Investigating Residents' Use and Perceptions of Informal Greenspaces: A Study of Stony Creek in Melbourne's West

Abstract: As the world's population is becoming more urbanised, there is growing recognition of greenspaces as a promising planning tool in tackling problems associated with urbanisation. An increasing body of research highlights the physiological, environmental and social benefits of urban greenspaces for urbanites. So far, however, very little attention has been paid to informal greenspaces and their potential uses and benefits. Informal greenspaces are found in a variety of forms and types including vacant lots, railway or waterway verges and brownfields. Drawing on a case study of Upper Stony Creek, an urban waterway in Melbourne's West, this paper examines how residents perceive and use informal greenspaces. Upper Stony Creek is a concreted drainage channel separated from the residential area. An informal greenspace of around 40,000 square metres is located towards the south of the Creek. Drawing on qualitative interviews with residents living in close proximity to the Creek, the study examined how residents engaged with and benefited from the presence of informal greenspaces in their neighbourhood. The findings showed that not only do residents use the accessible green area, but they were also using the fenced-off channel verges. Dog walking was the main activity conducted in these spaces and the lack of regular maintenance and perceptions of unsafety were among the most critical concerns regarding their use. The paper concludes by recommending ways informal greenspaces can be managed and utilised to add value to urban environments and fully capitalise on their potential as additional parkland.

Key words: Informal greenspace; greening; perceptions; urbanisation.

Introduction

A growing body of literature recognises the importance of urban greenspaces and their contribution to human and more-than-human lives in cities (Groenewegen et al. 2006; Lee & Maheswaran 2011; Maller et al. 2006). The health benefits of greenspaces and access to nature have been widely studied over the last two decades (Lee & Maheswaran 2011; Townsend et al. 2003) and include both physical (Shanahan et al. 2015) and mental health and wellbeing (Alcock et al. 2014). Social cohesion (Groenewegen et al. 2006) and economic benefits (Tyrvainen 1997) are less studied, but also potentially important aspects of greenspaces (Keniger et al. 2013). Environmental benefits such as ecosystem services, improving microclimate, reducing air pollution, mitigating noise and biodiversity conservation are also widely acknowledged (Kong et al. 2010; Shanahan et al. 2015). Besides formal urban greenspaces, informal greenspaces (IGS) can also be considered as a part of urban green infrastructure with similar benefits to residents and the environment. IGS are simply the open spaces of cities that are not delineated (Akkerman & Cornfeld 2010) and include some form of vegetation. According to Hofmann et al. (2012), informal greenspaces differ to formal greenspaces in their low to zero maintenance and the absence of human involvement in their design and landscaping.

In contrast to formal urban greenspaces, up to now, far too little attention has been paid to IGS and the potential benefits they can provide for urban dwellers (Rupprecht et al. 2015c). Consequently, residents' perception of IGS and how they make use of such spaces are not fully understood. Specifically, the extent to which IGS can replace or complement more formal greenspaces is not known.

Seeking to partially address these gaps, this paper reports on the findings from a qualitative study of Stony Creek, an informal greenspace in Sunshine North, Victoria. Drawing on semi-structured interviews with residents living in close proximity to the Creek, the study aimed to investigate perceptions towards the site and the type of activities residents conducted in the area. It also explored what residents liked or disliked about their local IGS and what aspects encouraged or discouraged them from using this part of their neighbourhood.

The following section provides an overview of the concept of informality and informal spaces in cities and a summary of current research on IGS. The next section contextualises the research by exploring the case study of Sunshine North and the Stony Creek Site. The final section presents the data from interviews with residents and gives a brief summary and critique of the findings. Findings indicated that residents used the accessible green area of the IGS as well as the fenced-off channel verges. The main activity observed in the IGS was dog walking and the lack of regular maintenance and perceptions of unsafety were among the most critical concerns regarding IGS. The paper concludes by making some

brief recommendations about how IGS can be managed and utilised to add value to urban environments and fully capitalise on their potential as additional parkland.

Cities and informality

The concept of urban informality is a major area of interest within built environment related disciplines including planning and urban design. Informal spaces have been referred to by various names and terms. A list of these terms can be seen in Table 1.

