Community Action Plan

KAMPUNG MORTEN MELAKA

R4C
Identify. Understand. Act.

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RESILIENT CITIES NETWORK

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Foreword

بِسْمِ اللَّهِ الرَّحْمَٰنِ الرَّحِيمِ

Assalamualaikum Warahmatullahi Wabarakatuh, greetings of peace, Salam Melakaku Maju Jaya, Rakyat Bahagia, Menggamit Dunia, Bijak Laksana Tuah, Berani Laksana Jebat and Salam Malaysia MADANI.

Praise be to Allah, all thanks and gratitude to the Almighty Allah S.W.T, for with His grace and blessings, the implementation of the Community Action Plan (CAP) under the Resilience For Communities (R4C) project has been successfully carried out in the state of Melaka.

This effort demonstrates a significant approach that places the community at the heart of strengthening urban resilience. Based on the principles of inclusivity, preparedness, and sensitivity to current realities, this initiative focuses on today's key challenges, particularly climate change and increasingly complex development pressures.

This approach proves that a city's resilience is not solely defined by physical capacity or infrastructure but also driven by community unity and collective awareness of environmental sustainability and societal well-being.

Therefore, I would like to express my deepest appreciation to all parties involved, especially the Historic Melaka City Council (MBMB), Resilient Cities Network, Z Zurich Foundation, and other strategic partners for their strong commitment and close collaboration in making this initiative a success.

In conclusion, I urge that such efforts continue to be expanded and strengthened. May the implementation of this CAP serve as a catalyst for a collective movement towards building a greener, more resilient, and inclusive Melaka, for the well-being of today's citizens and the continuity for future generations.

"MELAKAKU MAJU JAYA, RAKYAT BAHAGIA, MENGGAMIT DUNIA"
"WISE LIKE TUAH, COURAGEOUS LIKE JEBAT"

DATUK SERI UTAMA AB RAUF BIN YUSOH
CHIEF MINISTER OF MELAKA

Foreword

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Climate change is a real and pressing challenge that directly affects public well-being and the sustainability of urban development. The Resilience For Communities (R4C) initiative under the Urban Climate Resilience Program (UCRP) comes at the right time to strengthen community preparedness and resilience against risks such as flooding and heatwaves.

The Community Action Plan (CAP) developed through this initiative is the result of a collaborative process involving government agencies, local communities, and international partners. It represents an inclusive and forward-looking approach for building communities that are aware, responsive, and accountable to their surrounding environments.

I believe the implementation of this CAP will bring long-term benefits to the target communities and serve as a model of best practice for other areas across the state of Melaka. Congratulations to all parties who have contributed to the success of this meaningful initiative.

YB DATUK RAIS BIN DATUK WIRA YASIN
SENIOR EXCO FOR HOUSING, LOCAL GOVERNMENT, DRAINAGE, CLIMATE CHANGE AND DISASTER MANAGEMENT

Foreword

بِسْمِ اللَّهِ الرَّحْمَٰنِ الرَّحِيمِ

Assalamualaikum Warahmatullahi Wabarakatuh, greetings of peace, Salam Melakaku Maju Jaya, Rakyat Bahagia, Menggamit Dunia, Bijak Laksana Tuah, Berani Laksana Jebat and Salam Malaysia MADANI.

The Melaka Historic City Council (MBMB), as one of the local governments, remains steadfast in its commitment to tackling climate change through a holistic and inclusive approach. The Community Action Plan (CAP), implemented under the Resilience for Communities (R4C) project, reflects MBMB's aspiration to shape Melaka into a city that is not only historic, but also smart and sustainable.

Through the active involvement of the communities in Pantai Peringgit as well as Kampung Morten, this CAP has been developed as a strategic guide that not only assesses current risks and needs but also outlines high-impact, community-driven actions ready for implementation. It also reinforces cross-sector collaboration in driving comprehensive urban resilience.

I deeply appreciate the steadfast support from all involved, and I hope that the CAP's implementation will continue to inspire the transformation of our living environment into one that is safer, greener, and more agile in the face of future challenges.

YBHG. DATUK HJ. SHADAN BIN HJ. OTHMAN
MAYOR OF MELAKA HISTORIC CITY COUNCIL

Community Acknowledgment

This Community Action Plan would not have been possible without the invaluable participation, knowledge, and commitment of the residents of Kampung Morten. We extend our heartfelt appreciation to every community member who shared their experiences, insights, and aspirations throughout this collaborative process under the Urban Climate Resilience Program (UCRP) - Resilience for Communities (R4C).

Your willingness to share local knowledge and concerns has been instrumental in shaping practical, community-led strategies to address increasing risks of heat stress and flooding. This plan is a testament to your strength, unity, and proactive spirit in building a safer, more resilient, and sustainable community for present and future generations.

We also acknowledge the contributions of local leaders, volunteers, and partner organizations whose support in facilitating workshops, discussions, and outreach activities ensured an inclusive and impactful process.

Together, we are not just responding to climate challenges — we are leading change from within.

Contents

Abbreviations

CAP	Community Action Plan
CRMC	Climate Resilience Measurement for Communities
CRO	Chief Resilience Officer
DID	Department of Irrigation and Drainage
DOSM	Department of Statistics Malaysia (Perangkaan/Jabatan Perangkaan Malaysia)
EWS	Early Warning System
EXCO	State Executive Council
JAPERUN	State Legislative Assembly Development and Coordination Committee Offices (Jawatankuasa Pembangunan dan Penyelarasan Dewan Undangan Negeri)
JPKK	Development and Coordination Committee (Jawatankuasa Pembangunan dan Keselamatan Kampung)
JPS	Department of Drainage and Irrigation (Jabatan Pengairan dan Saliran)
Kampung	Compact urban settlement of informal origin, with occasional traditional traits
MBMB	Melaka Historic City Council (Majlis Bandaraya Melaka Bersejarah)
MERCY Malaysia	Malaysian Medical Relief Society
NBS	Nature Based Solutions
NTU	Nanyang Technological University
Perangkaan	Jabatan Perangkaan Malaysia
PLI	Poverty Line Income
R4C	Resilience for Communities
RCIFUNDs	R4C's Resilient Community Impact Funds
R-Cities	Resilient Cities Network
UNESCO	United Nations Educational, Scientific and Cultural Organization

Community Action Plan (CAP) Overview

The Resilience for Communities program aims to build sustainable and resilient communities that can withstand, recover from, and thrive in the face of climate-related disasters. Jointly implemented by Resilient Cities Network and Melaka Historic City Council with support from the Z Zurich Foundation and Zurich Malaysia, the R4C program in Melaka blends place-based and community-centered approaches with Resilient Cities Network's urban resilience framework, connecting community initiatives to city systems while bridging stakeholder gaps to enhance urban resilience.

This document is the Community Action Plan for Kampung Morten, Melaka. It presents a cohesive vision and robust portfolio of actions to enhance community resilience, following a comprehensive assessment and intensive engagement with community members and stakeholders.

VISION for Kampung Morten: A Resilient Heritage Community that Balances Sustainability with Cultural Preservation

This document is structured as follows:

- **Introduction:** Provides background on the R4C program's origins, objectives and approach.
- **Our City:** Examines Melaka's urban context, governance structures and existing resilience initiatives.
- **Our Community:** Presents key findings from community assessments and engagement.
- **Our Actions:** Details the community's resilience vision and projects identified, including **catalyst projects** with high impact, that have lower barriers to implementation and that have secured or anticipated funding. These catalyst projects will be implemented first to demonstrate success and build momentum for broader climate action initiatives.


#I@Kg-mar

INTRODUCTION

About Resilience for Communities

In rapidly growing cities across Asia, climate change, social inequality and unplanned urbanization overlap and intensify. In coastal cities like Melaka, extreme heat, flooding and rising sea levels threaten lives, livelihoods and local heritage, putting years of development progress at risk. But the impact is not felt equally. Aging adults and lower-income neighborhoods often carry the heaviest burden. These challenges can undo significant development gains unless addressed through equitable, community-focused resilience approaches. So, building resilience in this context means going beyond infrastructure or emergency response – it requires investing in community resilience. Long-lasting change starts by listening to communities and working alongside them to shape solutions rooted in their lived realities.

The Urban Climate Resilience Program is funded by the Z Zurich Foundation and implemented in nine countries. It aims to build sustainable and resilient communities that can withstand, recover from and thrive in the face of climate-related disasters. The program is a collaboration between the Z Zurich Foundation, Zurich Insurance National Business Units, and the following organizations: Resilient Cities Network, C40 Cities, the International Federation of Red Cross and Red Crescent Societies (IFRC), Local Governments for Sustainability (ICLEI) and Plan International.

Within the Resilient Cities Network, the Urban Climate Resilience Program is referred to as Resilience for Communities, or R4C. The R4C program includes the four R-Cities member cities: Boston, Houston, Greater Manchester, and Melaka. R4C blends place-based and community-centered approaches with R-Cities' urban resilience framework, connecting local initiatives to city systems while bridging stakeholder gaps to enhance urban resilience.

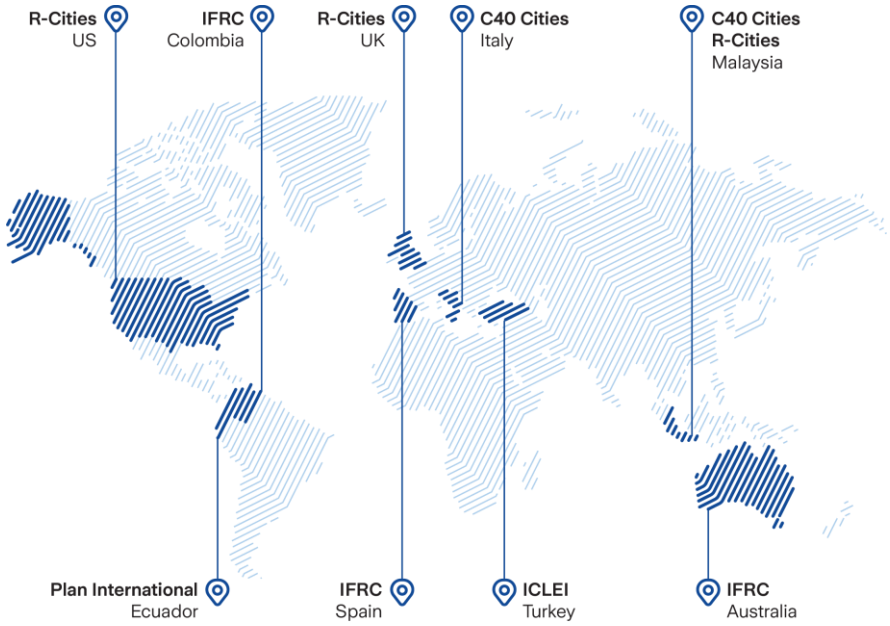

FIGURE 1: Map displaying the five implementing organizations in the Urban Climate Resilience Program and their respective program cities

FIGURE 2: Map of R4C cities

R4C in Melaka, Malaysia

Melaka faces several interconnected challenges, including frequent flooding, an aging drainage system, traffic congestion, gentrification, and inadequate infrastructure maintenance. These issues threaten the city's status as a UNESCO World Heritage Site, the well-being of residents and its cultural identity, particularly in the face of increasing climate risks.

Melaka Historic City Council's vision is to create a sustainable, smart, and thriving heritage city. Through its 2019 City Resilience Strategy, Melaka targets three main pillars:

1. Thriving and engaged communities
2. A livable and efficiently connected city
3. Collective leadership with smart governance.

These pillars recognize the interconnectedness of social, environmental and economic factors and propose integrated solutions to safeguard Melaka's future.

In Melaka, following a selection process, the R4C program engages the communities in Kampung Morten and Pantai Peringgit. These communities are exposed are exposed to flooding and heat risks, but they are committed to working together to address these challenges. The R4C program co-designs and implements projects to improve resilience to floods and excessive heat, aiming to accelerate climate resilience and promote sustainable development.

The city has prioritized a resilience-focused approach that supports inclusive decision-making, promotes multisector collaboration and invests in sustainable, adaptive development. This approach aims to protect Melaka's heritage, support vulnerable communities and ensure long-term economic and social prosperity amid climate change. The R4C program and its principles align well with the MBMB's ambitions and address the challenges they are facing, making it an ideal fit for the city's resilience journey.

