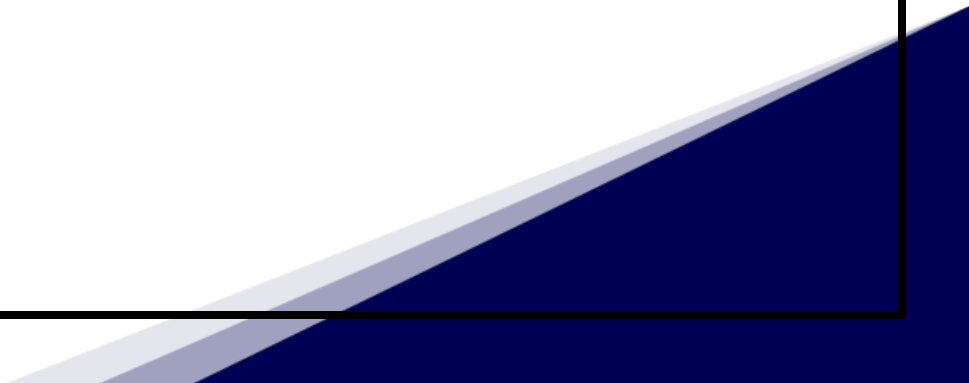




**Upper Stony Creek transformation:
health, liveability, and connection to
nature**



Upper Stony Creek transformation: health, liveability, and connection to nature

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Acknowledgment of country

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Executive Summary

Urban greening has become a popular policy intervention to tackle contemporary urban issues related to climate change, social disadvantage, poor public health, air pollution and dereliction. With growing interest in urban greening as a governance tool, it is essential to understand how urban greening policies address local issues and enable local populations to enhance their resilience.

Environmental inequity and poor public health in the Melbourne western region have positioned urban greening as a common solution to deal with contemporary urban issues. A number of regional initiatives such as Greening the West (GTW), a coalition of policy makers and private corporate stakeholders in Melbourne's western metropolitan region, have emerged in response to promote the proliferation of urban greening projects. One such initiative, the Upper Stony Creek Transformation Project, sought to improve community health and wellbeing in the socio-economically disadvantaged area of Sunshine North.

Following baseline research conducted in 2017, this report delivers residents' perceptions about the transformation of Upper Stony Creek in Sunshine North, from an informal green space to a remediated wetland. To achieve this aim, residents' perspectives about the greening project was gathered through interview methodologies. The findings provide valuable insights to both academics and policy makers about consideration of local residents' needs in implementation process of urban greening in areas occupied mostly by culturally and linguistically diverse (CALD) communities.

The report identifies newly introduced wildlife in the wetlands as a significant positive development that provides opportunities for residents to engage with nature. By facilitating interactions with the natural environment, the greening project of Upper stony Creek potentially contribute to the health and wellbeing of residents. The research also reveals that the transformation project of Upper Stony Creek has enhanced the walkability of the site and has provided a new cycling trail for community. The newly introduced wildlife, walking and cycling trail with vegetation cover around the wetlands have had a net positive impact on the liveability of the area and have encouraged more residents to get out and engage with the environment of the Creek.

Despite these benefits, significant deficiencies exist which make attaining improvement in the health and wellbeing of residents difficult. The lack of basic park amenities such as public bathrooms, drinking fountains and shade (natural or artificial) adversely impacts the use of the park by different age groups and restrict the types of activities residents engage in. This report identified chemical odour and pollution emitted from nearby factories as one of the

primary concerns of residents, impacting the environmental quality of the park and contributing to poor health and wellbeing outcomes for residents. Compounding this is the prevalence of dumped rubbish near Upper Stony Creek, not only creating an unpleasant view, but also posing additional risks to the environmental and public health. Residents reported chronic dissatisfaction with the progress made in tackling rubbish around the site.

This study faced several limitations that need to be acknowledged. One of the main challenges encountered during the research process was the lack of engagement by community-based organisations in the study area. This posed a significant obstacle to recruiting residents especially residents with CALD background in the study, as there were relatively weak formal networks through which to disseminate information about the research or to engage potential participants. As a result, the findings of this study are not representative of the broader community perspectives on the transformation project. Secondly, the narrow geographical focus of the study may limit our ability to engage with potential participants and community-based organisations.

Ultimately, findings show that urban greening alone is not sufficient in resolving environmental injustice and residents' poor health and wellbeing, but that the quality and context (culture, class and geography) of urban greening should be considered by policy makers. Indeed, a holistic approach considering the community needs should be taken into consideration through the implementation of greening projects and that addressing residents need via thorough consultation is essential to creating valued green spaces.

Introduction

Melbourne's western suburbs are among the fastest growing areas in Australia (Paul, 2021). As a consequence of population increase, historical pollution and worsening heat stress, environmental pressures have also increased. Studies show that the western region of Melbourne has less tree canopy cover than the eastern suburbs of Melbourne (Jacobs et al., 2014). Jacobs and colleagues (2014) demonstrate that tree canopy coverage in Melbourne western suburbs is approximately 5-10%, while land area covered by trees in other regions of Melbourne is about 10-30%. In addition to the lack of urban green space, poor health issues such as diabetes and obesity among the community has been reported in the region (Greening the West, 2020) . As our research has demonstrated (Farahani & Maller, 2019; Kelly et al., 2022; Kelly et al., 2022) residents of disadvantaged suburbs of Melbourne's West report relatively poorer health, life satisfaction and wellbeing as well as higher rates of depression when compared to the national average.

Considering these environmental and health issues, and following studies suggesting green space as a solution to urban health issues (Mitchell & Popham, 2007; Twohig-Bennett & Jones, 2018), urban greening is recognised as a key strategy to address disadvantage in Melbourne's Western suburbs. The *Greening the West* coalition was established by City West Water in 2011 to collaboratively address the deficit in urban green space with the aim to maximise the coverage and quality of greenspace in the western suburbs of Melbourne. The goals of the coalition are to the increase tree canopy, green space, and improve the quality and functionality of green space for all communities. These aims are promoted with the assumption that frequent use and civic interaction will increase with the provision of better quality green space, resulting in improved health and wellbeing outcomes for residents.