Table 1 Terms used to refer to informal spaces

Term Describing Informal Spaces	Source
'terrain vague'	(De Sola Morales 1995)
'dead zones'	(Doron 2000)
'parafunctional space'	(Papastergiadis 2002)
'leftover space'	(Akkerman & Cornfeld 2010)
'superfluous landscapes'	(Nielsen 2002)
and 'marginal sites'	(Gandy 2013)
'spaces of uncertainty'	(Cupers & Miessen 2002)
'urban voids'	(Akkerman & Cornfeld 2010; Armstrong 2006)
'ambivalent landscapes'	(Jorgensen & Tylecote 2007)
'the urban interstices'	(Tonnelat 2008)
'wasteland'	(Gandy 2013)
'counter public'	(Shaw & Hudson 2009)
unintentional landscapes	(Gandy 2016)
'open mosaic habitat'	(Maddock 2008)
'in-between space'	(Brighenti 2016)

Many terms in this diverse lexicon of informal spaces carry negative or neutral meanings while only a few have positive connotations. This uncertainty and the mixed feelings regarding informal spaces are noticed by Gandy (2016, p. 433):

> 'In some cases, so-called wastelands or terrain vague have been appropriated as spaces of adventure, creativity or discovery. In other cases, these anomalous spaces have been the focus of anxiety or disdain, or simply erased on account of their putative 'emptiness' to make way for more lucrative forms of land use.'

According to Akkerman and Cornfeld (2010), informal spaces are part of a city's subconscious: 'They emerge as if by accident, sometimes the result of negligence or omission, or simply a feature of time flow in the city' (Akkerman & Cornfeld 2010, p. 33). Informal spaces form in contrast to 'the ordered and controlled spaces' of the city (Shaw & Hudson 2009, p. 3). They are perceived as 'empty and meaningless by authoritarian figures' due to their lack of official function (Shaw & Hudson 2009, p. 3). A key aspect of informal spaces is therefore how they often contrast with their surroundings – usually ordered, designed, controlled and more formal urban spaces. In fact, the terms used to refer to informal spaces highlight this juxtaposition and their presence at the edges or margins of the urban form (Brighenti 2016).

Informal greenspaces

The term 'urban greenspaces' refers to publicly owned and accessible open spaces within urban and peri-urban environments that are wholly or partly covered by considerable amounts of vegetation (Conedera et al. 2015; Hadavi et al. 2015; Pillay & Pahlad 2014). Urban greenspaces usually include designed and delineated areas, rather than less formal vegetated areas that are not planned — otherwise known as informal greenspaces (Akkerman & Cornfeld 2010) or IGS. So far, there has been little agreement on the types and definition of IGS and their description remains open (Rupprecht & Byrne 2014):

> 'IGS consists of any urban space with a history of strong anthropogenic disturbance that is covered at least partly with nonremnant, spontaneous vegetation. It is not formally recognized by governing institutions or property owners as greenspace designated for agriculture, forestry, gardening, recreation' (Rupprecht et al. 2015b, p. 206).

The formality or informality of a greenspace is not an absolute fact and can be dependent on several factors including access and accessibility, control and management, frequency of maintenance and human involvement in design and upkeep (Rupprecht et al. 2016; Rupprecht et al. 2015b). The degree of informality in greenspaces is therefore relative and varies based on their qualities and characteristics. Thus, classifying greenspaces as either formal or informal can be simplistic and problematic for decision makers planning to alter such spaces.

Similar to other informal spaces, previous studies have shown that residents usually have complex and sometimes contradictory perceptions of local IGS (Jorgensen & Tylecote 2007; Rupprecht et al. 2015b). Vacancy and the lack of perceived safety, low maintenance and litter are among the negative feelings reported towards such spaces. Conversely, naturalness and lack of restrictions are among the positive perceptions of IGS (Akkerman & Cornfeld 2010; Rupprecht et al. 2015b; Shaw & Hudson 2009). According to Rupprecht et al. (2015b) residents prefer some level of human influence and maintenance in IGS rather than none.

Informal greenspaces come in different sizes and formats 'from … small clefts of vegetation as well as fortuitous urban voids' (Akkerman & Cornfeld 2010, p. 32). Depending on their size, their benefits can vary. The most obvious benefits of larger IGS is the provisioning of ecosystem services to cities (Kremer et al. 2013). Previous investigations of IGS such as vacant lots revealed that they can perform similarly to or even be more effective than gardens or lawns in some of the ecosystem services they provide (Kremer et al. 2013).

