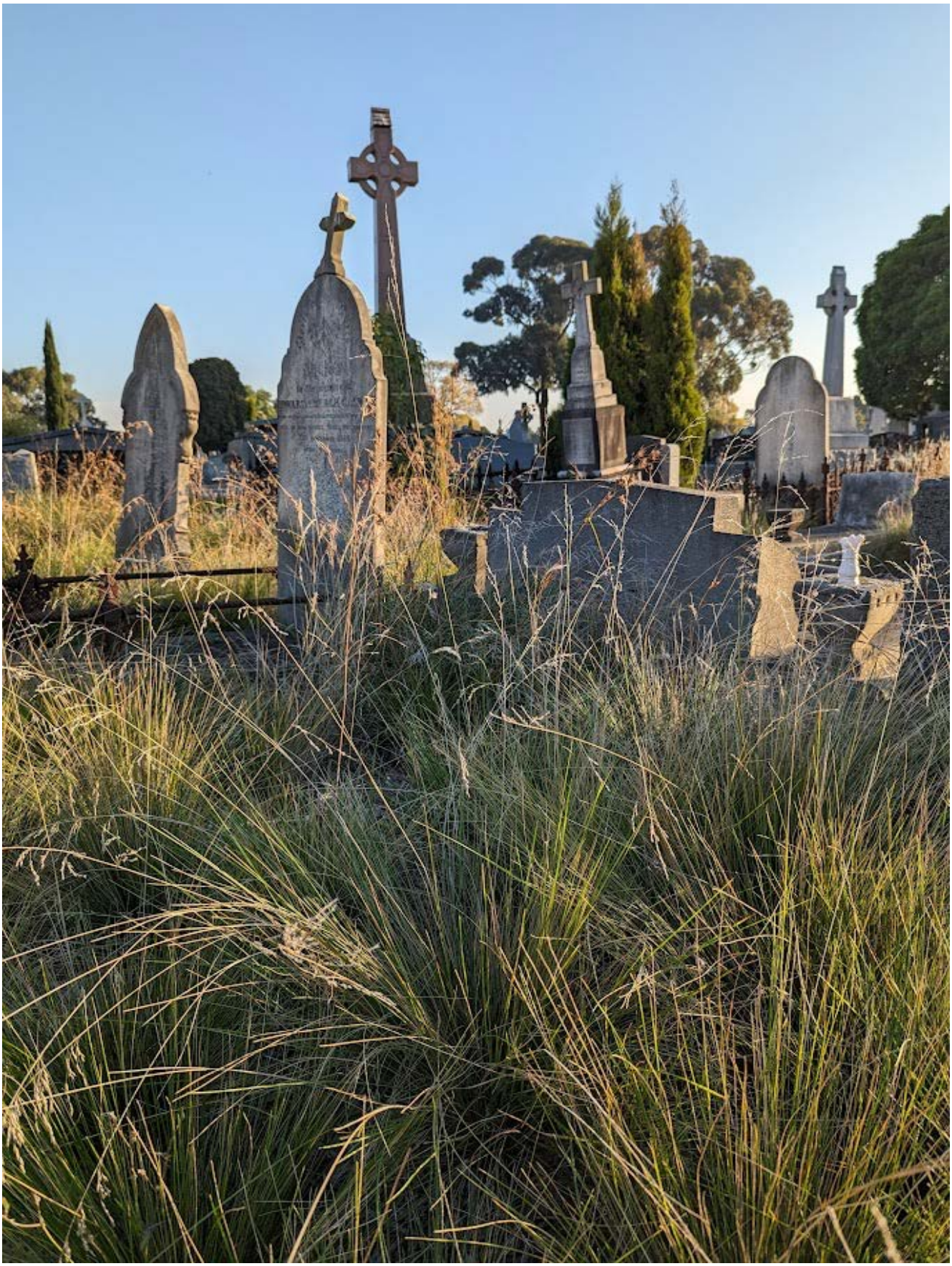

Native Australian grasses planted as part of Project Cultivate in the Melbourne General Cemetery (image by author, May 2024).

LANDSCAPE
REVIEW

The future of a cemetery in a warming climate

WENDY WALLS

This paper utilises the complex physical and cultural landscape of an inner urban cemetery in Melbourne to position microclimate materiality as a crucial contemporary design framework. Beginning with key concepts from design literature on the design potentials of heat, air and atmosphere, this theory-led framing suggests that small-scale fluctuations in temperature over time can offer insight into spatial and temporal diversity as qualities that can be leveraged through design. This position is further explored in the specific social and environmental context of the Melbourne General Cemetery. This case illustrates the relevance of microclimate materiality for landscape design in navigating urban pressures in our time of climate change – especially in complex sites where cultural, social and environmental values overlap.

