

Landscape (Sub)Urbanism in Theory and Practice

Richard Weller

ABSTRACT This paper considers the application of principles of landscape urbanism to suburban landscapes in order to help landscape architects play a more influential role in shaping contemporary patterns of suburban sprawl. Landscape urbanism needs to define itself more clearly in relation to dominant socio-political and aesthetic movements such as smart growth, green urbanism, and new urbanism, and to distinguish itself more clearly from, and in relation to, McHargian planning methods. The paper first positions landscape urbanism in the context of a wider array of (sub)urban planning and design theories and explains how landscape urbanism is a departure from critical regionalism. It then describes and reflects upon a three-year master planning project for a suburban residential development for 40,000 people in Perth, Western Australia, funded in part by the Australian Research Council. By bringing theory and practice together as such, this essay contributes to the maturation of landscape urbanist discourse.

KEYWORDS Landscape urbanism, suburban sprawl, smart growth, green urbanism, new urbanism, McHargian planning method, critical regionalism

The American population is expected to increase by 60 million before the year 2025. Many of these new citizens will want a freestanding house and a garden. Twelve million new homes will be built in the first decade of the 21st century alone (Gillham 2002, 246; Nelson 2002, 85). Where these new communities will be sited, who will design them, and what form they will take are questions landscape architects can be expected to answer.

Introducing the Harvard Design Magazine Reader *Sprawl and Suburbia*, William S. Saunders writes, “Sprawl . . . presents itself as the single most significant and urgent issue in American land use” (2005, xvii). In the same book, Robert Fishman says, “Suburbia and sprawl are ultimately about our democracy and survival” (2005, xvii) (Figure 1). The landscape of suburban sprawl is clearly important, yet within landscape and architectural design discourse, we don’t hear much about it. Despite their considerable work in suburbia, landscape architects have written very little about the topic of suburban sprawl.¹ More troubling is that in the vast array of literature on the topic of sprawl, the profession and the academy of landscape architecture are rarely mentioned: landscape urbanism, never.

Although many landscape architects might find sprawl repugnant, many of them do a good trade in contemporary suburbia. Their involvement, however, often seems merely ornamental and apologetic, neither structurally influential nor ecologically substantive (Duany 2000, 80). In deference to a “sense of place,” the landscape that the new suburb almost invariably erases is returned to the new development as thematic veneer, a symbolic pastiche or hapless remnant of its former self. Indeed, many suburbs draw their names from the very landscape they destroy or some other unlikely Arcadian reference. But despite its transparent deceptions and much maligned socio-ecological merits, one can’t ignore that suburbia still gains considerable purchase from its long gone pastoral idyll and associated aristocratic pretensions.

The design and delivery of the leftover open spaces in suburbia is a legitimate landscape architectural craft. If, however, landscape architects engaged in such work consider themselves landscape urbanists, in all likelihood they will argue for and develop design tactics to garner more significant structural influence over the whole suburban planning process. They will, according to Chris Reed, position themselves as “urbanistic system builder[s] whose interests now encompass the research, framing, design and implementation of expansive new public works and civic infrastructures” (Reed 2006, 283).

Many landscape architects, particularly modernists, would say they have always tried to do and be what Reed’s portrayal of the landscape urbanist now implies. The question then is why landscape architects—despite inheriting a suburban pedigree that reaches from Olmsted and Vaux’s Riverside to McHarg’s The Woodlands—are not currently recognised as leaders in the field? Reed’s “system builder” may be a somewhat exaggerated image, but certainly most self-respecting landscape architects now consider themselves to be at least equal members of larger teams doing such infrastructural work. Why then is the landscape so often trivialised in suburban development? Perhaps suburban typologies

and economies are inherently incompatible with landscape systems; perhaps other professions maintain hegemony over the development process; perhaps the regulatory conditions and a litigious society dampen the will to innovate; perhaps landscape architects fail to convincingly represent their holistic world view and its creative potential. Perhaps all of the above.

As an “ethos,” landscape urbanism is about reclaiming structural influence over projects (Corner 2003, 58). As James Corner explains it, landscape urbanism is concerned with the “vast organizing fields that establish new conditions for future development” and “orchestrating a collective of experts and ideas towards a new synthesis” (2003, 60). He could be talking of suburbia, but he isn’t. It is now over a decade since the term “landscape urbanism” was coined, yet the movement remains academic and enigmatic. It is time that landscape urbanist theorizing was scrutinised, clarified, and then tested in the working landscapes of suburban sprawl. This is the primary purpose of this two-part paper.

Part One examines landscape urbanist discourse in relation to the dominant suburban paradigms such as smart growth and new urbanism. It also shows how landscape urbanism has separated itself from the theory of critical regionalism and therefore from a certain landscape architectural romanticism. Part Two then discusses a master planning project for a suburban development for 40,000 people on the outskirts of Perth, Western Australia, from 2004–2007.² By focusing on the banal role of public open space, this discussion enables readers to appreciate the practical complexities and contradictions of working in suburban landscapes in the light of landscape urbanism’s loftier theoretical ambitions. Although isolated into separate parts, the proximity of theory and practice in this paper prompts the reader to form useful convergences. Theory is tempered and refined by practice, and practice is inspired by theory.

PART ONE: LANDSCAPE (SUB)URBANISM IN THEORY **Landscape Urbanism**

As a school of thought, landscape urbanism compresses the polarisation between design and planning in an effort to combine the strengths of each. It shifts the landscape architectural project from an art (or craft) of making beautiful landscapes to one of interdisciplinary negotiation and the seeding of strategic, development processes. Just as it has been inspirational, the landscape urbanist polemic has also been grandiloquent. Accordingly, I have tried to condense the rhetoric into a set of basic principles without falling prey to reductionism. In short, as I interpret it, landscape urbanism claims to do the following:

- include within the purview of design all that is in the landscape—infrastructure and buildings, etc., and shuffle across scales so as to bridge the divides between landscape design, landscape ecology, and landscape planning.
- bring greater creativity to planning operations and greater rationality to design operations.
- conceptualize and then directly engage the city and its landscape as a hybridised, natural, chaotic ecology.
- emphasize the creative and temporal agency of ecology in the formation of urban life as opposed to envisaging an ideal equilibrium between two entities formerly known as culture and nature.
- understand and manipulate the forces at work behind things and less with the resultant aesthetic qualities of things.
- interpret and then represent landscape systems so that these systems can in turn influence urban forms, processes, and patterns.
- prefer open-ended (indeterminate and catalytic) design strategies as opposed to formal compositions and master plans.

Landscape urbanism, as even this clarification demonstrates, is (perhaps necessarily) “paradoxical and complex” (Corner 2003, 58). This is not only because the world it wishes to engage with is also paradoxical

and complex, but because it is grappling with emerging and difficult new conceptions of both ecology and the city—conceptions that by comparison make the scientific certitude of McHargian landscape planning, the *genius loci* of critical regionalism, or the petite aesthetic prescriptions of new urbanism, seem all too easy, not to say limiting, and ultimately untenable.

Attuned to developments in the natural sciences, landscape urbanism's conception of ecology is that nature is not directed toward a state of harmonic equilibrium but that it involves more open-ended processes of self-organisation and indeterminacy as described by chaos theory. Kristina Hill, for example, explains that this new paradigm of ecology is different to that which underpinned McHargian planning methods: that it forms "a new dialogue between designers and ecologists" (Hill 2001, 93). Hill argues that a spatiality of fixed boundaries can no longer adequately define ecology: "places must be seen as part of a changing context in which trends cannot be exactly predicted [and] surprises should be expected" (Hill 2005, 155). McHarg's understanding of ecology was not that things were static, but his methods for securing a best fit between culture and nature were dependent upon clearly determined boundaries and land uses. In accordance with Hill's ecology of flow and flux, landscape urbanism attempts therefore to engage with the openness and unpredictability of both natural and cultural systems. Landscape urbanism therefore engages time as well as space. It emphasises the reciprocal creativity of the natural and cultural worlds, conflating the two into a hybrid that is in turn subject to continual evolution. Corner, for example, conflates mind and matter into the same poetic scape:

The process of which ecology and creativity speak are fundamental to the work of landscape architecture. Whether biological or imaginative, evolutionary or metaphorical, such processes are active, dynamic, and complex, each tending toward the increased differentiation, freedom, and richness of a diversely interacting whole. There is no end, no grand scheme

for these agents of change, just a cumulative directionality toward further becoming. (1997, 81)

In conflating nature with culture, landscape urbanism naturalises the city, a major and not unproblematic theoretical shift with regard to urban history. For example, Alan Berger's recent book *Drosscape* (2006), which tracks sprawl from coast to North American coast, is almost a paean to its naturalness—one consequence of marvelling over it from the air. That the city is natural is, in a material if not philosophical sense correct, but it is also a dangerous piece of sophistry in the midst of a global environmental crisis that has the sprawling landscapes of the first world at its root. This naturalisation of the contemporary city is problematic because it confers a certain inevitability upon its growth, which in turn can seem to justify its rampant and destructive spread.

In the *Landscape Urbanism Reader*, editor Charles Waldheim declares that "the landscape is the model for contemporary urbanism . . . increasingly characterised by horizontal sprawl and rapid change" (2006, 37). But apart from Alan Berger's notion of drosscape, the *Reader* presents scant theoretical or applied work that explicitly involves designing suburbs or re-structuring sprawl. As Grahame Shane points out, "the recent discourse surrounding landscape urbanism does not yet begin to address the issue of urban morphologies or the emergence of settlement patterns over time" (2006, 63). The *Reader* ends however with an image of sprawl; an image I find portentous. If it is to become less enigmatic and engage less voyeuristically with conditions of suburban sprawl—as I think it should—landscape urbanism must better define itself in relation to the popular culture of the smart growth debates without necessarily simplifying its complicated appreciation of ecology and urbanity.

Smart Growth and Landscape Urbanism

Many will be familiar with the sprawl debates, but they are worth briefly staking out. The case *against* sprawl is that it is—like many of its inhabitants—obese. Sprawl is unhealthy because it is destructive of agricultural

land and precious habitat. Its non-porous surfaces increase runoff that damages waterways, and its large free-standing homes are energy inefficient. Sprawl is car-dependent and compounds global warming. Sprawl leads to social problems because it isolates people, in particular women and the elderly. Sprawl is thought to lack culture and community because it lacks density and a sense of place. Additionally, while sprawl is portrayed as economically rational, the real costs are borne by the whole population, not just the sprawlers. Most importantly, neither the ecosystem nor the infrastructural system can support predicted increases in population if that population sprawls. Finally, sprawl is ugly.