Biodiversity conservation is among other benefits of IGS (Gandy 2013; Rupprecht et al. 2015a) where they can represent refuges or habitat remnants for native animal and plant species. Socio-psychological benefits of IGS should also not be overlooked. IGS are places of 'spiritual refuge' (Akkerman & Cornfeld 2010, p. 34) and they are considered as 'social breathing spaces' in urban environments (Shaw & Hudson 2009, p. 1). Other socio-ecological benefits that IGS can offer include food production (Kremer et al. 2013).

Overall, IGS provide opportunities for a diverse range of activities and uses including ones that occur in formal greenspaces and public open spaces, and accommodating some opportunities that formal greenspaces may fail to provide (Rupprecht et al. 2016; Shaw & Hudson 2009). Key features in encouraging IGS use are shown to be proximity and distinctive characteristics of the site including the absence of rules and restrictions and passive surveillance (Rupprecht et al. 2016). Proximity and accessibility are similarly shown to be key factors in formal greenspaces visitation (Jim & Chen 2006). Additionally, the type of IGS and vegetation structure can also influence their visitation and use (Rupprecht et al. 2015c).

Previous research suggests that IGS can be places of exploration and excitement and 'escape from adult supervision' (Rupprecht et al. 2016) and as such they are increasingly regarded as places of opportunity to serve community needs (Kremer et al. 2013). According to Akkerman and Cornfeld (2010, p. 34), they are 'welcome agents of change in a regimented urban environment:

> The all-too-frequent evolution of fortuitous urban voids into crime-infested danger zones does not detract from their potential to urban design as ingredients of urban wonderment, of the unexpected, the serendipitous and the invigorating in the urban surprise-free experience. The unexpectedness that leftover spaces express is all integrated within the mainstream space of the city. In a regulated city-form appropriate landscaping could turn the leftover space into a small haven of foliage or sudden tranquillity. Successful design could transform it into a welcome point of respite, if safety to the pedestrian could be guaranteed.

IGS are especially important in urban areas lacking in parks and formal greenspaces (Rupprecht et al. 2015b). Formal greenspaces are often inequitably distributed across cities and spatially correlate with socioeconomic variation (Shanahan et al. 2014). Affluent neighbourhoods generally have a more tree cover and better access to both public and private greenspaces, whereas lower socio-economic areas have poorer tree cover and residents often have less access to public greenspaces (Lin et al. 2015; Pauleit et al. 2005). In residential areas where residents have low access to greenspaces, the presence and availability of IGS can offer opportunities to residents for interaction with nature that they might otherwise not have.

Lastly, IGS are places of potential. They are seen as neighbourhood spaces that can be utilised in future interventions and urban renewals. They are considered as reserved spaces of the city that can be given a proper function as the needs rise.

> Vacant lots are sites for social and ecological processes in the city. The social context of vacant lots, often residential areas or neighbourhoods with high population density and low household income, offers potential to develop landscapes that are more socially and ecologically beneficial. Unused lots within high social need contexts can be prioritized for redevelopment of public green infrastructure (Kremer et al. 2013, p. 230).

Study area and the interview procedure

The study is part of a larger multi-disciplinary longitudinal study on the impacts of greening interventions on residents' health and wellbeing, and plant and animal biodiversity. This paper reports on a subset of baseline data about local residents' perceptions and use of a local IGS in Sunshine North.

Located 12 kilometres west of Melbourne's Central Business District, Sunshine North is an established suburb with a population of more than 10,000 people and an average of 2.9 people per household (Australian Bureau of Statistics 2011). The study area is bounded by Gilmore Road, Furlong Road and Stony Creek — an urban waterway in Melbourne's western growth corridor that runs through Sunshine North (Figure 1). The area currently does not offer a great variety of greenspaces which was also corroborated through interviews findings. Public greenspaces in the case study area include Lloyd Reserve and an informal greenspace in close vicinity to Stony Creek (which will be transformed into a park through the proposed greening intervention). This section of the creek is currently a concrete channel and the associated open space offers very poor open space amenity (*Brimbank City Council* 2015). The local government authority, Brimbank City Council, has recently upgraded Lloyd Reserve which is being used by sports clubs.