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Introduction

The Melbourne General Cemetery, sited to the north of the Melbourne central business district, is a historically important and very large open space within central Melbourne. Although originally designed as a garden cemetery following nineteenth-century European design principles, over time the cemetery has filled with graves, transforming from open parkland as in its original vision to an intensive, multilayered and complex urban landscape.

The cemetery is now at a critical juncture as the site can no longer take new in-ground burials, which have been its primary source of income, resulting in a major impact on the cemetery's operating and maintenance models. Added to these economic challenges are the pressures of future planning and the value of large open spaces to urban communities in the context of climate change.

Melbourne is predicted to become hotter and drier, factors that also influence the quality of urban landscapes. Anticipating that this will lead to combined pressures related to funding, maintenance and future planning, the cemetery's horticulture team has trialled an innovative native grassland planting strategy called Project Cultivate. While this new planting strategy has been successful, local community groups who use the cemetery recreationally have agitated for an even more substantial site redesign towards addressing climate threats like urban heat.

This scenario involving a culturally valuable site with issues related to its maintenance, costs and community pressure in a warming climate exhibits a compelling, provocative and fundamentally difficult design challenge that is illustrative of the issues facing many urban cemeteries worldwide. In the Australian context, the example further highlights the need for conceptual frameworks and exploratory methods that can enable designers to address warming urban landscapes that are socially complex.

This paper proposes a design framing based on microclimatic materiality to describe and discuss the distinctive atmospheric and landscape qualities of the cemetery. The framing is intended to highlight the spatial and temporal diversity of the microclimate as a material condition, and as a way of viewing and responding to complex landscapes like the cemetery.

The paper is presented in two parts. The first presents recent literature on urban cemetery redesign and introduces the framing of microclimate materiality for navigating these kinds of intricate spaces. Part two gives a more detailed description of the Melbourne General Cemetery, its background, heritage, current condition, community involvement

KEY WORDS
design, material speculation, microclimate, landscape architecture, planting design

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and recent Project Cultivate. The site is an important example of where diverse landscape qualities and spatial influences create conflicting agendas, which impact on the potential for landscape design in a warming climate.

Part one: Design challenges and microclimatic opportunities

Cemeteries, while often meticulously designed in the first instance, are traditionally viewed as single-programme spaces with a primary design strategy that is assumed to be kept indefinitely. Further, governance and policy on cemetery sites are often decades old, reflecting the priorities and concerns of previous urban agendas but also limiting the options for introducing new design strategies into cemetery spaces. More so, until relatively recently, it has been rare for the maintenance plans or redesign of urban cemeteries to be included in the work of urban designers and planners at all (Bennett and Davies, 2015).

However, as cities come under the pressures of a warming climate, population growth and built density, cemeteries and their often-large open spaces are increasingly drawing attention for their potential to cater to new uses and multiple programmes. Whereas in the past, cemeteries have been perceived as separate from other social, community or environmental uses, they are increasingly identified as usable spatial urban resources. This is reflected in the growing body of global research on how older cemetery spaces can be redesigned and planned to address greater social and environmental concerns. For example, studies have considered the need for more community engagement and placemaking in cemeteries (Bachelor, 2020; Bennett and Davies, 2015; Grabalov and Nordh, 2022), or how cemeteries can have a role as ecological enclaves where the relative isolation of a site creates refuge for urban plants and animals (Anna and Ewa, 2020; McClymont and Sinnett, 2021). Much of this research engages with design strategies, such as succession planning, mixed-use design and transformative maintenance, that work towards a diversified programme and varied spatial uses.

However, ideas for doing more with cemetery sites also highlight some obvious tensions, such as how cross-programmed activities might conflict with spaces of mourning, traditions and perceptions of respect. For example, many cemeteries are physically divided by religion or cultural practices that may no longer reflect emerging community demographics or interests. The Melbourne General Cemetery, which part two will explore in more detail, was originally laid out in discrete religious denominations primarily indicating the customs of European immigrants. Over time, with new migration patterns and changing burial practices, this original layout and new burials have become intermingled. Yet, despite the unique new montage of stories, people and influences, the history and heritage of the site are still not fully representative of the current and growing community.