The case for sprawl gets a political boost from economic liberalism and a suspicion of any regulatory planning that inhibits individual rights vested in land. Additionally, by conventional economic modelling, sprawl is comparatively cheap to build and thus democratically (equitably) enables people to enter the real estate market. To oppose this on either environmental or aesthetic grounds is elitist. Further, in insecure times, new suburbs (particularly those with walls around them) are thought to be safe. Low density suburbia is also thought to be better for children than dense, urban neighbourhoods. The suburbs are generally good because they lack congestion, and their distance from urban centres is offset by the fact that many people enjoy driving. In any case, cars, like homes, will become more energy-efficient and less polluting in the future. Finally, a free-standing home and a garden is what people want and a suburban home is the epitome of individual, familial, and communal pride.

The sprawl debates are often highly emotive and ideologically skewed, and statistics can cut both ways. For example, in *Sprawl: A Compact History* (2005), Robert Bruegmann attempts a complete deconstruction of the aesthetics and morality of the anti-sprawl movement. He claims that since 1945 in North America, more land has been added to the permanent register of open space than has been developed, and that by 2005 “by even the most generous estimates,” only a mere five

percent of the North American landmass was urbanised (144). Alternatively, in an equally well-researched book, *The Bulldozer in the Countryside* (2001), Adam Rome notes that Bruegmann’s 5 percent figure was reached by the 1950s, had climbed to 10.9 percent in the 1970s, and had doubled again by the 1990s (264).

Not only are statistics malleable, but so too is the language used to describe sprawl. Rowe speaks of land that is “lost” to development, and Frederick Steiner refers to 365 acres of land being “consumed” by sprawl every hour (Steiner 2006, xvi). To say sprawl “consumes” land, according to Bruegmann, is prejudicial and symptomatic of polarised debate. James Kunstler, one of the more impassioned critics of sprawl claims that it “has nearly wrecked the human habitat of North America,” and most of it is “depressingly brutal, unhealthy, and spiritually degrading” (1993, 10). Yet Bruegmann, (flying out of Los Angeles), extols the contemporary city as “the grandest and most marvellous work of mankind” (2005, 225). For Bruegmann, Portland’s Urban Growth Boundary—one of the most proactive anti-sprawl mechanisms introduced in recent times—is at best dubious, whereas for Kunstler, Portland is a model of success. And so it goes.

According to Arthur C. Nelson (2002, 86–88), smart growth is about conserving open space, limiting sprawl, compacting mixed-use development, revitalising old centres, enhancing public transport networks, and sharing development costs equitably. These principles are also germane to new urbanism, but where new urbanism is preoccupied with the formal aesthetics of development, smart growth is more concerned with the socio-economic and political processes that give rise to sprawl in the first place. That is to say, smart growth maintains faith in planning and policy to control the city.

Landscape urbanism has far less faith in controlling urban dynamics, but it shares with smart growth an interest in engaging processes rather than superimposing forms. As Corner explains, “The promise of landscape urbanism is the development of a space-time ecology that treats all forces and agents working in the

urban field and considers them as continuous networks of inter-relationships” (2006, 30). Nelson says something similar, describing smart growth as “a systems approach to environmental planning—shifting from development orientation to basins or ecosystems planning” (2002, 88–89).

In this case, Ian McHarg’s planning method would seem fundamental to smart growth’s regional management concerns. Like smart growth advocates, McHarg believed in the efficacy of the master plan as an expression of scientifically grounded reason to bring about an evolutionary reconciliation between economics and ecology. Despite the best intentions, however, experience has taught that a universalist method, Cartesian omnipotence, and the Big Plan often become blunt instruments. Anthony Flint, author of *This Land*, summarises the demise of faith in planning thus:

Nobody is drawing big plans anymore that have colour-coded zones for where development can and can’t go. Those are the maps that just get put on a shelf when the next administration comes in. The smartest of the smart growth governments are concentrating on changing zoning, the DNA of growth, on steering funding toward infrastructure in built up places and on taking away the constraints that hobble good growth. Consumers have to take it from there. (2006, 259)

Landscape urbanists such as Alan Berger reach a similar finding: “[t]he polarizing rhetorical arguments of the pro- and anti-urbanization contingencies, as well as dynamic economic process, make traditional master planning approaches for future cities seem absurd” (2006, 236). According to landscape urbanists, unless it makes allowance for indeterminate contingencies, the chaos of both the socio-political and ecological economies will constantly thwart the master plan that imposes an unwavering rational order over the future. Applying a single planning method, and one that purports to invariably “get it right” in all circumstances, would seem not only to oversimplify the world but also ignore the temporal flux of all things and the

radical differences and particularities that each project or region presents.

Corner goes so far as to say that the city now “escape[s] design and even more so planning . . . ; [it] is out of control” (2003, 59). In his estimation, however, this condition is not hopeless and anarchic; rather, it is a positive attribute of contemporary urbanity and one to be anticipated and harnessed through highly nuanced design strategies. In this paradigm, the designer has to act catalytically, intervening in dynamic processes rather than treating the “city as a static composition with the planner as the figure in charge” (Corner 2003, 59). As Koolhaas famously declared design is no longer a matter of asserting a final, formal composition but is now a matter of “staging the conditions of uncertainty” and “irrigating territories with potential” (1996, 969).

However, to intervene in states of chaos, which by definition means the predictability of unpredictability, is not easy. One’s interventions in chaotic states need be to *more*, not less, precise, a point well made by Linda Pollack when she talks of a “precise openness” in regard to work submitted to the Fresh Kills competition (2002, 62). As history demonstrates, landscapes have been good places to test strategies that later become urban design methods, but urbanism per se is a far more dangerous program to now leave *open-ended* than a piece of post industrial parkland. Paradoxically, the most successful urban design movement in the world today—new urbanism—is one that would leave nothing to chance.

New Urbanism

The Congress for the New Urbanism (CNU, 1993–present) outlines its virtues against the dystopian failings of the Congrès Internationaux d’Architecture Moderne (CIAM 1928–1953). The CNU is now the only well-organised, international, easily understood, and highly marketable force in contemporary suburban planning. Unlike the “complex and paradoxical” movement of landscape urbanism (Corner 2003), the new urbanists offer a clear and simple manifesto. First, the CNU states that it “views disinvestment in central cities, the spread

of placeless sprawl, increasing separation by race and income, environmental deterioration, loss of agricultural lands and wilderness, and the erosion of society's built heritage as one interrelated community-building challenge" (Congress for the New Urbanism 2001). Applying these maxims to the practice of design, Andres Duany and his colleagues recommend that in any given project, natural amenities not only should be retained but also celebrated, that trees be saved and topography respected. Duany argues for large areas of open space to be set aside and made to link into larger open space systems and natural reserves (Duany, Plater-Zyberk, and Speck 2000, 246). Were these principles observed more vigorously, many tracts of suburban development undoubtedly would be better places. But is it good enough?

Duany rejects sprawl, but in America and Australia, where a freestanding home is considered a birthright, he finds himself more often than not adding to it albeit in a manner styled as traditional, walkable, and (sometimes) transit-oriented. Even though Duany's residential projects might be regarded by the bourgeoisie as more liveable places, it is unlikely that such projects can be taken seriously as a wholesale antidote to sprawl. New urbanism only alleviates sprawl so long as one forgets that it now takes close to 12 acres of land to sustain one American (Ingersoll 2006, 133).³ Any new urbanist "village" is in this sense an illusion. This realisation is the point of departure for the movement of green urbanism.

Green Urbanism

While acknowledging that "[p]recisely what green urbanism implies is evolving and unclear," Timothy Beatley (2000) concludes that a greener city is one that would reduce its ecological footprint, function in a way analogous to nature by developing a circular rather than linear metabolism, strive toward local and regional self sufficiency, and offer its citizens a healthier lifestyle and environment (5–6). Beatley posits green urbanism as a significant improvement upon the new urbanism, which he criticizes for rarely reflecting "a clear or sig-

nificant concern about reducing ecological impacts or promoting more ecologically sustainable lifestyles" (65). Green urbanism is significant because it shifts the emphasis from new urbanism's preoccupation with the styling of development toward a regional, landscape planning perspective.

Shifting from new urbanism to green urbanism, Cynthia Girling and Ronald Kellett, in their book *Skinny Streets and Green Neighbourhoods* (2005), take the by now well-known principles of landscape urbanism and add some. In prioritising the landscape, they stress that suburban developments should have the following:

a vision for protecting, restoring and interconnecting urban ecological infrastructure; multifunctional green networks at every planning scale—the metropolitan area, the city, and the neighbourhood; a research community and citizenry that understand the city's ecosystem; landscape restoration that repairs fragmented ecological structure; and finally natural processes visibly integrated in the design of urban landscapes. (146)

It is here that debates about urban sustainability become relative. Well-intentioned landscape architects who wish to open up more habitat and breathe it into our suburbs could in turn increase the city's overall sprawl balloon and place even greater demands on both private and public transport systems. Not only that, as Robert Freestone points out, to develop green urbanism is a far more complex project than simply setting aside generous open spaces: "ecological footprints extend far beyond any neat notions of a discrete hinterland. . . . Genuine green cities demand multifaceted processes of environmental management (e.g., low energy usage, wastewater treatment, pollution controls, recycling, nature conservation, endangered species legislation, public transportation)" (2002, 98).

New urbanists and green urbanists both agree that to avoid sprawl means residential density must increase. The European form of new urbanism advanced by Rob Krier (2003) achieves such high density but according to Girling and Kellett, this is not a model which Americans

would willingly embrace (2005, 137; Krier 2003). Consequently, North American green/new urbanists have settled for what they call “compact neighbourhoods,” communities with a density of between 15 to 30 dwellings per acre (75 per hectare) as an ideal (Girling and Kellett 2005, 96).

Girling and Kellett’s research, like the new urbanism movement in general, ultimately deals with the prosaic dimensions of suburban design and arrives at formal prescriptions for its improvement. Such prescriptions are the stuff suburbia is ultimately made of, and despite a declared interest in the background datascape of codes, regulations, and policies, landscape urbanists are extremely suspicious of predetermined aesthetic outcomes. As Corner explains, the “attention paid to the dynamic structures and processes that engender future development distinguishes landscape urbanism from more object-based ideas such as ‘city-scape,’ ‘infrascapae,’ ‘green city,’ or any other such hybrid image that derives from an objectified notion of formal appearance” (2003, 60).

