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THE OVERFLOW: REVITALIZATION OF COURTYARDS IN KAED, IIUM THROUGH THE CONCEPT OF OASIS

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ABSTRACT

The courtyards within the Kulliyyah of Architecture and Environmental Design (KAED), IIUM, have strong potential to enhance campus life but remain underutilised due to thermal discomfort, limited shading, and poor functionality. The Overflow: Oasis project aims to transform these spaces into comfortable and vibrant environments that support wellness, social interaction, and the identity of KAED. The study employs site analysis, literature review, precedent studies, and design development to formulate suitable design strategies. The proposal introduces two courtyard concepts: the Tranquility Oasis, a pocket garden for rest and reflection, and the Wellness Oasis, an outdoor activity and community space. Overall, the project demonstrates how neglected courtyards can be revitalised into sustainable, inclusive, and meaningful environments that promote well-being within the academic setting.

Keywords: Courtyards, Oasis Concept, Revitalization, Sustainability, Well-being

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INTRODUCTION

The Kulliyyah of Architecture and Environmental Design (KAED), International Islamic University Malaysia (IIUM) centers the courtyards as important community spaces that sustain social, academic and recreational interactions. They create in between spaces that connect circulation routes and they offer chances of relaxation, informal meetings and outdoor activities. Nonetheless, the factors which hinder their efficiency and make them less comfortable by the users include the lack of enough seats, poor shading, unutilised spaces and visual identity. The proposed research work will restore vitality to courtyards by dealing with such problems and changing them into dynamic multifunctional spaces incorporated with KAED architectural values. With the due incorporation of strategies of inclusivity, sustainable landscaping, and climate responsiveness, the courtyards can also be more aligned with the goals of SDG No. 3, No. 4, No. 11 and No. 13 and IIUM Sejahtera Framework, which underlines all-round well-being.



Figure 1: Site - Courtyard A
(Source: Author, 2025)



Figure 2: Site - Courtyard B
(Source: Author, 2025)

METHODOLOGY

Figure 5 illustrates the process undertaken to achieve the design project's objectives.

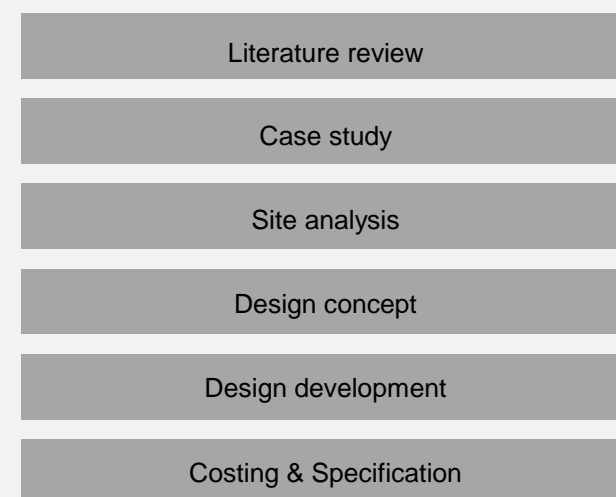


Figure 5: Research Methodology Chart
(Source: Authors, 2025)

LITERATURE REVIEW

Educational and urban settings on a larger scale require the mandatory use of courtyards and pocket gardens that have numerous multifunctional advantages in a variety of ways to a global sustainable end. IIUM-KAED has two interior courtyards that serve as pocket gardens, which are both environmentally and socially valuable.

ROLE OF COURTYARDS AND POCKET GARDENS

Courtyards are open areas of the buildings that maximize natural light and ventilation and expose them to nature. They create a healthier learning environment in educational institutions, promote well-being, and academic/social participation (Kordi et al., 2025). Pocket gardens (or pocket parks) are greatly scaled green spaces usually not larger than an acre and are usually intended to enhance urban quality, strength and the tightness of green to urban populations particularly in intricate or busy urban areas (Dong et al., 2023). They are both an essential infrastructure in terms of recreation, rest, and socialisation with the community (Kordi et al., 2025; Dong et al., 2023).



