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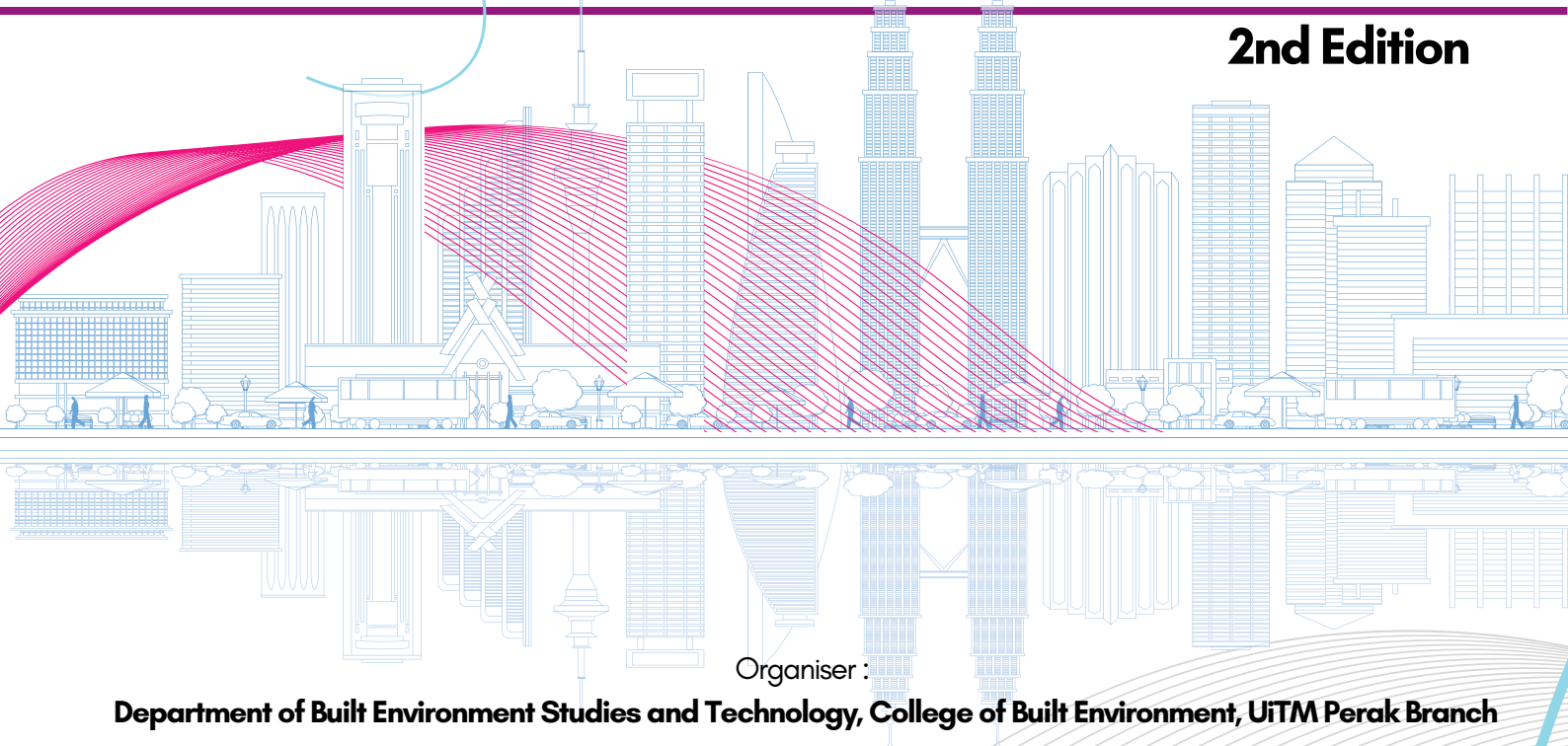
Cawangan Perak

e - Proceedings



Proceeding for International Undergraduates Get Together 2024 (IUGeT 2024)
“Undergraduates’ Digital Engagement Towards Global Ingenuity”

2nd Edition



Organiser :

Department of Built Environment Studies and Technology, College of Built Environment, UiTM Perak Branch

Co-organiser :

INSPIRED 2024. Office of Research, Industrial Linkages, Community & Alumni (PJIMA), UiTM Perak Branch