Corner’s diminution of aesthetics seems to me to be exaggerated for polemical impact but, significantly, it does coincide with geographer David Harvey’s critique of new urbanism as a *utopia of form*. Both Corner and Harvey argue that what is really needed instead is a “utopia of process” (Harvey 2005, 25). For them, attention to economic, socio-political, and ecological processes—above and beyond urban aesthetics—is the path to a world that is more “socially just, politically emancipating, and ecologically sane” (Harvey 2005, 25).

Corner declares that landscape urbanism can achieve this goal “because of its extensive scale and scope, its inclusive pragmatism and creative techniques, its prioritizing of infrastructure and process, its embrace of indeterminacy and open-endedness, and its vision of a more wholesome and heterogeneous world” (2003, 62). Indeed, but it behoves landscape urbanists to translate this high mindedness into urban form. If they do not, then new urbanism’s path *back to the future* will remain the only alternative to formless sprawl, and as Alex Marshall so nicely puts it, that won’t work: “[it]

resembles trying to grow a rose by starting with the patterns of its leaves and petals. . . . You have to study the seed and the soil within which the seed is grown” (2000, 20). In seeking to go deeper into the ground of urbanism, Marshall could be speaking of critical regionalism.

From Critical Regionalism to Critical Pragmatism

A sweeping conflation of aesthetics and politics, critical regionalism emerged in the 1980s as an academic architectural project of resistance to what was perceived to be the homogenising forces of global modernity. Although remaining committed to innovative architectural form, with new urbanism, critical regionalism shared a sense of being a corrective to the placeless abstractions of both the CIAM and sprawl.

Kenneth Frampton, the theory’s best known advocate, hoped for an architecture that would absorb and adapt the benefits of modernity while correcting its destructive tendency to proceed with little apparent regard for environmental or cultural specificity (Frampton 1983, 17). Mixed with Christian Norberg Schulz’s turn to *genius loci* (the spirit of place), critical regionalism coincided with landscape architecture’s own development of the idea of achieving a “sense of place” through design (Seddon 1972).⁴

According to Ellen Dunham-Jones, during the last few decades when sprawl has constituted 75 percent of all new development in the United States, architects, particularly the avant garde, had virtually nothing to do with it (2005, 4). In the absence of critical architecture in suburbia it is somewhat paradoxical that the conservative movement of New Urbanism—which, like critical regionalism asserts the authenticity of a sense of place—has been most effective in reforming suburbia. Well aware of this paradox in 1995 Frampton moved to position landscape as the “critical” agent of urbanism, stating that “landscaped form” is now of greater importance to urbanism than “the freestanding aestheticized object” (Frampton 1995, 121).

This turn to landscape by Frampton is both surprising and prescient. Surprising, because landscape architecture, a discipline charged with asserting the primacy

of the landscape, has arguably failed to do so. While seeking aesthetically to increase the environmental and cultural resilience of specific places, landscape architecture often finds itself complicit in the commodification of those places. Prescient, because out of landscape architecture, landscape urbanism now emerges to reassert the landscape as a fundamental datum for contemporary urbanism.

Signaling a departure from new urbanism's nostalgia and critical regionalism's inherent romanticism, Bart Lootsma captures the zeitgeist in referring to "critical pragmatism," not critical regionalism (1999, 264). What landscape urbanists and Frampton can agree on then is that the landscape is "critical." The challenge for landscape urbanism is to demonstrate how the seemingly contradictory notions of pragmatism and criticism can productively co-exist.

Noted for his pragmatic and yet also critical disposition, Rem Koolhaas describes landscape as an "anonymous, thin, vegetal plane" (Waldheim 2006, 43). In so doing Koolhaas shifts emphasis from the critical regionalist's idealisation of landscape as a site of resistance to the landscape urbanist's foregrounding of its instrumentality. Similarly for Alex Wall, the landscape is now an "accelerant," "matrix," and "continuous surface," something seemingly available for anything, anytime (Wall 1999, 253). This conception relieves landscape of its traditional burden as culture's anchor in a world adrift, but it reaffirms the landscape, albeit somewhat abstractly, as urbanism's organisational platform. For landscape urbanists (particularly those of a more architectural persuasion), the landscape is an opportunity for both program and an ecology that can be rationalised to absorb the indeterminacy of the city. Kelly Shannon, for example, explains:

[T]here is an urge to literally reground the environment with an intelligence of place—interpreted not so much in the conservative sense of Martin Heidegger's and Christian Norberg Shultz's *genius loci* but more in Elia Zenghelis's [founder with Rem Koolhaas of OMA—Office for Metropolitan Architecture] con-

temporary interpretation of uncovering existing logics of reality and finding a site's capacity. (2005, 147)⁵

Critical pragmatism empowers and to an extent liberates landscape architecture. As that process unfolds, however, one wonders to what degree landscape architecture needs to retain and better articulate its disciplinary difference to brands of architecture and urban design that have recently found the idea of landscape so useful. And does not that real difference lie enduringly with an acute sense of site specificity, a sense that the site itself is, as Sebastien Marot says, "the regulatory idea of the project" (2003, 7)? In this world view there is no such thing as an anonymous site.

PART TWO: LANDSCAPE (SUB)URBANISM IN PRACTICE

Practical Limitations to Innovation

In practice it is hard to reconcile the land's ecological systems with suburban systems. The reason for this is fundamental: ecological systems are organic and boundless whereas suburban systems are mechanistic; ecological systems are radically site specific whereas suburban systems are standardised and generic. If one is to design with ecological responsibility *and* creativity, then every site requires a highly nuanced and flexible response. Yet, due to the regulations that govern the layout of housing and its related infrastructure, suburban typologies are, in a word, inflexible (Ben-Joseph 2005, 117–130). Suburbia's inflexibility derives from the fact that it is not a single product that can be simply innovated but a complex integration of many products, each resisting change in the other. This systemic conservatism is compounded by the fact that developers, service providers, and ultimately consumers all operate within narrow financial margins. Consequently, changes to suburbia tend to be cosmetic, not structural.

Much as landscape architects claim to have a holistic perspective, there is much in the suburban landscape that is beyond their control and outside their expertise. In regard to suburban development, what is broadly ac-

cepted to be within the landscape architect's purview includes a broad brush response to how a project might adapt to existing site conditions, the form that open space systems of the development will take, and how landscape aesthetics can render suburbia as arcadian. The degree to which existing site conditions inform a development and the form that the public open spaces will take largely depend, in turn, upon the point at which the landscape enters the design process. As Girling and Kellet stress, "it is possible to design better developments only if strategically situated, interdependent networks of open space, streets, utilities and land use can be planned and designed together from the outset" (2005, xiv). Such an improvement then depends upon the landscape architect's ability to find ways of reconciling the industrial logic of suburbia with the eco-logic of the land. Ideally, this needs to occur at both regional and sub-divisional scales, and in such a way that stakeholders and the other consultants involved in suburban planning and design will support it.

In the project described and critiqued below, the landscape architecture team from the University of Western Australia's Faculty of Architecture, Landscape, and Visual Art were brought in by the client, the Armadale Redevelopment Authority (ARA), ahead of any other consultants and asked to develop the project's first concept plan. We were asked to develop a master plan "as if the landscape really mattered."⁶

The Wungong Urban Water (WUW) Landscape Structure Plan (LSP)

The WUW LSP (2004–2007) was both a professional consultancy and a research project (Figure 2).⁷ The research question concerned the possibility of adapting emergent landscape urbanist theory to the rigours of quotidian suburban master planning. The application of landscape urbanist theory to the WUW project, I argue, has improved the outcome and concomitantly identified the need for landscape urbanism to draw on other urban theory to render itself more directly relevant to suburban master planning. Although (in an abridged format) it contains all the information typi-

cal to the documentation of a case study, the following description and critique does not follow conventional case study methodology: what follows is a reflection upon the project by one of the authors of the project with an emphasis on the relationship between theory and praxis.⁸

The University of Western Australia Landscape Architecture department was originally given six weeks in which to develop an initial LSP. Coordinated by the ARA, a team of over 60 consultants representing 38 different organisations then took the initial LSP and spent three years (2004–2007) testing and refining its ideas, resolving all aspects necessary to master plan approval and sub-divisional development. The discussion that follows only pertains to the landscape architecture of the project.⁹

The site is 3,750 acres (1500 hectares) of damp, degraded, agricultural land on the outskirts of Perth (Figures 3a and 3b). The brief called for a master plan that would accommodate 15,000 homes at low to medium density to house a population of 40,000 people and to be constructed over a 15-year period. Based on population projections, Perth's latest planning report "Network City" (WAPC, 2004) anticipates the construction of 350,000 new homes in the next 23 years, 40 percent of which are allocated to peri-urban sites such as the WUW project.¹⁰ The remaining 60 percent are optimistically expected to be transit oriented and built into existing developed areas.

According to our mapping Perth has 295,000 acres (118,000 hectares) of degraded rural land that could be reasonably developed without encroaching upon wetlands or removing vegetation. At a low density, this land could easily accommodate up to 1.5 million new homes, circa 3.2 million people. Unless an urban growth boundary is imposed, this city can and probably will sprawl well into the 21st century.

The site of the WUW project includes a significant water course and a string of wetlands through its centre. Eighty percent of the metropolitan region's wetlands—vital organs in the local ecology—have been destroyed, and its rivers have become eutrophic. Like

most peri-urban lands, the site bears topographic scar tissue, weed-infested fragments of vegetation, impeded hydrological systems, and unbalanced soils. To guide the creation of the LSP, the following in-house principles were drafted:

- Protect, interlink, and enhance existing vegetation deemed of cultural and ecological value.
- Create a holistic matrix of public open space (POS) that transcends individual property ownership and is robust, simple, and multi-functional.
- Integrate with the POS matrix a comprehensive storm water management system as a legible infrastructural component of the project.
- Assert the POS matrix as the primary guidelines for subsequent development.
- Align streets and housing orthogonally (north-south and east-west) to maximise passive solar access.
- Create an iconic site identity not through suburban pastiche but through the use of substantial plantings of endemic vegetation.

