIES

Istana Seri Menanti

The diversity presented in Malay architecture extends beyond the various types of traditional houses found in different states of Malaysia. It is also evident in the architectural design of Traditional Malay Royal Palaces, which are known for their grandiosity and historical importance (Zainal Abidin, et. al., 2017a). These palaces serve as monumental structures that represent the opulence, heritage, customs, and architectural prowess of Malay culture. Each palace possesses unique architectural features that highlight the regional identities and distinctive characteristics of vernacular architecture (Zainal Abidin, et. al., 2017b). The timber palaces particularly symbolise traditional Malay houses, further emphasising this architectural wealth.

Taking the above factors into account, the researchers recognise the significance of conducting an extensive study on one specific royal palace, the *Istana Seri Menanti* (Seri Menanti Palace). This investigation aims to explore the palace's distinctive architectural attributes and its historical importance, with the ultimate goal of incorporating these unique elements into the project's overarching design. By doing so, the team not only aimed to honour the palace's architectural legacy but also infuse the project with a sense of continuity and authenticity, thus celebrating the profound architectural diversity that underlies Malay heritage.

The palace, which was designed to be symmetrical throughout, is another unique factor that separates it from other timber palaces in Malaysia. The verticality of the palace's image provides a grand architectural which can be seen from afar and differentiates itself from any other traditional Malay royal palace. Figure 6 shows the front façade of the *Istana Seri Menanti*, showing the elements of a grave-marker, a hilt of *Tajung kris* and a top-window ventilation panel (Unknown, 2014).



Figure 6: The front facade of Istana Seri Menanti, showing the elements of a grave-marker, a hilt of *Tajung Kris* and a top-window ventilation panel (Said, 2005)

FINDINGS OF RESEARCH

Potential Design Adaptation

The precedent study of *Istana Seri Menanti* has had a significant impact on the venture to design the Archway project. The idea involves dividing the palace form into two distinct sections, each carrying specific symbolic meanings. The upper part of the ceremonial entrance represents an elevated platform, while the lower part signifies a gateway and archway. This deliberate separation serves a dual purpose of the entrance design framework. Firstly, it provides a strong visual coherence to the design. By aligning the entrance form with the architectural style of *Istana Seri Menanti*, a sense of visual continuity is created, where the front view connects the three main components of the proposed design: the platform, the gateway, and the archway. Secondly, this alignment emphasises the strong conceptual connection between the three components. The whole design composition highlights interdependence of components and showcases their intrinsic relationship within the design.

The ceremonial entrance covers a pathway, visually and symbolically linking these components and reinforcing the overarching architectural narrative. Essentially, by incorporating *Istana Seri Menanti's* front facade as a foundational reference point in the proposed design, the entrance design merges historical inspiration with contemporary innovation. The produced amalgamation pays tribute to the architectural heritage of the palace but also enhances the visual harmony and conceptual synergy of the four primary elements of the design, ultimately contributing to a balanced and meaningful architectural composition. Table 1 shows some major design elements of *Istana Seri Menanti* that would be adapted into the proposed design of the Malay Enclave entrance.

Table 1: Adapted design elements

DESIGN ELEMENT	Istana Seri Menanti (Said, 2005)	Abadi: The Ceremonial Entrance
Overall Design Form		
Two-tiered roof		
Ornaments		
Facade		

Gate Metaphor and Symbolism

A gate is an important building element for the host of a building complex to control the entry and exit to the area. According to *Adiguru* (great artisan) of Malaysian Carving, Norhaiza Nordin, the gate is a metaphor for the anatomy of the human body from the head, body to the feet (Shaifuddin, et. al., 2021). Thus, building a gate is seen as a human being standing upright as if a protector or guard in front of a residence or a palace.

According to Nakula (1985) in his book *Warisan Kelantan IV*, the gate represents the final boundary between the domestic sphere and the outside world. In the pursuit of knowledge and life experience, members of the household pass through this threshold, whether to work, travel, or learn, gaining what he describes as "inner chest" wisdom. This experience is then expressed and symbolised through the decorative elements found on the gate. Nakula explains that these carvings serve as visual embodiments of this acquired knowledge. As such, gates are often adorned vividly with bright colors, rich materials such as gold leaf, gold paint, iron, and copper, and intricate carvings. He further asserts that the gate symbolises the divine knowledge of Allah S.W.T. that is present in the natural world.

The surviving gates today often feature intricate floral motifs and calligraphic inscriptions of Quranic verses. These elements serve not only a decorative purpose but also reflect the spirit and identity of the owner or palace, functioning both as a form of security and as a symbolic "receptionist" welcoming visitors. The overall design reflects a strong alignment with the principles of Islamic art. However, classical motifs are also present, including stupas, mountains, plants, and mythical figures in the Kala style. Commonly used plant motifs include lotus flowers, bamboo shoots, wings, bean tendrils, and spinach leaves (Rashid, 2021). Figure 7 shows example of numerous gates design, found in the Malay Archipelago.



