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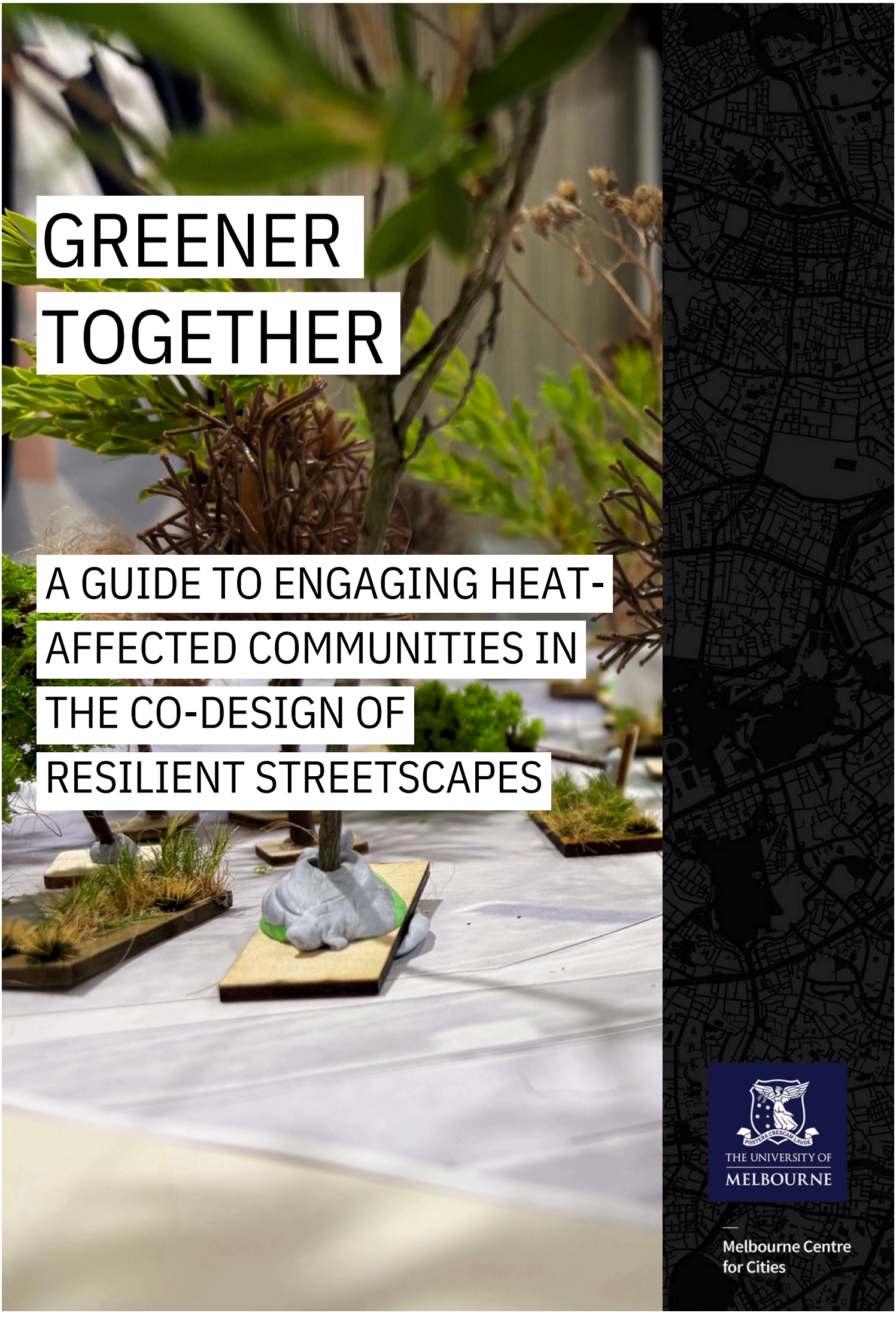