Without fill, the water table in this landscape is generally too high for houses built on concrete pads, the construction technique that dominates the local housing market. This, as well as the site's location at the headwaters of Perth's riparian system, its remnant wetlands, and regional water shortages made water-sensitive design a dominant theme.

Immediately we set aside and buffered all the existing wetlands, riparian zones, and stands of significant vegetation. We then needed a simple system of drainage swales that would collect all the storm water from the future suburban subdivisions and strip it of pollutants before injecting it back into the aquifer or discharging into the site's natural drainage system. This comprehensive drainage system, we concluded, would also function as a POS system. Ideally that system would form an interconnected matrix across the whole site, transcending the boundaries of the many smaller subdivisions that would form over the next 15 years in order to complete the project.

In Western Australia, in addition to land set aside

for environmental protection, a development must also allocate 10 percent of its developable area to POS. This figure should be site-specifically derived and flexible, but to provide workable consistency for the industry, it isn't. To create a holistic, interconnected matrix of POS, we took the allowable 10 percent POS allocation and stretched it into thin "ribbons" across the entire site. A rule we made for ourselves was that no future resident should ever be more than 650 feet from this POS matrix.¹¹ A second rule was that the degree of thinness to which an open space in a suburban context could be reduced before it was no longer visually and functionally viable was around 85-foot wide. It was felt that if the POS became thinner than this then the space risked being perceived by the public as a drain rather than a linear park. Following these rules resulted in the superimposition of 26 miles of POS strips spaced 650 feet from one another across the whole site. These strips of POS became known as park avenues.

Each 85-foot-wide park avenue is defined by four rows of trees which frame a central (35-foot wide) grassed open space (Figure 4). This open space functions as both a passive recreational area and a swale system. In what is a hot site in a hot climate, the avenues also work to channel cool air through the residential zones, and in summer they function as windbreaks filtering harsh easterly winds. Rear-loaded housing is prescribed to address the avenues, encouraging community ownership and passive surveillance. Adjacent to one side of the avenue is a small road, ensuring general public access.

By virtue of their linearity, avenues encourage people to move along their length, an important consideration with regard to high obesity rates. People will also be enticed along the avenues because each one leads to the Wungong River and, as a rule, to a 200-square foot community park, situated at the heart of each neighbourhood. Similarly, each of the eight schools in the LSP is connected to a park avenue, making the POS matrix a safe and effective system for children (Figure 5). Some roads necessarily cross the avenues, but they are kept to a minimum. The avenues not only convey storm water

and people, but wildlife can also utilise this interconnected matrix. Finally, by virtue of their visual clarity and functionality, the avenues provide what would otherwise be raw suburban development with a distinctive and binding character on a scale commensurate with the development. The simple, low-maintenance typology of the avenue thus achieves a lot with very little.

However, when an archaeological survey of the site revealed a plethora of important Aboriginal sites and these were (rightly) included in the overall POS calculation, the total POS figure was well over the mandatory 10 percent of the developable land.¹² Consequently, every second avenue became a “road avenue,” meaning it retained its form as an avenue defined by four rows of trees, but a road replaced the internal open space (Figure 6). The continuity of the avenues as the structuring device for the whole development was thus maintained, but in the final scheme, residents now would find themselves potentially up to 1300 feet from the nearest park avenue (Figure 7).

Because the avenues cut across the boundaries of the 35 different land holdings that comprise the site area, they were understandably perceived by developers as complicating the orthodox development process. Striated by the avenues, the LSP was criticised as over-determined, inflexible, and hegemonic. Indeed, to an extent it is, but not without reason: the avenues guarantee an overall drainage system, a holistic matrix of interconnected POS, and help create a large-scale sense of place—all of which is unlikely to occur in their absence. To enable a degree of flexibility, we specified that an avenue could be adjusted to a distance of 100 feet so as to fit topographic nuances, but each development must ensure that the avenue enters and leaves any particular sub-division as demarcated on the master plan.

What irked the various developers and their design teams most, however, was that when they tested the paradigm of the avenues, they found that the patterns of roads and housing that they generally superimpose on sites couldn't fit. They argued, somewhat ironically, that the avenues limited their ability to create a distinctive “sense of place” for their particular project. We ar-

gued that within the bandwidth set by the avenues, developers were free to brand their project in any way they so wished and that they needn't rely on road patterns to create identity. We argued that the larger sense of place we were creating at the master plan scale was more important than the branding of individual sub-divisions.

As opposed to curvilinear road networks or more eclectic new urbanist patterns what functions best within the stricture of the avenues are simple grids. This too was intentional because simple grid layouts would maximise orthogonal housing orientation, in turn maximising passive solar energy opportunities. The LSP aimed to ensure that 90 percent of homes would be orthogonally oriented whereas many sub-divisions achieve only 60 percent. Developers complained that this, again, was restrictive.

In the final master plan, however, the avenues on the northern side of the Wungong River are intercardinal, not orthogonal (Figure 8). The reason for this design was partly that drainage was better served this way, but the main reason was that the cadastral boundaries of the existing land ownership of the site are intercardinal. It was considered difficult enough to ensure that the avenues would link from one subdivision to another, but to add to that the complication of cutting across the existing grain of land ownership was to make construction absurdly complicated. Consequently, the consultant team explored and resolved ways of manipulating subdivision design within the intercardinal orientation of the avenues so as to maintain orthogonal orientation for the house lots without incurring a significant loss of yield for developers.

THE WUV PROJECT IN RELATION TO THEORY

This paper's underlying intention to link theory and praxis prompts two key questions of this project: 1) what can we draw out from it in relation to the discourses of smart growth, new urbanism, green urbanism, and critical regionalism; and 2) how does this project embody or reflect back on to the emergence of landscape urbanism?

Smart growth advocates might well have argued against residential development in the WUW project site in the first place. Indeed, the development can not claim to be transit-oriented, nor does it include within its bounds any significant employment sources. In view of its approximately 30-minute drive from the central business district of Perth and average building density of eight homes per acre, each of which will in all likelihood have two cars, this development is extending sprawl, not resisting it.

A regional (smart growth) perspective, however, can be made to work both ways. For example, the addition of 40,000 new residents in this site will contribute significantly to the vitality of the adjacent township of Armadale, thus affirming Calthorpe's image of a network city or polycentric urbanism. (Calthorpe and Fulton 2001) Also, if such degraded land is not developed, then development will potentially push further into richly bio-diverse vegetation north of the city.¹³ Additionally, because of the change of land use from unregulated small-scale agriculture to well-designed and -managed sub-division, considerable money begins to infuse the site's degraded ecosystem. Consequently, the quality of the WUW site's waterways should improve, which in turn would have beneficial downstream effects.

Whether the spaces we have set aside for environmental protection and habitat linkages do achieve viable ecological corridors in the midst of suburbia remains to be seen. Certainly, new urbanist planners who generally aim for increased densities and what they believe to be legible urban form regard the buffers around wetlands and riparian corridors, in addition to the 10-percent POS provisions, as excessive. They worry that the landscape spaces being set aside in contemporary suburban developments are hard to maintain, fragment clear urban form, dissipate density, and ultimately lack genuine ecological functionality (Kaufmann, Morris, and Jones 2006, 13).¹⁴ In this instance, the clear civic form of the avenues helped allay fears of more amorphous, degraded POS that one so commonly finds in suburbia.

The many planning details of this master plan

(more fully discussed elsewhere)¹⁵ conform to new urbanist principles. Residential areas are organised in accord with walkable distances to neighbourhood centres, streets form interconnected grids as opposed to cul-de-sacs, no buildings back onto POS, and generous streetscapes are prescribed. What "sense of place" the housing stock will achieve remains to be seen, but the new urbanist strategy of developing prescriptive aesthetic codes (Place Codes) has been adopted in a bid to regulate urban form.

New urbanism's stated landscape principles, as noted earlier, have also been broadly observed (Duany, Plater-Zyberk, and Speck 2000, 246). Indeed, had we not been able to refer to the "authority" of new urbanism, it is unlikely that the bold use of POS in the LSP would have been accepted. In this regard, while landscape urbanism may well reject new urbanism's aesthetics, it can nonetheless find solid grounding in some of its broadly accepted structural principles.

With regard to both new urbanism and critical regionalism's focus on *genius loci* to derive form (albeit to different aesthetic ends), the master plan's use of avenues bears some connection to the surrounding rural landscape. The master plan's avid protection and enhancement of existing wetlands, its retention of remnant vegetation, and its restriction of all plantings to species of provenance should form a coherent registration of local landscape character. Furthermore, retaining sites of Aboriginal significance adds to the project's registration of site specificity.

The master plan's insistence on a comprehensive storm water filtration system, orthogonal solar orientation, and an interconnected matrix of public open space as the dominant determinants of form, however, does shift this project a few degrees from new urbanism toward green urbanism. Satisfying Girling and Kellett's call for "strategically situated, interdependent networks of open space" (2005, xiv), the avenues ensure that the landscape architecture of this master plan is forceful, pragmatic, systematic, and infrastructural. The unambiguous spatiality achieved through the public open space matrix sets guidelines for the urbanism to follow.

In these ways, the landscape architecture of this project embodies an emerging landscape urbanist “ethos” (Corner 2003, 58) whereby the landscape architect plays a role commensurate with that of a “system builder” (Reed 2006, 283). In seven tenets set out earlier, landscape urbanism conjoins the methods and scales of planning with design; it focuses on the landscape as an infrastructural system; it appreciates the contemporary city as a hybridized, denatured ecology; and it aims for structural influence over contemporary urbanism. All these landscape urbanist characteristics can be found in the WUW project.