Figure 6: An example of pocket garden
(Source: landud.co.uk, 2018)

ENVIRONMENTAL AND SOCIAL BENEFITS

Courtyards and pocket gardens are significant in the control of microclimates of the surrounding areas. They alleviate the hot and humid climates where heat stress is a factor due to their ability to improve natural ventilation, create thermal comfort, and use lower energy amounts (Zamani et al., 2018). These spaces, as well as stormwater management, can also be coupled with sustainable drainage systems, which will assist in reducing the urban heat island effect (Zamani et al., 2018; Bagiouk et al., 2024). Besides, they sustain biodiversity through provision of flora and fauna habitat in such dense built areas. Such ecological role provides a number of valuable ecosystem services, including air purification and absorption of rainwater, to improve the performance of the environment and the comfort of the user (Dong et al., 2023; Bagiouk et al., 2024).

Beyond environmental benefits, courtyards and pocket gardens also serve vital social functions. Green spaces within educational institutions contribute to user satisfaction, improve motivation, and foster a positive learning environment. They provide restorative settings that support mental health, social cohesion, and informal academic engagement among students and staff (Kordi et al., 2025; Dong et al., 2023). Furthermore, pocket gardens promote equity by ensuring that green spaces are accessible to diverse populations, including communities in high-density or lower-income areas that may otherwise lack access to quality outdoor environments (Dong et al., 2023).

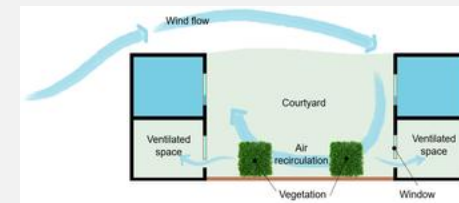


Figure 7: The courtyard model with natural ventilation and vegetation.
(Source: Sun et al. 2021)

CONNECTION TO SDGS AND KAED'S CONTEXT (SDGS 3, 4, 11, 13)

Courtyards can play an important role when it comes to the Sustainable Development Goals (SDGs) in both environmental and social terms. SDG 3, Good Health and Well-being, can be achieved by lowering stress, enhancing mental health, and increasing physical activity and a sense of belongingness (Kordi et al., 2025; Dong et al., 2023). The Quality Education SDG 4 is promoted by the means of improving the learning environment and offering inclusive spaces to collaborate outside of the classroom (Kordi et al., 2025). The SDG 11 on Sustainable Cities and Communities is mitigated by provision of resilient and accessible green infrastructure that improves sustainable cities (Kordi et al., 2025; Dong et al., 2023; Bagiouk et al., 2024). Lastly, SDG 13, Climate Action, is achieved through the capacity of courtyards to mitigate the effects of climate by regulating microclimates, conserving energy and managing floods in the areas (Zamani et al., 2018; Bagiouk et al., 2024).

The two courtyards at KAED, IIUM are pocket gardens that duplicate these principles. With such a twinning of environmental responsiveness and social inclusivity, they reinforce the sustainability of our campuses and have a direct impact on the goals of health, education, urban resilience, and climate action aligned with the SDGs.

SDG	Key Contributions at KAED	Citations
SDG 3	Health, well-being, stress reduction	(Kordi et al., 2025; Dong et al., 2023)
SDG 4	Quality education, student engagement, inclusive learning	(Kordi et al., 2025)
SDG 11	Urban resilience, accessible green infrastructure	(Kordi et al., 2025; Dong et al., 2023; Bagiouk et al., 2024)
SDG 13	Climate mitigation, energy savings, stormwater management	(Zamani et al., 2018; Bagiouk et al., 2024)

Figure 8: How KAED's courtyards support SDGs 3, 4, 11, and 13.
(Source: Authors, 2025)



Figure 9: Highlighting where improvements can link to SDGs
(Source: Authors, 2025)

CASE STUDIES

Taman Tasik Titiwangsa

One of the oldest urban parks in Kuala Lumpur, Taman Tasik Titiwangsa that is constructed along a big lake and centred around the established green environment. The park features various facilities like jogging lines, bicycle lanes and canopies, and kiosks, seating provisions, also includes family-based spaces like picnic lawns and built-in benches. It has natural elements, such as appropriate tree row positions and shelter near the lake, that provide a comfortable microclimate that adds to the user experience. Passive and interactive zones are also introduced to the park, and both silence and physical activity can be chosen. This case study teaches how natural shading, site-permeable green areas, and community-friendly amenities can turn a public courtyard or park into an inclusive, thriving environment.