The inclusion and celebration of some buried in the cemetery, and the absence and exclusion of others, are reminders of the heavy influence of social norms, colonialism and wealth in countries like Australia. As historian Robert O'Shea (2011) writes:

> Despite its inclusive name and ecumenical foundation as a collaboration between various Christian denominations and the state, the Melbourne General Cemetery has consistently functioned as an exclusionary space … from the creation of the cemetery as the first burial ground in Melbourne with no allocated space for Indigenous burials, to the present, where interments are limited to expensive mausoleums. (p 82)

Although the size, environment and semi-public nature of cemeteries may appear to be a quick solution to offering more park-like environments in cities, these are still complex socially and culturally coded spaces. In addition to the importance of history and memorialisation are new emerging and critical questions about changing community attitudes (Grabalov and Nordh, 2022; Nordh et al, 2023; Rae, 2021). The premise of transforming cemeteries to become more diverse in their use and to enable multiple communities of people, plants and animals alongside existing traditions of remembrance

is not about just adding more to these sites, but rather is concerned with how to negotiate with spatial and social diversity (Greene and Walls, 2023; Hooper, 2020; Klingemann, 2022; Straka et al, 2022).

It may not be viable to retain cemetery landscapes for single programmes within the pressures of the contemporary urban environment. Yet introducing even more priorities, like environmental performance or social activation, only adds to the challenge of navigating between values and priorities of past, present and future uses.

This research poses a design theory-led position of microclimatic materiality as one framework (among many possibilities) for interrogating complex sites like cemeteries. Microclimates, as dynamic and temporal small spaces of light, air and temperature, offer a rich spatial diversity for designers to utilise for conceiving design opportunities in contested and layered spaces. Even more useful is how the behaviours and effects that inform microclimatic qualities can be aligned with other agendas like social use, environmental performance or cultural connections. Thermal effects, for example, are a strong driver of how people or animals use and enjoy outdoor spaces. When viewed this way, the transferable materiality of atmospheric qualities, including heat, are a creative medium that, in unison with landscape elements, designers can employ to respond to heightened social, cultural and environmental performance.

Lastly, a focus on microclimatic materiality in urban landscapes also invites a design conversation about working in the future climate of cities. Cities are increasingly hot environments due to the effects of thermally dense materials and the urban heat island, which are further compounded by the incremental temperature gains due to climate change (City of Melbourne, 2016; Osmond and Sharifi, 2017). Although the increasing threat of extreme heat in urban environments adds urgency to a focus on microclimate materiality, this is most often presented as a technical problem to be solved through a singular focus on cooling (Nice et al, 2024; Osmond and Sharifi, 2017; Wang et al, 2022).

Rather than presenting a solution-oriented approach, this paper focuses on the spatial and experiential potentials of microclimates. A design-led framing and deeper theoretical engagement with atmospheric effects are often ignored in the face of the urgent need to respond to climate change and warming cities. However, for designers interested in qualities of diversity and temporality, there are considerable opportunities underpinning the sensory condition of microclimates and their material effects. The final section in this part turns to design literature to expand on the theoretical context, which then frames the part two discussion of the example of the Melbourne General Cemetery.

Microclimate as design materiality

Atmospheric qualities, like temperature, air quality, humidity and light, are primary conditions that influence how both human and environmental communities use and enjoy physical spaces. The thermal zones of microclimates can invite users to linger, as gentle warm sunshine can on a winter's morning; or equally they can repel people and animals, such as when heat builds up to uncomfortable levels. Dynamic conditions also can lead to diversity in the way a space is used at different times. For example, the shifting and fluctuating temperatures of daily, diurnal and seasonal patterns create distinctive, yet ephemeral moments in time and space.

Throughout the twentieth century, work with environmental effects was most closely aligned with environmental and climate sciences, with a focus on measurement and quantification. This led to assumptions that atmospheric effects were conditions to be controlled or fixed, rather than a design materiality. Writing from a twenty-first century perspective, Roesler and Kobi (2018) explain:

> To look at the existing literature on microclimates (conceived as man-made artifacts) one gets the impression that this is still a purely scientific and technical subject which has little to do with architecture, landscape architecture or material culture in general. (p 16)

However, beyond viewing these conditions as environmental byproducts, a growing body of design theory recognises microclimates as a rich material palette, which can be harnessed and influenced through design (Lally, 2014; Rahm, 2014; Roesler, 2019).

This is particularly evident when sites and phenomena are viewed at a human scale, in the immediate space where a body might feel and experience but also react to local conditions. Whereas much urban climate research has focused on large-scale cooling such as addressing the heat island of whole suburbs or cities (Gao et al, 2022; Shao and Kim, 2022; Žuvela-Aloise et al, 2016), the framework of microclimate as design materiality emphasises the many and varied smaller-scale effects that emerge through the interactions of environmental forces with physical and material conditions.