FIGURE 3: Resilient Melaka Strategy's Three Main Pillars
Source: Resilient Melaka (Majlis Bandaraya Melaka Bersejarah, 2019)

R4C Implementation in Melaka

The R4C program in Melaka is jointly implemented by R-Cities and the Melaka Historic City Council Resilience Unit. It is supported by the Z Zurich Foundation and Zurich Malaysia. R-Cities also engages partners such as Urban Scale Studio and the Asian School of the Environment at Nanyang Technological University (Singapore) to bring in local knowledge and strengthen technical expertise.

For the R4C program, engagement with the community of Kampung Morten is facilitated through its existing residential committees. Each community in Melaka has a Development and Coordination Committee (JPKK) that manages state-supported community development programs.

As the program moves forward to project implementation, R4C aims to expand its partnerships and enhance stakeholder engagement, fostering a stronger enabling environment for community and climate actions.

R4C Melaka Champions

The Department of Town Planning in MBMB oversees urban planning and includes the Resilience Unit. The head of the department also serves as the Chief Resilience Officer of Melaka. The Resilience Unit's primary purpose is to integrate resilience principles into the city's planning and development, ensuring that Melaka can adapt to and thrive amid future challenges.

To implement R4C in Melaka, a task force coordinated by the Chief Resilience Officer and consisting of 21 relevant MBMB officials was formed. These R4C Champions participate in various activities, such as workshops and engagement sessions.

MEMBER DEPARTMENTS OF THE MELAKA R4C CHAMPIONS TASK FORCE:

1. Department of Evaluation and Asset Management
2. Department of Engineering
3. Department of Corporate and Community Management
4. Department of Licensing and Environmental Health
5. Department of Landscape and City Beautification
6. Department of Town Planning

R4C Objectives

The Resilience for Communities program provides Melaka with comprehensive support to build climate resilience at the community level.

The objectives of R4C are to:

1. Invest in and deepen the resilience capacity of cities by providing diagnostic support, including through the CRMC tool
2. Understand barriers to achieving urban resilience through direct communication with the communities most affected
3. Co-design equitable, resilience-focused interventions by engaging and working directly with community members and city leaders
4. Kick-start initial projects through catalyst funding (Resilient Community Impact Funds) and leverage additional climate action investments
5. Create a project pipeline that serves as both an implementation roadmap and a strategic tool for partnership development and advocacy

Installation of Outdoor Heat Sensor
Source: Majlis Bandaraya Melaka Bersejarah, 2025

Phases of Implementation

The R4C program follows a three-step process in each of the identified communities.

PHASE 1

RESEARCH AND ASSESSMENT

Direct involvement of communities in identifying gaps and obstacles to address their unique challenges using tested methodology, including the CRMC tool

PHASE 2

CO-PRODUCING ACTIONS AND PLANS

Engagement with community, city and other stakeholders in the project preparation process; mapping of partnership opportunities

PHASE 3

DESIGN & IMPLEMENTATION

Identification and implementation of interventions to enhance community resilience to climate hazards; recommendation of policies to be developed for further up-scaling.

Resilient Community Impact Funds

This CAP document includes the identification of catalyst projects to be funded during Phase 3, including under the R4C's Resilient Community Impact Funds, designed to kick-start further climate actions in Kampung Morten.

Community Engagement in Kampung Morten
Source: Urban SCALE, 2025

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OUR CITY

Melaka Overview

About Melaka City

Melaka City is the capital of Melaka State, located on the west coast of Peninsular Malaysia with a population of about half a million people. Known for its rich history and multicultural heritage, the city is a UNESCO World Heritage Site recognized for its well-preserved colonial architecture and historical landmarks. Once a vital port during the 15th century, Melaka has evolved into an urban center that balances cultural preservation with modern development. The city relies heavily on its UNESCO World Heritage Site status for economic stability, with 45 percent of its income from the services and tourism sectors. However, this dependence creates vulnerabilities, as demonstrated during the COVID-19 pandemic, which severely disrupted economic and tourism activities. The city also faces ongoing flooding challenges due to an aging drainage system, with flash floods occurring regularly during periods of heavy rainfall, particularly affecting low-lying areas and heritage zones.

Melaka Historic City Council and Melaka State

Melaka City is administered by Majlis Bandaraya Melaka Bersejarah (also known in English as Melaka Historic City Council), which handles public health, town planning, environmental protection, and urban-infrastructure maintenance. At the state level, Melaka is governed through the State Legislative Assembly comprising elected representatives known as Ahli Dewan Undangan Negeri (ADUN) .

The ADUNs are collectively led by the Chief Minister of Melaka, who oversees the implementation of state policies and strategic development initiatives. Each ADUN represents their constituency and plays key roles in legislation, constituency service, development planning and community engagement, acting as a bridge between government and residents. State agencies, such as the Department of Drainage and Irrigation, operate under state jurisdiction to manage water infrastructure and flood mitigation.

Together, the Chief Minister, the ADUNs and local authorities such as the MBMB work in coordination to address Melaka's development needs while managing the challenges of heritage preservation, economic resilience and climate adaptation.

Melaka State
Is a state located in the south of Peninsular Malaysia; it borders Negeri Sembilan and Johor

Melaka Historic City Council
The selected communities (Kampung Morten and Pantai Peringgit) are under the jurisdiction of Majlis Bandaraya Melaka Bersejarah

FIGURE 4: Map of states in Peninsular Malaysia

Melaka Priorities

As the local authority, the MBMB's mission is to promote a livable heritage city through efficient and responsive urban governance for the well-being of all residents, with climate resilience as a top priority. To address flooding challenges, the MBMB has planned 30 flood mitigation projects, including 16 in the Melaka City Parliamentary Areas such as Kampung Morten and Pantai Peringgit, 10 in Tangga Batu, and four in Hang Tuah Jaya. These projects include the construction and upgrading of 26 drainage systems and two reservoirs, along with two installations of flood pumps and water gates.

To reduce carbon dioxide emissions and help lower global temperatures, the MBMB is also implementing an energy-saving initiative. This involves installing and replacing 253 smart LED streetlights, as well as upgrading 294 existing high-mast, spot and pedestrian lights to LEDs within 2025. The MBMB has set out a policy to install 300 smart LED streetlights annually, which can reduce electricity consumption by 60-80 percent. Additionally, all MBMB infrastructure and building projects now use LED lighting. Solar panels are also being installed at every bus stop and on the MBMB office building.

Flood Risk in Melaka

In Melaka, there are eight major river basins, including the Sungai Melaka basin, which runs through the city center and R4C locations like Kampung Morten and Pantai Peringgit. In 2023, the Global Risk Resilience Fellowship program, a collaboration between Resilient Cities Network and Howden Insurance, conducted a desktop flood hazard analysis in Melaka, focusing on the UNESCO World Heritage Site and three kampungs, including Kampung Morten.

The analysis identified three main causes of flooding in Melaka:

1. Flash floods from heavy rainfall
2. River floods from overflowing riverbanks during heavy rain or high tides
3. (Less common) storm surges caused by strong winds pushing seawater onto the coast.

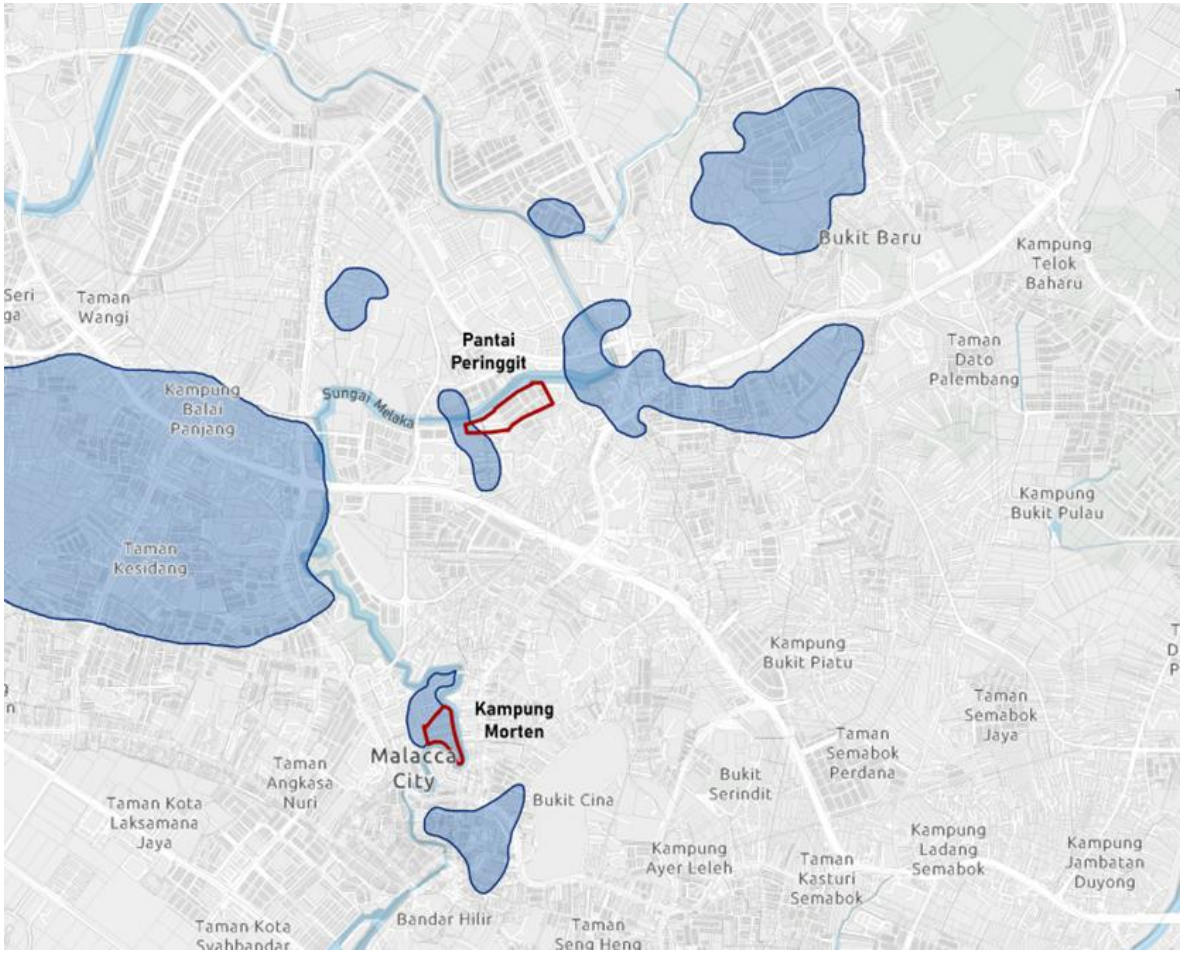
Recent Flood Events in Melaka

The *Jabatan Pengaliran dan Saliran (JPS)*, under Malaysia's Ministry of Energy Transition and Water Transformation (PETRA), categorizes floods into four types:

1. Monsoon floods
2. Flash floods
3. Coastal floods
4. Stagnant floods.

According to the JPS' 2022 Annual Flooding Report, Melaka experienced 39 flash flood events that year.

The Sungai Melaka basin is prone to floods, especially during the Northeast Monsoon from November to March. A significant flood event occurred on 6 May 2022, affecting areas in the Sungai Melaka basin such as Solok Benteng, Sungai Putat, Taman Bukit Beruang, Jalan Pulau Nibong and Pengkalan Rama Pantai. The Batu Hampar telemetry station recorded an unprecedented 174 mm of rainfall in just two hours, exceeding a 100-year return period. Flood depths ranged from 0.2 to 0.45 meters, highlighting the event's severity.



Legend: Flood-prone Area | Melaka River | Land Cover | Road

FIGURE 5: Melaka flood map
Source: Interim Report, Integrated River Basin Management Plan, Sungai Melaka, 2024

Flood-Prone Areas in Melaka

Flood-prone areas, as defined by JPS, are zones highly susceptible to flooding due to factors such as intense rainfall, river overflow and rapid urbanization.

As the country's lead agency on flood risk management, the JPS identifies vulnerable areas, develops mitigation strategies and implements early-warning systems to reduce impacts on communities.

According to the 2024 Integrated River Basin Management Plan for Sungai Melaka, prepared by JPS, Kampung Morten has been officially designated as a flood-prone area. This classification is based on a combination of historical flood data, the settlement's low-lying location adjacent to Sungai Melaka, and inadequate drainage capacity that intensifies surface runoff during heavy rain.