Figure 1 The area under study

(Source: Nearmap)

Lloyd Reserve

Stony Creek

Intervention Site

The first author conducted 20 interviews with 23 participants (including partners and spouses), during October 2016 to March 2017. Residents were recruited using flyers delivered to mailboxes, with participation requiring a Sunshine North residential address and a minimum of 18 years of age. The process of recruiting and conducting interviews continued until data themes were 'rich and thick' and

data saturation was achieved (Richards & Morse 2012). Interviews were between 25 minutes to 105 minutes in length and addressed residents' use of IGS and their perceptions and experiences of their neighbourhood greenspaces. A professional transcription service transcribed the interview audio recordings and these were imported into NVivo (qualitative analysis software) for analysis. Thematic analysis of the interviews was based on coding of responses into a series of topics related to the aims of the study.

Table 2 Participants' demographic information

Code	Gender	Age	Cultural background	Years lived in the neighbourhood
1a	male	75 plus	Australian	47
1b	female	75 plus	Australian	47
2	male	35-44 years old	English	8
3	female	25-34 years old	Mixed European	3
4	female	35-44 years old	Maltese/Australian	13
5	female	35-44 years old	Australian/English	9
6	female	45-54 years old	English	5
7a	female	45-54 years old	English	12
7b	male	45-54 years old	Australian/English	4
8	male	65-74 Years old	Mixed European	60
9	female	65-74 Years old	Maltese	54
10	female	45-54 years old	English	23
11	female	55-64 years old	Mixed European	33
12	male	45-54 years old	New Zealand	6
13	male	35-44 years old	Maltese	5
14	male	55-64 years old	English/Irish	1.5
15	Male	35-44 years old	Greek	44
16	Male	35-44 years old	Irish/Mauritian	15
17	Male	25-34 years old	European	NA
18	Female	35-44 years old	Australian/German	30
19	Male	55-64 years old	Croatian	1.5
20a	Female	45-54 years old	English	17
20b	Male	45-54 years old	European/Croatian	54

Table 2 shows participants' demographic information which varied across age, gender and cultural background, and the years they had lived in the Sunshine North suburb. Participants had lived in their suburb on average for 20 of years and therefore had good knowledge of, and familiarity with, the formal and informal greenspaces in their area.

Findings
The following is a brief description of residents' perceptions of and their issues and concerns about their neighbourhood in addition to a discussion of how the Stony Creek site is used in its existing state.

Overall perceptions
The study found that the overall perceptions of residents about the Stony Creek site were negative. The overwhelming majority of participants (n=19) commented on undesirable features in more than 100 instances coded in NVivo. Whereas less than half the participants commented on the positive and desirable attributes of the site (16 instances). This finding is consistent with previous studies that there are mixed feelings towards IGS (Gandy 2016; Jorgensen & Tylecote 2007; Rupprecht et al. 2015b).

> The Stony Creek drain that we're talking about until this project came along, I didn't even know it was called the Stony Creek …, it was a drain. I never walked along the drain, I'd never had anything to do with the drain. It's just a plain, old, ugly drain that was there. (female participant, 45-54 years old)

Participants were asked about the popular names in the neighbourhood frequently associated with the Creek and the nearby open space area. The analysis of responses to this question also confirmed that overall feelings about the area are not positive. Most of the names associated with the Creek ('the Stony Creek drain', 'storm drains', 'drain', 'concrete channel', 'urban rubbish', and 'the culvert'), and the adjacent open space area ('paddock', 'flood basin', 'dumping area' and 'the big hole') did not convey positive feelings towards the area. '(The) Drain' was the most popular name (n=13) among participants.