These design ideas are found in recent writings from scholars like Silvia Benedito (2021) and design work by Phillipe Rahm (2023) and Sean Lally (2014), who have tested and explored the potential of atmospheric materials to form spatial design. These examples show how thermal conditions can be used to shape and direct human and environmental uses of a site. For example, the environmental potentials of relatively quiet, dark and cool spaces might inform future planting strategies, or knowledge of the influence of thermal diversity on interactions might highlight how social programmes work differently in the mornings compared with the afternoons. In this way, microclimates offer a mechanism for engaging with environmental and social diversity through use and experience. Further, the interactions of microclimate temperature, site and use are relational. Bodies and use respond to but also contribute to thermal effects. While a group may seek out space with relative warmth, they bring heat with them too, adding further microclimate variance that depends on people's actions and activity. Articulating these interwoven and temporal elements that influence microclimate allows us to understand temperature effects as environmental conditions, but equally how the materiality is 'shaped by cultural, social and political meanings' (Roesler and Kobi, 2018, p 13).

Thus, as a design-theory view for diversifying spatial qualities, arrangement and uses, microclimate materiality is valuable for interrogating the growing research and proposals related to the question of how urban cemeteries might offer greater social and environmental amenities. However, it is important to recognise that landscape microclimates begin from existing site and material conditions. Here, the distinct landscapes of cemeteries pose particular technical challenges that can contradict thermal management with traditional spatial elements. For example, in Victoria, Australia dark marble and stone are common for graves, but these materials absorb and hold heat from the sun. In addition, the norms of planting trees and shrubs are informed by heritage precedents, ongoing maintenance and new demands.

Certainly emerging research is looking to cemeteries as landscape solutions to urban cooling; for example, studies of cemeteries in German and Turkish cities found that densely treed cemeteries had a greater cooling effect than parks (Selim, Karakuş and Eyileten, 2023; Stumpe et al, 2024). However, the conditions in these locations do not necessarily reflect the distinctive landscapes of other cemeteries. Part two now turns to the unique site of the Melbourne General Cemetery to explore this theory more directly through a particular context and community and specific spatial qualities.

Part two: The Melbourne General Cemetery

The Melbourne General Cemetery (MGC) covers 43 hectares, equivalent to the area of the Melbourne Botanic Gardens. It is positioned next to the University of Melbourne, and amidst Melbourne's busy and densifying northern suburbs (figure 1). The physical size of the site makes it one of the most substantial pieces of open space in the inner-north of the city. It is a large and distinctive landscape that is much loved and enjoyed by its surrounding communities (Epstein, 2021; Saffer, 2022).

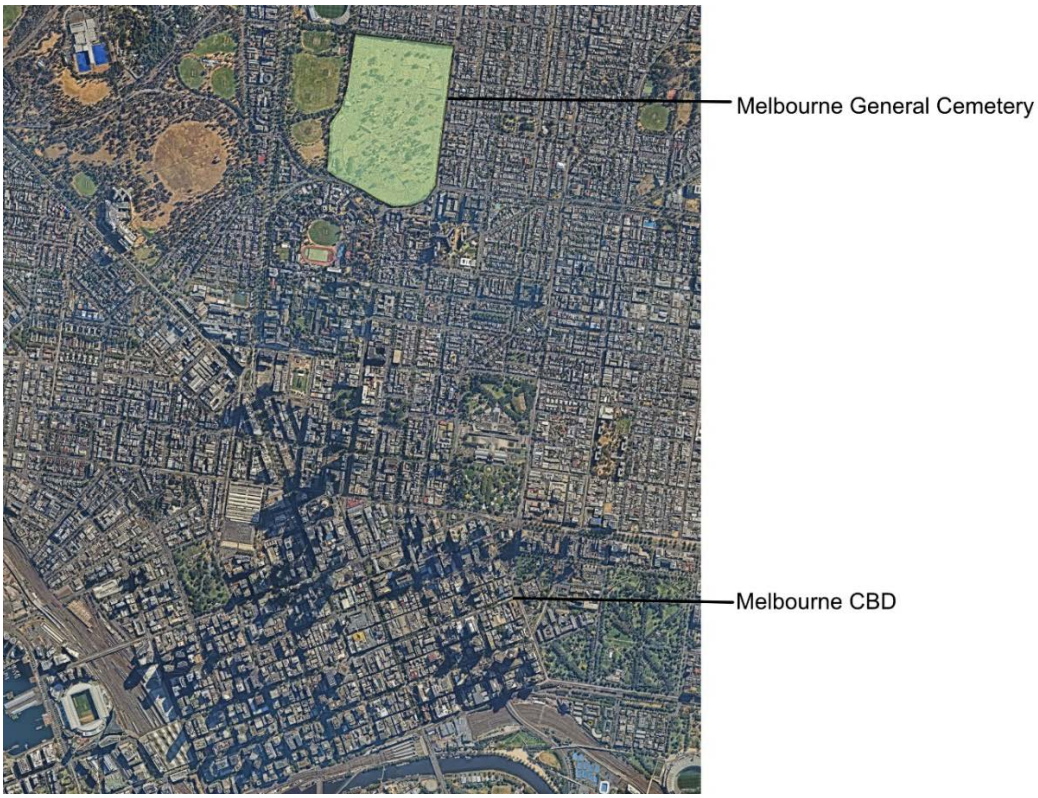


Figure 1. Aerial map of central Melbourne showing the central business district and the Melbourne General Cemetery 2 kilometres to the north (adapted from Nearmap, 2024).