The flood risk is further amplified by ongoing urban development and increasing climate variability, underscoring the urgent need for targeted mitigation measures and resilient infrastructure planning in the area.

Heat Risk in Melaka

In Malaysia, policy and public attention have primarily focused on acute heatwaves rather than chronic heat stress. The MET Malaysia classifies and monitors heatwave events, issuing alerts when temperature thresholds are exceeded. In March 2024, Melaka experienced a Level 1 Heat Alert when temperatures consistently reached 35-37°C for three consecutive days.

Heatwave Categories

LEVEL	DAILY MAXIMUM AMBIENT TEMPERATURE
Level 1: Alert Level	**Level 1:** 35°C to 37°C for at least 3 consecutive days
Level 2: Heatwave	**Level 2:** 37°C to 40°C for at least 3 consecutive days
Level 3: Extreme Heatwave	**Level 3:** Exceeds 40°C for at least three consecutive days

To enhance local understanding on heat stress, Melaka City has partnered with the Asian School of the Environment at Nanyang Technological University in the framework of the R4C program to conduct citywide heat mapping. Derived using the wet-bulb temperature index – which accounts for both heat and humidity – the meteorological data show frequent exceeding of the 27°C discomfort threshold, especially during the April-May 2023 heatwave.

Wet-bulb temperature is particularly relevant in humid, tropical environments like Melaka, where high humidity reduces the body's ability to cool itself through sweat evaporation.

Urban heat island analysis also revealed that areas with very high urban heat intensity had less tree coverage (see Figure 6). This includes the heritage zone in the city center, which had less than 10 percent tree coverage (see figure 7). These insights provide a valuable basis for guiding climate- responsive urban planning and greening strategies.

Relative Surface Temperature By Land Cover Type in Melaka

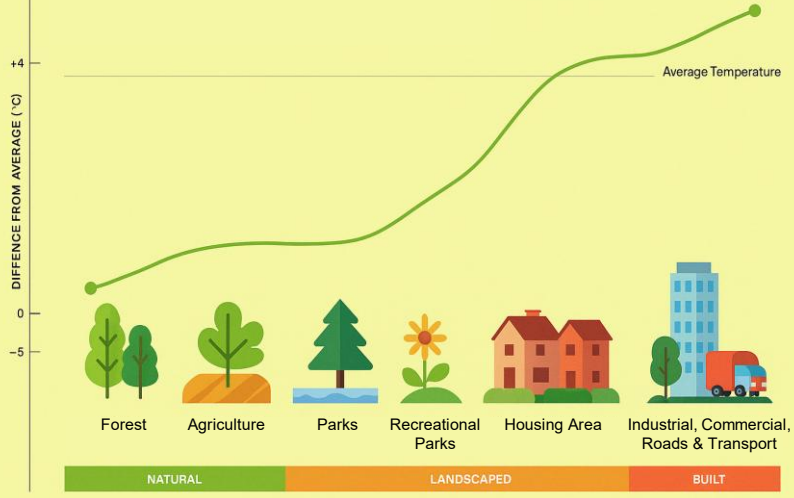
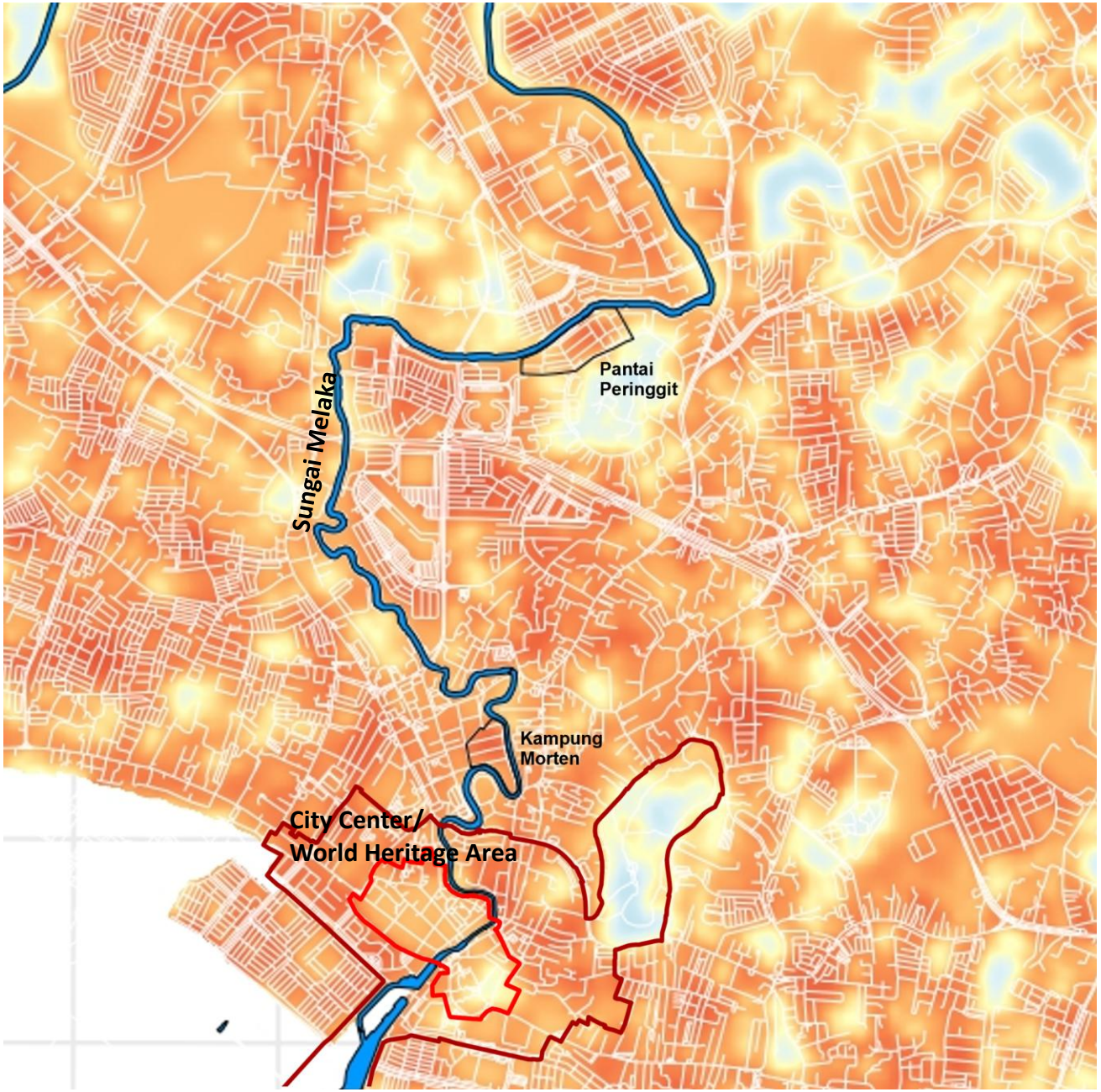


FIGURE 6: Melaka's relative surface temperature by land cover
Source: Ramsay and Hamel, "Rapid Heat Assessment: Melaka, Malaysia" (Nanyang Technological University, 2024)



Urban Heat Islands in Melaka

FIGURE 7: Melaka's urban heat island map –Integrated Valuation of Ecosystem Services and Trade-offs Modelling Source: Ramsay and Hamel, "Rapid Heat Assessment: Melaka, Malaysia" (Nanyang Technological University, 2024)

Ambient Air Temperature (℃)

33.0
32.5
32.0
31.5

Legend

Buffer Zone
Core Zone


ZURICH
Program Daya Tahan Iklim Bandar (UCRP)
MENERAJU
RESILIENT CITIES NETWORK
RESILIENCE 4 COMMUNITIES
Identify. Understand. Act.
URBAN SCALE
KOTA LAKSAMANA


URBAN SCALE
CITIES NETWORK
MENERAJU
BANDAR

OUR COMMUNITY

Kampung Morten

About the community

Kampung Morten is a traditional Malay village located on the Melaka river, just outside the UNESCO World Heritage Site, and is significant for Melaka's cultural and economic landscape. Kampung Morten derives its name from British Land Commissioner F. J. Morten, who helped establish the village, although it was originally founded in the 1920s by local resident Othman Mohd Noh.

The kampung is known for its wooden house style reflecting traditional Malay design. Its significance was recognized in 1989 when it was declared a heritage village under Melaka's Preservation and Conservation Enactment. This designation transformed Kampung Morten into a vibrant tourist attraction. The kampung comprises about 12 acres and has around 100 households.

Despite mounting challenges, the kampung maintains a strong community bond. Its uniqueness and characteristics attract tourism and support local livelihoods through guesthouses and food vendors. The riverside walkway, managed by the MBMB, serves as a key asset, drawing visitors and providing a space for food vendors to set up stalls in the evenings, further enhancing the kampung's appeal. Additionally, the JAPERUN Hall of Kota Laksmana, located within the kampung, offers the community a convenient gathering space and facilitates stronger engagement and visibility with JAPERUN officials.

Sentosa Village
Source: The Tourism, 2024

Demographic Profile

According to the community leader, there are 100 houses in Kampung Morten, inhabited only by Malays, of whom a significant proportion are senior citizens. The community faces economic challenges, with many residents living near or below the poverty line.

Total Population

600 people

51% Male **Female 49%**

Age Distribution

0-13 years old **13%**

14-60 years old **55%**

More than 60 years old **32%**

As of 2022, 6.6 percent of the population in Malaysia is aged 65 or above (Department of Statistics, Malaysia)

The average household size is approximately

6 people

**based on household survey*

Household Income

<2,000 MYR **45%**

2,001 – 4,000 MYR **49%**

4,001 – 6,000 MYR **5%**

>6,001 MYR **1%**

In 2022, Melaka recorded an average poverty line income of 2,670 MYR, representing the minimum household income level required to meet basic living needs Department of Statistics, Malaysia).

Community in Kampung Morten
Source: Urban SCALE, 2025

Shocks and Stresses

Kampung Morten faces multiple shocks and stresses, including flooding and heat, compounded by an aging population.

Through engagement sessions with community members, various issues were mapped which shows how the community is facing pressures associated with its status as a heritage and tourism neighborhood.
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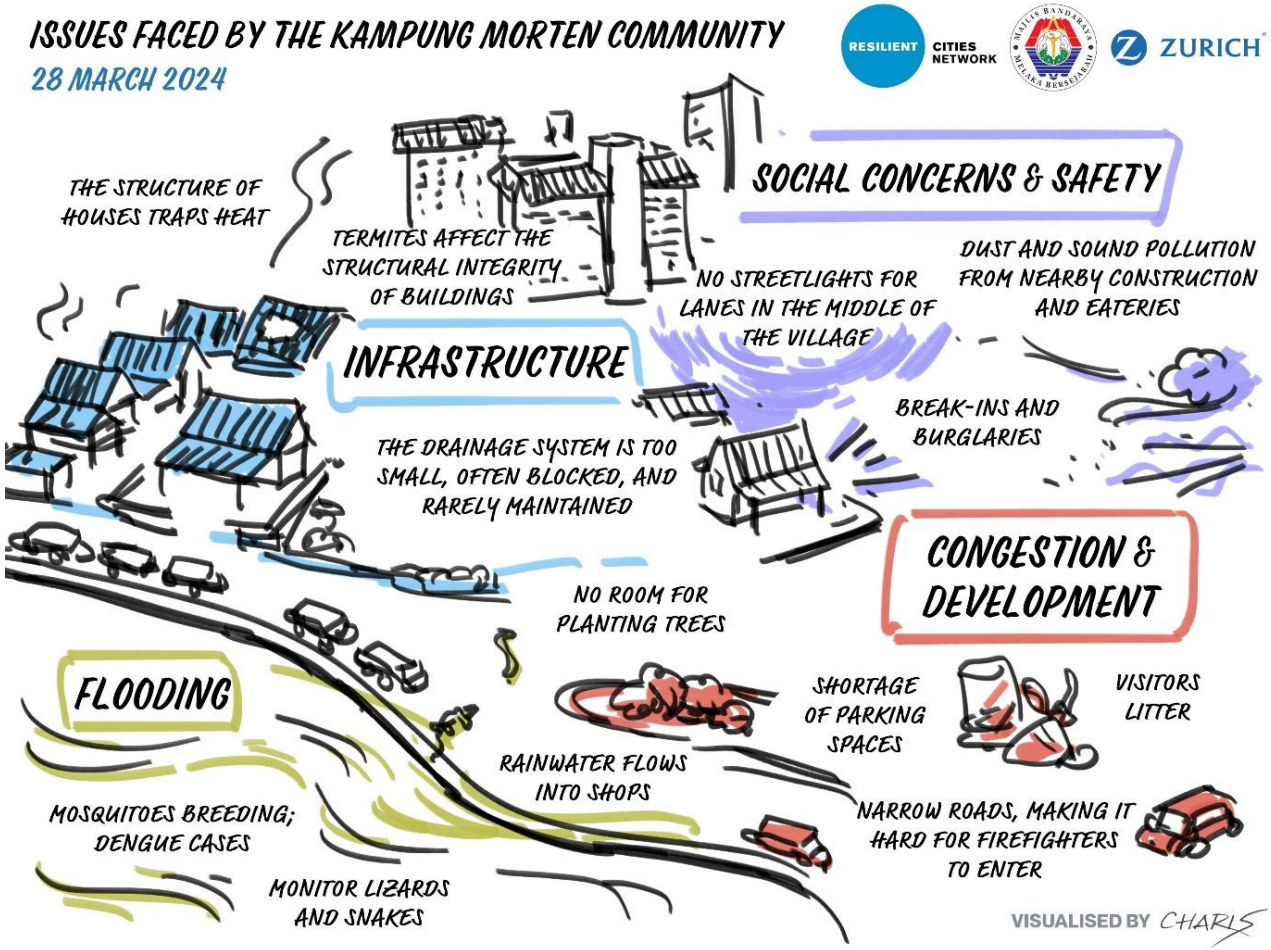