Figure 10



Figure 11

Figure 10 and Figure 11 show Taman Tasik Titiwangsa

(Source: ecentral.my , 2024)

TRX City Park

TRX City Park is a modern urban green space which can be found in Tun Razak Exchange development. It is a modern lifestyle park, designed as gazes of open event lawns with self-shaded promenades, kids play areas, fitness stations, water amenities. To add to the lack in shade created by newly planted trees, architectural canopies and reflective pools are used to provide shade and beauty to an urban atmosphere. Barrier-free circulation and way finding is also a priority of the park. It has photogenic landscape items and multi-utility spaces that promote sharing in social media and has wide usage by multiple users, including office employees and families. This case study can be used to show the importance of contemporary measures of design, being relevant to modernity, accessibility and flexibility of space to activate a public arena in a crowded city setting.



Figure 12



Figure 13

Figure 12 and Figure 13 show TRX City Park

(Source: pentago.com.my, 2024)

Synthesis

Both case studies reveal the importance of comfort, accessibility, and multifunctionality in public outdoor spaces. Taman Tasik Titiwangsa prioritises natural cooling, cultural identity, and community ownership, while TRX City Park focuses on urban lifestyle appeal, modern facilities, and flexible open spaces. Together, they provide valuable insights for enhancing the KAED courtyards: integrating natural and built shading, ensuring barrier-free circulation, and offering multifunctional areas that support both academic and recreational activities.

SITE ANALYSIS

The KAED Courtyards serve as essential community spaces within the Kulliyah of Architecture and Environmental Design (KAED), International Islamic University Malaysia (IIUM). Designed to sustain social, academic, and recreational interactions, they act as in-between spaces that connect circulation routes while offering opportunities for relaxation, informal meetings, and outdoor activities. However, challenges such as limited seating, poor shading, unutilized areas, and lack of strong visual identity reduce their comfort and efficiency for users. The proposed project seeks to restore vitality to these courtyards by transforming them into dynamic, multifunctional spaces that reflect KAED's architectural values.

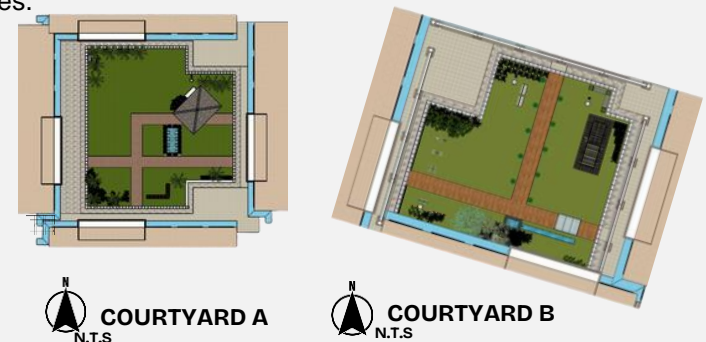


Figure 14: Site analysis diagrams

(Source: Authors, 2025)

The courtyard provides basic seating areas with simple concrete benches and a straightforward stone-paved walkway connecting different sections of the space. While these features are functional, they appear underutilised and lack comfort, shading, and aesthetic appeal, making them less inviting for prolonged use. The benches show signs of wear, and the walkway is uneven and blends into the ground, reducing accessibility and visual clarity. To enhance usability, improvements in design, materials, and landscaping are needed so that the seating and pathways can better support relaxation, circulation, and social interaction in the courtyard.



Figure 15



Figure 16

Figure 15 and Figure 16 :Existing conditions in Courtyard A, including worn benches and uneven stone-paved walkways.