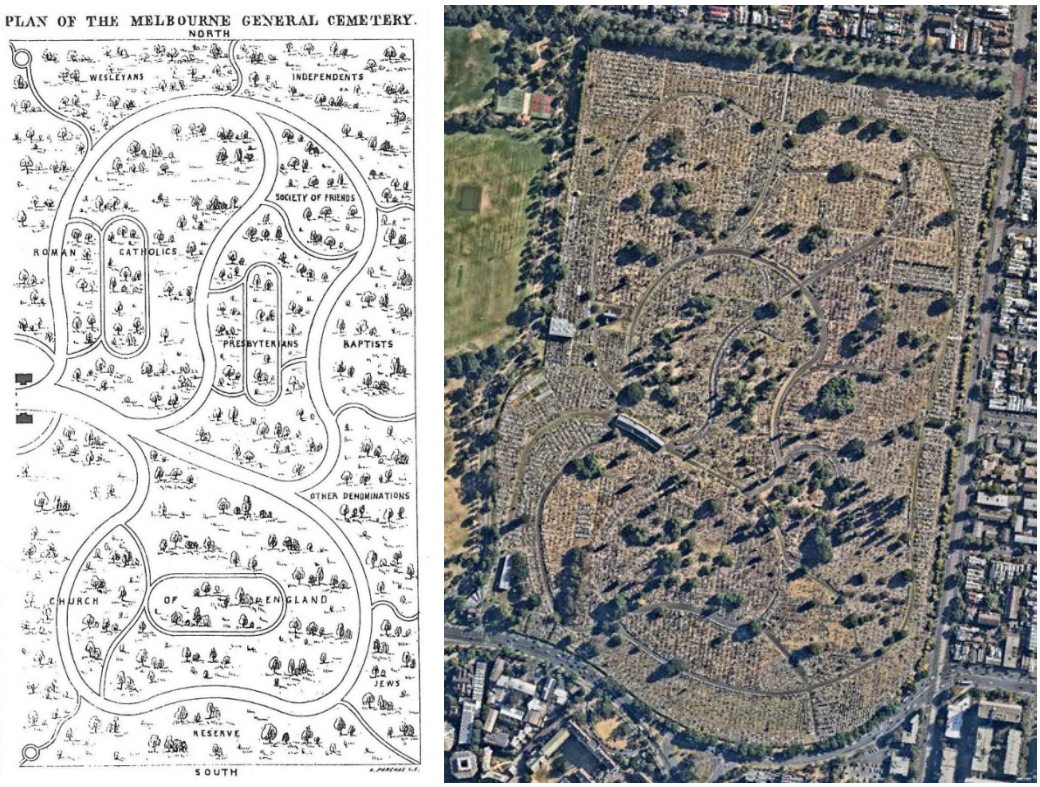
With the intention of designing a *garden cemetery*, the original plans included curving pathways and lawns in a spatial arrangement dividing European religious denominations (figure 2a). This underlying arrangement is an exemplar of romantic garden style, a significance reflected in the Victorian Heritage Register (H1788), which states:

> aesthetic importance due to the meticulous planning of architect Albert Purchas (1825–1909), and botanist Baron Ferdinand von Mueller (1825–1896) who were responsible for the formal and romantic layout of the cemetery and also the plantings of exotic and indigenous species of flora. (Victorian Heritage Database, 2024)

Since the cemetery opened in 1853, its landscape has evolved through many stages of planning, management, mismanagement and varied maintenance (Chambers, 2003; O'Shea, 2011; SMCT, 2024b). While the general shape of the early plan remains legible, the layout and historical markers of the garden style, like open grassy lawn and trees, have been removed over time as new graves have infilled the original layout (figure 2b).

The remaining distinctive heritage elements range from the small scale of the wrought-iron fence (1870s) to some mature trees planted in the late 1800s and a selection of monuments to famous characters like explorers Robert Burke and William Wills, billiards champion Walter Lindrum and several Australian prime ministers. Other than a memorial to First Nations chief Derrimut, there is a notable absence of Aboriginal Australian graves or memorials (Briskey, 2023; Edensor and Sumartojo, 2024).