FIGURE 8: Kampung Morten Issues Mapping from Engagement Sessions, 2024

Flooding

Kampung Morten was identified as a flood-prone area in the Sungai Melaka Integrated River Basin Management Plan (Interim 1) 2024. Historical flood data from the Department of Irrigation and Drainage for the period 2019 to 2023 shows that the village experienced flooding in 2021, with water levels reaching depths of 0.15 to 0.35 meters.

During the assessment phase, alongside surveys, multiple engagement sessions were held to create a community map. Community members highlighted and mapped specific areas within Kampung Morten that are particularly vulnerable to flooding, including the southwest area near the gate of Kampung Morten, where leakage from the river wall occurs during periods of heavy rainfall and high river levels. Another hotspot is the lower area around Lorong Tun Mamat 3, where the elevation makes it highly susceptible to flooding, with one house being particularly affected. The owner of the affected house even stated that it serves as the flood early-warning system for the community: “I will be the early-warning system as my house will be affected first if the flood happens.”

Figures 10-12 show flooding in Kampung Morten during heavy rain.

FIGURE 9: Kampung Morten community mapping, 2024

FIGURE 10: Flooding in January 2022

FIGURE 11: Flooding in November 2023

FIGURE 12: Flooding in August 2024

Heat

With 32 percent of Kampung Morten's population aged 60 and above, addressing rising temperatures has become increasingly important for community well-being. Traditional houses, often built with red zinc roofs and minimal insulation, tend to retain heat, resulting in warmer indoor environments, especially during midday. This has been particularly noted in communal spaces such as the kindergarten on the second floor of the JAPERUN Hall, where high temperatures may affect learning comfort. Residents have adapted their daily routines to cope, with elderly individuals preferring to socialize in cooler venues like the surau or JAPERUN Hall.

To better understand indoor heat conditions, Kampung Morten was selected for a community heat assessment under a collaboration with Nanyang Technological University. In October 2024, indoor sensors were installed in 17 homes, with monitoring continuing through the second quarter of 2025.

Initial study findings (up to February 2025) are that indoor temperatures typically peak around 2:00 p.m., averaging 31.9°C and reaching as high as 39°C, while early-morning lows average 27.7°C. Outdoor temperatures are slightly lower on average, peaking at 31.1°C and dropping to 25.4°C around 7:00 a.m.

These insights highlight the importance of incorporating local climate data into future planning and design strategies to improve thermal comfort, especially for vulnerable groups. Kampung Morten's proactive involvement showcases the value of community-led resilience initiatives in the face of rising urban temperatures.

FIGURE 13: Indoor and Outdoor Temperature in Kampung Morten
Source: *Community Heat Assesment collaboration with NTU, 2025*

Climate Resilience Measurement for Communities

In Melaka, the assessment stage is built on the Climate Resilience Measurement for Communities tool from the Z Zurich Foundation. The CRMC model looks at factors contributing to a community's resilience through a holistic lens using the five-capitals model of assets that make up a community: human, social, physical, natural and financial (Figure13).

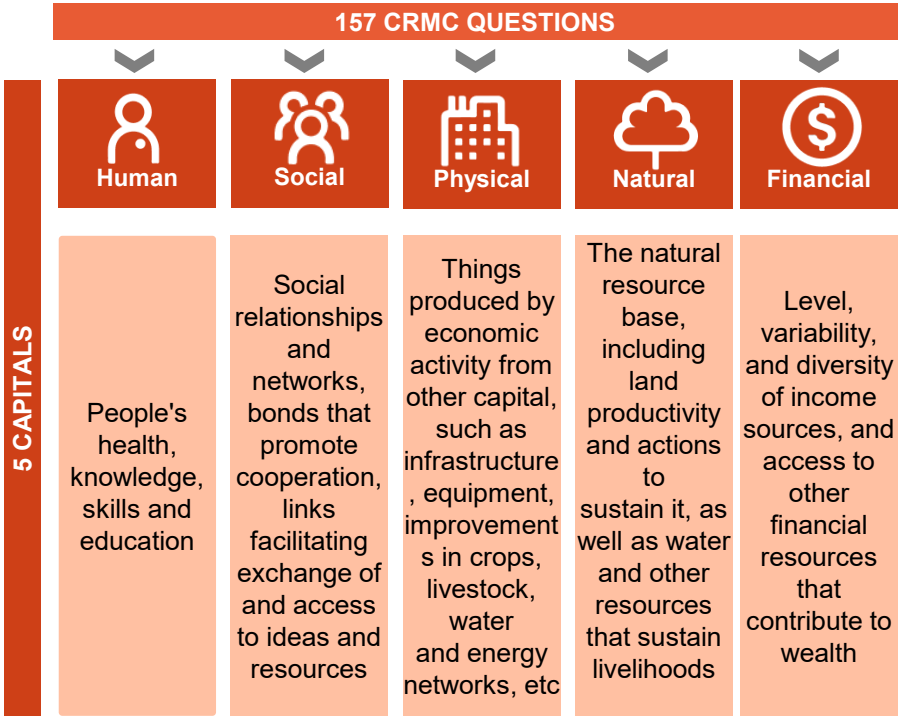


FIGURE 14: CRMC Five Capitals

The CRMC also looks at hazards, in the case of Melaka, both flooding and heat. For hazards, sources of resilience are also grouped into three categories: general, hazard-specific, and hazard-unique.

To that end, CRMC has identified 76 sources of resilience through 157 questions associated with the hazards and the five capitals. The questions are also grouped into seven different themes, shown in figure 14. Information on basic demographics is also collected to obtain a better understanding of the community.

FIGURE 15: CRMC Seven Themes

The CRMC uses software that feeds the data collected in the field through a mobile application on a smartphone/tablet to an online web platform for setup and analysis. The data collection process itself is structured around four key modes: **secondary research, key-informant interviews, focus groups and household surveys.**

Series of Community Engagement

Phases 1 and 2 of the Resilience for Communities initiative involved extensive community engagement through surveys, focus group discussions and interviews carried out in accordance with the Climate Resilience Measurement for Communities tool. These participatory processes were critical in shaping this Community Action Plan, ensuring it reflects real challenges on the ground while amplifying local voices in decision making.

By adopting a co-design approach, the initiative fostered collaboration between communities and agencies, enabling solutions to be developed together rather than imposed. This helped address implementation barriers, align agency efforts with community needs and build mutual trust. Beyond data collection, the process laid a strong foundation for shared ownership and long-term resilience, ensuring no-one is left behind as Melaka adapts to future urban and climate challenges.

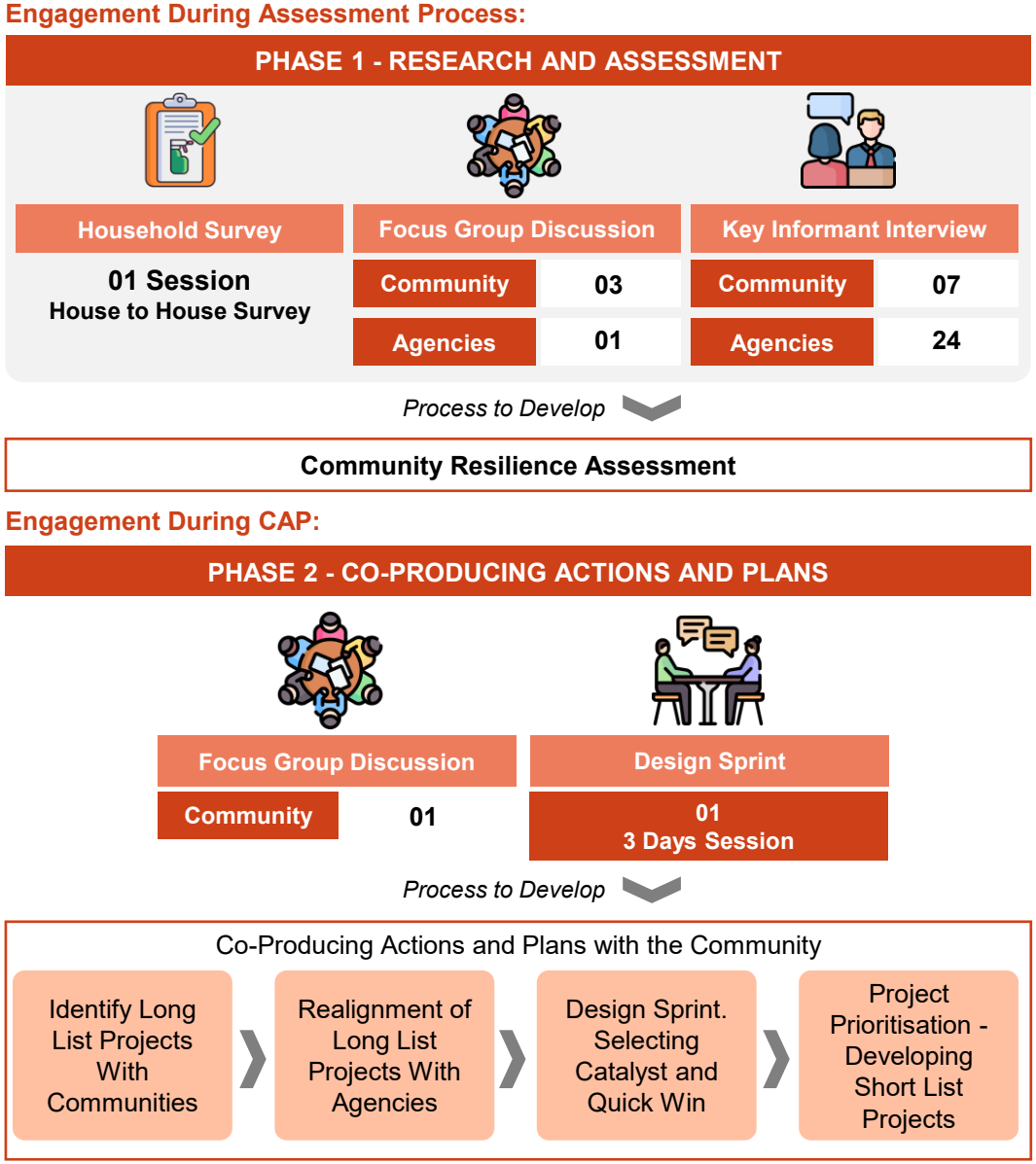


Figure 16: Engagement During Assessment Process

Summary Findings for Flood and Heat Assessment in Kampung Morten

Kampung Morten faces significant challenges related to flooding, heat and overtourism. Flooding is a recurring issue, with more frequent incidents reported by residents, particularly in flood-prone areas near the village gate and Lorong Tun Mamat 3. Rising temperatures, exacerbated by sparse greenery and concrete surfaces, pose risks to the aging population and children, with humidity levels further intensifying discomfort. Additionally, tourism brings noise, safety concerns, environmental issues like stagnant water and littering, and development pressures, all of which threaten the community's heritage and quality of life. Balancing these challenges while preserving the area's cultural identity is a key priority. Meanwhile, the CRMC findings are summarized in the following table.