GREENER TOGETHER

A GUIDE TO ENGAGING HEAT-AFFECTED COMMUNITIES IN THE CO-DESIGN OF RESILIENT STREETSCAPES

THE UNIVERSITY OF MELBOURNE

Melbourne Centre for Cities

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The Re-imagining Streets with Green Infrastructure project is an interdisciplinary team spanning urban greening, landscape architecture, engineering and social sciences from the University of Melbourne, in collaboration with partners from Mosaic Insights and RMIT University. The team includes Professor Sarah Bell, Dr. Kylie Soanes, Dr. Marie Dade, Dr. Nano Langenheim, Dr. Kerry Nice, Dr. Dom Blackham, Gavin He Tian Chew, and Dr. Thami Croeser. The project is funded by Hort Innovation and co-investment from the Australian Government, the University of Melbourne and the Victorian Government. The project 'Re-imagining streets with green infrastructure' (GC22011) is a strategic levy investment through the Green Cities Fund, under the Hort Frontiers Strategic Partnerships Initiative. Hort Innovation is the grower-owned, not-for-profit research and development corporation for Australian horticulture. This project has human research ethics approval from The University of Melbourne Project ID #30838.

Cover image: Kylie Soanes

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A GUIDE TO USING CO-DESIGN TO ENGAGE HEAT-AFFECT COMMUNITIES TO RADICALLY CHANGE STREETS FOR RISK REDUCTION AND LIVABILITY.

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CO-DESIGNING STREETS WITH GREEN INFRASTRUCTURE

The critical role of streetscapes for urban greening is increasingly recognised. Comprising up to 90% of public open space, street greening initiatives have the potential to mitigate urban heat islands, provide communities with daily access to greenspace, and improve liveability. However, efforts to retrofit greening, particularly canopy trees, to streets face a range of complex social and technical challenges. Streets are often highly constrained, supporting not just traffic and pedestrians, but also critical infrastructure and services above and below ground. There may be limited soil volume and opportunities for passive irrigation to support healthy tree growth. The appearance and maintenance of streetscapes is governed by safety regulations, standard practices, and the social norms of multiple government, industry and community stakeholders. Given this complexity, many greening retrofits fall short or fail to break ground.

Co-design is a promising tool to enable effective, ambitious street greening retrofits. It has two potential benefits: 1) the resulting streets are more socially acceptable because they are designed by the community and therefore fit for purpose, 2) it identifies creative solutions to technical challenges that would otherwise have not been discovered using traditional approaches and sources of knowledge. By bringing together community, technical experts, and other stakeholders to explicitly tackle the unique local challenges, co-design supports the crafting of street retrofits that offer creative, bespoke solutions.

Effective co-design therefore requires engaging all of these communities and supporting them to contribute to a common goal.

This document provides a guide to engaging heat-affected communities in the co-design of deep greening retrofits to residential streets. Our approach is based on the co-designing infrastructures framework which supports the facilitation team to:

- develop a thorough understanding of the site, community, and stakeholder managers
- build a shared vision for the project
- input technical data to inform decisions
- explore trade-offs, benefits, and costs
- create a scaled, measured, retrofit plan, co-designed by the local community.

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We applied the co-designing infrastructures approach to three streets within Melbourne, which allowed us to explore and test the approach and adapt it to the context of deep greening retrofits for streets and heat-affected communities. Here we share some guiding principles to support future projects. A detailed description of the activities and tools deployed in the workshops can be found in the companion document "Co-designing streets with green infrastructure: a toolkit".