(Source: Authors, 2025)

The courtyard infrastructure includes a drainage cover and outdoor lighting to support functionality and safety within the space. However, the drainage cover shows signs of deterioration, with visible damage and uneven edges that may pose hazards to users. Similarly, the lamp post, though intended to provide adequate lighting for nighttime use, appears outdated and lacks integration with the overall courtyard design. These conditions reduce both the safety and aesthetic quality of the space. Upgrading the drainage system and modernising the lighting would improve usability, safety, and visual coherence, making the courtyard more functional and inviting.



Figure 17: Existing conditions in Courtyard A
(Source: Authors, 2025)

Overall, while the KAED courtyards provide essential open spaces for circulation and gathering, issues such as inadequate seating, poor shading, worn pathways, deteriorating infrastructure, and outdated amenities limit their functionality and comfort, highlighting the need for revitalisation to create safer, more inviting, and sustainable community spaces.

SWOT Analysis

Table 1 shows the SWOT Analysis table for the site. (Source: Authors, 2025)

CATEGORIES	DESCRIPTION
Strength (S)	<ul style="list-style-type: none"> • Open Layout Enhances Accessibility - It allows easy movement and flexibility in usage. • Abundant Seating Areas Encourage Rest and Social Interaction - Allows for users to pause, relax, or engage in social activities.
Weakness (W)	<ul style="list-style-type: none"> • Maintenance Concerns - uneven grass growth and overgrown plants hint at inconsistent landscaping and debris. • Limited Accessibility Features - no visible ramps or accessible routes at both courtyard.
Opportunity (O)	<ul style="list-style-type: none"> • Outdoor Gym and Interactive Elements - Courtyard B suits compact gym stations or sensory furniture. • Outdoor Exhibition Space - Courtyard A suits showcases, pop up events, and displays.
Threats (T)	<ul style="list-style-type: none"> • Weather Exposure or weather impact - Open courtyard vulnerable to heavy rain or strong sunlight, limiting usability. • Pest and Maintenance Issues - Dense plants and poor drainage.

Site Zoning

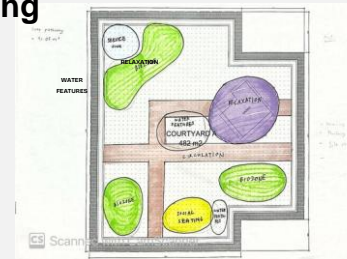


Figure 21: Site - Courtyard A

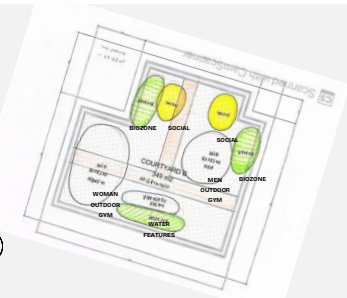
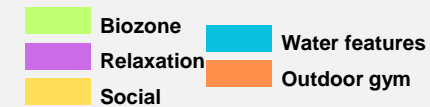


Figure 22: Site - Courtyard B



Courtyard A balances ecology, relaxation, and social interaction. Three corner biozones act as natural buffers, improving environmental quality. A relaxation zone on the east provides a quiet retreat, while the southwest social zone encourages gatherings with water features enhancing both areas. A small service zone in the northwest ensures functionality, and central circulation connects all spaces while separating active and passive areas.

Courtyard B emphasizes social engagement and physical activity. Outdoor gyms for women (southwest) and men (east) promote inclusivity, supported by northern social zones for interaction. Corner biozones soften the environment, while a central water feature anchors the layout and supports ecology. Circulation divides the courtyard into functional sections, linking gym, social, and ecological spaces seamlessly.

DESIGN CONCEPT : OASIS

The design concept of Oasis draws inspiration from the idea of creating serene, nature-filled spaces that serve as a peaceful refuge within or around buildings. Rooted in the vision of transforming chaos into calm and stress into strength, the oasis approach in architecture seeks to integrate greenery, water features, and natural light into built environments, providing relief from the harshness of urban or challenging settings. This concept emphasizes enhancing well-being by establishing spaces that are not only visually soothing but also refreshing and life-enhancing. Addressing site pain points such as excessive heat, stress, and lifeless courtyards, the Oasis concept introduces qualities associated with comfort and rejuvenation—cool, alive, refreshing, and layered. Ultimately, it aims to elevate the user experience by merging natural elements with architectural design, resulting in environments that foster calm, vitality, and resilience.