> I call it Stony Creek, but that's because I know it's Stony Creek. I wouldn't know whether many of the neighbours would actually, unless they're old timers, would know that it's actually there and that it was a creek. I think they probably view it as a drainage line. (female participant, 45-54 years old)

The thematic analysis of the interview responses suggests that there are four main issues regarding the unpopularity of the Stony Creek area: poor maintenance, litter and rubbish being dumped, low accessibility and feelings of lack of safety. Unattractiveness of the site, vacancy, pollution, unattractive surroundings, and lack of walkability were among less prominent reasons for unpopularity of the area. Consistent with the literature (Qureshi et al. 2010; Rupprecht et al. 2015a), this research found that poor maintenance was the main reason for interviewees' lack of interest in the informal greenspace (n=11). Maintenance mainly referred to the lack of frequent lawn mowing and grass cutting and the area not being tended:

> 'We don't go there anymore because of the weed problem and there's no pathway, really, once you get to that zone… Uh, it's deserted. There's no one really that maintains the area….' (male participant, 25-34 years old)

Poor maintenance was associated with a sense of unsafety regarding natural hazards such as snakes. One interviewee referred to the area not being safe for his dogs as well as himself.

> 'If they cut the grass a bit more often, it will be a bit more friendly for usage. Up until recently, the grass was a bit high, so it wasn't possible to go there because of potential snakes.' (male participant, 35-44 years old)

Following poor maintenance, antisocial behaviours such as litter and rubbish dumping in the informal greenspace and along the adjacent street was the main concern about the use of the open space (Figure 2). Residents frequently spoke of rubbish being dumped along the edges of the informal greenspace (n=10).

> '…it annoys the crap out of me because people dump rubbish there and you can never catch it because council fees is probably too high and they probably got too much at their houses too so they tend to dump rubbish.' (male participant, 75 plus)

Figure 2 Litter problems in the area

(Photo taken by the first author on 10.10.2016)

The majority of those who were interviewed perceived the neighbourhood as unsafe and the crime rates as constantly rising (n=18). Additionally, eight participants spoke of their perceptions of unsafety while walking in or along the IGS. These results seem to be consistent with other research which found safety is among the key concerns regarding informal spaces use (Akkerman & Cornfeld 2010; Ozguner & Kendle 2006; Rupprecht & Byrne 2014). Natural hazards (such as snakes) in addition to crimes, drug deals and use were among the main concerns of participants regarding safety.

> 'You only have to come out night time – and there's no houses there, of course – and you'll see a car parked here and there. And, uh, you know, it's all about drugs.'
> (male participant, 45-54 years old)

Another reported problem was the access to the area. While the open area adjacent to the Creek is publicly accessible, the Creek itself is fenced off from the residential area.

> 'I don't like taking [my daughter] down there as well... Cuz I've gotta go through the fence and she goes, 'Oh you can't go in there, it's a fenced-off area', I said 'It's public land to me'. Um, so she doesn't like going down there.... if there's a fence there, and there's a hole in it, it means someone's cut the hole purposefully for doing something wrong. You know what I mean? She doesn't like doing the wrong thing.' (male participant, 35-44 years old)

Figure 3 Informal access to the creek

(Photo taken by the first author on 10.10.2016)

A common view amongst interviewees was that the area is not attractive, inviting or people-friendly (n=8).

> 'But, it's not very tasteful to the eye when you're walking around that sort of area.'
> (male participant, 25-34 years old)

Five interviewees alluded to the notions of 'nothingness' and 'vacancy' when describing the Stony Creek open space. Opinions differed as to whether its vacancy is considered as negative (has encouraged current problems such as litter dumping) or positive (an opportunity for future development). As one interviewee put it: 'People think no one cares about this stretch of road. So, I might as well dump the rubbish 'cause it's, you know, it's a nothing area'. Talking about future opportunities an interviewee said: 'I like that it's a vacant block of land that they're going to do something with, one day'.

Some participants expressed concerns about different types of pollution (sound, air, water and environmental pollution) associated with the site. A number of interviewees explicitly referred to factories in the surrounding area as the source of pollution. Another reported problem was the lack of walking tracks on the site. A few participants were particularly critical of the area getting wet, soggy and 'cloggy' as expressed by one participant (n=4).

Two themes emerged from the analysis of positive feelings towards the area. A number of interviewees commented about the vegetation, trees and landscaping of the site (n=4). And a few residents acknowledged the sense of privacy and being surrounded that the site offers.