Human

+ Strengths

Good awareness of flood risks and high level of food security

− Weaknesses

Limited understanding of heat risks

Social

+ Strengths

Good healthcare accessibility and good trust in local leadership and disaster response personnel

− Weaknesses

Limited trust in local authorities

Limited heat risk mapping, risk reduction and response planning particularly

Physical

+ Strengths

Confidence in personal adaptation measures and related infrastructure in place

− Weaknesses

Overflowing river

Natural

+ Strengths

No particular strength in this area

− Weaknesses

Limited tree cover and extensive non-permeable surfaces

Financial

+ Strengths

Local government planning for climate adaptation

− Weaknesses

Limited business and household income continuity

Why We Need To Take Action

What the community has experience

Community engagement sessions with Kampung Morten residents revealed that the community is affected by both floods and heatwaves. Flooding has become a common issue in Kampung Morten, occurring at least once a year, particularly during the monsoon season from October to December. While historical flood data from JPS does not record annual flood events in Kampung Morten, the community suggests for more flood occurrences that may not be captured in the existing records. Interviews and focus group discussions indicate that during heavy rains, water levels rise rapidly, although the flooding is not severe.

"I will be the early-warning system as my house will be affected first if the flood happens"

Community of Kampung Morten

"Due to the extreme heat, I'm unable to socialize and gossip with my friends as I usually would. I can only meet them during events at the surau or the community hall."

Community of Kampung Morten

"We hesitate to purchase new appliances or furniture, fearing they may be damaged by recurring floods"

Community of Kampung Morten

Summary of Aspirations for Kampung Morten

During focus groups, Kampung Morten residents prioritized flood resilience through upgraded drainage systems in back lanes and roof repairs for traditional wooden houses to prevent water damage. For heat mitigation, they emphasized creating well-maintained, landscaped environments that provide natural cooling and improve the microclimate. Beyond environmental challenges, the community seeks heritage preservation alongside modernized infrastructure for safety and connectivity. They also want shared community spaces like an updated community hall, beautified public areas, and government support for housing renovations to ensure the kampung remains vibrant, culturally rich, and sustainable for future generations.

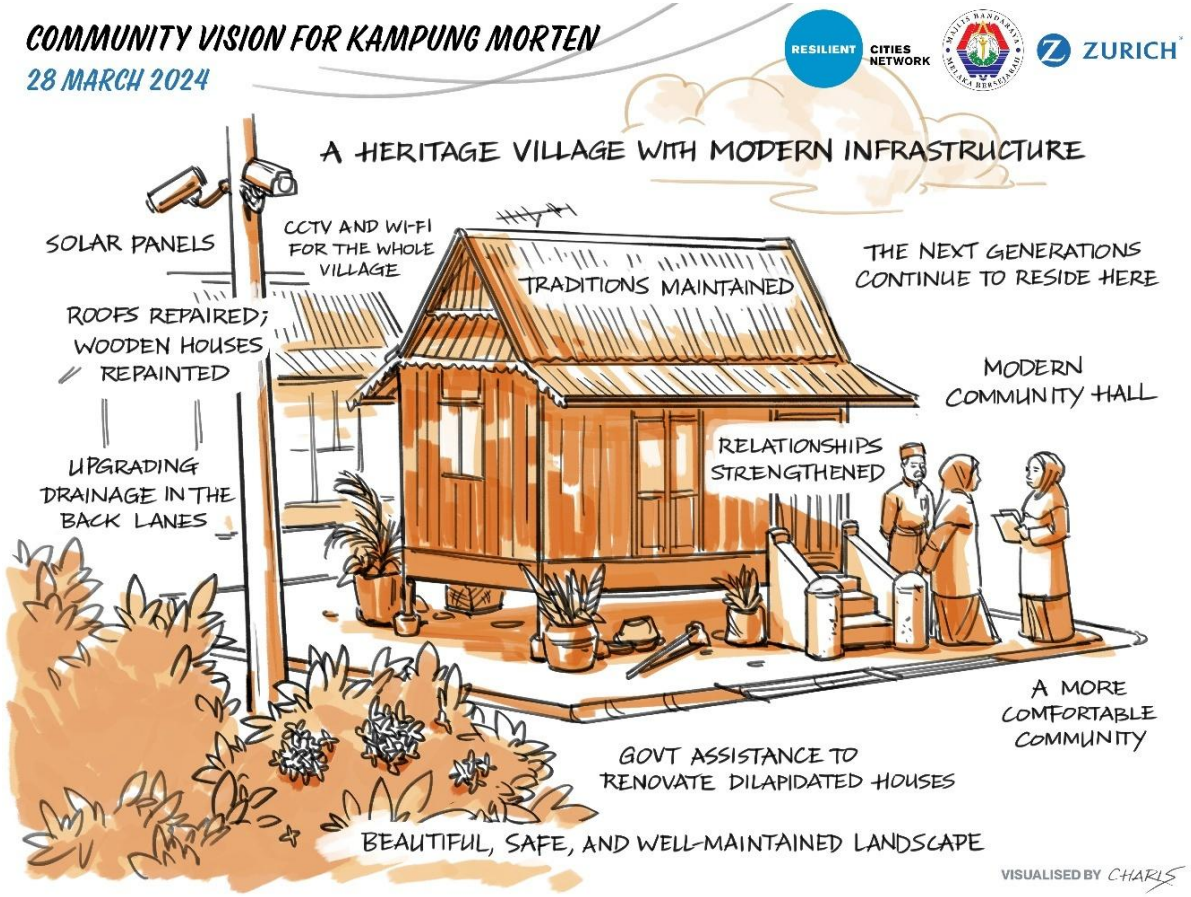


FIGURE 17: Community Aspiration from Engagement Sessions for Kampung Morten, 2024
Source: Charis, 2024


onset
33.8
56.7
%RH
HOBO MX temp/RH logger

OUR ACTION

Resilient Kampung Morten

R4C's co-design process with Kampung Morten residents and key stakeholders transformed local challenges into opportunities.

These community engagement sessions and consultations culminated in a shared vision: "A resilient heritage community that balances sustainability with cultural preservation." Several key projects emerged to address flooding and heat stress and to improve social cohesion and community well-being.

To achieve this vision, projects identified in this CAP aim to:

- Enhance climate resilience planning and services at city level while informing the community under actions within **Our Plan**
- Transform spaces for safer and cooler urban environment under actions within **Our Place**
- Directly empower residents with knowledge, tools, and networks to better adapt and protect themselves from climate change shocks and stresses under actions within **Our People.**

Our Plan	Our Place	Our People
Setting the foundation for informed, resilient actions, from city to community	**Transforming spaces for safer, sustainable living**	**Empowering communities to lead resilient change**

Regarding scope or location, some initiatives will be at the city level and help contribute to Kampung Morten and Pantai Peringgit simultaneously. Some initiatives would also be twin initiatives, each deployed in both communities, although with local-context considerations.

From Catalyst Project to Longer-Term Impact

This CAP for Kampung Morten has also identified **catalyst projects** for immediate implementation using available R4C's Resilient Community Impact Funds and existing resources to be mobilized within the period of June 2025 to June 2026. These projects will demonstrate early success and build momentum for the community's broader resilience journey, while other priority and supporting initiatives will seek new partnerships and funding for scaled-up implementation

Catalyst Project	Priority Project	Supporting Project
Catalyst projects are impactful and with low barriers to implementation, allowing for immediate action. They generate momentum, build confidence among stakeholders and demonstrate tangible improvements in a short timeframe. Certain phases within broader priority projects can also be catalyst projects.	**Priority projects** are impactful for longer-term resilience. They may require more detailed planning, higher investment, or coordination among multiple stakeholders before implementation given their complexities such as regulatory requirements, infrastructure needs or resource allocation.	**Supporting projects** are long-term initiatives that complement and reinforce the broader resilience goals. While they may not be directly tied to the core themes of the plan, they play a crucial role in enhancing community well-being and sustainability.

Across all projects identified within the CAP, they are anticipated to impact:

Systems Strengthening	Space Transformation	Capacity Building
Enhance climate resilience planning and services at the city level, benefiting approximately **70,000 residents** across Melaka.	Revitalize community spaces featuring nature-based solutions and climate-adaptive design, demonstrating safer and cooler urban environments that will impact **70 residents**.	Direct empowerment of **470 residents** with knowledge, tools, and networks to better adapt and protect themselves from climate change shocks and stresses

OUR VISION

"A Resilient Heritage Community that Balances Sustainability with Cultural Preservation"

OUR MISION

Address River Flow & Drainage	Strengthen Climate Resilience	Aged-Friendly Community	Modernize While Preserving Heritage	Enhance Livelihood

OUR ISSUES

Flood **Heat**

OUR KEY CHALLENGES

Aging Population and Economic Vulnerability	Dependence on Tourism and Heritage for Livelihoods	Environmental and Structural Challenges	Gaps in Heat Resilience Planning	Recovery Takes Longer After Flood

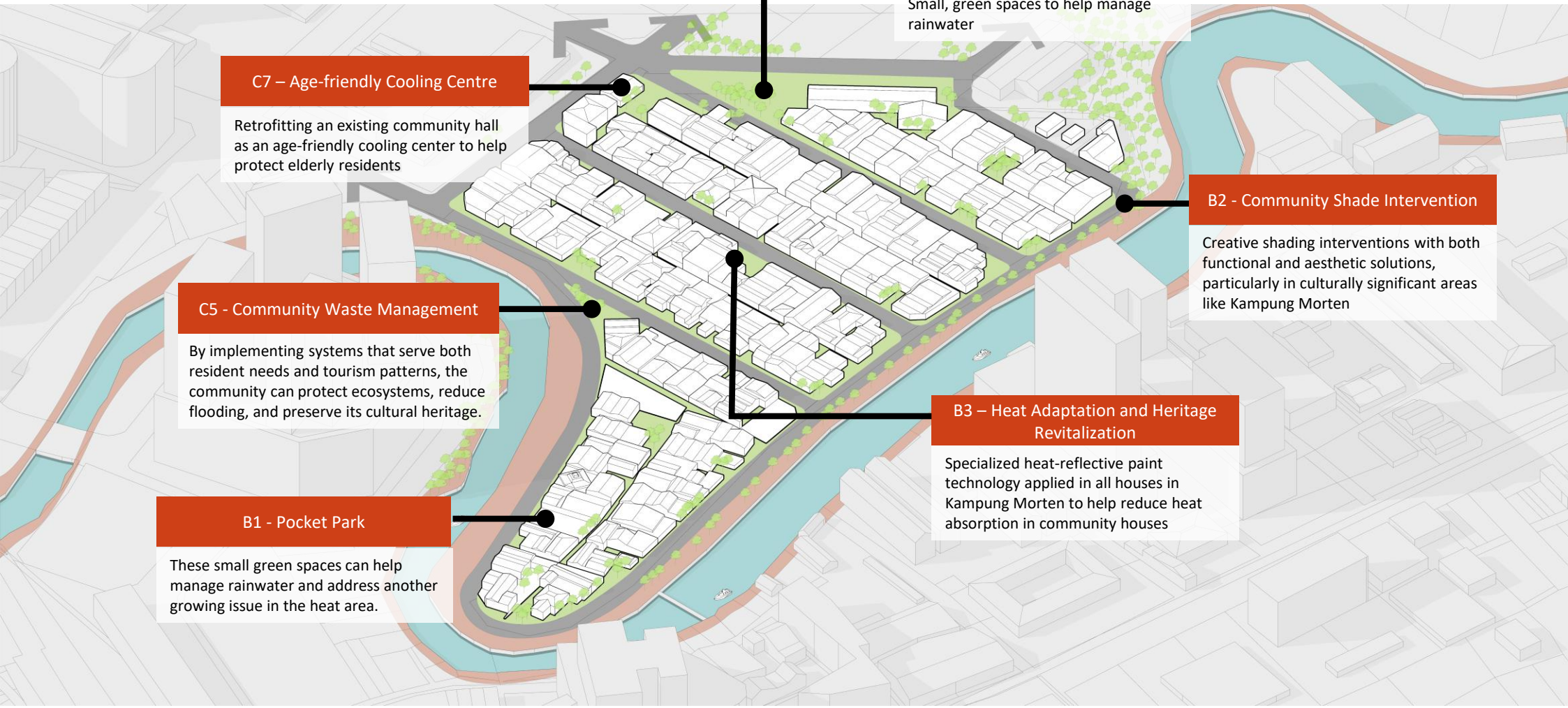
OUR ACTIONS *(Different project might be in different location)*