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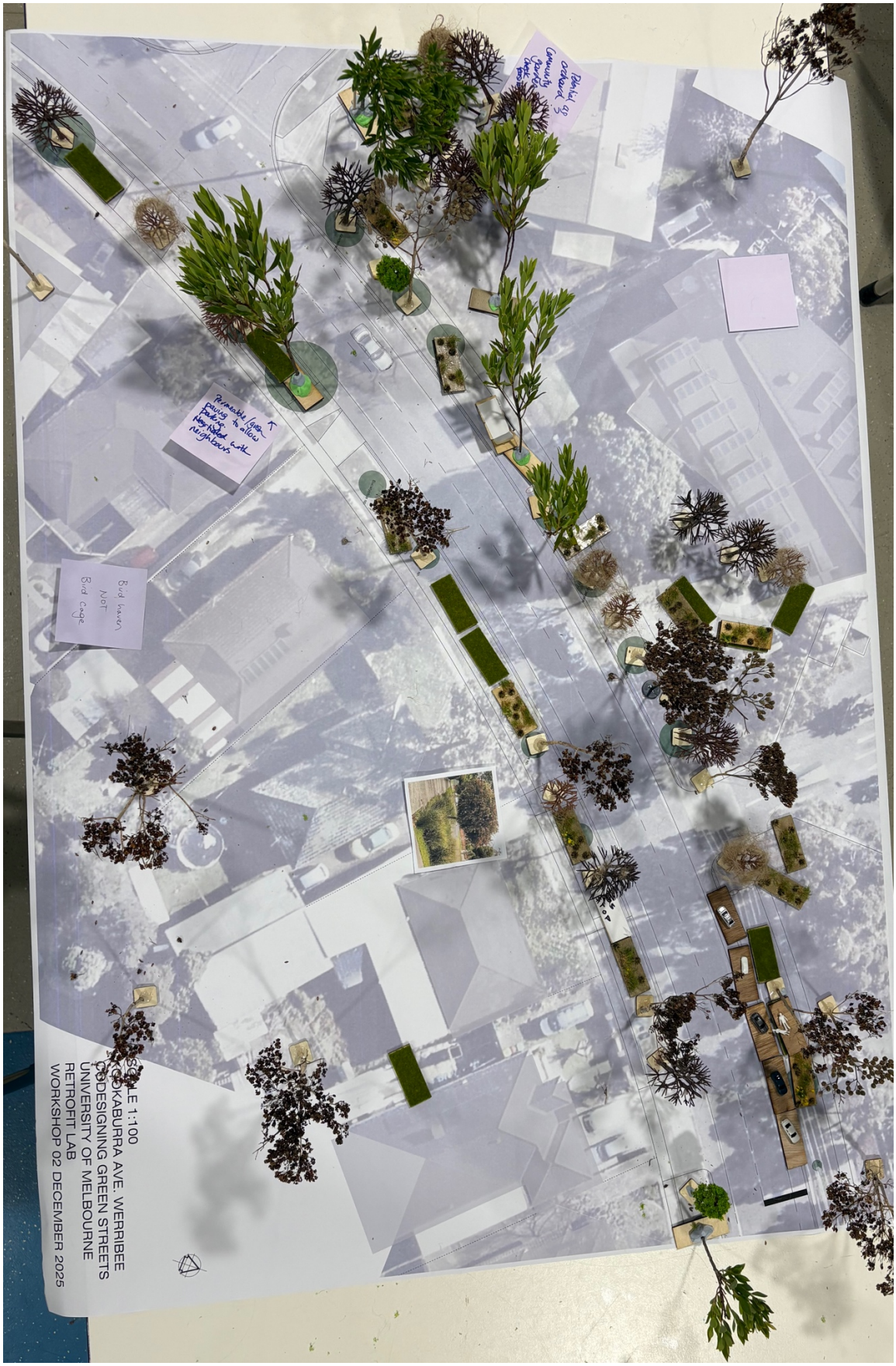
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DESIGNING GREEN STREETS
UNIVERSITY OF MELBOURNE
RETROFIT LAB
WORKSHOP 02 DECEMBER 2025

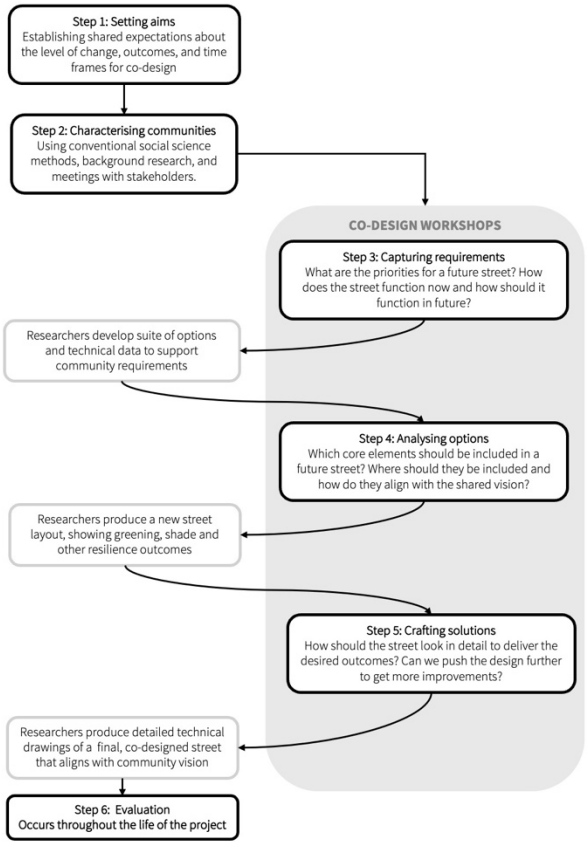
THE SIX STEPS OF CO-DESIGN

The co-designing infrastructures process consists of six steps which we have modified to suit the context of street greening retrofits.