> 'Actually, when you're in the lower part of it, you do feel, um, ah, you know, like you've got a bit of privacy too because you can't see up. You know, you feel a bit sort of hidden from the road, from the people driving past, so it's quite nice really.'
> (female participant, 45-54 years old)

Current uses

Participants were asked to discuss how they currently use the area. Their responses showed that the area is considerably underused. The site was most popular for dog walking (Figure 4). Six participants mentioned they often walk their dogs in the area, have them off leash or play 'catch' with them. The informality of the space has given residents the impression that they can have their dogs 'off leash' in the area. Otherwise, there is no sign to permit walking dogs off leash in the Stony Creek informal greenspace area.

> 'I'll go for a walk with the dog by myself. Which is good, but um ... So I'll go down there by myself, um, and what that means is I can take the dog off the leash cuz there's no one else around. The dog runs after the rabbits-Um, she goes into the creek, I let her drink the water cuz it's running so fresh.' (male participant, 35-44 years old)

<u>Figure 4 Dog walking along the creek</u>

<u>(Photo taken by the first author in 2017)</u>

A few participants stated that they walked past the open area (n=4) rather than using the space. A number of interviewees reported that they had seen motor bike riders using the area (n=7). As previous research has shown, IGS provide opportunities for a diverse range of activities that formal greenspaces may fail to accommodate (Rupprecht et al. 2016; Shaw & Hudson 2009) and the use of Stony Creek informal space by motor bike riders is an example of such activities.

> That retarding basin as it is now, the only people who actually use it is some trail bike riders who park there occasionally and use it. 'Cuz there's some jumps and ramps that have just sort of formed that way. (male participant, 35-44 years old)

Three interviewees mentioned they take their children or grandchildren to the area. Two residents also used the Creek site as a shortcut route to the train station.

Discussion and Conclusion

This study set out to investigate residents' perceptions and use of IGS in their neighbourhoods. IGS are understudied in urban environments and represent an opportunity to increase liveability and improve health and social outcomes, especially in lower socioeconomic areas of cities that may be lacking in

formal greenspaces, and in the context of increasing global urbanisation. Drawing on qualitative interviews with residents of Sunshine North, this study examined how residents used the Stony Creek informal greenspace in its existing condition. Despite its informality and the presence of fencing in some areas, residents valued the site and used it for a number of different activities.. However, consistent with the literature (Rupprecht et al. 2016; Rupprecht et al. 2015b), the findings indicated that maintenance, access, safety and litter problems were among the concerns of residents and affected how much and when they used the Stony Creek area. The safety concerns included both natural hazards such as the presence of snakes in the area (encouraged by a lack of regular maintenance), crime and local drug trade. Unattractiveness of the site and surroundings and low perceptions of walkability in the site were of less concern.

In spite of these misgivings, residents use the area for practices typically found in formal greenspaces such as dog-walking, and less typical ones such as motor bike riding. In contrast to formal greenspaces, the lack of restrictions in IGS provide opportunities for the emergence of practices that might not be acceptable in more formalised urban spaces (Rupprecht et al. 2016). In fact, residents appreciated the sense of exploration, informality and feelings of being away from urbanisation that this site provided. Therefore, IGS' are fulfilling a niche that is not met by formal greenspaces. This means that when IGS are targeted for interventions residents' current uses of the IGS should be taken into account during the transformation where possible.

The findings of this study highlight the importance of understanding residents' perceptions and concerns about existing informal greenspaces for informing future interventions and greenspace renewal projects. The case study of Stony Creek suggests that small interventions that aim to target the main concerns such as regular maintenance and providing better access can increase the use of IGS without resorting to formalising the space. In fact, understanding residents' needs and expectations for these areas could provide an opportunity for cost-effective interventions that do not jeopardise the informal character of such areas.

In conclusion each informal greenspace will be unique in its features and characteristics, as will residents' perceptions of it. Therefore, understanding these sites and residents' lived experiences, issues and concerns more completely through in-depth consultation with the local community will be important in order to ensure that future interventions meet community needs and expectations. A sound knowledge of how IGS are used or the reasons why they are not used can inform planners and decision makers who plan to intervene in such spaces and increase the liveability of urban neighbourhoods.

Acknowledgements

References

Akkerman, A & Cornfeld, AF 2010, 'Greening as an urban design metaphor: Looking for the city's soul in leftover spaces', *The Structurist*, vol. 49, no. 50, pp. 30-35.