Because it restricts rather than liberates development and is in itself formally resolute, the WUW master plan may be seen to differ from current landscape urbanist discourse on one key point: it rejects landscape urbanism’s penchant for indeterminacy. In the suburbs, the city is not “out of control” (Corner 2003, 59); it is the result of rational decisions, many of which bear little regard for the landscape. These decisions can be contested, resisted, and deflected to more holistic ends only if the landscape architect is able to devise suitable design strategies. In this project, we needed to impose an unambiguous and overarching landscape structure to ensure the protection and creation of landscape systems (habitat, drainage, and POS) that necessarily transcend individual sub-divisional interests. It is possible to argue, as did the developers and their designers, that the striation of the WUW site by linear avenues over-determines the resultant development, but in suburbia, to merely “irrigate territories with potential” (Koolhaas 1996, 969), as Koolhaas would have it, could mean simply connecting the internet and the sewerage and letting development loose. Moreover, suburbia doesn’t have much *potential* in the sense of vibrant urbanity that Koolhaas meant when he originally made his famous retort to the new urbanists. In the suburbs, lines need to be drawn and certain landscapes designated for certain uses. The big plan or the master plan is therefore important. Although on most counts I am putting the WUW project forward as a manifestation of landscape urbanism, our approach to the WUW project

is paradoxically best exemplified by Andres Duany and his colleagues with the following explanation:

[C]onsultants thrive in a swamp of unpredictability. A master plan that offers clarity is their mortal enemy as it immediately diminishes the value of their services. When such a plan is completed, they begin to stir, warning their developer clients, “Watch out—if that plan is passed you’ll lose your flexibility!” Eventually the master plan is rejected and the status quo prevails. (2000, 180)

Perhaps what is needed in suburbia then is greater freedom at the level of individual expression with regard to built form and private property, but greater limitation with regard to broad scale ecological site conditions. This perspective suggests that landscape urbanism needs to find its own voice somewhere between the polarisations that Koolhaas and Duany have come to represent in contemporary urbanism.

CONCLUSION

Thirty years after McHarg proclaimed us “steward[s] of the biosphere” (1969, 5), James Corner, from the same Chair, presents the contemporary problem thus:

It is both tragic and ironic that as designers we are all ultimately interested in the density of building but that most who actually accomplish this can only do so through the typically unimaginative and uncritical techniques of design as a service profession. On the other hand, the visionaries it would seem are as always provocative and interesting but their utopias continually evade the problem of an operative strategy. (2006, 32)

The WUW master plan is not utopian, and in accord with landscape urbanist theory, it has attempted to deploy a simple, pragmatic and operative strategy. Furthermore, while it is being touted as innovative, its essential logic differs little from an established tradition of landscape architects bringing open space networks

to the fore in suburban planning. For example, Olmsted and Vaux's Riverside in Chicago (1869) integrated a generous public open space system (Creese 1985); the Griffin's Castlecrag in Sydney (1920s) related roads and buildings to topography (Walker 1994); McHarg's The Woodlands (1973) paid careful attention to hydrological systems (Forsyth 2005, 161–207); and Village Homes in Davis, California (1975) created a strong sense of community through the agency of its open spaces (Francis 2003). Upon studying these precedents, it seems remarkable how advanced they were or, alternatively, how little landscape architecture in suburbia has progressed over the course of the 20th century.

While it is true that Ian McHarg taught some of the current proponents of landscape urbanism and his "will to power" has even been recharged by landscape urbanism, the intellectual and creative differences between the teacher and his graduates remain somewhat obscure. I have alluded to differences throughout this paper, but these differences are to my mind best thought of as adding to rather than replacing McHarg's methods. Certainly, there are strong continuities between the two with regard to scope, philosophy, and technique. For instance, both landscape urbanism and McHargian planning operate at an urban scale, both are driven by the meta-narrative of ecology, and both prefer to ground the design process in empirical data. Together they form powerful theoretical and practical tools that could relate equally to smart growth, new urbanism, and green urbanism and thus position landscape architects to more forcefully negotiate the conditions of contemporary sprawl.

Anne Spirn lists three key, unresolved areas of McHarg's legacy: "How to reconcile environmental values and human needs, how to give material form to ecological processes and values, and finally, how to conceive of local actions within a regional context" (2000, 114). There is no better or more challenging place in which to broach these fundamental issues than in the badlands of contemporary sprawl.

ACKNOWLEDGMENTS

The author wishes to sincerely thank the reviewers and editor, Elen Deming, for her contributions to both the form and content of this paper.

NOTES

1. Notable exceptions are referenced in this paper. Two noteworthy books on suburbia by landscape architects not directly cited are Cynthia Girling and Kenneth Helphand's *Yard Street Park: The Design of Suburban Open Space* (1994), and Patrick M Condon's *Sustainable Urban Landscapes: The Surrey Design Charette* (1996).
2. This theoretical and practical work forms the core of a larger study into a range of development scenarios for Perth (based on 2050 population projections) funded by the Australian Research Council.
3. Other sources indicate up to double this amount. See http://www.footprintnetwork.org/gfn_sub.php?content=footprint_overview.
4. Professor George Seddon's key text *Sense of Place* (1972) was written about Perth, the reprint of which has been enthusiastically endorsed by Andres Duany.
5. The Dutch architects MVRDV are exemplary in this regard. See Patteeuw (2003).
6. Informal conversation between client and consultant, 2004.
7. The master plan for Wungong Urban Water received the 2007 Award for Planning Excellence and the President's Award from the Planning Institute of Australia.
8. For a comprehensive guide to case study methodology, see Francis (2001).
9. The design team for the LSP was Professor Richard Weller and Tinka Sack, advised by Sharni Howe and Patric de Villiers, and supported by Andrew Nugent, Julia Robinson, and Alexandra Farrington. The core consultant team that worked on the LSP from 2004 through to its final master plan status in 2007 was directed by Matt Taylor and included ATA Environmental Scientists, JDA Hydrologists, GHD Engineering, Worley Parsons Traffic Engineering, and Tempus Archeology. The main planners for this project were The Planning Group. A complete documentation of the project is available at http://www.landcorp.com.au/portal/page?_pageid=1033,1&_dad=portal&_schema=PORTAL&nav=wungong.
10. Both Andres Duany's new urbanism and Peter Calthorpe's transit-oriented development (TOD) have had a major im-

pact on Perth planning culture. New urbanist principles are enshrined in a comprehensive local planning guideline entitled “Livable Neighborhoods,” and TOD is now enshrined at a regional scale in Network City (WAPC, 2004). See http://www.planning.wa.gov.au/publications/liveable/LN_ed2.pdf.

11. Anecdotal evidence from research being conducted into suburban lifestyles and health by the University of Western Australia's School of Population Health indicate that people will use POS more frequently when it is closer by.
12. It is unprecedented in Australian suburban development to have mapped and preserved sites deemed of such significance.
13. The South Western Zone of Western Australia in which Perth sits is classified as one of the world's 33 biodiversity “hotspots,” meaning it contains unique and threatened biodiversity (Mittermeier 1999, 404).
14. The riparian zone through the midst of the WUW project is 330 feet wide, and wetlands are buffered by 200 feet of revegetated land wherein storm water is carefully managed.
15. See http://www.landcorp.com.au/portal/page?_pageid=1033_1&_dad=portal&_schema=PORTAL&nav=wungong.

REFERENCES

- Beatley, Timothy. 2000. *Green Urbanism: Learning from European Cities*. Washington, DC: Island Press.
- Ben-Joseph, Eran. 2005. *The Code of the City: Standards and the Hidden Language of Place Making*. Cambridge, MA: MIT Press.
- Berger, Alan. 2006. Drosscape. In *The Landscape Urbanism Reader*, ed. Charles Waldheim, 197–217. New York: Princeton Architectural Press.
- . 2006. *Drosscape: Wasting Land in Urban America*. New York: Princeton Architectural Press.
- Bruegmann, Robert. 2005. *Sprawl: A Compact History*. London: The University of Chicago Press.
- Calthorpe, Peter, and William Fulton. 2001. *The Regional City: Planning for the End of Sprawl*. Washington, DC: Island Press.
- Condon, Patrick M. 1996. *Sustainable Urban Landscapes: The Surrey Design Charette*. Vancouver: University of British Columbia.
- Congress for the New Urbanism. 2001. Charter of the new urbanism. <http://www.cnu.org/charter>.
- Corner, James. 1997. Ecology and landscape as agents of creativity. In *Ecological Design and Planning*, ed. G. Thompson and F. John Steiner, 80–108. New York: Wiley & Sons.
- . 1999. Eidetic operations and new landscapes. In *Recovering Landscape: Essays in Contemporary Landscape Architecture*, ed. James Corner, 153–169. New York: Princeton Architectural Press.
- . 2003. *Landscape Urbanism*. In *Landscape Urbanism: A Manual for the Machinic Landscape*, ed. Mostafavi Mohsen and Ciro Najle, 58–63. London: AA Publications.
- . 2006. Terra fluxus. In *The Landscape Urbanism Reader*, ed. Charles Waldheim, 21–33. New York: Princeton Architectural Press.
- Creese, Walter L. c1985. *The Crowning of the American Landscape: Eight Great Spaces and Their Buildings*. New York: Princeton University Press.
- Duany, Andres, Elizabeth Plater-Zyberk, and Jeff Speck. 2000. *Suburban Nation—The Rise of Sprawl and the Decline of the American Dream*. New York: North Point Press.
- Dunham-Jones, Ellen. 2005. Seventy-five percent: The next big architectural project. In *Sprawl and Suburbia: A Harvard Design Magazine Reader*, ed. William S. Saunders, 1–20. Minneapolis: University of Minnesota Press.
- Fishman, Robert. 2005. Beyond Sprawl. In *Sprawl and Suburbia: A Harvard Design Magazine Reader*, ed. William S. Saunders, xi—xviii. Minneapolis: University of Minnesota Press.
- Flint, Andrew. 2006. *This Land: The Battle over Sprawl and the Future of America*. Baltimore: The Johns Hopkins University Press.
- Forsyth, Ann. 2005. *Reforming Suburbia: The Planned Communities of Irvine, Columbia, and the Woodlands*. London: University of California Press.
- Frampton, Kenneth. 1983. Towards a critical regionalism: Six points for an architecture of resistance in Postmodernism. In *The Anti-Aesthetic*, ed. Hal Foster, 16–30. Seattle: Bay Press.
- . 1995. Toward an urban landscape. In *Columbia Documents of Architecture and Theory*, vol 4, 83–93. New York: Columbia University.
- Francis, Mark. 2001. A case study method for landscape architecture. *Landscape Journal* 20 (1): 15–29.
- . 2003. *Village Homes: A Community by Design*. Washington, DC: Island Press.
- Freestone, Robert. 2002. Greenbelts in city and regional planning. In *From Garden City to Green City: The Legacy of Ebenezer Howard*, ed. Kenneth C. Parsons and David Schuyler, 67–98. Baltimore: The Johns Hopkins University Press.