1. **Setting aims** with community partners
2. **Characterising communities** of each street
3. **Capturing requirements**, identifying the community's needs for their street
4. **Analysing options** for a street retrofit
5. **Crafting solutions** to barriers or constraints
6. **Evaluation,** which occurs throughout the life of the project

These steps can be implemented in multiple ways, however are typically based on a series of co-design workshops (steps 3, 4, and 5) supported by background research, stakeholder meetings, technical landscape designs, and social science methods. Workshop participants include residents and other community members familiar with the street of interest, local government and other authorities, technical experts from a range of fields (e.g. water sensitive urban design, urban heat, resilience, ecology, landscape architecture, engineering, and social science).

This process (opposite) has been adapted from "Co-designing Infrastructures: Community collaboration for liveable cities", Bell et al, 2023.



OUR TEST STREETS

We hosted co-design workshops in three streets: Breese Street, Brunswick; Alfrieda Street, St Albans, and; Kookaburra Avenue, Werribee. The streets varied in site context, the level of community engagement, planning approach by land manager stakeholders, and socio-demographic contexts.

Street snapshots

Breese Street

Breese Street, Brunswick,is set in a light industrial turned residential neighbourhood. The narrow road corridor is almost entirely paved, with little existing green infrastructure. Formal on-street parking is present along the stretch. At the time of our workshops, Breese Street had been identified as a priority street for green infrastructure by the local municipal council, City of Merribek, and was subject to the development of a masterplan. The local community were highly engaged in advocating for green infrastructure in their street.

Three workshops were attended by approximately 27 participants.

Alfrieda Street

Alfrieda Street, St Albans, is a residential suburban street in Melbourne's north-west. The street is includes wide traffic lanes, expansive green road verges, and no formal carparking. Given the street's role as a connector between retail and civic centres, Alfrieda Street had been the subject of a recent masterplan by Brimbank City Council with a view to support active transport. The local community were highly vulnerable to urban heat effects, with a high proportion of residents speaking languages other than English.

Three workshops were attended by approximately 8 participants.

Kookaburra Avenue

Kookaburra Avenue, is a suburban residential street in Werribee, Melbourne's outer-west. The segment of focus for our project included important community and civic centres, such as the Wyndham Park Community Centre, community garden and shed, health services, local primary schools and an early childhood education centre. The segment also included formal bike lanes and bus stops. The surrounding neighbourhood includes a high proportion of former and current social housing. The co-design was run in partnership with staff from the community centre.

Two workshops were attended by approximately sixteen participants.

GUIDING PRINCIPLES

Our research constituted a proof-of-concept trial of the co-designing infrastructures method to the context of streetscape retrofits in heat-affected communities. Through eight workshops across three different community groups, we were able to trial multiple tools and approaches, explore new ways of doing things, and identify lessons that can be applied and adapted to future projects.

At each of the three streets, the co-design process resulted in street designs that thoughtfully accommodated local needs, navigated complex challenges to greening retrofits, and improved climate resilience. The combination of local knowledge and technical expertise allowed new avenues to be explored. The solutions devised during this process were often novel, not "off the shelf" techniques, and yet were technically feasible and strongly aligned with local priorities. Importantly, the workshops opened dialogue among residents and their local land managers. Through this shared language, participants were able to develop a common ground and build relationships that could be drawn upon in future. The results from each of the workshops are reported elsewhere.

Here, we present guiding principles for future projects wishing to engage heat-affected communities in meaningful re-design of streets to improve green infrastructure and climate resilience, more engaged and empowered communities. Our findings span four themes:

1. On engaging communities
2. On sharing knowledge
3. On facilitation
4. On incorporating technical knowledge

ON ENGAGING COMMUNITIES

BUILD RAPPORT AND ESTABLISH TRUST

The co-design process brings together community members, land manager stakeholders, and technical experts to address pressing environmental and social challenges. This is a task that requires trust – trust that the process is genuine, that ideas will be heard and respected, and that the end result reflects a shared vision for a greener, more resilient, more liveable street. The approaches and time taken to build trusted relationships will vary from community to community. We adopted a range of methods including:

- Meeting with council and community teams prior to the co-design workshops to set shared objectives and expectations, identify and address concerns. This allowed us to establish a way of working together before entering the intense workshop environment.
- Regularly reflecting back to participants to ensure priorities and needs had been interpreted correctly
- Being approachable and transparent. From simple things like ensuring everyone had name tags, to sharing the limitations of our research, we aimed to create an environment where people felt safe and supported, both to contribute and to question.
- Maintaining open lines of communication that allowed community members, technical experts, or land manager stakeholders to raise issues or reflections with the workshop facilitator. The facilitator was a consistent, primary point of contact throughout the process.