Alcock, I, White, MP, Wheeler, BW, Fleming, LE & Depledge, MH 2014, 'Longitudinal effects on mental health of moving to greener and less green urban areas', *Environmental Science & Technology*, vol. 48, no. 2, pp. 1247-1255.

Armstrong, H 2006, 'Time, Dereliction and Beauty: an Argument for 'Landscapes of Contempt'', paper presented to The Landscape Architect, IFLA Conference Papers.

ABo Statistics 2011, *Australian Bureau of Statistics*, Australian Bureau of Statistics, ABS.

Brighenti, AM 2016, *Urban interstices: the aesthetics and the politics of the in-between*, Routledge.

Brimbank City Council, 2015, Brimbank City Council, viewed 6/4/2017 2017, <http://www.buzz.brimbank.vic.gov.au/from-wasteland-to-wetland-upper-stony-creek-set-for-transformation>.

Conedera, M, Del Biaggio, A, Seeland, K, Moretti, M & Home, R 2015, 'Residents' preferences and use of urban and peri-urban green spaces in a Swiss mountainous region of the Southern Alps', *Urban Forestry & Urban Greening*, vol. 14, no. 1, pp. 139-147.

Cupers, K & Miessen, M 2002, *Spaces of uncertainty*, Müller und Busmann Wuppertal.

De Sola Morales, I 1995, *Terrain Vague in AnyPlace C*, Davidson MIT Press: London.

Doron, GM 2000, 'The dead zone and the architecture of transgression', *City*, vol. 4, no. 2, pp. 247-263.

Gandy, M 2013, 'Marginalia: Aesthetics, ecology, and urban wastelands', *Annals of the Association of American Geographers*, vol. 103, no. 6, pp. 1301-1316.

Gandy, M 2016, 'Unintentional landscapes', *Landscape Research*, vol. 41, no. 4, pp. 433-440.

Groenewegen, PP, Van den Berg, AE, De Vries, S & Verheij, RA 2006, 'Vitamin G: effects of green space on health, well-being, and social safety', *BMC public health*, vol. 6, no. 1, p. 1.

Hadavi, S, Kaplan, R & Hunter, MCR 2015, 'Environmental affordances: A practical approach for design of nearby outdoor settings in urban residential areas', *Landscape and Urban Planning*, vol. 134, pp. 19-32.

Hofmann, M, Westermann, JR, Kowarik, I & van der Meer, E 2012, 'Perceptions of parks and urban derelict land by landscape planners and residents', *Urban Forestry & Urban Greening*, vol. 11, no. 3, pp. 303-312.

Jim, CY & Chen, WY 2006, 'Perception and attitude of residents toward urban green spaces in Guangzhou (China)', *Environ Manage*, vol. 38, no. 3, pp. 338-49.

Jorgensen, A & Tylecote, M 2007, 'Ambivalent landscapes—wilderness in the urban interstices', *Landscape Research*, vol. 32, no. 4, pp. 443-462.

Keniger, LE, Gaston, KJ, Irvine, KN & Fuller, RA 2013, 'What are the benefits of interacting with nature?', *Int J Environ Res Public Health*, vol. 10, no. 3, pp. 913-35.

Kong, F, Yin, H, Nakagoshi, N & Zong, Y 2010, 'Urban green space network development for biodiversity conservation: Identification based on graph theory and gravity modeling', *Landscape and Urban Planning*, vol. 95, no. 1, pp. 16-27.

Kremer, P, Hamstead, ZA & McPhearson, T 2013, 'A social–ecological assessment of vacant lots in New York City', *Landscape and Urban Planning*, vol. 120, pp. 218-233.

Lee, AC & Maheswaran, R 2011, 'The health benefits of urban green spaces: a review of the evidence', *Journal of public health*, vol. 33, no. 2, pp. 212-222.

Lin, B, Meyers, J & Barnett, G 2015, 'Understanding the potential loss and inequities of green space distribution with urban densification', *Urban Forestry & Urban Greening*, vol. 14, no. 4, pp. 952-958.

Maddock, A 2008, 'UK Biodiversity Action Plan; Priority Habitat Descriptions', *UK Biodiversity Action Plan, 94pp*.