Further to the site's elements of colonial heritage, the MGC has taken on several curious features like the iconic memorial to Elvis Presley (figure 3). Added into a Charles Robinette rock grotto in 1977, it is the only official monument to the singer outside of North America (Jones, 2000; Stubbins, 2018). However, beyond the individual moments, the MGC is the resting place of over 300,000 graves. Across this collection is a remarkable diversity of cultural and religious practices, made visible in the evolving memorial types and in their upkeep and care. Forming a symbolic timeline from the 1850s through to today, the details within the MGC offer extraordinary insight into Melbourne's colonial, post-war and migrant histories (Dwyer, 2023).



(a) **(b)**

Figure 2. (**a**) An early plan of the Melbourne General Cemetery 1854 (reproduced from Chambers, 2003). (**b**) The cemetery today shows the same distinctive, though adapted curvilinear paths (image by Nearmap, 2024).

Figure 3. The idiosyncratic addition of an Elvis Presley memorial to a Charles Robinette rock grotto (image by author, 2024).

Today the MGC is governed by the Southern Metropolitan Cemeteries Trust (SMCT). This trust operates nine of Melbourne's major cemeteries under a private not-for-profit board and trust structure, reporting to the Minister for Health (SMCT, 2024b). Management is further guided by legislation and rules that are specific to cemeteries in Victoria, Australia. For example, when a grave is purchased in Victoria, it is in perpetuity, meaning that the cemetery site must be planned for continued and ongoing care (O'Shea, 2011). This provision for continual preservation raises complicated questions for sites like the MGC. Until very recently, the primary income for maintaining the site has come from traditional in-ground burials. However, as the site has filled up over time, this revenue is no longer available. While there are options for other sources of funds, the removal of this source represents a major loss of maintenance income.

These intersections of heritage, ongoing maintenance and potential future uses of a very large and important piece of open space make a compelling case for thinking about long-term design in cities, particularly considering climate change predictions of more heat in the future (CSIRO and Bureau of Meteorology, 2022). Increasing temperatures add pressure to urban landscapes but also impact how human communities can continue to enjoy outdoor space. This tension is exacerbated in the MGC site, which is a remarkable and beloved community space but also a very hot environment (Miller, 2024). After the following three sections briefly elaborate on these key site issues, the final section in this part discusses the important Project Cultivate initiative and the future of the cemetery in a warming climate.

A remarkable landscape

Beyond its major monuments, the landscape of the MGC is unusual and engaging, though in many parts degraded. After 170 years of mixed governance, maintenance and planning, the landscape is a patchwork of graves, roads, paths and plantings. It has gone through well-known periods of mismanagement, including alleged embezzlement and reuse of space (Ibac, 2017; O'Shea, 2011; Stubbins, 2018). For example, in the 1970s unmarked graves were covered with a new layer of soil to create space to re-sell as private plots. Similarly, parts of the original roads were repurposed. Now lines of graves from the mid-twentieth century era cut through older areas, following the curve of the original garden cemetery roads (figure 4) (O'Shea, 2011).

The density of graves, patchwork of styles and rearrangement of lines create a strong sense of the uncanny throughout the site. This quality reflects in part the site's physical evolution over time but also the impact of long-term ownership and maintenance challenges. Graves are purchased in perpetuity and are nominally the responsibility of the family who owns them. However, in many cases relatives no longer tend to their plots and, with over 300,000 burials, institutional upkeep of individual graves is untenable (O'Shea, 2011). The current maintenance strategy for subsiding and damaged headstones is to lay them down once they become unstable, primarily as a safety precaution (figure 5). Despite this, the intermingling of distinctive spaces, materials and character is rich with surprise and even moments of delight. Small groves of trees, for example, contrast with the extensive stone and concrete (figure 6).

The cemetery site, with its unusual layout, varied materiality and large space to explore, has a rare contemplative quality in urban public space. It is a landscape that creates reflection not just by being a cemetery, which of course provokes thought, but through its curious mix of planned and unplanned form, formal and wild vegetation and the diversity of experience that can be found within the large and exposed, yet full landscape. Its contradictions and ambiguity make it special and its charm is well-loved by the surrounding communities (Saffer, 2022).

Figure 4. Grave plots bordering one of the old serpentine roads (image by author, 2024).

Figure 5. Unstable headstones are laid on the ground (image by author, 2024).

Figure 6. A grove of trees and a rare clearing within the Melbourne General Cemetery (image by author, 2024).

A community space

The cemetery is home to many memorials and graves of local families who regularly visit loved ones. It is also used by commuters, walking or on bicycles, as it easily connects the city with the northern suburbs. The SMCT (2024b) estimates around 200 people pass through each day.