- Gillham, Oliver. 2002. *The Limitless City: A Primer on the Urban Sprawl Debate*. Washington, DC: Island Press.
- Girling, Cynthia, and Kenneth Helphand. 1994. *Yard Street Park: The Design of Suburban Open Space*. San Francisco: Wiley Professional.
- Girling, Cynthia, and Ronald Kellett. 2005. *Skinny Streets and Green Neighbourhoods: Design for Environment and Community*. Washington, DC: Island Press.
- Harvey, David. 2005. The new urbanism and the communitarian trap: On social problems and the false hope of design. In *Sprawl and Suburbia: A Harvard Design Magazine Reader*, ed. William Saunders, 21–27. Minneapolis: University of Minnesota Press.
- Hill, Kristina. 2001. Urban ecologies: Biodiversity and urban design. In *CASE: Downsview Park*, ed. Julia Czerniak, 90–101. Harvard Graduate Design School. New York: PRESEL Verlag.
- . 2005. Shifting sites. In *Site Matters: Design Concepts, Histories, and Strategies*, ed. J. Burns Carol and Andrea Kahn, 131–156. New York: Routledge.
- Ingersoll, Richard. 2006. *Sprawltown. Looking for the City on Its Edges*. New York: Princeton University Press.
- Kaufmann, Chip, Wendy Morris, and Evan Jones. 2006. *Australian New Urbanism: A Guide to Projects*. Australian Council for New Urbanism.
- Koolhaas, Rem. 1996. *S, M, L, XL*. Rotterdam: 010 Publishers.
- Krier, Rob. 2003. *Town Spaces: Contemporary Interpretations in Traditional Urbanism*. Berlin: Birkhauser.
- Kunstler, James H. 1993. *The Geography of Nowhere: The Rise and Decline of America's Man-Made Landscape*. New York: Touchstone—Simon and Schuster.
- Lootsma, Bart. 1999. Synthetic regionalization: The Dutch landscape toward a second modernity. In *Recovering Landscape: Essays in Contemporary Landscape Architecture*, ed. James Corner, 251–274. New York: Princeton Architectural Press.
- Marot, Sebastien. 2003. *Sub-Urbanism and the Art of Memory*. Spain: AA Publications.
- Marshall, Alex. 2000. *How Cities Work: Suburbs, Sprawl, and the Roads Not Taken*. Austin: University of Texas Press.
- McHarg, Ian. 1969. *Design with Nature*. Philadelphia: Natural History Press.
- Mittermeier, Russell, Normal Myers, and Cristina Goettsch Mittermeier, eds. 1999. *Hotspots: Earth's Biologically Richest and Most Endangered Terrestrial Ecoregions*. Mexico City: CEMEX Conservation International.
- Nelson, Arthur C. 2002. How do we know smart growth when we see it. In *Smart Growth Form and Consequences*, ed. Terry S. Szold and Armando Carbonell, 82–101. Toronto: Lincoln Institute of Land Policy.
- Patteeuw, Veronique, ed. 2003. *Reading MVRDV*. Rotterdam: NAI Publishers.
- Pollack, Linda. 2002. Sublime matters: Fresh Kills. In *Praxis: Journal of Writing and Building. Volume 4: Landscapes*, ed. Amanda Reeser and Ashley Schafer, 58–63. Cambridge, MA: Praxis, Inc.
- Reed, Chris. 2006. Public works practice. In *The Landscape Urbanism Reader*, ed. Charles Waldheim, 267–285. New York: Princeton Architectural Press.
- Rome, Adam. 2001. *The Bulldozer in the Countryside: Suburban Sprawl and the Rise of American Environmentalism*. New York: Cambridge University Press.
- Saunders, William S., ed. 2005. *Sprawl and Suburbia: A Harvard Design Magazine Reader*. Minneapolis: University of Minnesota Press.
- Seddon, George. 1972. *Sense of Place: A Response to an Environment. The Swan Coastal Plain, Western Australia*. Melbourne: UWA Press.
- Shane, Grahame. 2006. The emergence of landscape urbanism. In *The Landscape Urbanism Reader*, ed. Charles Waldheim, 55–67. New York: Princeton Architectural Press.
- Shannon, Kelly. 2006. From theory to resistance: Landscape urbanism in Europe. In *The Landscape Urbanism Reader*, ed. Charles Waldheim, 141–161. New York: Princeton Architectural Press.
- Spirn, Anne Whiston. 2000. Ian McHarg, landscape architecture, and environmentalism. In *Environmentalism in Landscape Architecture*, ed. Michael Conan, 97–114. Washington, DC: Dumbarton Oaks.
- Steiner, Frederick, R., ed. 2006. *The Essential Ian McHarg: Writings on Design and Nature*. Washington, DC: Island Press.
- Waldheim, Charles, ed. 2006. *The Landscape Urbanism Reader*. New York: Princeton Architectural Press.
- Walker, Meredith, ed. 1994. *Building for Nature: Walter Burley Griffin and Castlecrag*. Sydney: Walter Burley Griffin Society.
- Wall, Alex. 1999. Programming the urban surface. In *Recovering Landscape: Essays in Contemporary Landscape Architecture*, ed. James Corner, 233–250. New York: Princeton Architectural Press.
- Western Australian Planning Commission (WAPC). 2004. *Network City: Community planning strategy for Perth and Peel*. Western Australian Planning Commission, <http://www.dpi.wa.gov.au/networkcity/1214.asp>.

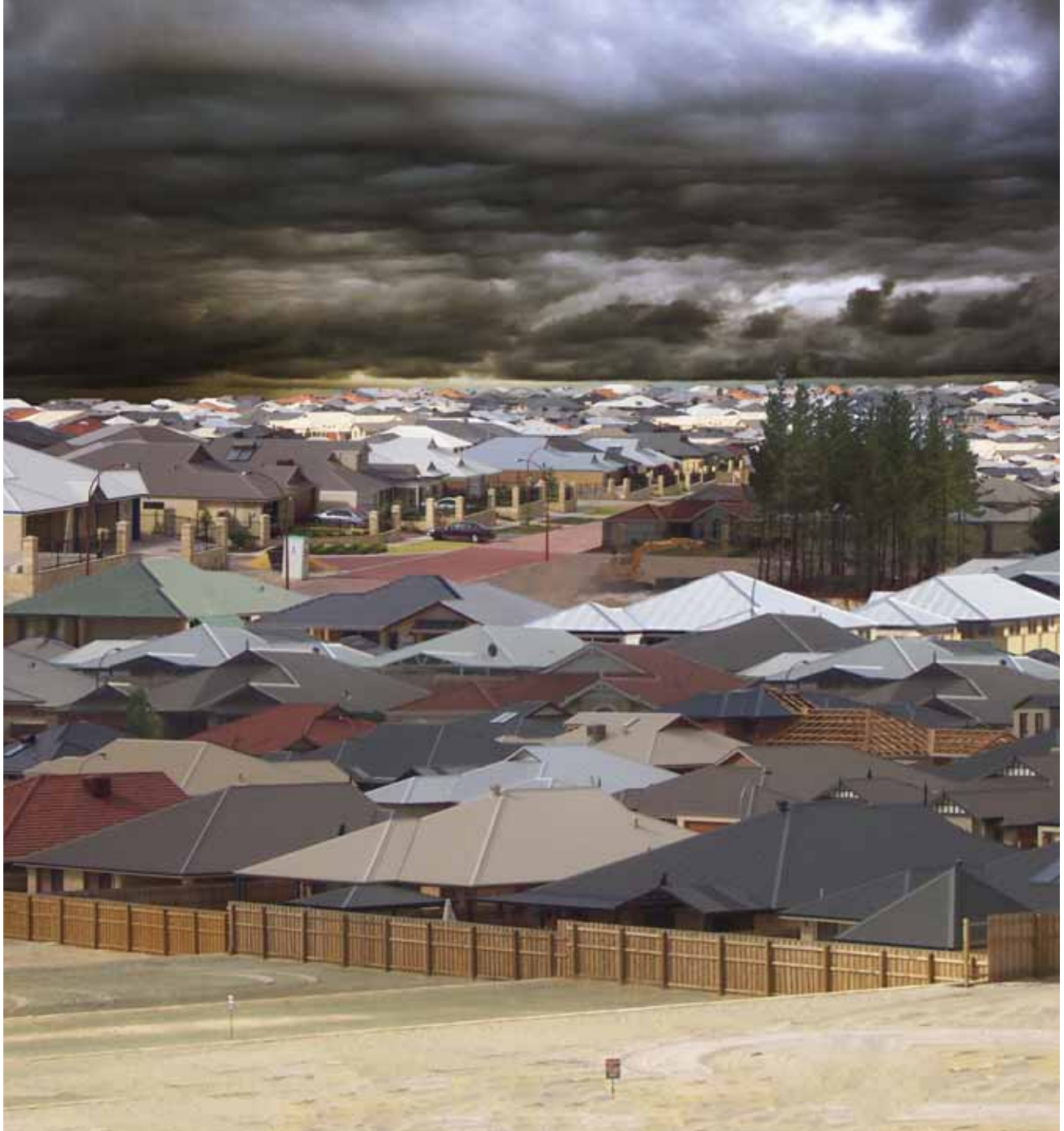


Figure 1. Typical West Australian Suburbia. (Photomontage by Andrew Thomas, 2007.)

AUTHOR RICHARD WELLER is Professor of Landscape architecture at the University of Western Australia where he specializes in both the theory and practice of design. He is author of the book *Room 4.1.3: Innovations in Landscape Architecture*, published by Penn Press, and is currently working on planning options for the city of Perth in 2050.