Our Plan	Our Place	Our People
CATALYST		
A1 - Strengthening Melaka Command Center's Flood and Heat Response	B1- Pocket Park	C1 - Community Heat Monitoring C2 - Community Heat Awareness & Outreach
PRIORITY		
A2 - Heat and Health Capacity Building	B2 - Community Shade Intervention B3 – Heat Adaptation & Heritage Revitalization	C3 - Flood Early-Warning System C4 - Flood Awareness Workshop
SUPPORTING		
A3 – Building Cooling Intervention & Guideline A4 – Improving Flood Control Operation & Maintenance	B4 - Riverbed Restoration B5 - Drainage Study & Improvement	C5 – Community Waste Management C6 – Flood Insurance C7 - Age-friendly Cooling Centre

ALIGNMENT TO THE FIVE CAPITALS

Human | Social | Physical | Natural | Financial

Overview of Proposed Projects – Kampung Morten



**Indication of the potential locations for projects which includes physical transformation in Kampung Morten*

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OUR PLAN

Setting the foundation for informed, resilient actions, from city to community

OUR PLAN – A1 CATALYST

STRENGTHENING MELAKA COMMAND CENTER'S FLOOD AND HEAT RESPONSE

A PROJECT DESCRIPTION

The MBMB is currently in the process of developing an integrated command center that will address the growing challenges, including those posed by urban heat and flooding. This initiative marks an important step toward climate-responsive urban governance. However, there is currently a noticeable gap in the coordination and integration of various data entries, affecting the city's ability to respond to emergencies. Specifically, the connections between data systems, real-time response protocols and community engagement strategies remain underdeveloped.

This presents a timely opportunity to enhance the MBMB's command center framework by incorporating knowledge and best practices from the R4C program. The R4C initiative has produced valuable insights regarding the use of data and an understanding of what communities need on the ground for better response and preparedness.

In addition, the MBMB can benefit from study exchanges and peer learning sessions with other local councils that have implemented similar climate resilience initiatives. These exchanges can offer practical knowledge on successful implementation models, technology integration and cross-sector collaboration, enabling the MBMB to design a more robust, responsive and inclusive command center.

FIGURE 18: The Rio de Janeiro Operations Center integrates data from multiple sources to keep citizens informed about emergency situations.

OUR PLAN – A1 CATALYST

STRENGTHENING MELAKA COMMAND CENTER'S FLOOD AND HEAT RESPONSE (cont.)

B IMPLEMENTATION BARRIER

Coordination among the various agencies can be complex, especially when trying to integrate legacy systems or standardize data sharing protocols. Existing data sources are often managed by different departments or organizations with limited interoperability, making integration technically and institutionally challenging. Addressing these implementation barriers requires strong leadership, cross-agency collaboration and clear communication to build trust and foster a shared vision for a more resilient and connected Melaka.

C PROJECT DETAILS

Location/Scale	City Wide
Shocks/stresses	Flash flooding, extreme heat,, limited governance capacity/services
Implementor	Majlis Bandaraya Melaka Bersejarah
Partner	Government Agencies ○ Health Department, Negeri Melaka ○ Department of Drainage & Irrigation, Negeri Melaka ○ Meteorological Department, Negeri Melaka
Phase	Phase 1 – Development of input from R4C to MBMB's command center and study exchange (Q2-Q4 2025) Phase 2 – Integration of R4C input into MBMB's command center (2026)
Resilience capitals	Physical, Social

FIGURE 19: An example of Urban Observatory (UO) deployments of a Visible Near-Infrared (VNIR) Hyperspectral camera in United State
Source: The Urban Observatory: A Multi-Modal Imaging Platform for the Study of Dynamics in Complex Urban Systems, 2021

OUR PLAN – A2 PRIORITY

HEAT AND HEALTH CAPACITY BUILDING

A PROJECT DESCRIPTION

Heat is an increasing concern in Melaka. Unfortunately, local understanding of heat is limited, as identified in the CRMC survey. Heat particularly affects children and the elderly. Living in high temperatures can lead to various heat-related illnesses such as heat stroke, high fever, dehydration and more. Extreme heat can make people very sick, especially the elderly, children and those who work directly in the sun. In Melaka, there are volunteer community paramedics, however heat considerations are not yet thoroughly included in their training, so there is an opportunity to better align this service with people's needs.

At the city level, local authorities, in collaboration with the medical community, could prepare and disseminate clear and simple health information regarding heat. It is important to ensure that this knowledge is effectively communicated within the community. Activities such as trainer training on heat risk knowledge and how to better response to heat cases for local leaders, paramedic communities or volunteers could help facilitate increased awareness at the community level, starting with areas like Kampung Morten before expanding throughout the city.

It is expected that this initiative will initially increase the knowledge of heat and health among health workers and volunteers, which, in turn, will help reduce heat risks and enhance preparedness for the broader community. With better understanding, preparation and community support, communities can mitigate the harmful effects of extreme heat.

FIGURE 20: Cycling Paramedic in Melaka
Source: World of Buzz, 2024

B PROJECT DETAILS

Location	City level
Shocks/stresses	Extreme heat, heat knowledge gap, limited health services
Implementor	Majlis Bandaraya Melaka Bersejarah
Partners	○ Ministry of Health, Malaysia ○ Health Department, Negeri Melaka ○ Monash University, Malaysia ○ Paramedic Community (ParaCom) ○ St. John Ambulance
Phase	Phase 1 – Preparation of heat advisory (Q3-Q4 2025) Phase 2 – Training for trainers (2026)
Resilience capitals	Human, Social

Our PLAN – A3 SUPPORTING

BUILDING COOLING INTERVENTION AND GUIDELINE

A PROJECT DESCRIPTION

Extreme heat poses significant health risks, especially for vulnerable populations such as the elderly and children. Heat monitoring has revealed high indoor temperatures and humidity in Kampung Morten and Pantai Peringgit, where community members often remain indoors. It is essential for local authorities to encourage effective and affordable at-home cooling solutions based on insights from R4C interventions and case studies.

Developing and sharing cooling guidelines will help create comfortable indoor environments during extreme heat, safeguarding communities from heat-related illnesses. These guidelines will offer practical tips for community members, helping families to reduce their electricity bills by minimizing reliance on air conditioning. Using simple, low-cost cooling techniques with locally sourced materials and traditional designs, the guidelines can also be translated to inform future building permits, encouraging builders and developers to adopt heat-adaptive designs.

B PROJECT DETAILS

Location	Pantai Peringgit, City-wide, Kampung Morten
Shocks/stresses	Extreme heat, aging population, economic inequality
Implementor	Majlis Bandaraya Melaka Bersejarah
Partner	○ Department of Engineering ○ Department of Town Planning ○ State Housing Agency ○ Researchers
Resilience capitals	Human, Physical, Natural

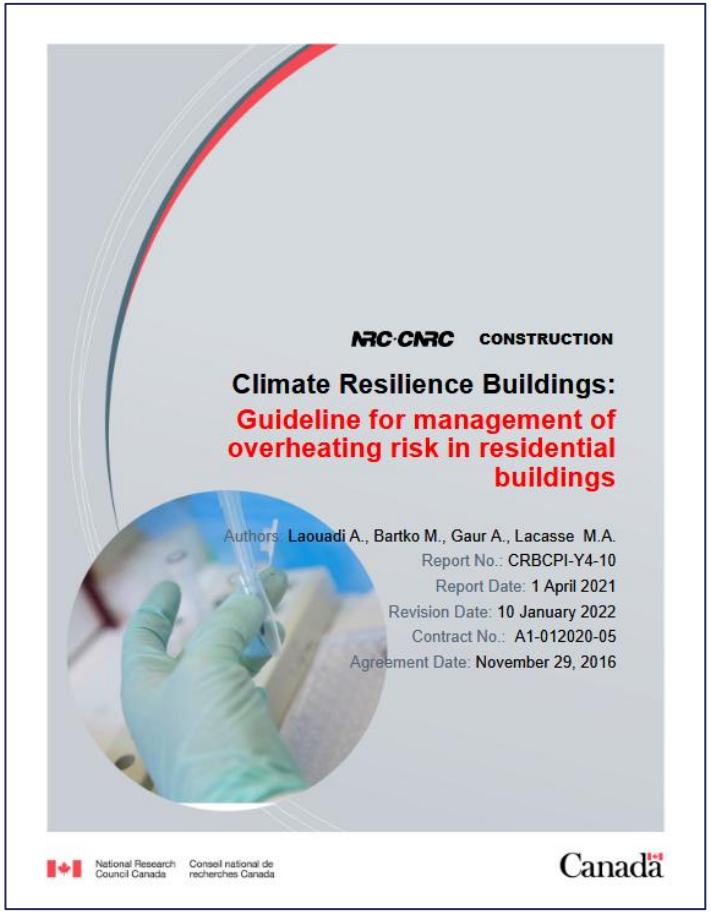


FIGURE 21: An example of guidelines: Climate Resilience Buildings: Guideline for Management of Overheating Risk in Residential Buildings.

Source: NRC Construction Research Centre, 2021.

IMPROVING FLOOD CONTROL OPERATION & MAINTENANCE

A PROJECT DESCRIPTION

Kampung Morten and surrounding areas experience recurring flash flooding during heavy rainfall that disrupts daily life, damages heritage buildings, and threatens tourism-dependent livelihoods. When drainage infrastructure becomes overwhelmed, water stagnation can persist for hours, creating safety risks and economic impacts for this culturally significant area.

This project implements proactive flood management through strategically positioned pump systems and regular maintenance protocols, with Kampung Morten serving as one of the first location within a broader flood control strategy. By ensuring reliable water drainage during critical periods, MBMB aims to reduce flood frequency and severity while protecting both community safety and the kampung's heritage tourism value. This initiative serves as a model for expanding effective flood control measures to other vulnerable areas across the council's jurisdiction.

B PROJECT DETAILS

Location	Kampung Morten
Issue	Flood, inadequate infrastructure, limited DRM
Implementor	Majlis Bandaraya Melaka Bersejarah
Partner	○ State Government ○ Local Communities ○ Corporations
Resilience Capitals	Human, Social, Natural

FIGURE 22: Pump panel, one of the key components for flood control pump system.
Source: *Engineering Department, MBMB, 2025*

OUR PLACE

Transforming spaces for safer, sustainable living

OUR PLACE – B1 CATALYST

POCKET PARK

A PROJECT DESCRIPTION

In flooding- and heat-affected Kampung Morten, there is an opportunity to introduce nature-based solutions, such as pocket parks, on land that is available from the MBMB. These small, green spaces can help manage rainwater and reduce the urban heat island effect in the area. Residents have shown interest in having more shaded, green areas where they can relax and gather. Kampung Morten would benefit more from simple, local solutions. Even if their impact on flooding is small, these green spaces can help cool the area, improve the environment, and support community well-being.

The pocket park in Kampung Morten will start with a community-driven design process, using co-design and tactical urbanism to test ideas with residents. This hands-on approach helps create a space that meets local needs. The final design is to combine green solutions to reduce heat with elements that reflect the area's cultural heritage. As a result, the pocket park could show how small, community-led projects can improve the environment, celebrate local identity and build resilience to climate challenges.

The pocket park project aims to create a shared green space that brings people together for social, cultural and recreational activities, helping to strengthen community ties and support well-being. It also encourages awareness of sustainability and heritage, showing how small, nature-based efforts can make a big difference. By adding greenery, the park helps Kampung Morten adapt to rising temperatures and changing weather. If successful, this approach could be expanded to other areas in the village, like the local school or the open space near Japerun Hall.

FIGURE 23: Potential pocket park location in Kampung Morten (before)
Source : Urban SCALE, 2025

FIGURE 24: Artist impression of a potential pocket park in Kampung Morten (after)
Source : Urban SCALE, 2025

POCKET PARK (cont.)

B IMPLEMENTATION BARRIER

The Pocket Park project in Kampung Morten faces several challenges. It is important to set realistic expectations, as the park alone would not solve flooding issues. Funding and resources may be limited, and land approval processes could delay progress. Keeping residents involved is key but can be difficult, and maintenance is a major concern: without clear ownership, the park could become neglected. Coordination between local authorities and the community can also be challenging, especially if there is a lack of understanding about the benefits and care needed for nature-based solutions.