In addition to these uses, the open space is valued by the residents of the surrounding suburbs of North Carlton and Princess Hill as a kind of parkland for light recreation. Because of its distinctive qualities, locals use it in ways that differ from their use of other local parks, playgrounds and sports fields. This particular engagement with the site intensified during Melbourne's famous COVID-19 lockdowns (2020–2021), when the cemetery became an essential and peaceful space for locals to spend time outside (Princes Hill Community Centre, 2022; Richards, 2021). That period also sparked recognition of the importance of the cemetery and the Save Our Cemetery residents' group who are focused on advocacy to local government and the SMCT for better upkeep of the site and its features (Epstein, 2021; Princes Hill Community Centre, 2022; Saffer, 2022; SMCT, 2024a).

An active 'friends' group also volunteers time for gardening and maintenance on new plantings, like Project Cultivate (discussed below). Beyond the formally organised events, known guerilla gardening practices of informal tending and planting take place around some of the older graves. Plants like rosemary, lavender and forget-me-nots have been added as indicative of traditional European cemetery vegetation, alongside garden cuttings of succulents and pelargonium, which grow well in the cemetery's relatively hot and dry microclimate (figure 7).

Figure 7. Garden plantings interspersed among graves (image by author, 2024).

These acts of informal guerilla gardening are far more prominent in the cemetery than in surrounding parks, offering some insight into the unique role of the cemetery as a community space. From the work of formal groups to the informal practices, the actions and use of the site reveal many layers of connection to and care of the site. But these also hint at the critical tensions over how to future-plan the site given its multiple community and maintenance interests. Clearly, there are divergent perspectives within the community about not only how the cemetery should look but also how people should be using the site. These tensions are further exacerbated by climate change predictions, including about how the site will look and perform in a warming climate.

A hot site

The material conditions of the cemetery can make the landscape a very hot site. The graves, roads and paths are hard surfaces of marble, concrete and asphalt (figure 8), which make up much of the terrain. While there are some remarkable old trees and shady groves like the row of peppercorn trees in figure 9, they are rare moments within the broader landscape.

Further contributing towards the climatic performance of the site is the highly complex subsurface. Even the existing groves and clearings, while appearing to be open landscapes, still include burials – some are entirely unmarked, while others are very old with minimal or semi-submerged headstones. The underground strata of graves in various states of decomposition have created a honeycomb of soil, materials and air pockets across the entire site. This is a major constraint on future design and heat management, especially the common method of mitigating heat with an extensive tree canopy as reflected in the City of Melbourne's target of achieving 40 per cent canopy cover by 2040 (City of Melbourne, 2012). In the MGC, creating a dense canopy simply is not a replicable option because it is impossible to plant new trees safely.

Figure 8. In some sections of the cemetery, almost the entire surface consists of marble and concrete (image by author, 2024).

Figure 9. A row of peppercorn trees (*Schinus molle*) in one of the few sections of open ground with canopy cover (image by author, 2024).

Despite these constraints on heat management through canopy cover, the community, including groups like Save Our Cemetery, would like to see more trees, more shade and more robust greening in the site. Recent campaigns to the local council have focused on the issues of heat and how people, plants and animals who share the cemetery will fare in the warming climate. Local resident Jane Miller (2024), writing to Melbourne's newspaper *The Age*, comments:

> just down the road from me is the Melbourne General Cemetery where decades of neglect and excessive use of herbicides have resulted in the creation of a heat island. At 43 hectares it is larger than the Royal Botanic Gardens yet estimates of tree coverage range from 8 to 18 per cent (the latter figure including trees outside the cemetery).

In the case of the MGC, the clear tensions between community, management and future planning present an important set of issues. The mix of ideals, visions and opinions about what the cemetery should look like and achieve reflects the issues facing cities in relation to climate change more generally. Of particular significance is how pragmatic concerns like funding and maintenance are balanced against competing community interests.

In 2023 the SMCT initiated a major planting strategy called Project Cultivate, which offers a striking and effectual response to some of these concerns. The final section in this part will briefly explain that project before reflecting on these site conditions against the framing of microclimatic materiality for design that engages with sites with concurrent social and environmental priorities.