One major project under the GTW banner was Upper Stony Creek transformation (2017-2020) in Sunshine North, a western suburb of metropolitan Melbourne. The project was funded by the Australian Government, Department of Environment, Land, Water and Planning, Melbourne Water, City West Water, Development Victoria, Brimbank City Council and Greenfleet to transform 1.2 km of a concreted drainage channel into a semi-natural waterway bounded by trees and vegetation.

Background

Pre-greening Study

Prior to the commencement of the Upper Stony Creek transformation project (see Figure 1), multidisciplinary research (Phase 1) was conducted to understand the social and ecological dimensions of the site. Phase 1 research also provided baseline data for further research about the impact of the transformation on the health and wellbeing of residents, biodiversity, and people-nature interactions in the area over time. Through this study, 23 interviews were conducted during October 2016 to July 2017.



Figure 1: Concept design of creek revegetation (Source: Melbourne Water)

Ecological observation and quantitative survey also were used to collect pre-transformation data. Survey was conducted in two ways of postal survey and online survey between March and May 2017. The survey and approach letter were translated in Vietnamese.

Findings

The analysis of interview and survey data found that, in Sunshine North and surrounding areas there were:

- Lower levels of subjective wellbeing, life satisfaction and higher rates of depression (40%) than the Victorian and Australian average
- Poorer access to and provision of high-amenity green space than other metropolitan areas
- Only 44% of respondents to the survey were satisfied with the quality of their local parks
- 52% of respondents found the local parks unattractive
- 55.6% of respondents viewed neighbourhood parks as unsafe
- 64.7% of respondents expressed concern about alcohol and drug use in parks
- 52.7% of respondents expressed concern about the presence of gangs or hoons
- 49.8% of respondents reported neighbourhood parks were poorly maintained
- 66.4% of respondents expressed concern about rubbish dumping.

For the area around the Upper Stony Creek study site, it was found:

- There was a prevalence of negative perceptions of Upper Stony Creek as a site with undesirable features such as the aesthetic unattractiveness, vacancy, industrial pollution, and lack of walkability
- For many residents the area was not attractive, inviting or people-friendly
- Noise, air, water and environmental pollution was a concern for some participants, with factories in the surrounding area reported as a source of pollution
- The lack of walking paths at the site was a critical problem for some participants
- Poor maintenance was reported as a primary reason for low utilisation rates around the Upper Stony Creek site.

Limitations of the pre-greening study

The valuable outcomes of the pre-greening phase of the Upper Stony Creek research aside, the study has several limitations. First, there is a high proportion of Vietnamese and Chinese residents in the Sunshine North community, and the participant cohort in the previous phase of the research does not accurately represent the cultural and linguistic diversity of the area.

According to the Australian Bureau of Statistics (ABS, 2021), 34.1% of the population in Sunshine North area reported having a Vietnamese background, 12.1% reported a Chinese background and 78.5% had two parents that were born overseas. The participants recruited for the study, however, were predominately from Anglo-European backgrounds. Further, promotional flyers were only distributed in English as it was assumed at least one household member would have sufficient English knowledge to understand the content.

The Upper Stony Creek transformation project did not progress as expected. In 2019, due to the discovery of large quantities of asbestos during excavation work, the focus of the project shifted from greening the site to cleaning up the asbestos. Accordingly, the focus of the project was redirected to a conversion of the wasteland along Gilmour Road into new wetlands and included the addition of a walking track along Upper Stony Creek. The reconfiguration of the project masterplan and the associated remediation works created significant delays that inhibited the post-evaluation phase within the initial research project scope.



Figures 2 and 3: Upper Stony Creek wetland site, before and after – Nov 2017 to Sept 2020
(Source: Melbourne Water)



Figure 4: Upper Stony Creek concrete channel (April 2022).



Post-greening study

The outcomes and limitations of the project's phase one, as well as the partial implementation of the Upper Stony Creek transformation, revealed the need for new knowledge of Sunshine North as a socio-economically disadvantaged CALD area. Better knowledge of Sunshine North's limited green infrastructure, existing heat vulnerability, environmental injustice and exposure to contaminated land is particularly critical. According to the Australian Urban Observatory (AUO, 2021), the social infrastructure index of the neighbourhood — which represents the provision of community and individual support services and resources (e.g., health, education, early childhood, community support, community development, culture, sport and recreation, parks, and emergency services) with a minimum score of 0 and maximum score of 16 — currently sits at 6.7 out of 16. In addition to capturing perspective that acknowledge the cultural and linguistic diversity of the area, evidence was needed to document the impact of environmental disadvantage and urban greening regeneration on the physical and mental wellbeing of residents. The post-greening phase of the project was thus aimed to understand diverse residents' lived experience and the benefits of greater access to quality green space created through the Upper Stony Creek transformation project.

Methodology

This study aimed to interview 40 residents living in close proximity to Upper Stony Creek. Based on the project plan, we expected to recruit 20 new participants and to invite 20 participants from the pre-greening phase of the project conducted in the period 2016–2017. Participants were required to be within 1.2 km of Upper Stony Creek in Sunshine North and at least 18 years old. Our initial recruiting efforts included dropping flyers into residents' mailboxes over two stages separated by a three-month interval. We erected promotional posters in the Upper Stony Creek area, including in local cafes, schools and shops and sought assistance from the Brimbank City Council. We also joined a community social gathering in the local café to inform residents about the project and involve them in the research. Information about the research was posted on multiple community Facebook pages such as the *Brimbank Community* page, *3020 Exchange-Albion*, and the *Sunshine North/West* page. Snowball sampling with existing participants was used to engage additional participants in the research project.