C PROJECT DETAILS

Location	Kampung Morten
Shocks/stresses	Flooding, heat, lack of open space, decreased social cohesion
Implementor	Majlis Bandaraya Melaka Bersejarah
Partners	○ State government ○ Residents association ○ Local communities ○ Private sector
Phases	Phase 1: Co-design with tactical urbanism (Q2-Q3 2025) Phase 2: Pop-up project for trial (Q3 2025 to Q2 2026) Phase 3: Implementation (permanent installation)
Resilience capitals	Social, physical, natural

FIGURE 25: Tun HS Lee, Kuala Lumpur, Malaysia
Source: Discover A Lush New Pocket Park in Downtown Kuala Lumpur, 2023

OUR PLACE – B2 PRIORITY

COMMUNITY SHADE INTERVENTION

A PROJECT DESCRIPTION

Rising temperatures are increasing challenges to community cohesion, discouraging people from spending time outdoors and engaging in public spaces. To address this issue, creative shading interventions present both functional and aesthetic solutions, particularly in culturally significant areas like Kampung Morten. This community shading intervention introduces decorative shading elements such as colorful lanterns, umbrellas and fabric canopies.

Additionally, other shading options that incorporate greenery, such as trees and green canopies, could be explored. These shading interventions could be implemented along the streets of Kampung Morten as well as the riverfront pedestrian areas. Adopting a tactical urbanism approach, characterized by participatory design and opportunities for testing and iteration, could further refine these solutions, as could incorporating artistic elements. To demonstrate the effectiveness of these interventions, heat sensor monitoring could be used to track temperature changes before and after implementation.

Such initiatives not only provide relief from the heat but also cultivate a sense of identity, pride and connection within the community. By involving community members in both the implementation and maintenance phases, these projects will foster a sense of ownership and stewardship. These additions not only aim to lower temperatures but also to enhance the visual appeal of Kampung Morten. As a vital area for both heritage and tourism, these enhancements will better protect the community and provide a more enjoyable experience for visitors to the kampung. The insights gained from these projects can serve as a valuable reference for similar initiatives in other communities.

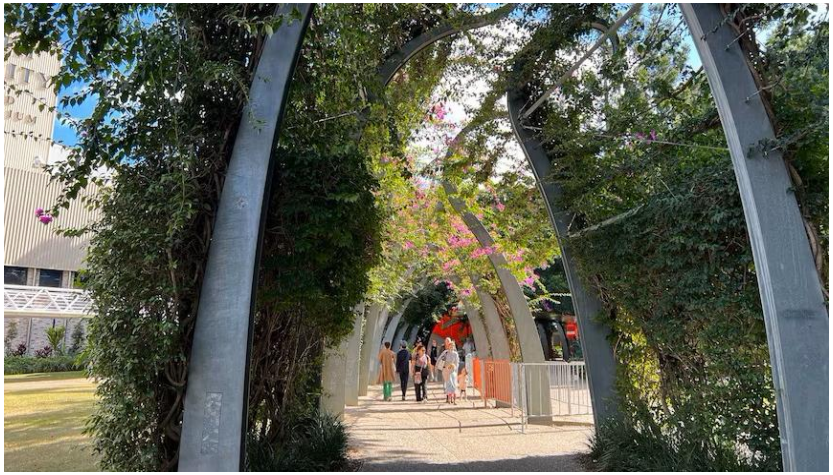


FIGURE 26: A one-kilometer-long Bougainvillea-lined arbor in South Bank, Brisbane (Australia)
Source: *ABC News* (Alexander Lewis, 2022)

B PROJECT DETAILS

Location	Kampung Morten
Shocks/stresses	Heat, decreased social cohesion, lack of green
Implementor	Majlis Bandaraya Melaka Bersejarah
Partners	○ State Government ○ Residence Association ○ Local Communities ○ Corporations
Phases	Phase 1 – Assessment and Design Phase 2 – Implementation
Resilience capitals	Social, physical, natural

OUR PLACE – B3 PRIORITY

HEAT ADAPTATION AND HERITAGE REVITALIZATION

A PROJECT DESCRIPTION

Kampung Morten, known for its traditional Malay wooden houses and heritage value, is particularly vulnerable to rising temperatures due to its older building materials and limited insulation. As we learned about the heat data in Kampung Morten (Figure 13), data from October 2024 to February 2025 shows indoor temperatures, with an average around 32 ℃ during the hottest time of the day, with some houses reaching closer to 39 ℃.

With increasing temperatures caused by urban heat and climate change, these homes can become uncomfortably warm, especially during the day. There is an opportunity to apply specialized heat-reflective paint technology to these houses to reduce indoor heat build-up and improve the comfort of residents, especially during hot weather, as well as other low-cost home improvement solutions. Specialized heat-reflective paint technology applied in Kampung Morten could help reduce heat absorption in community houses and enhance the overall living conditions for the community. There is also an opportunity to bring partnerships to implement this initiative, including with Zurich Malaysia and AkzoNobel.

This initiative is also expected to raise awareness, within the Kampung Morten community, of sustainable solutions that address climate change while maintaining the unique character of their environment. This is particularly important in Kampung Morten, where maintaining the cultural authenticity of the homes is a priority and structural modifications are limited. Repainting houses in Kampung Morten would also refresh the heritage of the area.

FIGURE 27: Example of an old Malay house in Kampung Morten with tin roof
Source: *Ramsay, 2024*

B PROJECT DETAILS

Location	Kampung Morten
Shocks/stresses	High indoor heat, aging community, economic inequality, dilapidated environment
Implementor	Majlis Bandaraya Melaka Bersejarah
Partners	○ State government ○ Residents association ○ Local communities ○ Corporations
Phases	Phase 1: Development of detailed cooling-paint plan Phase 2: Outreach program with potential collaborators, volunteers and communities Phase 3: Implementation of programs with collaborators, volunteers and communities
Resilience capitals	Human, physical, financial

OUR PLACE – B4 SUPPORTING

RIVERBED RESTORATION

A PROJECT DESCRIPTION

Kampung Morten is prone to occasional flash floods because the riverbed is obstructed by sediment and polluted, so the river's capacity is significantly reduced. This situation not only creates unpleasant odors and an unattractive environment but also poses health risks to the community. The Melaka Historic City Council and state environmental agencies are tasked with planning, maintaining environmental health, and preserving the area's heritage.

Restoring the riverbed in Kampung Morten is crucial for enhancing the river's capacity, improving the local environment, and supporting the cultural heritage of the village. To begin this important restoration process, the local authorities could start by assessing the river thoroughly, removing flow- hindering materials, and incorporating green features like floating plants to purify the water naturally.

B PROJECT DETAILS

Location	Kampung Morten
Shocks/stresses	Flood, inadequate infrastructure
Implementor	Majlis Bandaraya Melaka Bersejarah
Partners	○ State government ○ Departmet of Drainage and Irrigation, Negeri Melaka
Resilience capitals	Physical, natural

OUR PLACE – B5 SUPPORTING

DRAINAGE STUDY AND IMPROVEMENT

A PROJECT DESCRIPTION

Kampung Morten experiences localized flooding, worsened by inadequate drainage infrastructure and leading to water becoming stagnant and potential health risks. To enhance the current drainage situation, it is crucial to understand the existing flooding trends and drainage needs. Additionally, there is an opportunity to incorporate nature-based solutions.

To effectively manage stormwater and enhance sustainability in Kampung Morten, a comprehensive drainage study should be developed, followed by the implementation of necessary upgrades. The local authority should coordinate with relevant agencies, such as JPS, and potentially engage academics and technical experts. Also, by potentially integrating nature-based solutions, these improvements will not only help manage stormwater more efficiently but also yield significant public health benefits by preventing water stagnation.

B PROJECT DETAILS

Location	Kampung Morten
Shocks/stresses	Flood, inadequate infrastructure
Implementor	Majlis Bandaraya Melaka Bersejarah
Partners	○ State Government ○ Department of Drainage and Irrigation, Negeri Melaka (JPS)
Resilience capitals	Social, Physical, Natural

OUR PEOPLE

Empowering communities to lead resilient change

OUR PEOPLE – C1 CATALYST

COMMUNITY HEAT MONITORING

A PROJECT DESCRIPTION

There remains a lack of comprehensive data to understand environmental conditions in Kampung Morten. The 2024 CRMC survey identified certain concerns, including limited community knowledge of heat risks. This is to be addressed by engaging community members through educational sessions and gathering volunteers for a citizen science approach. With committed household participation, heat sensors were installed with support from Nanyang Technological University to accurately record indoor and outdoor temperature data in the community.

The monitoring project, which has been running since October 2024, involves community leaders, MBMB officials, and households working with researchers. Privacy remains critical, with sensors collecting only environmental data, which is synthesized into understandable visual reports shared with the community.

Early findings showing high indoor temperatures, have highlighted the need to protect households and improve thermal comfort. This data-driven approach has catalyzed strategies like cooling-paint applications, while empowering stakeholders to address heat challenges.

Looking forward, the aim is to expand monitoring to evaluate heat-related project implementations and build analytical capacity within local authorities. Transferring knowledge and practices to city officials will ensure the project's sustainability and enable future replication across other communities, strengthening the initiative's long-term impact through combining resident experiences with scientific data for informed planning.

FIGURE 28: Installation of Heat Sensor in one of the houses in Kampung Morten
Source: Urban SCALE, 2025

FIGURE 29: Heat Sensor Device
Source: Urban SCALE, 2025

COMMUNITY HEAT MONITORING (cont.)

B IMPLEMENTATION BARRIER

Gaining community trust is crucial for heat monitoring success. Despite educational efforts, some residents may hesitate to participate because of privacy concerns or uncertainty about benefits, requiring continuous engagement and demonstration of tangible value.

Long-term sustainability depends on effectively transferring technical knowledge to local stakeholders. Without building this capacity through training and mentorship, the initiative risks becoming a one-time effort rather than an enduring practice that continues informing community decisions and policy development after initial researcher involvement ends.

C PROJECT DETAILS

Location	Kampung Morten
Shocks/stresses	Heat, lack of heat knowledge
Implementor	Majlis Bandaraya Melaka Bersejarah
Partner	○ Nanyang Technology University (NTU)
Phases	Phase 1: Identification of potential collaborators among communities in Kampung Morten (Q2 2024) Phase 2: Installation of heat sensors indoors and outdoors (Q3 2024) Phase 3: Data collection and analysis (Q3 2024 to Q4 2025) Phase 4: Integration of heat monitoring with heat-related catalyst projects (Q3 2025 to 2026)
Resilience capitals	Human, social, financial

FIGURE 30: Outdoor heat sensor installed by Majlis Bandaraya Melaka Bersejarah and Nanyang Technological University
Source: Jabatan Perancang, Majlis Bandaraya Melaka Bersejarah, 2025

OUR PEOPLE – C2 CATALYST

COMMUNITY HEAT AWARENESS AND OUTREACH

A PROJECT DESCRIPTION

The 2024 CRMC survey revealed a concerning lack of heat risk knowledge in Kampung Morten, a heritage village with a high proportion of elderly residents. Our ongoing heat monitoring confirms consistently high indoor temperatures, creating urgent health risks for this vulnerable population.

With rising temperatures, there is an urgent need to equip households with practical knowledge and tools to protect themselves while respecting and preserving the kampung's unique cultural identity and heritage values.

The initiative will help translate heat data into relatable, everyday language through posters, workshops and community events, helping residents understand how rising heat impacts their health, daily lives and heritage environment. To ensure sustainability, local champions will be identified and engaged with through existing community associations like the Development and Coordination Committee. This approach embeds knowledge within established community structures, allowing information to continue flowing even as external support decreases.

Integrating heat monitoring data with community knowledge will create more effective, context-sensitive management strategies. Local authorities will gain valuable insights into specific needs, ensuring targeted interventions.

By creating a platform for ongoing dialogue between the community and officials, these initiatives could set a precedent for future partnerships on other environmental and social issues, leading to stronger policies that prioritize both heritage preservation and community health.

FIGURE 31: Heat Awareness Hand Fan
Source : *Urban SCALE, 2024*

COMMUNITY HEAT AWARENESS AND OUTREACH (cont.)