Figure 7: Various gates design, found in Kelantan, Malaysia
(PPS, 2016).

DESIGN IDEATION

The primary goal of this architectural design endeavour centres around the profound objective of evoking a powerful sense of 'remembrance.' This desire is achieved through the creation of a meticulously designed environment that acts as a bridge, connecting history with the present. This ambitious aim is realized through a carefully orchestrated fusion, where traditional Malay architectural elements seamlessly blend with a cozy and nostalgic atmosphere reminiscent of a village setting.

The ultimate intention is to extend an invitation to everyone, compelling them to embark on a journey that allows them to enjoy the pleasure of nostalgic reminiscence, similar to stepping back in time, while also savouring the modern conveniences of our contemporary world. At its essence, the concept of *Abadi* strives to construct an environment where the boundaries of the past, present, and future seamlessly intertwine, forming a harmonious and continuous whole. Within this thoughtfully cultivated setting, users are immersed in an experience that transcends the confinement of time, offering a tapestry woven with the threads of historical heritage and contemporary significance.

This spirit is evident not just in the way the architecture is designed, but also in how it embraces and develops traditional architectural culture. It can be seen in the smooth shift from classic architectural forms and the continuation of centuries-old craftsmanship methods. Additionally, it encompasses the practical and wise utilisation of traditional building systems that form the foundation of the design. By respecting these timeless traditions, architectural legacy is honoured and continuously progress to meet the changing needs of today and tomorrow. Figure 8 shows the front façade of the proposed Ceremonial Entrance, where adaptation of the Malay design elements are apparent.



Figure 8: The front facade of the Ceremonial Entrance

Promoting Tradition

A ceremonial entrance is an important introduction to a place, giving a nice impression to users, either the occupants or visitors, to a place. Function as a gate, it allows the hosts of a building complex to have a sense of control to their properties. For this proposed project, creating spaces that are educational, engaging, and culturally valuable is the main focus of this proposal. These spaces aim to serve as channels for the spread of education, active participation, and the development of a deep appreciation for the intrinsic value of Malay cultural and societal traditions. Careful thought and curation have gone into the design of these spaces to foster a collective commitment to preserving and celebrating the diverse tapestry of Malay heritage. The following are the envisioned channels of the project.

Significance in Education: At the core of this concept is the importance of providing educational opportunities that offer structured avenues for individuals to gain a profound understanding of the multifaceted aspects of Malay culture and society. These educational spaces act as fertile grounds for the cultivation of knowledge, allowing individuals to explore the historical, social, and cultural dimensions of Malay traditions. Such educational initiatives play a crucial role in nurturing an informed population capable of carrying forward the legacy of Malay heritage into the future. Figure 9 shows an illustration of a modern girl standing at the welcoming entrance of the Malay Enclave.

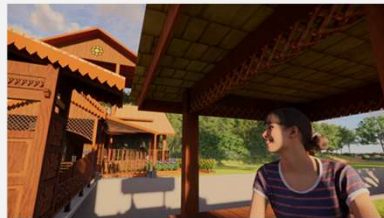


Figure 9: A perspective view of the entrance to the Malay Enclave, welcoming modern society to the area.

Captivating Environments: In addition to the educational aspect, the envisioned spaces are strategically crafted to create captivating environments. They are carefully curated to ignite enthusiasm and foster interaction among people, consequently fostering a vibrant and dynamic cultural community. These spaces possess the ability to stimulate dialogues, workshops, exhibitions, and various interactive platforms that inspire individuals to actively contribute to the preservation and promotion of Malay cultural traditions. Figure 10 shows a captivating environment, designed to ignite enthusiasm and foster interaction.



Figure 10: A captivation environment to ignite enthusiasm and foster interaction

Nurturing Cultural Significance: A primary objective of these spaces is to foster a deep sense of cultural significance and appreciation among individuals. By offering immersive experiences that encapsulate the richness of Malay traditions, these spaces empower participants to recognise the inherent value of their cultural heritage. The act of celebrating, venerating, and safeguarding Malay customs is undeniably connected to the cultivation of a profound sense of cultural identity and belonging. Figure 11 shows how the ceremonial entrance caters to cultural activity in the *serambi* (verandah) of the platform.