To recruit participants from culturally and linguistically diverse (CALD) backgrounds, we:

- provided the content of the flyer in both English and Vietnamese
- advertised the research project in VietTimes (Vietnamese newspaper)

- posted the promotional flyer on Vietnamese community Facebook pages, and
- provided an online information page and expression of interest in English, Vietnamese, Chinese (simplified) and Italian.

The Australian Vietnamese Women's Association and ICP Health assisted the research team in recruitment efforts. The research team unsuccessfully sought collaboration and assistance from the Migrant Resource Centre, the Vietnamese Community in Australia (Victoria Chapter), Australian Vietnamese Women's Association, Brimbank City Council, and Djerriwarrh Community & Education Services.

A total of 27 interviews were conducted. Four participants were recruited from the previous phase of the research. The interviews were primarily conducted online to minimise any health risk due to COVID for both the interviewer and interviewees. Interviews were conducted in a semi-structured format to allow for a more informal, conversational tone. At the beginning of the interview, participants were asked to answer some demographic questions on gender, age, cultural background, country of birth, household status, educational level, employment status and income range. At the end of the interview, participants were also asked if they agreed to participate in any further research about Upper Stony Creek. All interviews except one were in English. With the attendance of an interpreter, one interview was conducted in Vietnamese. The research team offered participants a \$30 gift card as a token of appreciation.

All interviewees were provided with a Participant Information Sheet prior to giving informed consent. RMIT's Human Research Ethics clearance was granted on 1 December 2021, reference: 2022-24865-17732. Interviews lasted approximately 45 minutes, and they were audio-recorded and transcribed. A copy of the interview schedules is attached as an appendix.

Data collection occurred between May and August 2022. All interview data were transcribed and cleaned. Concurrent with data cleaning, content analysis was undertaken using the qualitative data analysis software NVivo20 for coding key and frequently cited concepts and themes (discussed in Findings).

Demographic characteristics

The table below compares the demographic characteristics of participants in the two phases of the Upper Stony Creek research.

Table 1: Demographic characteristics of participants in two phases of the Upper Stony Creek research

Demographic characteristic		Pre-greening research (n=23)	Post-greening research (n=27)
Gender	Female	11	16
	Male	12	11
Age range	<25 years	0	1
	25 to 34 years	2	8
	35 to 44 years	7	7
	45 to 54 years	7	5
	55 to 64 years	3	1
	65 to 74 years	2	3
	75 + years	2	2
Cultural background	Singaporean	0	1
	Chinese	0	1
	Vietnamese	0	2
	Anglo-Saxon	21	23
	Greek	1	0
	Croatian	1	0
Education level	Post-graduate degree	8	4
	Bachelor's degree	2	6
	Vocational or other tertiary qualification	5	13
	Year 12 or equivalent	7	2
	Year 10 or below	1	2
Work	Employed for salary	10	20
	Self-employed	4	1
	Retired	4	5
	Student	1	0
	Engaged in home duties	1	0
	Unemployed and looking for work	2	1
	Unable to work	1	0

Australian Bureau of Statistics data revealed changes in the socio-cultural profile of the neighbourhood between 2016 and 2021. As Table 2 reveals, the median age of residents in Sunshine North increased from 35 to 37 between 2016 and 2021. Despite this increase, the median age of participants decreased from 50 to 45 compared with the previous phase of the research. Additionally, individuals identifying with Vietnamese and Chinese backgrounds in Sunshine North increased between 2016 and 2021 from 30.8% to 34.1% and from 9.4% to 12.1%, respectively. Recruitment efforts resulted in the participation of two participants with a Vietnamese background and one participant from the Chinese community. In the pre-greening phase of research there were no participants from Vietnamese or Chinese backgrounds. A preliminary analysis of the interview data revealed

that the cultural diversity of the Sunshine North community is a characteristic that attracts some participants to the area to live.

Table 2: Neighbourhood Age Median and Cultural Diversity Comparison between 2016 and 2021

Census		2016	2021
Median age		35	37
Cultural background	Vietnamese	30.8%	34.1%
	Chinese	9.4%	12.1%
	Australian	7.8%	10%
	English	7.1%	8.8%

Findings

The greening transformation of the Upper Stony Creek achieved a number of key outcomes:

- It provided an opportunity for residents to exercise in the presence of nature (green areas and wetlands), where previously the site was predominantly used for dog walking or as a shortcut to the train station (Kelly et al., 2022)
- It led to an increase in walking for exercise and recreational purposes. Considering the fact that the walkability indicator in the Brimbank local government area (LGA) is -0.5 (AUO), the increased use of the site for walking can continue to have a positive impact on local residents' physical activity and health outcomes
- It increased the physiological and mental health benefits provided by greater access to a green area and being in closer contact with nature (this theme did not emerge from the interview data in the pre-greening study)
- Where a lack of safety in the area represented one of the main concerns of residents pre-greening (Kelly et al., 2022), no participants in the post-greening study expressed any concern about safety issues at the site
- The introduction of wildlife to the area and its subsequent health, wellbeing and educational benefits provided by green coverage and wetlands was frequently mentioned by participants
- Low accessibility was one of the main issues regarding the unpopularity of Upper Stony Creek in the pre-greening study (Farahani & Maller, 2019), yet this issue did not emerge in the post-greening study
- Positive feelings towards the site were reported in interviews. Based on the pre-greening study, the popular names associated with the creek in the neighbourhood carried with them negative connotations, including the 'drain', 'storm drain', 'concrete

channel', 'urban rubbish', and the 'culvert'. However, the current study revealed more positive names such as Stony Creek, Wetlands, the walking track, and Gilmore Lake, all of which are currently used to refer to the site. Stony Creek was the most popular name (n=12) that emerged among the participants.

The neighbourhood: Sunshine North

The geographical scope of the current research did not capture the whole neighbourhood but was restricted to within 1.2km of Upper Stony Creek. Despite the narrow geographical scope of this research compared, some significant themes regarding the neighbourhood emerged, and these are addressed in the following sections.