B IMPLEMENTATION BARRIER

Heritage protection regulations limit modifications to Kampung Morten's traditional houses, while financial constraints prevent families from investing in cooling solutions. Awareness materials being prepared must acknowledge these limitations and focus on practical actions residents can take within these constraints. The village's high proportion of elderly residents requires customized outreach, using visual aids and face-to-face discussions and involving trusted community figures. Many residents may not fully understand the seriousness of heat risks or may view them as merely uncomfortable rather than dangerous. Collaboration with health experts is essential to develop age-appropriate messaging connecting heat risks to familiar health concerns. Success depends on overcoming both physical constraints and perception challenges, focusing on solutions honoring the kampung's cultural significance while protecting resident well-being as climate conditions intensify.

C PROJECT DETAILS

Location	Kampung Morten
Shocks/stresses	Heat, lack of heat knowledge
Implementor	Majlis Bandaraya Melaka Bersejarah
Partners	○ Health Department, Negeri Melaka ○ Monash University, Malaysia ○ Nanyang Technology University
Phases	Phase 1: Identification of potential partners for the program (Q3 2025) Phase 2: Development awareness and outreach module and activities (Q3 2025) Phase 3: Programme execution (Q3 2025 to 2026)
Resilience capitals	Human, social, financial

FIGURE 32: Community engagement on heat awareness
Source : *Urban SCALE, 2024*

OUR PEOPLE – C3 PRIORITY

FLOODING EARLY-WARNING SYSTEM

A PROJECT DESCRIPTION

As a traditional and close-knit community, Kampung Morten faces unique challenges in dealing with climate-related risks such as heatwaves and flooding. Currently, responses to these risks are often reactive and rely on informal communication channels among the community. While this reflects strong community ties, it also highlights the need for a more structured and proactive approach. Strengthening the early-warning system by integrating it with a city-level MBMB Command Center would ensure the community receives timely, accurate information about potential hazards. This would significantly enhance community readiness and enable a more coordinated and effective response to future climate threats.

The project begins by examining existing warning systems, including both formal tools and informal responses. By engaging with residents and integrating with community structures like the Development and Coordination Committee, challenges can be understood and sustainable knowledge transfer systems established. This approach embeds warning mechanisms within established community associations, ensuring continuity as external support decreases. The goal combines improved technology with stronger community connections through institutionalized local protocols.

This project aims to make Kampung Morten's warning system more effective and coordinated. With clearer alerts, residents will respond more quickly to risks like floods or heatwaves. By involving the MBMB, staff and community members through existing organizational structures, the project will build shared responsibility, ensuring the system remains practical, trusted and maintained long after implementation.

FIGURE 33: Semarang's Disaster Preparedness Group conducting a simulation to test flood warning

B PROJECT DETAILS

Location	Kampung Morten
Shocks/stresses	Flood, limited capacity on disaster response
Implementor	Majlis Bandaraya Melaka Bersejarah
Partners	○ State Government ○ Department of Drainage and Irrigation, Negeri Melaka
Phases	Phase 1: Scoping, needs assessment and Feasibility study Phase 2: Procurement and installation Phase 3: Testing, training and simulation Phase 4: Launch and monitoring
Resilience capitals	Physical, social

FLOODING AWARENESS WORKSHOP

A PROJECT DESCRIPTION

As climate change drives more frequent flooding in Kampung Morten, residents and visitors face increasing risks. As both a heritage site and tourism destination with guesthouses and food vendors critical for livelihoods, the kampung faces unique challenges – from protecting cultural assets to ensuring visitor safety in a compact village where evacuation is difficult. Flood awareness and flood kits serve as vital components linked with the early-warning system to enhance community resilience.

Flood awareness educates residents and tourism operators about risks, warning signs and protective actions. This knowledge helps stakeholders recognize early indicators, giving time to safeguard guests, protect businesses and secure the heritage area without creating alarm that might harm tourism. Materials must address the kampung's dual identity as home and attraction. Flood kits provide essential supplies for households and visitor accommodation during emergencies.

Combining targeted awareness with designed kits enhances Kampung Morten's resilience. Implemented effectively, stakeholders can make informed decisions during emergencies while maintaining the kampung's welcoming atmosphere. This preparation enables self-sufficiency when narrow streets limit emergency access, protecting both cultural heritage and visitor experience that define this neighborhood.

FIGURE 34: FIGURE 24: Example of flood survival kit
Source: IMAM Response & Relief Team – IMARET, 2019

B PROJECT DETAILS

Location	Kampung Morten
Shocks/stresses	Flood, limited capacity on disaster response, local identity loss
Implementor	Majlis Bandaraya Melaka Bersejarah
Partners	○ State Government ○ Department of Drainage and Irrigation, Negeri Melaka ○ MERCY Malaysia
Phases	Phase 1: Identificaiton of potential partners for the program Phase 2: Development awareness and outreach module and activities Phase 3: Programme execution
Resilience capitals	Human, social, financial

OUR PEOPLE – C5 SUPPORTING

COMMUNITY WASTE MANAGEMENT

A PROJECT DESCRIPTION

Kampung Morten's riverfront location increases flooding vulnerability, while its heritage tourism status creates unique waste challenges. Tourism activities support livelihoods but generate additional waste. Poorly managed waste blocks drains and waterways, increasing flood risks and diminishing the kampung's appeal as a cultural attraction.

There is an opportunity to improve waste management in Kampung Morten, for instance by installing exploring smart bins or other mechanisms to reduce waste overflow and flood-causing blockages. By implementing systems that serve both resident needs and tourism patterns, the community can protect ecosystems, reduce flooding and preserve its cultural heritage.

B PROJECT DETAILS

Location	Kampung Morten
Shocks/stresses	Flooding, limited waste management
Implementor	Majlis Bandaraya Melaka Bersejarah
Partners	○ State government ○ Food vendors and guesthouses ○ Resident association
Resilience capitals	Human, social, natural

OUR PEOPLE – C6 SUPPORTING

FLOOD INSURANCE

A PROJECT DESCRIPTION

The recent CRMC survey revealed that very few residents in Kampung Morten currently have flood insurance coverage, highlighting a significant gap in disaster preparedness. Before suggesting insurance solutions, one must first understand the community's capacity, financial constraint, and interest levels regarding insurance products. This preliminary assessment is crucial to identify appropriate options that meet the needs of residents, their vehicles and small businesses such as food vendors and guesthouses that both support tourism in this riverside heritage village.

Kampung Morten's riverside location increases flood vulnerability. While insurance could provide financial protection for homes, vehicles, and business equipment, any initiative must be tailored to this unique community. Traditional homes and small enterprises have specific considerations that standard insurance products may not adequately address.

B PROJECT DETAILS

Location	Kampung Morten
Shocks/stresses	Flooding, limited financial literacy
Implementor	Majlis Bandaraya Melaka Bersejarah
Partners	○ State government ○ Private sector
Resilience capitals	Human, financial

OUR PEOPLE – C7 SUPPORTING

AGE FRIENDLY COOLING CENTRE

A PROJECT DESCRIPTION

An age-friendly cooling center in Kampung Morten, utilizing the Japerun Hall, would protect elderly residents from rising heat caused by climate change. This central, accessible space is ideal for transformation into a safe, cool refuge for seniors during hot days. Working through the Development and Coordination Committee would ensure local management and sustainability. The space could explore solar power installation to maintain cooling during power disruptions while promoting renewable energy.

The anticipated outcomes include improved health and reduced heat-related illnesses among vulnerable seniors. The center would promote social interaction, reduce isolation and provide emergency shelter. Overall, this initiative will enhance community resilience, support healthy aging and create a better-prepared neighborhood environment in Kampung Morten.

B PROJECT DETAILS

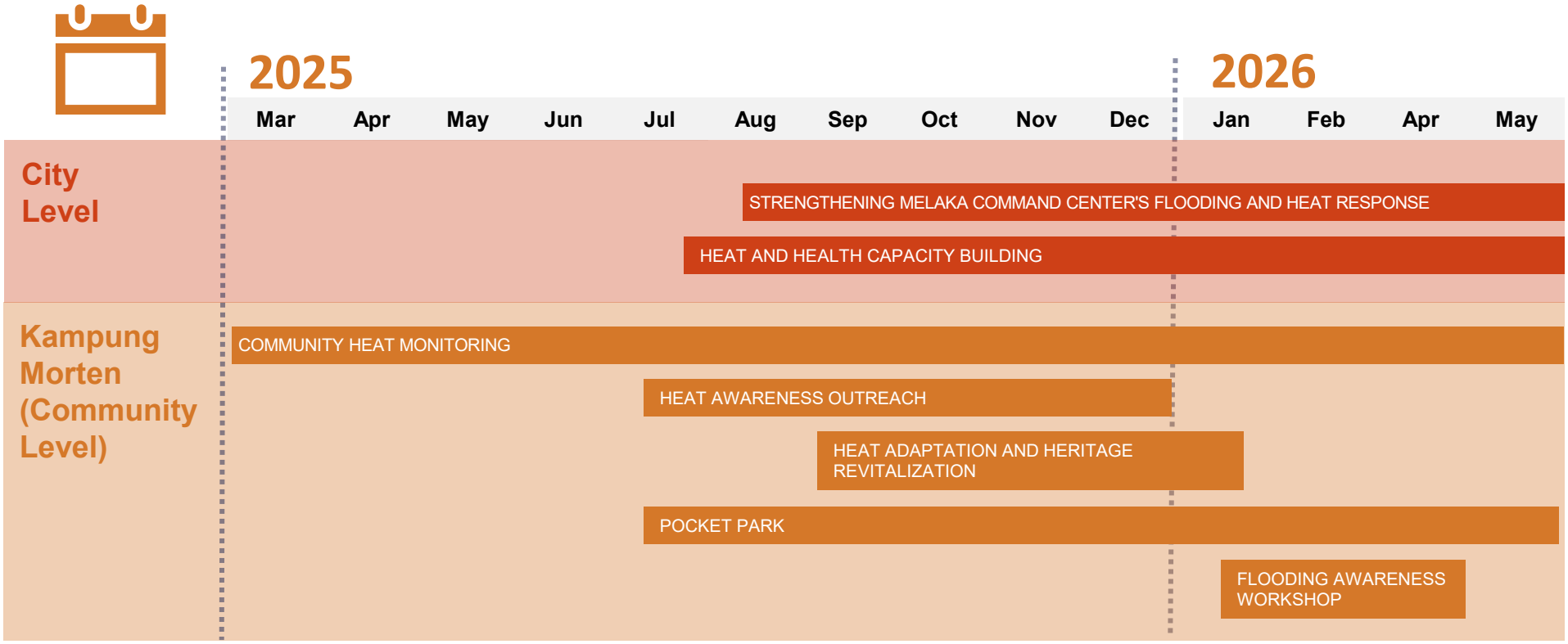
Location	Kampung Morten
Shocks/stresses	Heat, aging community, decreased social cohesion
Implementor	Majlis Bandaraya Melaka Bersejarah
Partners	○ State government (JAPERUN) ○ Local communities ○ Corporations
Resilience capitals	Human, social, natural

FIGURE 35: Adults spending time at a cooling center during summer
Source: Center of American Progress, 2024

FROM ACTION PLANNING TO IMPLEMENTATION

The approach in this CAP integrates city-level interventions with community-focused projects in Kampung Morten.

Within the next year (June 2025 to June 2026), we will see the launch of catalyst projects and the initial phases of priority projects utilizing Resilient Community Impact Funds and existing resources, demonstrating immediate progress and building momentum, as can be seen in the below projects' timeline.



GOING FORWARD AND CALL TO ACTIONS

In Kampung Morten, the R4C program has unpacked the interconnected challenges and mapped opportunities in the communities. Through this CAP, the program aimed to promote the Kampung Morten vision of becoming a “resilient heritage community that balances sustainability with cultural preservation.”

Beyond initial efforts already identified within catalyst projects, further collaborative partnerships are needed. For sustainable impact, we need diverse stakeholders to contribute expertise, additional funding opportunities for planned projects awaiting resources, and continued community engagement to ensure solutions effectively address local needs.

We invite stakeholders to join in to transform Kampung Morten into a model of urban resilience, where residents feel secure during floods, connected to city services, and protected from heat stress. The integrated solutions presented above demonstrate how a community can become safer, better connected and more climate-resilient, serving as examples for other communities facing similar urban challenges.

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With gratitude to the community of Kampung Morten, whose stories, ideas and collaboration shaped this plan.