Figure 11: Cultural activities in the *serambi* of the platform

Conserving Heritage Through Exposure: One of the fundamental outcomes of these educational and immersive environments is the preservation and protection of diverse elements of Malaysian culture. By experiencing the rich activities and customs deeply rooted in Malay traditions, not only are they ensured to carry on, but the gradual erosion they face due to modernisation and globalisation is also mitigated. As a result, these spaces serve as dynamic reservoirs where Malaysian cultural heritage is not only safeguarded but also revitalised. To summarize, this concept emphasises the paramount importance of architecturally designed spaces that go beyond mere physical structures, but includes educational immersive, and culturally focused attributes. The spaces act as essential tools for perpetuating and celebrating Malay cultural and societal traditions, fostering an enduring appreciation and preservation of culture for future generations. Figure 12 shows how the Ceremonial Entrance also function as gathering area for visitors.



Figure 12: The platform of the Ceremonial Entrance functions as a gathering area.

CONCLUSION

The central premise of the concept, Abadi, lies in the deliberate integration of diverse architectural elements within a built environment. Such elements mainly focus on the architectural design form, supported with ornamental details and distinctive design motifs. Each component is purposefully selected or designed to fulfill a specific intention, whether to refer to a particular historical period, represent an architectural style, or embody cultural heritage. The proposed project also offers a dedicated space for the campus community and the general public to explore significant historical eras, architectural design traditions, and cultural heritage. The proposed Malay Enclave seeks to create an impression of timelessness while fostering a meaningful connection between the past and the present.

The proposed Malay enclave represents the modern exemplar of architectural styles of Malaysia and serves as a testament to the region's abundant history and cultural richness. Deftly crafted and in perfect harmony with nature, the design resonates universally, emphasising the deep connection between aesthetics, community, and spirituality. However, with the rapid pace of urban development and global influence, it is crucial to safeguard the heritage of Malay architecture. To tackle these challenges, inclusive approaches that strike a balance between modern necessities and historical conservation are essential. As we move ahead, it is vital to acknowledge that preserving this architectural legacy is not solely about safeguarding the past, but also about nurturing a profound comprehension of our shared heritage.

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REFERENCES

- KAED, IIUM. (2019) Launching of Kaed Malay Enclave Teaching Lab, Landscape Architecture, KAED, IIUM. Accessed on 3rd Oct, 2025, at <https://landscapearchiium.wordpress.com/2018/04/19/launching-of-kaed-malay-enclave-teaching-lab/>
- In-jae, M. (1986). The Korean Folk Village. Museum International, 38(1), 40–42. <https://doi.org/10.1111/j.1468-0033.1986.tb00606.x>
- Nakula, A. (1985). Warisan Kelantan IV. Kuala Lumpur: Perbadanan Muzium Negeri Kelantan.
- PPSK (2016). Estatika Rumah tradisional Kelantan Ciri 5: Pintu Gerbang dan pintu Tangga. Persatuan Pencinta Sejarah Kelantan. Accessed on 3rd Oct, 2025, at https://pp-sk.blogspot.com/2016/01/estatika-rumah-tradisional-kelantan_17.html
- Rashid, S. et al. (2021) 'Architectural characteristics of Malay traditional houses through decorative elements: A comparison between Perak Limas' house (PLH) and Johor Limas' House (JLH)', Malaysian Journal of Sustainable Environment, 8(1), p.87. Doi:10.24191/myse.v8i1.12662.
- Said, I. (2005). *Timber Species in Malay Wood Carving*. Proceedings of the International Seminar Malay Architecture as Lingua Franca, June 22 -and 23, 2005, Trisakti University, Jakarta, Indonesia. Accessed on 3rd Oct, 2025, at <https://core.ac.uk/download/pdf/11777532.pdf>
- Shaifuddin, A.F., et. al. (2021). Persona Seni Ukiran Melayu Terengganu. *Jurnal Sejarah Lisan Malaysia* ISSN 2600-7088 JILID 5 ISU 2. <https://ir.uitm.edu.my/id/eprint/92416/1/92416.pdf>
- Service, K.C., (2023) Ministry of Culture, Sports and Tourism / Korean Culture and Information Service, Korean Culture and Information Service. Available at: <https://www.kocis.go.kr/eng/main.do> (Accessed: 07 September 2023).
- Unknown (2014). Istana Lama Seri Menanti, Accessed on 3rd Oct, 2025, at <https://istanalamaserimenanti.blogspot.com/2014/>
- Zainal Abidin, N., Raja Shahminan, R.N. and Ibrahim, F.K. (2017a). Architectural influences of Istana Lama Seri Menanti, Negeri Sembilan. *Planning Malaysia Journal*, 15(1). Doi:10.21837/pmjournal.v15.i6.230.
- Zainal Abidin, N., Raja Shahminan, R.N. and Ibrahim, F.K. (2017b). Architectural influences of Istana Lama Seri Menanti, Negeri Sembilan, *Planning Malaysia*, 15. doi:10.21837/pm.v15i1.230.