Drug issue

Concern about drug use and drug dealing was expressed by many participants. This issue was also reported in the pre-greening phase of research, where drug dealing emerged as a major concern regarding safety in the neighbourhood. The interview excerpts provided below outline some of these concerns. As one participant shared:

Apparently, there's some drug addicts in our street. And I wish that element wasn't there. It's been there in every area of Sunshine and Sunshine North since I've lived around this area, and I wish that element wasn't there. I'm not talking about people who just take drugs and function. I'm talking about that element that's associated with crime. (P15, 50-year-old female)

The concern about drug use and drug dealing among residents seemed to go beyond the activities themselves to the anti-social behaviour and civil disorder associated with them. They did, however, express concern regarding how drug use and dealing encourages further crime and disorder in their local community. For instance, one participant shared her concern about the associated crime and car accidents that occur in the area:

I guess for anyone that lives right near me, it feels like a problem (drug use) that will never get solved. And the drug use is one thing, but the drug dealing is another matter, much bigger problem, because it attracts the crime. So, people are quite fearful in the streets about having their car broken into, their house broken into. So, that's... it's not pleasant. (P7, 32-year-old female)

Another concerning issue is the vehicles coming to the area for drug dealing. The concern of whether the drivers of these vehicles are affected by drugs and the possibility of an accident in the neighbourhood is very concerning to participants.

The concern about drug use and dealing in the neighbourhood does not seem to be a gender-based issue, as three male participants also shared their concerns. However, the concern expressed by at least two of these three male participants focused on the lack of support and attention paid to resolving the issue by relevant official persons rather than feelings of a lack of safety in the area.

Vandalism

In addition to the drug use and drug dealing issue, vandalism also emerged as an issue concerning some of the residents. For instance, P26, a 40-year-old female participant who is from a CALD background expressed how vandalism in local parks by alcohol consumers causes concern for her children:

You know, alcoholic people drink there and have broken glasses there (local parks), so they even lie there. So, it's a bit, you know, dangerous to the children. Yeah, that's the thing that I do not like. (P26, 40-year-old female)

P6, a male 34-year-old participant, also shared the same concern, saying that there is a constant broken glass issue in a local park called Lloyd Reserve. He associated this issue with a lack of a sense of pride towards the neighbourhood by young people. P9, a 30-year-old female participant, also expressed a similar concern. For her, broken glass in the parks does not allow her to fully enjoy the environment. As she stated:

I think in the area what I get a bit concerned about is you have sometime broken glass bottles or syringes, unfortunately... I can't say it's not the actual park, but it's those in the park that kind of makes me not enjoy the space. (P9, 30-year-old female)

Besides the issue of broken glass in local parks, for P1, a 31-year-old female participant with migrant background, graffiti as another type of vandalism is prevalent in the area. She referred to graffiti as being prominent in the culture of the neighbourhood and she is concerned that residents, especially young residents, do not respect the neighbourhood and will abuse any developments or facilities in the area. Both P6 and P1 highlighted two different approaches among residents towards the area, where some people show disrespect and damage public spaces and facilities, while some members of the community voluntarily remove signs of vandalism from the neighbourhood.

Sense of safety

Following issues around drug use and vandalism in the neighbourhood, addressing the issue of a sense of safety in the area was pertinent. Fourteen out of 27 participants identified

a lack of a sense of safety as one of their main concerns in the neighbourhood. A variety of reasons make them feel this way. For some participants, strangers coming into the area for drug use and dealing, in turn wandering the neighbourhood, was associated with feelings of a lack of safety. As one participant explained:

We've had a few situations where people come and knock on the door or, like, walk through the front yard and we don't know who they are, but because we have cameras it's fine. We feel more secure and safer than I used to. (P17, 28-year-old female with CALD background)

Further to what participants expressed, the researcher was also aware of people wandering in the neighbourhood while dropping flyers in residents' mailboxes. In addition to drug dealing-related reasons for feelings of a lack of safety, the presence of people who are drug- or alcohol-affected is a source of feeling unsafe in the neighbourhood. Two female participants cited the presence of drug-affected individuals who sometimes scream and carry knives as a reason for feeling unsafe, particularly in terms of children's safety:

I like to walk a lot and take the kids for walks, but we can only do it at certain times of the day, cause there's a few drug addicts that hang out at the end of the street that run around screaming and sometimes with knives. (P25, 39-year-old female)

Many participants expressed their concerns about the occurrence of car break-ins in the neighbourhood. A few of them shared their experience of their cars being broken into:

I have never in my life worried about whether my purse was in the car or if I left my laptop in the car or, you know, locking my front door. I've never had to check twice. So, now that I live here, I feel like I'm constantly asking is the door locked? Is my car locked or locked my car but check again—I'm very conscious of it. (P7, 32-year-old female)

Another participant expressed a similar sentiment:

When we first moved in, and we had a couple of security incidents, we had... we didn't have a gate on the front of our property. We had a fence, but then there was a gap, and we parked our cars in the driveway and on two occasions—oh, one occasion. Uh. Someone came in in the middle of the night and broke into one of our cars and took a few items and we set up some security cameras after that, and we captured one other night where someone came onto

the property and attempted to open the car but then left. So, those two things were a bit of a wake up for us about security and safety here we've since had.
(P18, 37-year-old male)

Many participants expressed that they take quite a few precautions regarding their safety, including setting up security cameras around their properties, installing gates and security doors, double checking if their house and car are locked, and avoiding walking at night. As one participant stated:

It [the neighbourhood] is probably not very safe. It is the first time that I'm concerned about double-checking that the car's locked and double checking that the front doors locked and, recently, I just got security cameras for the house because there has been times where I mentioned it's a lower socioeconomic area... some individuals that are on drugs and, you know, they want to steal to then pay for the goods and whatever. (P3, 32-year-old male)