Core Elements of Oasis Architecture

Integration with Nature:

- Architecture incorporates plants, water features (ponds, fountains, etc.), and natural light to blur the lines between indoor and outdoor spaces

Tranquility and Calm:

- The goal is to create spaces that offer respite from stress and bustle, promoting relaxation and well-being.

Community Focus:

- Oasis designs can foster social interaction and a sense of community through shared gardens, gathering spaces, and communal amenities.

Sustainability:

- Many oasis concepts incorporate sustainable design principles, such as green roofs, natural ventilation, and efficient water management.



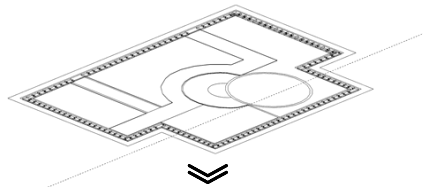
The Oasis Concept is developed as a dual spatial typology that transforms the two existing courtyards into complementary spaces, each addressing a distinct aspect of human well-being. The first courtyard becomes a Tranquility Oasis, functioning as a passive zone dedicated to contemplation, rest, and sensory pause. The second transforms into a Wellness Oasis, serving as an active outdoor gym that integrates nature, shade, and revitalizing elements to support physical activity and movement. Together, these spaces maintain conceptual unity while also responding to the client's request for a gym, expanding its role beyond exercise equipment into a holistic environment for body and mind. The theme and concept connection is rooted in the idea that a gym is not just about physical strain, but about creating an intentional environment that motivates people to stay active and feel good. By balancing the body and mind, the Oasis design transforms the gym into an inviting rather than intimidating place. Natural materials, calming colors, and climate-sensitive design reinforce this sense of harmony, making the courtyards into serene yet energizing spaces.

DESIGN DEVELOPMENT

Courtyard A

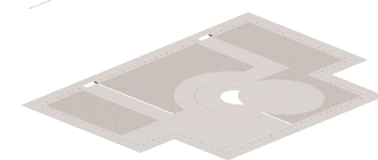
Linework Plan

- The process begins with outlining the courtyard layout, defining circulation routes and central gathering points.



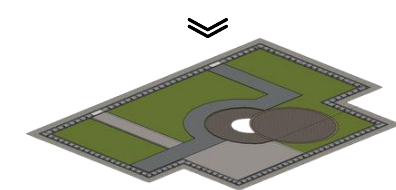
Base Forming

- Basic ground surfaces and levels are introduced to shape the foundation of pathways and activity zones.



Landscape Zoning

- Landscaping is added by dividing the courtyard into softscape and hardscape areas, creating balance between green zones and functional spaces.



Final Design Integration

- Finalisation of the design integrates greenery, shading structures, seating, and water elements to transform the courtyard into a comfortable and engaging oasis.

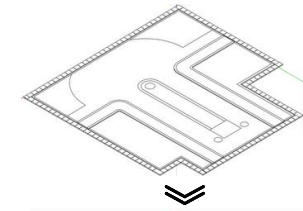


Figure 23: Design development sequence of Courtyard A
(Source: Authors, 2025)

Courtyard B

Linework Plan

- The process starts with mapping the courtyard outline and identifying areas for circulation, open use, and potential activity spots.



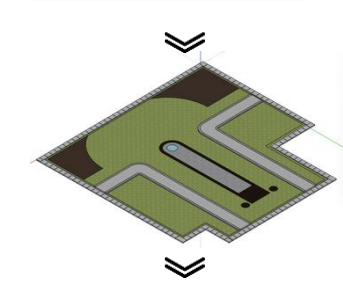
Base Forming

- Ground surfaces and levels are applied, forming the base structure for pathways and designated zones.



Landscape Zoning

- Zoning is developed by allocating green areas and open platforms to support an active outdoor environment.



Final Design Integration

- Finalisation of the design includes the integration of exercise equipment, greenery, and seating, shaping the courtyard into a wellness-focused oasis.