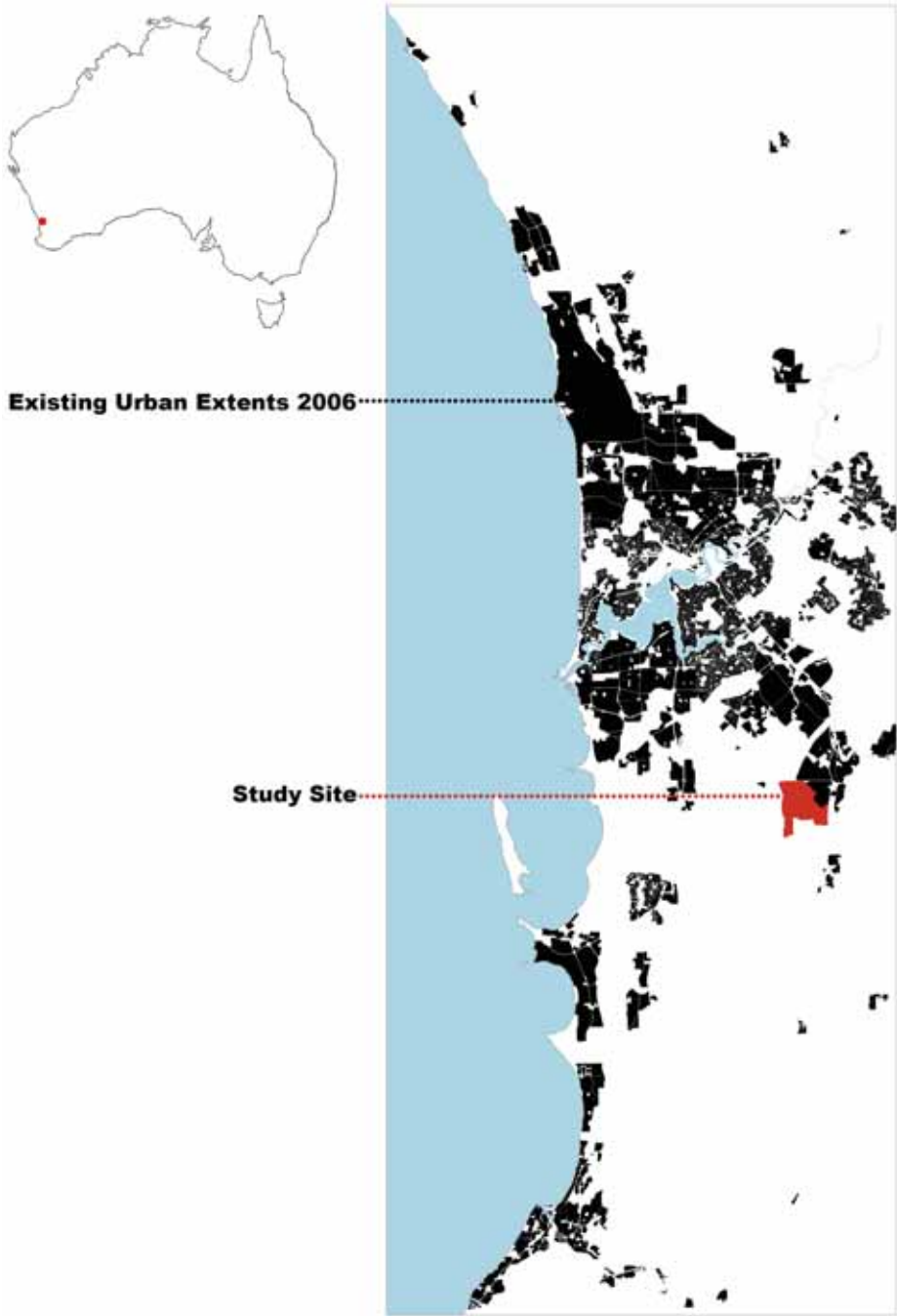


Figure 2. Location of the WUW Case study. (University of Western Australia, Landscape Architecture Program)

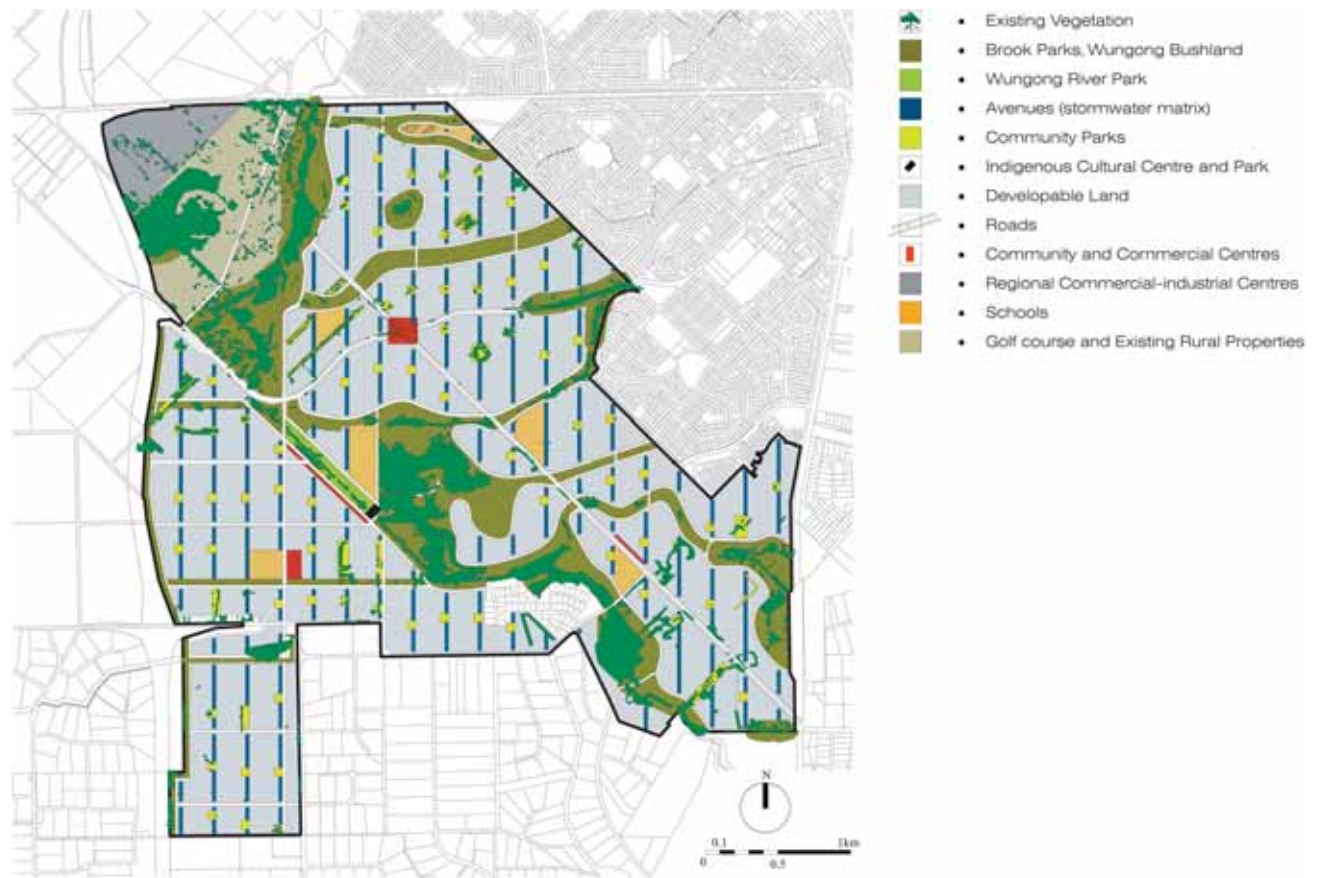


Figure 3a. Initial Landscape Structure Plan. (University of Western Australia, Landscape Architecture Program)

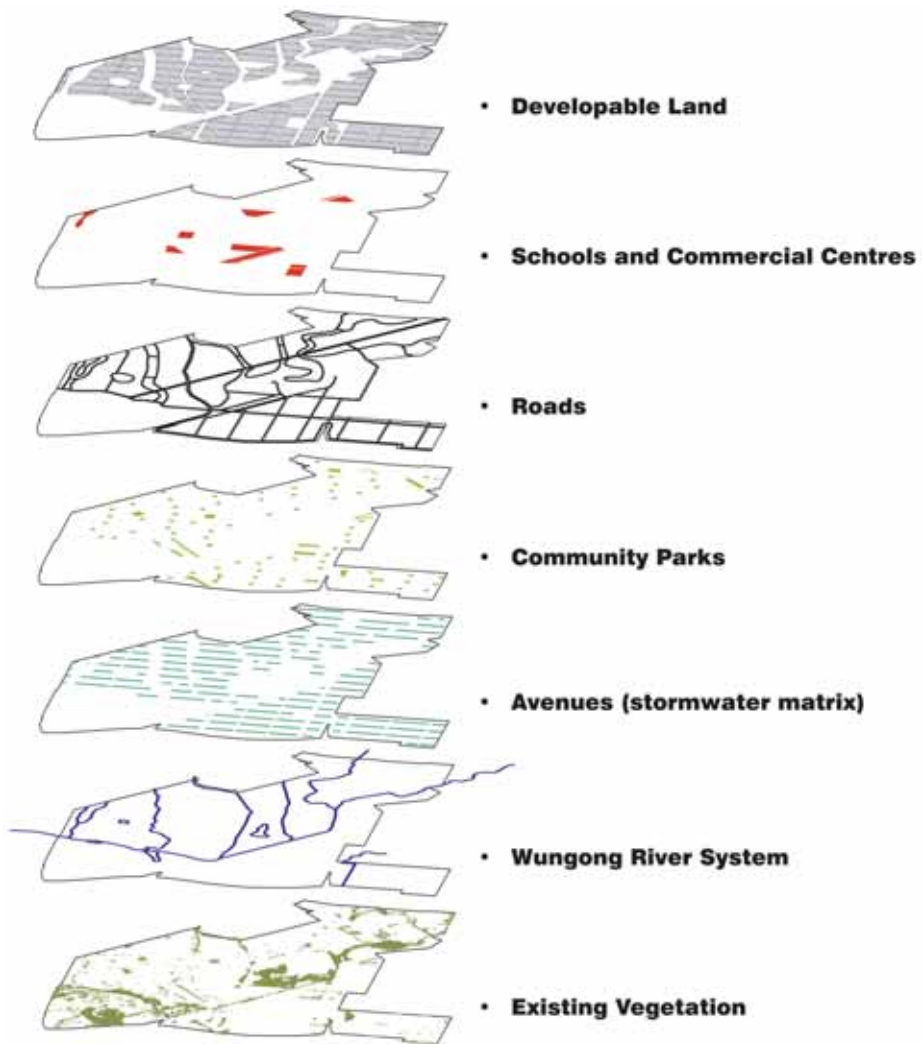


Figure 3b. Initial Landscape Structure Plan, program layers. (University of Western Australia, Landscape Architecture Program)