Pollution from nearby factories

Based on the interview data, pollution from the nearby factories was mentioned 31 times by 10 participants as a very unpleasant feature of the neighbourhood. Based on what participants shared in interviews, in addition to the chemical odour in the neighbourhood, especially in areas near to the factories, the chemical odour from the factories is detectable indoors, which concerns residents in terms of their health and that of their children. Two interviewees stated they had thought about moving from the area due to the odour/pollution in the neighbourhood. For some participants, this issue was exacerbated during the COVID lockdowns as they had to stay home. This meant they were more exposed to the odour/pollution indoors. Some participants shared that their concerns around this impacted their mental health. For instance, the interview excerpt from P9 (below), a 30-year-old female participant, reveals how stressful it is to walk through the neighbourhood when you are so conscious of the pollution:

I've always been able to manage the stress and my feelings by going on a walk generally on my lunch break, and during lockdown when we were at home. Sometimes that was really good. And sometimes that was really bad, because what would happen is, I would go on my walk at lunchtime, and if the air pollution was really bad, that would negatively impact my mental health. And I'd come home and say, "I can't live here anymore". Like, you know, I've gone outside for the first time in five hours. And I'm really stressed, and I've gone out and then I've copped all this pollution. (P9, 30-year-old female)

The odour from the factories across the neighbourhood becomes more noticeable when approaching Upper Stony Creek, as the polluting factory is almost 600 metres from Upper Stony Creek. The next sections reveal participants concerns about the odour/pollution in the nearby environment and Upper Stony Creek.

Poor maintenance

One of the main concerns shared by participants is the poor maintenance across the neighbourhood, especially in local parks. In addition to the rubbish dumping, the lack of attention to the urban greenery in the area was mentioned by P6, a 34-year-old male participant, and P3, a 32-year-old male participant. For P6, poor maintenance was associated with the lack of frequent mowing and grass cutting, while P3 shared his concern about the lack of care to the proper maintenance of trees by the council in the neighbourhood. He said the council cut down some trees on his street due to them being close to the powerlines. For him, it did not seem rational to cut the trees instead of trimming them to resolve the issue. He then followed up with the council on replanting new trees and was surprised and disappointed to hear that the council have put replanting new trees into their planting schedule for 2024. P3 expressed that a two-year gap for replanting is too long—this is not the council response he was expecting.

Sense of community

Before underscoring the residents' sense of community in the area, it is worth touching on the area's cultural diversity in greater detail. As mentioned earlier, according to 2021 Census data in 2021, a considerable proportion of Sunshine North residents are from the Vietnamese and Chinese communities (34.1% with a Vietnamese background and 12.1% with a Chinese background), and 78.5% of residents have two parents that were born overseas. Considering this cultural diversity, some participants expressed their perspective on this feature of the neighbourhood. The sense of community was talked about 18 times by 11 participants. For some of them, the geographical location of the neighbourhood as a triangular area surrounded by Furlong Road, railway lines and Upper Stony Creek promotes a sense of community. However, some believed that being separated from other approximate areas has caused a lack in a sense of community as there is no bonding place or event in Sunshine North neighbourhood. P15, a 50-year-old female participant, who has lived in the neighbourhood for about three years, noted that for one to feel a sense of community either you need to be among elder residents who know the neighbourhood and reminisce about what the neighbourhood was like in the past, or you need to be a member of the Vietnamese community. Otherwise, it is likely you will feel isolated due to a lack in shared experiences. For some participants, such as P7, a 32-year-old female participant,

fighting to resolve the neighbourhood's issues has increased social cohesion in the area. The concern for air and noise pollution from the industrial land use in the area has led to the creation by residents of a Facebook action group, through which they interact and communicate with each other to ensure policymakers take action towards improving the neighbourhood:

I think that we've made some good friendships with our neighbours. And we see them quite regularly through organising around the problem, the factory. We have made quite a few friends that I see regularly, we go to cafes together and things like that. But yeah, due to the lack of community space, I don't feel roots in this area. (P7, 32-year-old female)

Some participants identified that the neighbourhood lacks community centres where social interactions between residents could be promoted. For some respondents, like P13, a 68-year-old female participant, most social activities that help with the creation of a sense of community among residents are linked with the local school. Considering the absence of any active local community centres in the area, a newly established local café on Metherall Street plays a significant role in gathering residents together:

I guess in the early days of COVID, I didn't have the connections within the community that I now have. Once that cafe opens, so it's just a little neighbourhood café—that's where I feel like the community is, like, a little bit stronger and more connections being made all the time. (P2, 46-year-old female)

Sense of being neglected

Another theme that emerged from the interview data is a sense of being neglected by the local government. What P1, a 31-year-old female participant with a CALD background, shared with us indicates a sense of not being recognised by others:

I'm glad that they chose to put a little park in it now, a little area where people don't even know that we live here. Because a lot of times people just drive past without realising that when they turn into this road, there's so many of us living in.

Additionally, P13, who has lived in the neighbourhood for approximately 46 years, shared how she felt that all Sunshine North residents have been forgotten by policymakers:

There is certainly not a lot of beautification happens at this end of the Shire. I must say, the Council forgets about us North Sunshine people. Unless you're living in Keilor, there's no beautification happens. (P13, 68-year-old female)

Some participants compared Sunshine North with other suburbs in Melbourne to show the extent to which the neighbourhood is being neglected. As one participant stated:

I think they came in with the next plan, so nothing ended up happening. But I was very upset that it looked so terrible for such a long time. I think we're very badly let down in the West. I never ever imagined anything like that happen in the Southeast suburbs that, you know, some areas just get much more care and money spent on them than others. And I was furious about that. And then eventually they came in and finished it. With the reduced plans and, you know, it is much, much better than it was before, but it's very sad that they weren't able to actually finish it completely. (P21, 50-year-old female)

Similar viewpoint was shared by another participant:

I grew up in the Eastern suburbs, so I've taken all these features, facilities as standard, but over here seems to be the exception, and unfortunately, I think it's more a reflection on like local councils then politicians in the area of the lack of advocacy or, I guess, acceptance of poor outcomes. (P5, 41-year-old male)

Upper Stony Creek and its immediate environment

After outlining the issues of concern shared by the residents, this section focuses on the Upper Stony Creek site and its surrounding environment to determine residents' perceptions of the newly greened area.