Figure 24: Design Development Sequence of Courtyard B
(Source: Authors, 2025)

COSTING AND SPECIFICATION

No.	Elements	Courtyard A		Courtyard B	
		%	RM	%	RM
1	Hardscape	35.11	RM17,553.00	45.58	RM22,789.00
2	Softscape	6.24	RM3,118.00	8.71	RM4,356.00
3	M&E	0.62	RM308.00	0.46	RM231.00
4	Preliminaries		RM840.00		
5	Provisional sum (1.62%)		RM809.00		
			RM50,000.00		

Figure 25: shows a table of total cost estimation
(Source : Authors, 2025)

DESIGN FINALISATION

Courtyard A

The redesign of Courtyard A that is proposed and discussed focuses on the establishment of the restorative and contemplative atmosphere in the KAED context. The design aims to alleviate thermal discomfort and increase spatial quality through the use of shading devices, stratification of greenery and an element of water. The seating is strategically arranged to allow single and small group use, provide spaces of reflection, rest and minimal interaction. The sense of the courtyard is established as a pocket garden that provides user well-being and strengthening the identity of KAED as a climate-responsive and student-centred environment.



Figure 26



Figure 27



Figure 28



Figure 29



Figure 30



Figure 31



Figure 32



Figure 33

Figures 26 to 33 show perspective views of Courtyard A showing various angles of seating, greenery, and water integration. (Source: Authors: 2025)

Courtyard B

The Courtyard B redesign aims to transform a poorly used space into a dynamic wellness-based space. The design will include outdoor gym equipment, natural shading, and soft landscaping to allow physical activity and promote social interaction between students and staff. The spatial organisation will be designed so that it is accessible, usable and comfortable, especially in response to the climatic conditions of the site. The result is a multi purpose courtyard which promotes healthy living, improves community participation and adds to the peaceful nature of the neighboring courtyard.



Figure 34



Figure 35



Figure 36



Figure 37



Figure 38



Figure 39



Figure 40



Figure 41

Figures 34 to 41 show perspective views of Courtyard B, featuring outdoor gym facilities, shading elements, and landscaped seating (Source: Authors, 2025)