Project Cultivate

Project Cultivate is a native grassland and meadow planting strategy applied to some of the older sections of the MGC. The project aims to eventually cover at least 15 per cent of the total site. Led by the horticultural assets manager, the initiative uses mulching and native plantings to create a better-performing ground condition. The mulch addresses the site's poor soil quality and helps in managing water runoff. Planted into the improved ground are native grasses and wildflowers, including kangaroo grass (*Themeda triandra*), wallaby grasses (*Rytidosperma* sp.), everlastings (*Chrysocephalum*) and native flax (*Linum marginale*). These plants will tolerate the hard growing environment but also pose minimal risk in the complex subsurface. In the unirrigated site, the new grasslands will also help to manage the site's microclimate and improve biodiversity. Initial pilot plantings have already greatly reduced maintenance costs and herbicide use as well as improving rainwater runoff (SMCT, 2024c).

The visual and sensory effect of Project Cultivate is to provide a remarkable play of delicate colours and textures of Australian grasses against the structures of old graves (figure 10). The aesthetic is both uncanny and beautiful, connecting with theory of melancholy in landscape design (Bowring, 2016). It is also an extraordinary project for how it engages with Australian plant material, simultaneously acknowledging the pre-colonial landscape before the cemetery was built and forecasting towards supporting the site in the future.

Figure 10. Project Cultivate grass planting between graves (image by author, 2024).

Project Cultivate is highly innovative – especially in the context of the cemetery and its maintenance demands. The work will greatly improve the ongoing environmental performance of the site; from urban animal habitat to water management. While the native planting offers much environmental and aesthetic value to the site, residual tensions remain between the community expectations and wants, heritage significance and how this landscape will perform in the warming climate. The low-level grasses cannot provide shade and, although the plantings create a much-improved ground condition with reduced ambient air temperature, there is little space for people to be part of this emerging new landscape.

The mechanism of planting itself has engaged with locals and community groups through a series of planting days (SMCT, 2025). Nevertheless, returning to the premise that older cemetery spaces can and should be redesigned to increase both social and environmental uses, the grasslands are not planned around ongoing community activities.

In large part, this omission has occurred because the project centres on the environmentally focused strategy applied across as much of the site as is viable. The questions about how heritage is preserved or how the values implicit in guerilla gardening are addressed remain outside of the project scope. However, in considering the future of complex sites like cemeteries and cities experiencing climate change, are single strategies enough?

In reflecting on the issues raised in this paper, I suggest they are not, and that designers must find ways to shape spaces where cultural, social and environmental values overlap. This does not mean to detract from the considerable value of Project Cultivate. It is

an effective strategy with environmental significance. More so, reflecting on Project Cultivate within the MGC context exposes just how challenging it is to work across concurrent and conflicting agendas. In this light, finding design strategies and approaches that can engage with diversity is more critical than ever before.

Here, the design theory of microclimatic materiality offers one useful perspective where design can engage with diverse sensory and spatial effects, rather than seek uniform solutions. Importantly, these framings open up site possibilities to engage with social use in concert with environmental performance. For example, quiet evening strolls in the cemetery are distinctly different from the experience of the intense heat of the middle afternoon. Morning community events can be planned in spaces of gentle morning sun. Walking routes and education spaces can be designed around cool zones. Equally, warm and hot spaces can be designated for those creatures (lizards and skinks) who like them most.

Most importantly, all of these uses can occur together – not all at once, but through the temporality of microclimate conditions. The physical characteristics of external space are a major driver of how people and animals will use and enjoy it, and the fluctuating microclimatic qualities of temperature, light and air are a primary materiality in producing special moments of inhabitation for bodies – human or otherwise. This is especially true in cities – like Melbourne – that experience a highly variable range of seasonal and diurnal conditions (CSIRO and Bureau of Meteorology, 2022).

Conclusion

In the broader sense, this paper asks, what are our cultures of and assumptions about designing in a warming climate? Answering this question goes beyond trying to fix urban heat with single interventions like mass plantings or tree canopy, to engage with strategies that allow designers to work across social, cultural and environmental concerns.

The cemetery, as a microcosm of the city, highlights many of these complexities as well as the tensions in introducing new uses or programmes to established sites. While the cemetery is often described as a single-programme site with an overarching layout, examining the space in more detail reveals considerable diversity in its qualities. These kinds of distinctions can be leveraged through design. Further, harnessing site microclimates with smaller fluctuations of warm to cool or hot and the many in-betweens offers a compelling and richer material palette for conceiving design. This brings questions of community and people into design thinking about environmental effects and offers a framing that begins to align microclimate behaviours with the other agendas of contemporary urban sites.

About the author

Dr Wendy Walls is a lecturer in Landscape Architectural Design at the University of Melbourne, Australia. Her research focuses on landscape design practice, theory and methods in working with heat in cities. This includes the role of landscape architecture in designing for the lived experience of a warming climate, which she explores through data-driven and digital design methodologies informed by eco-critical theory and material explorations.

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Data availability statement: For information about Project Cultivate, including plant lists, go to https://smct.org.au/project-cultivate.

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