One of the main issues brought up by many participants is rubbish dumping. Rubbish dumping appears to be an issue present throughout the neighbourhood and is concentrated on Gilmore Road, a street on the Eastern side of the wetlands. Many residents expressed their concerns about this issue. As two participants pointed out:

There is also a big problem with dumping rubbish along the road near Upper Stony Creek, So, that's a significant problem. (P2,46-year-old female)

This is where they dump all the rubbish along here. There's no real fencing for the Upper Stony Creek. So, they just dump it along the creek. And I'm talking, like, three or four times a week on making reports of dumped rubbish and there's

entire bathrooms, and, like, crazy stuff, that all along there. Like, I could send you hundreds of photos that I've taken over three weeks. (P3, 32-year-old male)

The rubbish dumped along the road, near the wetlands, not only diminishes the area aesthetically but also reduces the recreational value of the site. Some participants, such as P7, a 32-year-old female participant, indicated that stronger surveillance and the installation of CCV by the local government could help to address the problem:



Fig 5: Rubbish Dumping along Gilmour Rd.

I think they need some form of security camera, potentially at the entrance because the other thing that makes the area really unliveable is there is a hell of a lot of rubbish dumping on the main street where you enter. So, that's Gilmore Road. And there's a lot of rubbish in the park itself. So, people bid up and vandalise the park. (P7, 32-year-old female)

Nearby factories

The unpleasant aesthetics of the site was reported as a reason for the site's unpopularity in the pre-transformation phase of the research (Kelly et al., 2022) — this still remains the case. In addition to the rubbish dumped near the site, the nearby factories degrade the aesthetic value of the site. Many participants expressed that they were discouraged to use the transformed site because of the unattractiveness of the nearby industrial zone. As one participant stated:

I think the Upper Stoney Creek is sort of unpleasant to walk there because of the close proximity to the factories. I would improve, you know, if you put that the Upper Stoney Creek thing if they had planned to be better to at least put large trees blocking off the view to the factories and the council getting on board, you know, stopping the pollution that comes from the factories,

even the external appearance of the factories—they're within their fence that grow mountains, mountains of dump rubbish within their fence, and it's not nice to look at or smell or see or hear. (P3, 32-year-old male)



Fig 6: Southern side of the wetlands

Despite all the benefits of the wetlands in relation to contact with nature, the industrial zone on the southern side of the wetlands diminishes this connection. The factories produce chemical odours that infuriate many wetland users and remind them they are in an industrial area and not in the natural environment. Additionally, the visible industrial area surrounding the site interferes with the pleasant scenery of the wetlands.

Insufficient amenities

Urban park amenities are essential components of every park to make them enjoyable and comfortable places for people to visit. Our study found that the Upper Stony Creek area lacks sufficient park amenities despite having undergone an entire transformation as a policy remedy to increase the use of the site by residents. It seems that the Upper Stony Creek area does not meet the needs of any age group. For instance, the area lacks shelter (natural and human-made) for adults and a playground for children. However, a recently erected pocket park can be seen on Cary Street, adjacent to Upper Stony Creek. As one participated noted:

During the heat of summer, we didn't do as many walks as we could have done. And yeah, a lot of it was because of the lack of shade along the walk. So, really, that needs to be more shelter, whether they provide that for actually putting in artificial structures or natural ones. (P10, 34-year-old female)

In addition to the absence of playground areas for children and shelter for adults, the absence of public toilets was also frequently mentioned, particularly by parents. Participants spoke about how the lack of public toilets in Upper Stony Creek restricts their visiting time at the site. As one participant mentioned:

I cannot spend much time in Upper Stony Creek because of the lack of toilet. As a parent with kids, the availability of a public toilet really influences how long you can spend at a park. So, if you're going to catch up with a group of mum friends, you go to parks with toilets because that means then the kids can play longer. (P4, 40-year-old female)

It seems that teenagers are also deprived of suitable amenities in the area and particularly at the site. P21, a mother of two teenagers, was not satisfied with the sports facilities provided for teenagers throughout the transformation project. Further to the unmet needs of different age groups, the site lacks basic amenities such as rubbish bins and tap water. As one participant mentioned:

There are no facilities, no bins, no water taps. You are still running along the concrete drain. Yeah, there's zero shade at all. So, it is unusable during summer. Warm weather. Yeah. It had a lot of potential. Project was great and much needed for the area. But once again, yeah, it was poorly delivered. (P5, 41-year-old male)

For several participants, Upper Stony Creek was a place to socialise with neighbours. As P1 explained:

I go there to walk. Yeah, but now, like, with my friends, we take a walk there and so chat with each other while we walk. (P1, 31-year-old female)

However, observations of the site during fieldwork revealed that the site, especially the area along the creek, lacks benches as a social resource.