ELEVATIONS AND SECTION DRAWINGS

Courtyard A



Figure 42: Floor plan design



Figure 43: Axonometric view

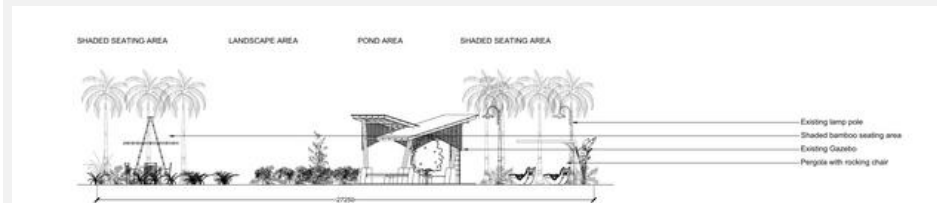


Figure 44: East elevation

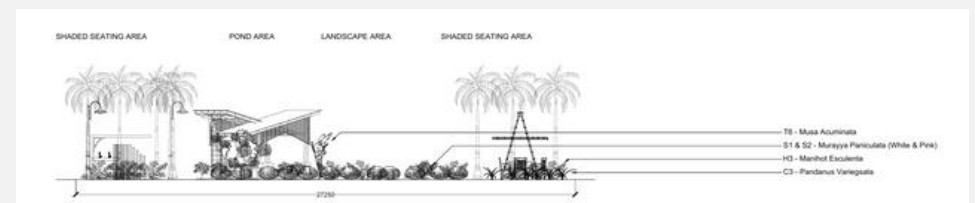


Figure 45: West elevation

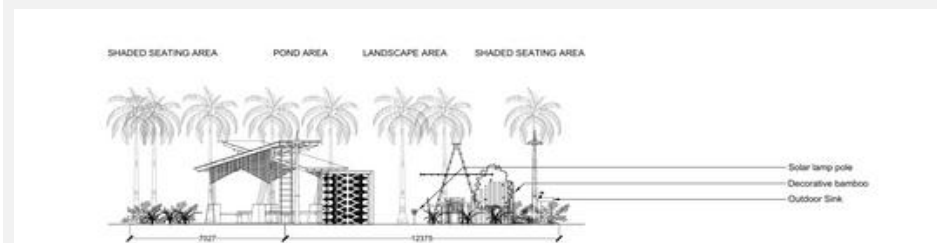


Figure 46: North elevation

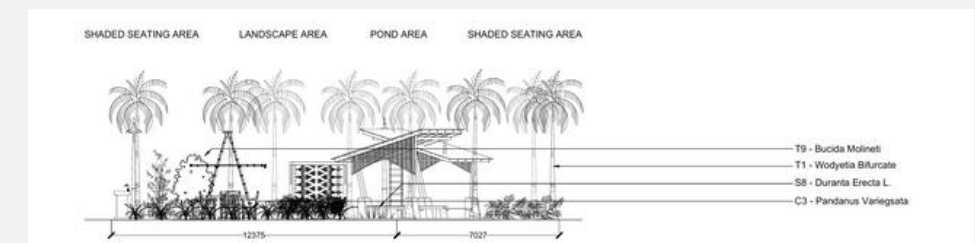


Figure 47: South elevation

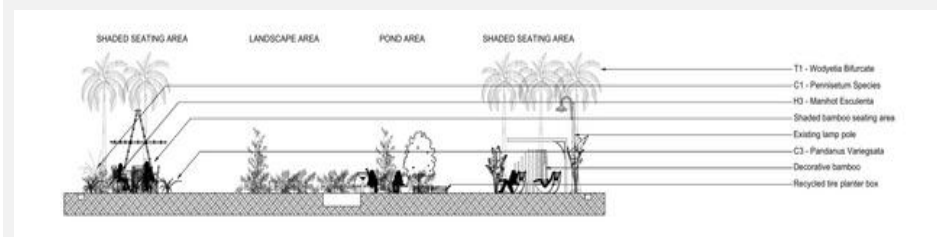


Figure 48: Section A-A

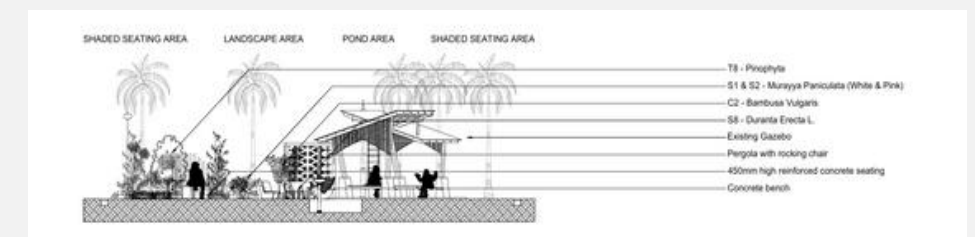


Figure 49: Section B-B

Figures 42 to 49 show the perspective views of the courtyard A
 (Source: Authors, 2025)