Maller, C, Townsend, M, Pryor, A, Brown, P & St Leger, L 2006, 'Healthy nature healthy people: 'contact with nature' as an upstream health promotion intervention for populations', *Health Promot Int*, vol. 21, no. 1, pp. 45-54.

Nielsen, T 2002, 'The return of the excessive superfluous landscapes', *Space and culture*, vol. 5, no. 1, pp. 53-62.

Ozguner, H & Kendle, AD 2006, 'Public attitudes towards naturalistic versus designed landscapes in the city of Sheffield (UK)', *Landscape and Urban Planning*, vol. 74, no. 2, pp. 139-157.

Papastergiadis, N 2002, *Traces Left in Cities in Leon Van Schaik Poetics in Architecture*, London: Architectural Design, Wiley Academy.

Pauleit, S, Ennos, R & Golding, Y 2005, 'Modeling the environmental impacts of urban land use and land cover change—a study in Merseyside, UK', *Landscape and Urban Planning*, vol. 71, no. 2, pp. 295-310.

Pillay, S & Pahlad, R 2014, 'A gendered analysis of community perceptions and attitudes towards green spaces in a Durban Metropolitan residential area: Implications for climate change mitigation', *Agenda*, vol. 28, no. 3, pp. 168-178.

Qureshi, S, Breuste, JH & Lindley, SJ 2010, 'Green space functionality along an urban gradient in Karachi, Pakistan: a socio-ecological study', *Human Ecology*, vol. 38, no. 2, pp. 283-294.

Richards, L & Morse, JM 2012, *Readme first for a user's guide to qualitative methods*, Sage.

Rupprecht, CD & Byrne, JA 2014, 'Informal urban green-space: comparison of quantity and characteristics in Brisbane, Australia and Sapporo, Japan', *PLoS one*, vol. 9, no. 6, p. e99784.

Rupprecht, CD, Byrne, JA, Garden, JG & Hero, J-M 2015a, 'Informal urban green space: a trilingual systematic review of its role for biodiversity and trends in the literature', *Urban Forestry & Urban Greening*, vol. 14, no. 4, pp. 883-908.

Rupprecht, CD, Byrne, JA & Lo, AY 2016, 'Memories of vacant lots: how and why residents used informal urban green space as children and teenagers in Brisbane, Australia, and Sapporo, Japan', *Children's Geographies*, vol. 14, no. 3, pp. 340-355.

Rupprecht, CD, Byrne, JA, Ueda, H & Lo, AY 2015b, ''It's real, not fake like a park': Residents' perception and use of informal urban green-space in Brisbane, Australia and Sapporo, Japan', *Landscape and Urban Planning*, vol. 143, pp. 205-218.

Rupprecht, CDD, Byrne, JA, Ueda, H & Lo, AY 2015c, ''It's real, not fake like a park': Residents' perception and use of informal urban green-space in Brisbane, Australia and Sapporo, Japan', *Landscape and Urban Planning*, vol. 143, pp. 205-218.

Shanahan, D, Lin, B, Bush, R, Gaston, KJ, Dean, JH, Barber, E & Fuller, RA 2015, 'Toward improved public health outcomes from urban nature', *American journal of public health*, vol. 105, no. 3, pp. 470-477.

Shanahan, D, Lin, BB, Gaston, KJ, Bush, R & Fuller, RA 2014, 'Socio-economic inequalities in access to nature on public and private lands: A case study from Brisbane, Australia', *Landscape and Urban Planning*, vol. 130, pp. 14-23.

Shaw, P & Hudson, J 2009, 'The qualities of informal space:(Re) appropriation within the informal, interstitial spaces of the city', paper presented to Proceedings of the conference occupation: negotiations with constructed space. Brighton: University of Brighton.

Tonnelat, S 2008, 'Out of frame'The (in) visible life of urban interstices—a case study in Charenton-le-Pont, Paris, France', *Ethnography*, vol. 9, no. 3, pp. 291-324.

Townsend, M, Maller, C, St Leger, L & Brown, P 2003, 'Using environmental interventions to create sustainable solutions to problems to health and wellbeing', *Environmental health*, vol. 3, no. 1, pp. 58-69.

Tyrvainen, L 1997, 'The amenity value of the urban forest: an application of the hedonic pricing method', *Landscape and Urban Planning*, vol. 37, no. 3, pp. 211-222.