Poor maintenance

The pre-greening phase of the study showed that interventions to resolve the poor maintenance of Upper Stony Creek could result in increased use of the site by residents; however, the current study showed that poor maintenance still remains one of the main issues of the site, despite the site's entire transformation. Participants in the research were not satisfied with the quality and maintenance of Upper Stony Creek area. Many participants

frequently identified rubbish dumping as an unpleasant feature of the site. As one participant pointed out:

What I don't like about Stony Creek... Same thing. So, syringes you'll see in the wetland, in the man-made lake there's. A build-up of litter. Unfortunately, the other one is dog poo. People don't pick up their dog poo around the track in upper Stony. (P9, 30-year-old female)

Contact with nature

Contact with nature in urban areas was spoken about by many participants. Since the transformation, participants have noticed a change in the wildlife in the area. The introduction of new wildlife to the site for some participants, specifically in the wetland area, is a sign of health and life in that particular part of the neighbourhood. The existing waterbody in the wetland has brought a variety of birds such as ducks and Ibises to the site. Through the introduction of new wildlife to the site, the wetland area has provided residents with more opportunities for contact with nature. As one participant noted:

When the water came and the area was starting to be more established, I started to hear the sound of frogs, which I like. I haven't seen any of the frogs, but I can hear the frogs and the water birds came. So, yeah, that was good. Makes a big difference to me, birds and frogs. And recently I've heard crickets when I walk around as well. I think they're crickets; they might be cicadas. (P15, 45- to 55-year-old female)

One of the consequences of the introduction of the new wildlife to the site is increased bird watching in the wetlands. Birdwatching, and in general, nature viewing in the wetlands is an opportunity to engage with the natural world and escape from everyday life. One participant described the following:

We like watching the birds in the wetlands. And if it's going to play again, yes, sometimes would have been on the swings. But majority of the time is just walking and nature viewing and birdwatching. (P9, 30-year-old female)

In addition to new opportunities to have greater contact with nature through the introduction of new wildlife to the site, the vegetation established around the wetlands has improved the contact between residents and nature in this urban area:

I think that they tried really hard to get some native species of plants. So, I appreciate that. There's a lot of, like, ground covers, and they tried to kind of make it a good tan track down. (P7, 32-year-old female)

Despite the aesthetic and native vegetation provided via the greening project in the Upper Stony Creek area, the lack of tree coverage in the site is noticeable, exacerbated by the wholesale clearing of site during remediation. Participants also complained about the lack of tree coverage, which limits use of the area to the early morning or late afternoon, especially in summer. Some participants even avoid using the site in the summer and prefer to go to more shady parks, such as Brimbank Park. As one participant noted:

When it's really hot, we would choose other parks over Stony Creek every single time because of the lack of shade—and because it's extremely hot around here, because there are no trees. (P7, 32-year-old female)

Discussion

The insights gleaned from our analysis of the interview transcripts have revealed a mix of outcomes, in that overall, the transformation of the site has enabled forms of engagement that were not identified pre-transformation, but that common issues still persist. This relates to rubbish dumping, maintenance and severe lack of respite spaces that are shaded. There are also no spaces provided for activities other than walking or wildlife watching, and as a consequence, there are no narratives of children or family activities found in interviews.

The presence of a heavy industrial area is an enduring problem. Non-visual sensorial insights are present in participant narratives, particularly in relation to the smell of factories nearby. Factories directly abutting the site, as well as heavy freight rail-lines, an elevated major highway and major earthworks always obscure line-of-sight from the wetlands. About 70% of the site is unusable due to a housing estate development, which is currently under construction, resulting in noise pollution and fencing prohibiting access to the creek. Under such conditions, it is questionable whether the transformation project fulfills all the health functions linked to green space development. First, as interview data has demonstrated, residents hesitate to visit the site because of unpleasant features both inside the site and across the immediate environment, such as the absence of shade, the lack of park amenities, and the surrounding industrial area. The relationship between park quality impacting whether residents visit parks and are active there is acknowledged widely in previous studies (Giles-Corti et al., 2005; Kaczynski & Havitz, 2009). Therefore, residents do not completely benefit from exposure to nature as they avoid visiting there. Second, the chemical odour and pollution emitted from the factories poses a potential health risk to

people visiting Upper Stony Creek and degrades the health benefits of the green space developed. In addition to the probable health risk, this condition causes mental stress on residents, which exacerbates problems in their emotional wellbeing. Elaborating on the emotional wellbeing aspect of Upper Stony Creek, the transformation project was identified as a missed opportunity by residents. This perception leads to a sense of disappointment, which adversely impacts their emotional experiences at the site and consequently exacerbates their health and wellbeing.

It appears that during the transformation of the project residents' expectations and concerns about Upper Stony Creek have not properly been addressed. The pre-greening study demonstrated that there were four main reasons: the absence of maintenance, rubbish dumping, accessibility, and safety for the lack of interest in visiting the site. The first two reasons remain the main concerns of residents. As discussed in the findings section, the poor maintenance and rubbish dumping negatively impact residents' perception about and usage of the site. The two last reasons were not brought up by residents during post-greening interviews. In addition to these reasons, the residents discussed the aesthetic unattractiveness of the site, vacancy, industrial pollution, and the lack of walkability in the Upper Stony Creek area. Regarding the walkability of the site, residents have welcomed the walking trail. Concern around the vacancy of the site did not emerge in the interviews. This concern appears to have been addressed through the planting of native plants and the use of the water element in the landscape design of the wetland area. However, the beautification of the site, especially of the wetlands, has not completely addressed the residents' concern around the aesthetic unattractiveness as the unattractive façade of the factories on the southern side of the wetlands still remains. Regarding the industrial pollution, the policy intervention during the transformation does not appear to have met residents' expectations. Residents are still unsatisfied with the chemical pollution emission from the factories. The table below illustrates how residents' concerns about the site have been addressed over the transformation project.

Table 3: Addressing undesirable features of the site in Upper Stony Creek transformation project

Undesirable features of the site expressed by residents in the pre-greening study	Transformation project
Absence of maintenance	Unaddressed
Rubbish dumping	Unaddressed
Poor accessibility	Did not emerge in the current study
Unsafety	Did not emerge in the current study

Aesthetic unattractiveness	Addressed in part
Vacancy	Did not emerge in the current study
Industrial pollution	Unaddressed
Lack of walkability	Addressed

One issue foregrounded in interviews is the absence of park amenities at the site. Upper Stony Creek lacks even basic park facilities such as water fountains and rubbish bins. These constitute basic amenity types that should be considered in green-space development. It is believed that the quality of urban green space is as important as the proportion of canopy coverage.