Bauchemic (Malaysia) Sdn Bhd

Universitas Sebelas Maret

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KINTA SPORT CENTER

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Abstract

The Kinta Sports Center in Ipoh, Perak, is a development project that significantly promotes environmental responsibility and resource efficiency. In Perak, the development of a green building sports centre represents a pioneering step forward in integrating eco-friendly practices into the community and recreational facilities. This paper provides a comprehensive analysis of the design, construction, and operational strategies of a green sports centre building. The primary goal is to build a sustainable, energy-efficient, and ecologically friendly facility that satisfies the demands of visitors while reducing its environmental impact. Modern green building innovations for this Kinta Sports Centre in Ipoh include air ventilation, noise cancellation walls, rainwater harvesting, and others. This centre uses less water thanks to the integrated innovation of rainwater harvesting. The project's method, design, and analysis are covered in this paper along with the financial demonstration of how sustainable design can be effectively applied to the sports facilities. The results showed that the green sports centre not only lowers operating expenses but also improves visitor satisfaction and establishes a standard for further advancements in the industry.

Keywords: *green building, sports centre, innovations, building sustainability*

1. INTRODUCTION

This state-of-the-art Kinta Sports Centre located in Ipoh, Perak is designed not only to provide top-notch amenities for visitors and sports enthusiasts but also to serve as a model for sustainable architecture in the region. As mentioned above, the main objectives of this development project are to build a sustainable and economically friendly environment to satisfy the visitors' demands while reducing environmental impact. Moreover, the integration of sustainable energy resources, such as solar panels, emphasizes the dedication to diminishing the establishment's carbon footprint. Another crucial component of the design of a green building is water management. Rainwater harvesting systems are important aspects of the sports centre that greatly cut down on water use and encourage sustainability. Moreover, native plant landscaping and green roofs contribute to the area's increased biodiversity and ecological balance. Additionally, trees will be planted all around the area to give more oxygen coming in and out from the open windows of the buildings. This facility puts its users' health and well-being first in addition to addressing environmental issues. Both visitors and guests can enjoy a healthier and more enjoyable atmosphere due to enhanced indoor air quality, increased natural light availability, and ergonomic design features. Consequently, this green construction sports complex in Perak serves as a model for future development in the area, showcasing that sustainability and practicality can coexist while also setting a new benchmark for sports facilities. The ensuing segments will focus on the design elements, construction techniques, and operational tactics implemented in this undertaking, emphasizing the advantages and obstacles linked to the establishment of a green building sports centre in Perak. Through this case study, we demonstrate how community-oriented structures may benefit from the use of sustainable design, paving the way for a more environmentally friendly and sustainable future for all.

MATERIALS AND METHODS

2.1 SITE ANALYSIS

i. Site Description

The property selected for this report is a piece of undeveloped land next to Bandar Meru Raya's Bangunan Perak Techno Trade Centre (PTTC). The proposed property is situated in the District of Hulu Kinta, Perak Darul Ridzuan at Lot 533831. The subject property is located approximately 10 kilometres from Ipoh, and it took about 15 minutes to get there. Furthermore, the subject property has a built-up area of 15,158 square meters. The land use category that is offered is for commercial building construction.

ii. Topography

The physical features of a land's surface that describe its characteristics are known as its topography. The proposed site has a level topography and is covered with bushes. The land is irregular in shape.