CREATE A NEUTRAL ‘THIRD SPACE’

Street greening retrofits can unearth tensions between the desires of local community desires and strategic planning objectives of local council. Often, this manifests in an adversarial relationship between community participants and the land manager stakeholders. The role of the facilitation team as ‘outsiders’ with no vested interest in the outcome allowed us to establish the workshops as a neutral third space and reinforce the idea that we were building something new, together. It set the tone that all options and ideas were up for discussion and exploration – the co-design was genuine, and the final outcome was not a foregone conclusion. We found this third space helped set any pre-existing tensions to one side and enable productive conversations. This can be particularly useful amidst pre-existing community advocacy, council proposals, or tension regarding a redesign of the street.

REMOVE BARRIERS TO PARTICIPATION

Time and accessibility are major barriers to participation in the co-design process, particularly in communities that are already under pressure. The schedule and location of workshops should reflect the needs of the community to be engaged. In one street, we consulted with the participant group prior to setting the workshop dates, selecting times that would enable most to attend. In others, we took the advice of local council or community representatives about the times that would work best Selecting a venue that is on the target street or within the local neighbourhood further enhances participation, reducing the travel burden for residents and locals. Ensuring that any venue is accessible for people with disabilities or reduced mobility, provides facilities for catering and discussion, and enables families with young children to attend, can also help meet the needs of your target community. Finally, it is important to ensure that language or literacy barriers do not limit participation in culturally and linguistically diverse communities. This may require the use of an interpreter, adjusted workshop materials, or reducing the reliance on written activities to ensure that participants can contribute meaningfully. We did not have access to an interpreter during our project, and would have benefited from a multilingual approach in several of the target communities.

Recruitment methods can also inadvertently create barriers to participation if not targeted to the local community. Simple things like the use of technology, the forums in which recruitment material is placed, or the style of material, can have an impact. For example, some community members reported that the QR codes displayed on our leaflets were off-putting. The requirement for online pre-registration, while appropriate and useful for one of our streets, created significant barriers for another community, where people either did not have an email address or were wary of providing their personal information. In these cases, letter box drops, advertisement through trusted community advocates, and inviting ‘walk-ins’ were more effective. The recruitment approach should be carefully considered to best align with the community.

BRINGING THE EFFECTS OF URBAN HEAT AND STREET DESIGN TO THE FORE

Workshops can be designed to reinforce the underlying goals of the project and draw attention to the key issues affecting the site. For example, we hosted our workshops during warmer months, when the effect of the urban heat island would be most apparent. Several workshop activities focused on directly experiencing the site, walking the street, mapping experiences, and providing an opportunity to see the street through someone else’s eyes. This is particularly important where the participants do not have lived experience of the street itself, and can help ensure the final design responds to the way the street is used by residents and local community members.

ON SHARING KNOWLEDGE

GROUNDING THE PARTICIPANTS IN PLACE

Ideally the participant group consists of people familiar with characteristics and culture of the street to be re-designed. This avoids a situation in which outside voices dictate change that may not be fit for purpose or respond to the needs of the local community. Where possible, we targeted our recruitment to people who lived or worked on the street, used it as part of their regular commute, or had other lived experience of the street. However, there are instances where this may not be feasible and we found several ways of grounding participants in place and supporting them to reflect on the unique context of each street.

Where the venue is close to the street, group walking tours provide opportunities to experience the street firsthand. Participants were encouraged to look closely at the details, rather than simply moving through the space, and to share their observations with others. Technical experts also offered insights into hidden elements, such as drainage, powerlines, wildlife habitats, or shade. Even participants who experience the street daily benefit from the opportunity to view their street with fresh eyes. Reflection activities can help them notice aspects they hadn't noticed before, or experience the street through another's point of view. This helped establish a coherent community experience.