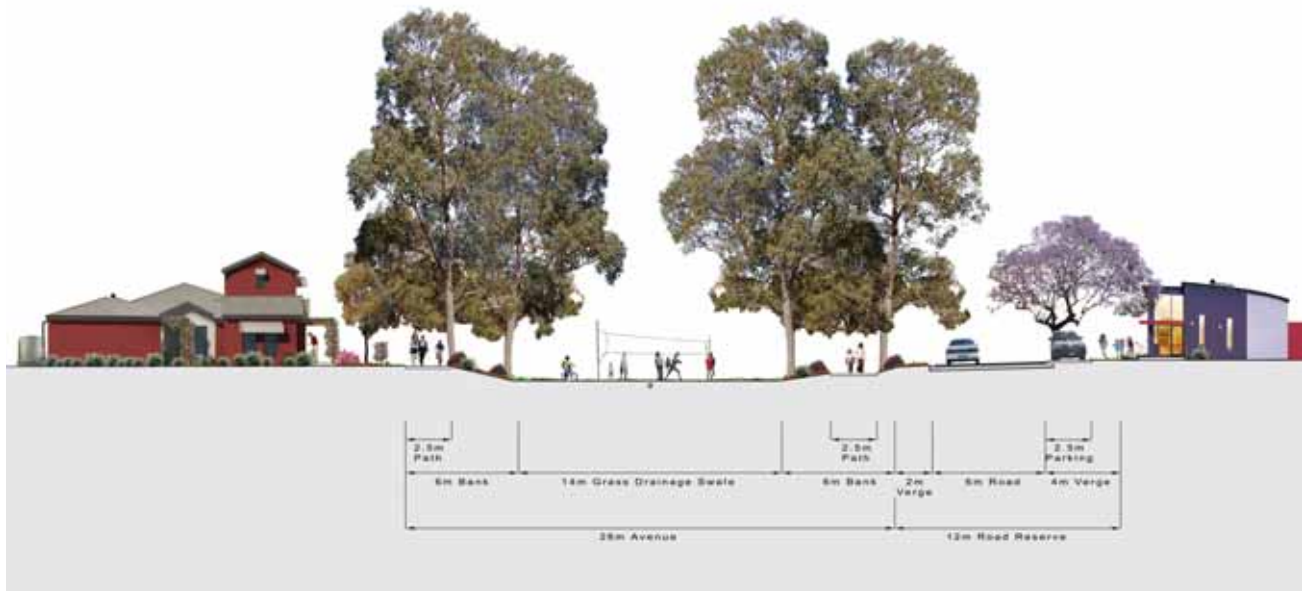


Figure 4. Section through a park avenue. (University of Western Australia, Landscape Architecture Program)



Figure 5. View inside a park avenue. (University of Western Australia, Landscape Architecture Program)

Figure 6. Section through a road avenue. (University of Western Australia, Landscape Architecture Program)

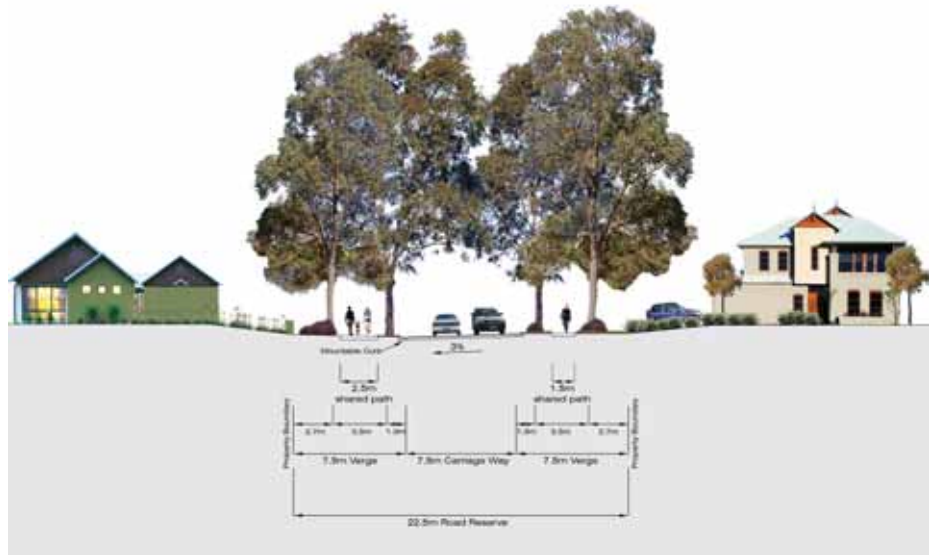
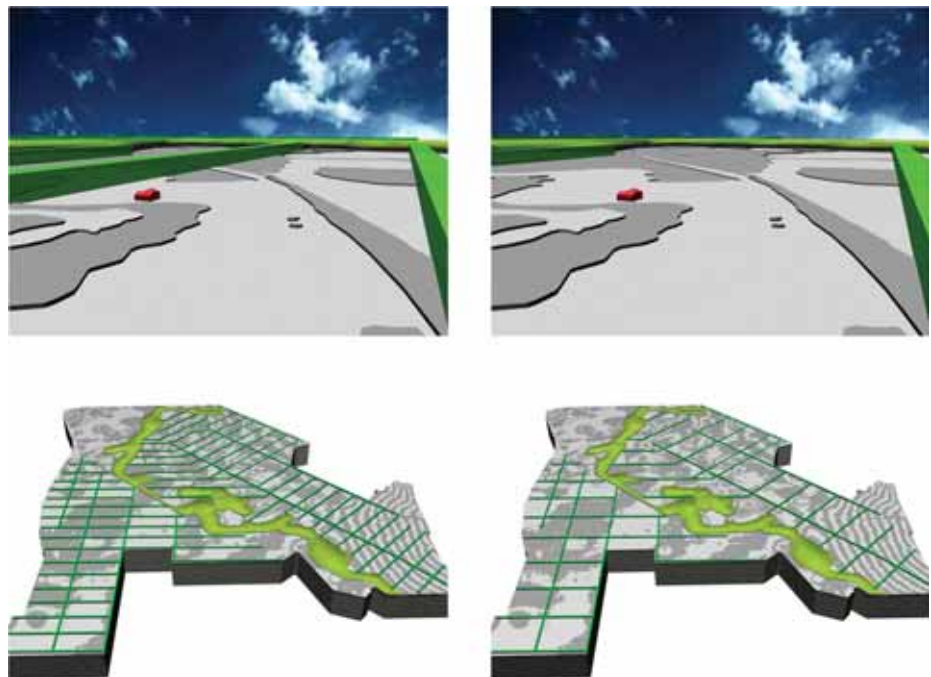


Figure 7. Overviews of avenues spaced at 650 feet and 1300 feet. (University of Western Australia, Landscape Architecture Program)



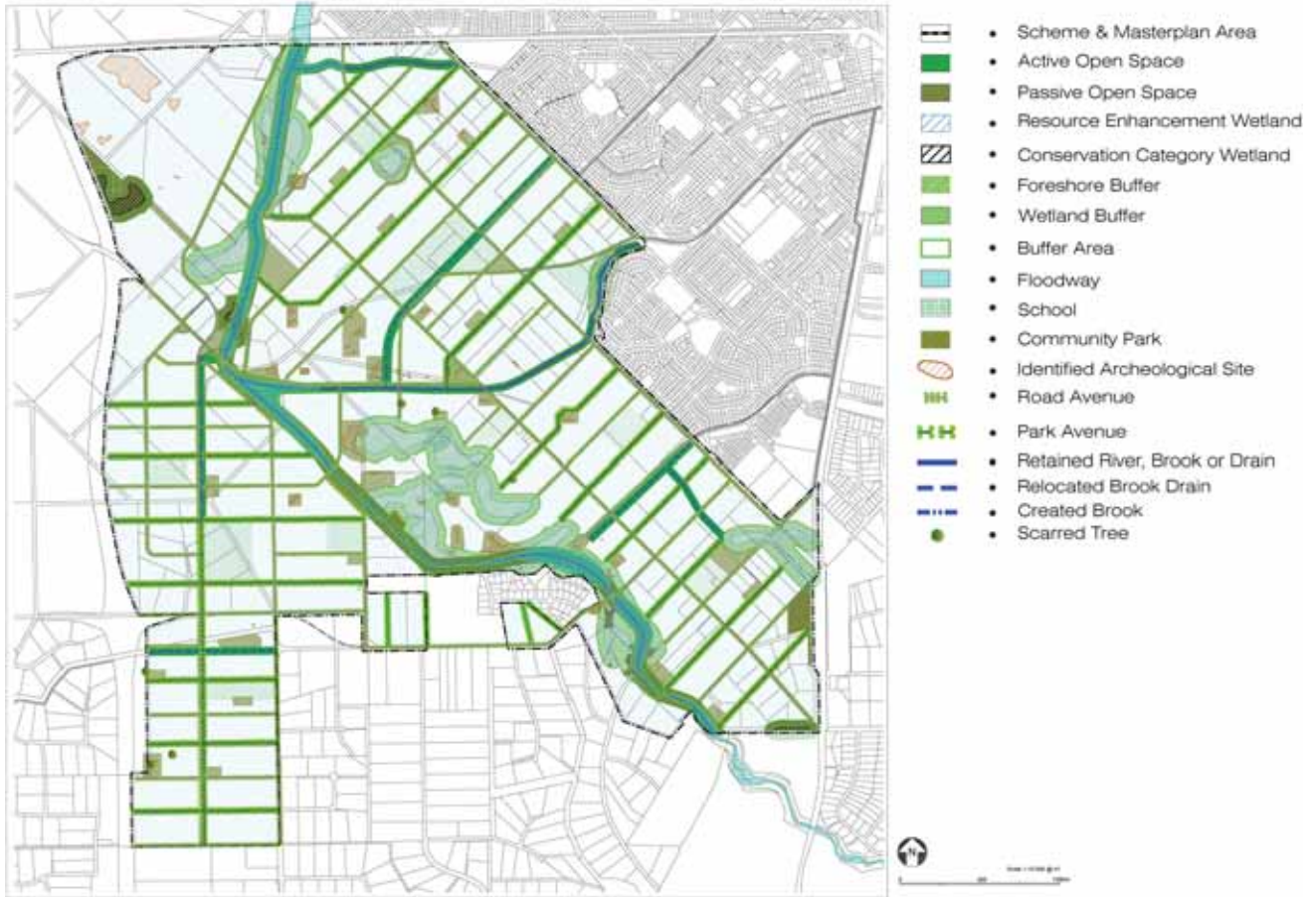


Figure 8. Final master plan for Wungong Urban Water as derived from the Landscape Structure Plan. (University of Western Australia, Landscape Architecture Program)