Figure 2.1 The view of proposed site

2.2 MARKET ANALYSIS

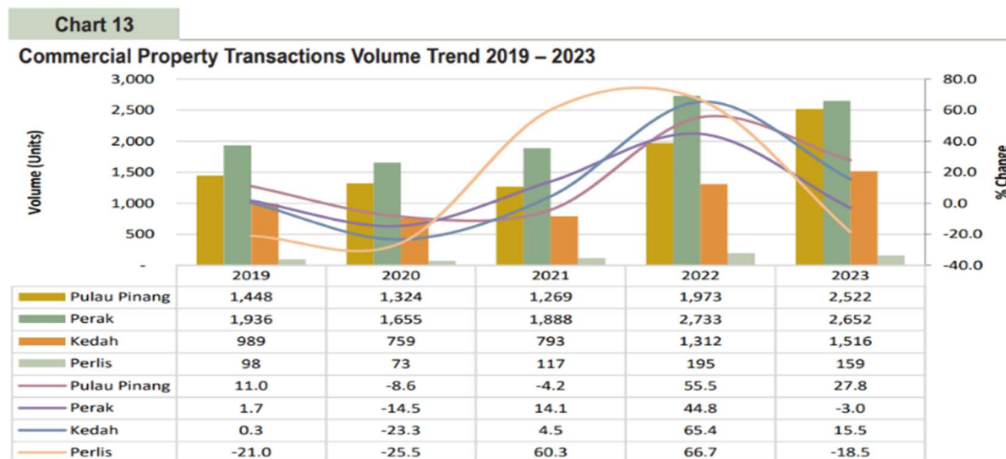


Figure 2.2 Commercial property transaction volume trend

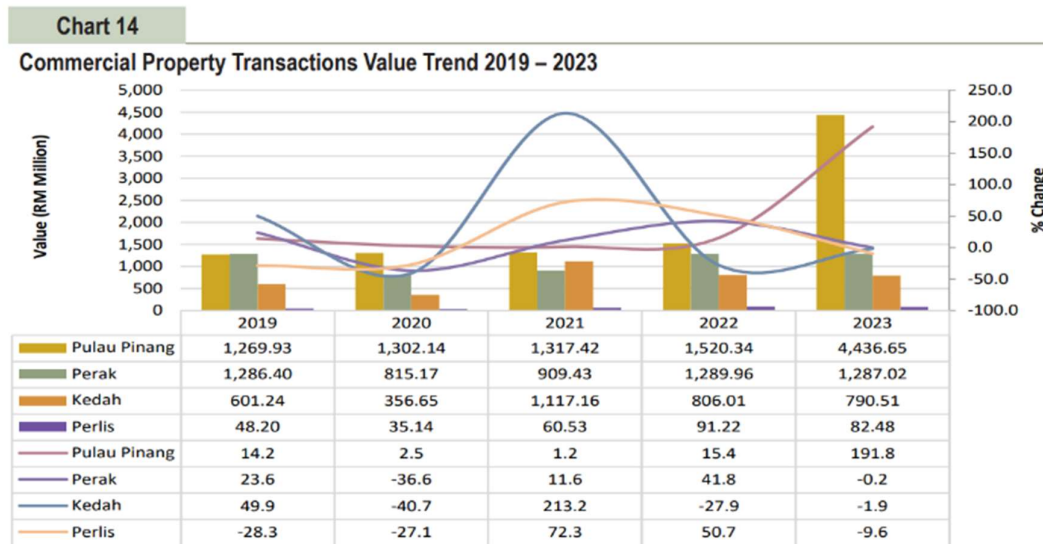


Figure 2.3 Commercial property transactions value trend

2.3 DESIGN ANALYSIS

Kinta Sport Centre is an indoor badminton and futsal court facility, dedicated to providing top-class indoor programs. We aim to become a regionally recognized brand name, promoting healthy lifestyles for both youth and adults.

i. GREEN BUILDING VENTILATION

One of the main components of our Kinta Sports Centre is green building ventilation. The design and installation of ventilation systems in environmentally friendly buildings is referred to as green building ventilation. The goal of these ventilation systems is to minimize energy use and environmental impact while maintaining a high standard of indoor air quality. Assuring occupant health and comfort, cutting energy use, and integrating with the building's overall sustainable design are the main objectives of green building ventilation.

ii. RAINWATER HARVESTING

The next component included in our project is rainwater harvesting. It is a process of collecting and sorting rainwater for on-site reuse as opposed to letting it run off. It is an age-old tradition that has gained popularity again in the present era because of its advantages for the economy and the environment. This environmentally friendly method of managing water can be applied to a number of tasks, such as laundry, potable water supply after proper treatment, toilet flushing, and irrigation.

iii. NOISE CANCELLATION WALL

Additionally, we are incorporating noise-cancellation walls. These walls, also known as soundproof walls or acoustic barriers, are designed to prevent or reduce sound transmission from one area to another. To stop noise pollution, these walls are built with materials and construction methods that absorb, attenuate, or deflect sound waves. They can be applied in a range of contexts, such as commercial, industrial, and residential.

A. GROSS DEVELOPMENT VALUE								
Asset	Usage	SFA (sf)	NRA (sf)	Rental (\$/sf p DAY)	Service Charge	New Rental	Occupancy Rate (%)	Total Rental gm.
BADMINTON COURT	SPORTS	969		18.00	2.00	14.00	70%	(325,384.00)
BADMINTON COURT	SPORTS	969		36.00	2.00	14.00	70%	(325,384.00)
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BADMINTON COURT	SPORTS	969		36.00	2.00	14.00	70%	(325,384.00)
FUTBALL COURT	SPORTS	9,946		100.00	5.00	95.00	50%	(472,435.00)
FUTBALL COURT	SPORTS	9,946		100.00	5.00	95.00	50%	(472,435.00)
FUTBALL COURT	SPORTS	9,946		100.00	5.00	95.00	50%	(472,435.00)
FUTBALL COURT	SPORTS	9,946		100.00	5.00	95.00	50%	(472,435.00)
Total rental		43,680		118.00			A-12	\$1,545,590.00
Gross Income						61,748,960.00		\$1,748,960.00
less operating @	25%	CUSTOMERS				15,436,740.00		
NET RENT	32%	DEVELOPER				46,312,220.00		\$2,144,944.00
Type	Size	Rental per Sq.ft (per month)	Total Rental (per month)					
1) Indoor Courts	43,680	\$q.ft	\$118.00	\$3,084,360.00				