Pre-recorded videos can also enable people to experience the street virtually, when direct access or walking longer distances is not safe, accessible, or feasible. For one street, we recorded footage using a go-pro and a bicycle, travelling slowly up and down the street on a sunny day. Projecting the video on a large screen enabled the group to view the street together in a semi-immersive experience. Guiding questions such as "What are some things that you noticed?", "What would it be like to live on this street?', "How would you feel walking here?", prompted a discussion and supported the exploration of other perspectives.

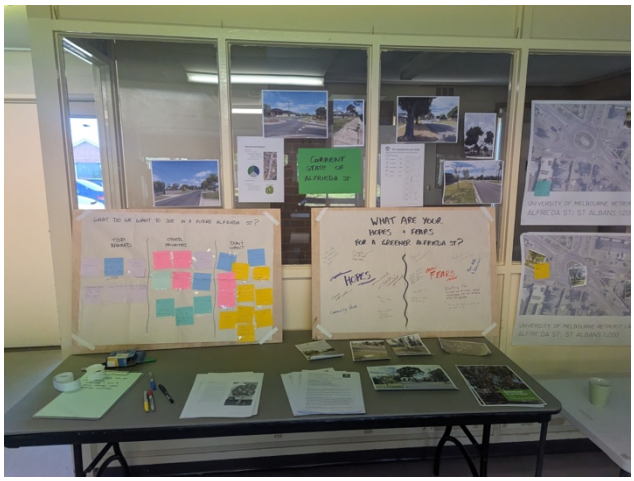
Finally, large print out images and maps can support participants exploration of place and provide focal points during workshop discussions. Referring back to the street context helps ensure that decision reflect the local needs.

PROVIDE DIVERSE OPPORTUNITIES TO CONTRIBUTE

Varying the way in which participants contributed to the workshop supports the involvement of people from a diverse range of experiences, skills and backgrounds.

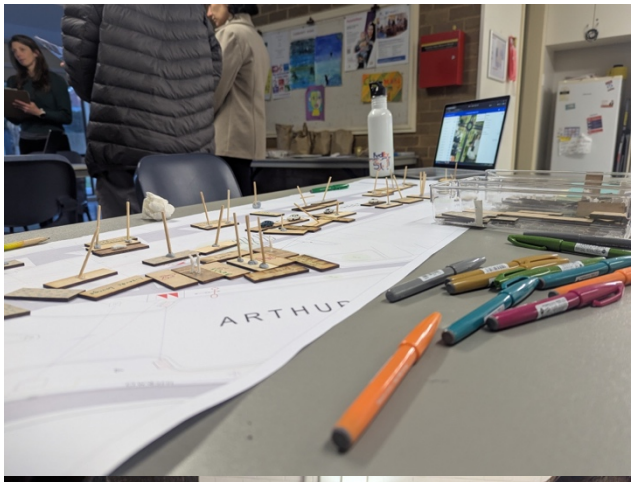
Multiple ways of eliciting priorities and goals can prompt participants to consider different elements, allow the design response to reflect a broader more nuanced set of values. For example, activities can include a variety of core components:

- Written and verbal contributions
- Group consensus and individual responses
- Anonymous, non-verbal participation (e.g. dot voting)
- Supporting multiple roles within a task (e.g. the scribe, the organiser, the crafter)
- Pre-surveys and homework (contributions outside of the workshop environment)



USE INFORMALITY TO ENCOURAGE EXPLORATION AND PLAY

Redesigning a street can feel like a monumental task and a big responsibility. We wanted to avoid decision paralysis, particularly when asking people to contribute ideas in a group setting, where the fear of doing something 'incorrectly' or imperfectly might be a barrier. Our activities were deliberately crafted to invite play and modification. For example, the use of movable scaled tiles to represent different streetscape elements allowed people to add ideas to the board without making a permanent change, and encouraged participants to explore different layouts and scenarios. In some cases, the facilitation team made the first mark on the paper to overcome the invisible repellent of the 'blank page'. Where three-dimensional physical models were used to illustrate designs, we avoided having a perfect model built before the participants arrived. Instead, facilitators built the base model in front of the participants while explaining the activity, indirectly showing how the elements could be moved and placed, deliberately making adjustments or modifications, establishing a culture of play and exploration.