Any lack of attention paid to the provision of park amenities counteracts efforts made to minimise environmental injustices via green-space development. Discussed here is that the remedy for environmental injustice is not only greening space but improving the *quality* of green space. Indeed, a holistic approach towards urban greening policy is needed to combat environmental inequity and its negative consequences to public health and individuals' wellbeing.

The participation of individuals from CALD populations in this research has been improved since its pre-greening phase. However, the research has not been able to fully incorporate our anticipated 50% participation rate of individuals from this cohort. CALD communities in Sunshine North constitute an extremely hard-to-reach research participant pool. After an extended period of consultation with community-based organisations, potential research partners and local council, we have identified the following key determinants that have inhibited our capacity to recruit CALD community members:

- Lack of community-based researchers with community connections
- Narrow geographical focus of the study site
- Geographical area's severe lack of service by community and social organisations

Doing research in and with one's own community is a highly valued practice, especially when those communities are marginalised in some way. This is a rare practice area, and effectively engaging community members to conduct research in their areas is rare. This is a pervasive issue in qualitative research and will likely be an issue in further research activities. Efforts should be made in the future research to secure peer researchers in recognised community organisations to assist in research design, data collection and analysis.

The geographical focus of the study site was purposefully limited in order to capture individuals' experiences around their health and wellbeing in relation to the Upper Stony Creek transformation. Participant narratives revealed that residents are more likely to engage with other green spaces in the area when seeking contact with nature, outdoor recreation or meeting with friends and family. In particular, Brimbank Park and the Maribyrnong River figured large in the local imagination of green space. By broadening the geographical scope to encompass the entire Sunshine North community, the focus could shift to include other significant green and blue infrastructure utilised by the community. A narrow geographical scope limited our capacity to engage with potential participants and also community-based partners.

Potential community partners had no direct connection with the community that lived within 1.2km of Upper Stony Creek. Brimbank City Council, the Vietnamese Community in Australia (Victoria Chapter), Australian Vietnamese Women's Association, Djerrivarrh Community & Education Services and IPC Health all had significant interest in the area and population. Connections with community, however, were not evident. Sunshine North, and the study site is a severely underserved geographical area. There are few community services, meeting spaces and places where individuals encounter one another. Participant narratives throughout phases one and two of the research consistently highlight a lack of consultation on behalf of local council, as well as an apparent lack of responsibility taken for the maintenance of public space.

Future research with the community in Sunshine North must take into account these contexts and take appropriate steps to seek peer-research relationships via community partnerships. Together, partnerships should bring about effective engagement strategies to enhance dialogue between community members, services and advocacy groups.

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Interview schedule with Household/Resident

Q1: Could you tell me a bit about yourself and your household?

Q2: Do you have a backyard/garden? Do you like your backyard/garden? What sorts of things do you grow? Do you like gardening?

Q3: Are there any particular plants, trees or animals you like/dislike?

Q4: What do you like about your neighbourhood?

- Is everything you need here?
- Is it a friendly place? Are there like-minded people about?
- Do people of different backgrounds get along well?

Q5: What don't you like about your neighbourhood?

Q6: Do you feel you belong to this neighbourhood? Why/Why not?

Q7: How safe do you and your household feel in this neighbourhood and why?

Q8: Do you have any friends in the neighbourhood?

Q9: Do you participate in social activities in your neighbourhood?

Q10: How many of your neighbours do you know by name?

Q11: How many of your neighbours do you consider as your friends or socialise with?

Q12: [MAP PROMPT] Do you go to any parks or green areas? (Indicate of map). If yes:

- Where? How often do you go? How do you get there? (Walk, run, drive, ride)
- How long would it take to walk from your home to the nearest park/greenspace?
- Who do you go with?
- How long do you stay there? What sorts of things do you do? Why?
- Do any other members of your household use the local parks or green areas?

Q13: Has your use of parks changed during COVID? How?

Q14: What features of parks that you go to do you like best?

- Trees and veg
- Urban waterways

Q15: What do you dislike the most about the parks that you go to? Why? What do you think could improve them?

Q16: How does heat in summer affect how you use parks in your neighbourhood? (if walkers)

- Do you walk all through the year or only at certain times? If so, when?
- Do you change where you go?

- Do you do different sorts of activities in the parks in winter and summer? Why?

Q17: Do you take an interest in any local wildlife?

- If yes, what sort, when/how, why?
- Have you noticed any changes in the wildlife over the time you have lived here?
- Are there any local birds/animals you particularly like or dislike?

Q18: [IMAGE PROMPT] How do you refer to this area [USC]?

- How do you get there? (Walk, run, ride)
- How long would it take to get there?
- How often do you go?
- How long do you stay there?
- Who do you go with?

Q19: Are you aware of the changes made to Upper Stony Creek [participant term] and the space around it?

- What changes have you noticed?

Q20: Has your use of the space changed over time?

- Did the transformation influence your use?
- Did COVID lockdown influence your use?
- How do you use the space now?
- What about other people in your household?

Q21: What do you like most about it?

Q22: What do you like least about it?

Q23: What is your overall opinion on the project to change the [participant term for USC]?

- How do you think it has affected you and your household?
- Do you think it adds to/improves your neighbourhood?
- Did you engage in the consultation process?
- Did the changes made meet your expectations?

Q24: How would you describe your current health and wellbeing?

- Do you feel healthy? If so, why, why not?

Q25: How would you describe the health of your household in general?

- What sorts of activities or aspects of the household make it healthy/unhealthy? Why?

Q26: How do you feel about your stress levels? How often do you feel stressed?

- Has this changed over time?

- What factors do you think have influenced his change?

Q27: Aside from your use of parks we discussed earlier, what sorts of physical exercise do you do regularly?

- How frequently do you do it? Where? For how long? Who with?

Q28: Do you (or anyone in your household) walk regularly in your neighbourhood?

- If yes, what sorts of places do you walk to? How often? When or what time of day?
Do you walk with anyone?

If no (not walking), why not?