8. DEVELOPMENT COST					
TYPE OF DEVELOPMENT COST	QUANTITY	UNIT	COST (UNIT)	DEVELOPMENT COST	TOTAL DEVELOPMENT COST
1.0 PRELIMINARY COST	3.75	acres	50,000.00	187,500.00	187,500.00
2.0 SITE PREPARATION	3.75		10,000.00	37,500.00	37,500.00
3.0 CONTRIBUTION TO AUTHORITY	1	%	60,774,720.00	607,747.20	607,747.20
4.0 CONSTRUCTION COST:					
A. FUTSAL COURT	39,784	sf	150.00	5,967,600.00	5,967,600.00
Acrylic Handcourt					
B. BASKETBALL COURT	9,690	sf	70.00	678,300.00	678,300.00
Acrylic Handcourt					
C. MANAGEMENT OFFICE / STORE	1 unit	1200	50.00	60,000.00	60,000.00
D. POWER ROOM	1 unit	100	100.00	120,000.00	120,000.00
E. TOILET	8 unit	25	300.00	2,500.00	20,000.00
F. CHANGING ROOM	4 unit	25	100.00	500.00	10,000.00
					RM6,855,900.00

9.0 INFRASTRUCTURE WORKS						30,000.00		
A. Rainwater harvesting	1 unit			50,000.00		50,000.00		
B. Air Ventilation				70,000.00		70,000.00		RM150,000.00
9.0 PROFESSIONAL FEES	5%	of	Gdv	60,774,720.00		3,038,736.00		
9.0 LANDSCAPING	3.00 %			7,005,900.00		21,037,700.00		
9.0 MARKETING AND ADVERTISING	1	%		60,774,720.00		607,747.20		
9.0 PROJECT MANAGEMENT COST	24 months			300,000.00		2,400,000.00		
10. FINANCE COST								
BL (1+0.07) ⁿ /(2+12)-1	14%	of item 2+3+5		7,005,900.00		1,015,134.91	1,015,134.91	
11.0 CONTINGENCIES	1%	RM7,005,900.00				70,059.00		
							35,988,044.31	
		DEV PROFIT		15,193,680.00			0.25	0.25
		GDN		RM60,774,720.00				
		DEV PROFIT		15,193,680.00			0.422186876	0.42

Figure 3.3 Layout plan for sport center

3. CONCLUSION

In conclusion, the proposed development of our sports complex represents a significant advancement in providing a top-tier facility for athletes and the broader community. Our design incorporates modern architecture, sustainable practices, and state-of-the-art amenities, ensuring a versatile and enjoyable environment for all users. The complex will feature multiple sports courts, training areas, recreational spaces, and ample spectator seating, all built to meet the highest standards of safety and accessibility.

One of the standout elements of our design is the emphasis on eco-friendly construction and energy-efficient systems, underscoring our commitment to sustainability and reducing the facility's environmental impact. This not only lowers operational costs but also sets a benchmark for future developments in the region.

The benefits to the community are manifold. The sports complex will provide a central hub for various sports and recreational activities, fostering physical health and well-being among residents. It will serve as a venue for local, regional, and potentially national sporting events, boosting the local economy through increased tourism and related business opportunities. Additionally, the facility will offer programs and spaces for youth and community groups, promoting social engagement and community cohesion.

By investing in this sports complex, we are creating a vibrant, dynamic space that supports athletic excellence, encourages healthy lifestyles, and strengthens community bonds. This development will become a cornerstone for local sports infrastructure and a source of pride for the community, contributing to the overall quality of life and well-being of its residents.

4. ACKNOWLEDGMENT

We would like to express our gratitude to Dr Nor Azalina Yusnita Binti Abdul Rahman for their lecture on RES614 Property Development. She provided us with information on this subject, instruction, and advice on how to complete the task using a unique learning method. We gained a lot of knowledge about this subject and all the course's subtopics from their explanations during the lesson. Without assistance and guidance, we would not have been able to complete this assignment given our inadequate knowledge of property development.

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Tarikh : 20 Januari 2023

Prof. Madya Dr. Nur Hisham Ibrahim
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Cawangan Perak



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Saya yang menjalankan amanah,

SITI BASRIYAH SHAIK BAHARUDIN
Timbalan Ketua Pustakawan

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Setuju.

27.1.2023

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