ON FACILITATION

AGILITY AND RESPONSIVENESS

Urban streetscapes are physically, socially and politically busy spaces. The nature of co-design means a wide variety of voices and perspectives are likely to attend. Our workshops were attended by community members with a range of prior knowledge, lived experiences, familiarity with technical elements of streetscapes, and motivations for contributing. Heat-affected neighbourhoods often also coincide with areas of socio-economic disadvantage or culturally and linguistically diverse communities. The co-design tools should reflect these needs.

The second step of co-design, 'characterising communities', enables the facilitation team to understand local needs prior to the workshop. However, we also found the need to be highly flexible and able to adjust the planned activities in the moment in order to meet the needs of the community members that attended on the day. This looked like adjusting structured activities to become more informal, replacing those that required writing to instead invite verbal contributions, or replacing quantitative surveys with probing conversations over cake and tea. Sticking to the intended purpose of each activity (e.g. shared vision, exploring concerns, identifying preferences) rather than the prescribed format, allowed us to achieve the desired outcomes without introducing the barriers to participation outlined above.

This also helped to support the exploration of other perspectives and encourage divers contributions. For example, activities might be adjusted or supplemented to channel the energies of dominant voices, or provide new opportunities for quieter voices to contribute in a manner that made them the most comfortable.

CREATE OPPORTUNITIES TO ENGAGE WITH COMPLEXITY

The co-designing infrastructures approach explicitly invites non-experts to engage with the complexity of streetscape redesign and urban greening. We worked to ensure our co-design process necessarily grappled with the spatial and infrastructure constraints of streets and would be technically feasible to implement. The changes were practical, physically fit within the space, while still enabling the street to function as a street. This involved identifying the location of hidden infrastructure (e.g. underground and overhead services), working from measured, spatially accurate design drawings and scaled interventions.

Trade-offs were considered explicitly. The use of physical tiles or cards to represent different actions or uses of a single space allowed participants to see when a decision to opt for one thing meant they lost another. This forced discussion about what was most important, often going back to the shared priorities and values identified early in the co-design process.

Finally, don't be afraid to let disagreements or differences of opinion be heard, provided the discussion remains respectful. Probing questions can help uncover the 'why' of a disagreement, or identify where different opinions are based on different understandings of the topic that can be redressed (e.g. "This seems like an important thing for us to explore as a group. Let's talk about it"). Importantly, the co-design process invites the correction of myths and misconceptions that might otherwise hinder a good outcome for co-design (e.g. I'm hearing concerns about tree roots. Let's check in with our tree expert and get some more information").


ARTHUR
ALFRED

ON INTEGRATING TECHNICAL KNOWLEDGE

LEVEL THE PLAYING FIELD

A key feature of the co-designing infrastructures process is the integration of technical knowledge alongside local and community perspectives. The goal is not to allow top-down expertise to override other sources of knowledge, but to make this information accessible to promote informed discussion and decision making. To reduce the potential for community participants to defer to authority of technical experts, several steps can help:

- Structure the room to create a level playing field, for example, by seating everyone around a table, rather than a lecture-style presentation.
- Create opportunities for information to be shared in conversation and dialogue.
- Display materials on a table that invites casual perusal or self-guided exploration of a topic, rather than assign reading lists.