Courtyard B

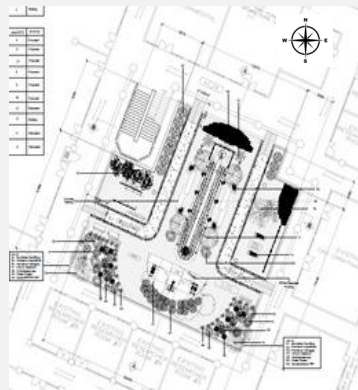


Figure 50: Floor plan design



Figure 51: Axonometric view

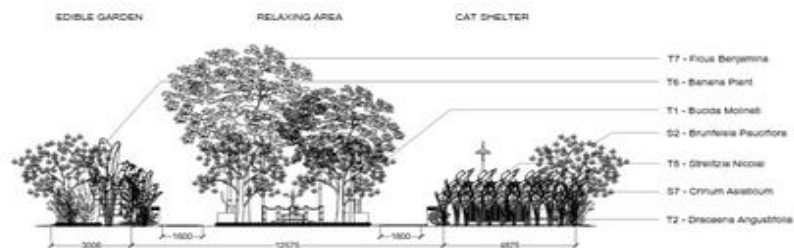


Figure 52: East elevation



Figure 53: West elevation

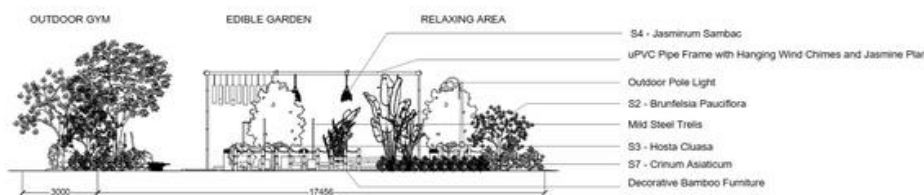


Figure 54: North elevation

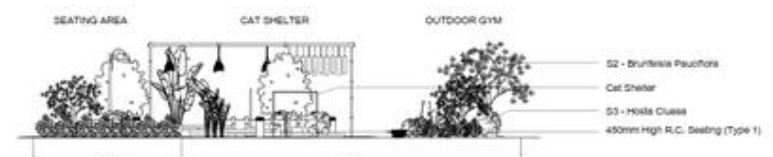


Figure 55: North elevation

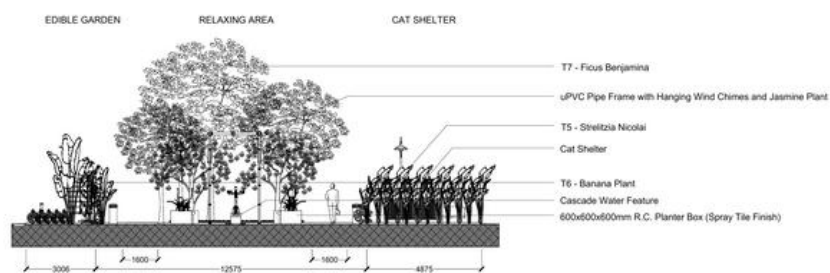


Figure 56: Section A-A

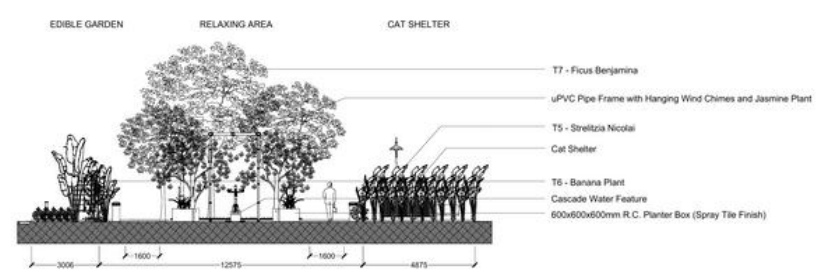


Figure 57: Section B-B

Figures 50 to 57 show the perspective views of the courtyard A
 (Source: Authors, 2025)

CONCLUSION

The Overflow: Oasis transforms the KAED courtyards into places that will enrich both academic and social life in the faculty. The project addresses questions of underutilisation, thermal discomfort, and non-functionality to show how strategy-based design interventions can turn neglected spaces into meaningful places of rest, wellness, and interaction. Courtyard A For Courtyard B The suggested design of the Tranquility Oasis (Courtyard A) and Wellness Oasis (Courtyard B) will assure the equilibrium between space serenity and energy, providing the user with various opportunities to experience the areas.

The solutions are both viable and sustainable and are guided by the design process which is aided by site analysis, literature review, case studies, design development and costing. In conclusion, The Overflow: Oasis also recognizes the importance of courtyards as essential elements of campus life-places which reflect not only comfort, inclusivity, and resilience but also the values of sustainable design and user-centered design.

ACKNOWLEDGEMENT

The completion of The Overflow: Oasis has been a meaningful and rewarding experience for the members of Ruang Teroka Studio, providing us with the opportunity to explore multidisciplinary collaboration while applying our skills in a real project context. This journey has strengthened our creativity, teamwork, and problem-solving abilities, leaving us with valuable lessons to carry into future work.

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15	Siti Nuramisha Binti Noor Azidi	2218646
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