RELATING TO LOCAL CONTEXT AND PRIORITIES

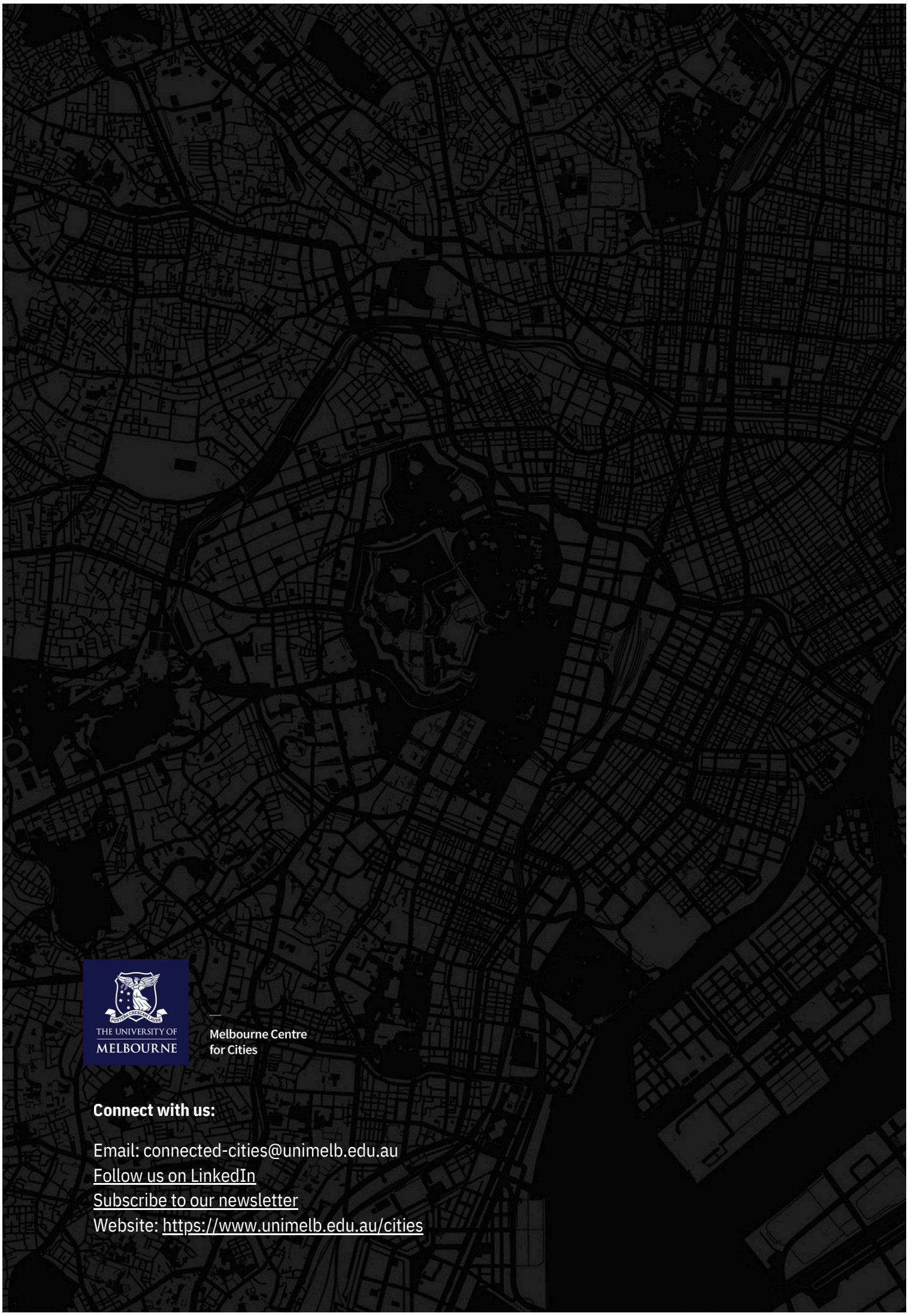
A wealth of technical information available can be overwhelming, particularly when in a co-design context where many participants may be unfamiliar with the more technical elements of streets, urban forestry, water sensitive urban design, or urban heat. Presenting this information to participants through the lens of their local street and identified priorities helped support understanding. This can be done by:

- Presenting information specific to the street to be redesigned, for example, local measures of heat, stormwater flowers, and shade.
- Using conversations and dialogue to provide advanced technical information in response to community questions and interests.
- Setting up technical expert ‘stalls’ and allowing participants to visit topics that interest them most and anchoring broader theoretical concepts to specific local examples.
- Collecting data from the street to provide specific, local, real-time information.

The more conversational approach to knowledge sharing also served to strengthen rapport between the technical experts and the participants, and give the participants confidence to explore new designs.

THE POTENTIAL OF DIGITAL TOOLS

Digital tools can support the visualisation and understanding of the impacts of future street designs on shade, heat, and stormwater run-off. By putting the consequences of designs into context, they can enable participants to engage with the real-world implications of their choices. Tools that translate technical terms into accessible, meaningful statistics are particularly helpful, for example, stating how much cooler the air would feel if additional trees were added, or how the frequency of flash flooding might be reduced. Some tools support participants to independently explore scenarios in real time, by editing designs on a spatially explicit map. However, we found this difficult to align with group work in a co-design setting, and it often required a high degree of technical knowledge to complete. The potential of digital tools is promising, however further adaptation is required to ensure they do not introduce barriers to participation and the development of a cohesive, shared vision.



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